
by

Caroline Brock

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Abstract

This dissertation develops an integrated household economics approach to understand dairy systems choice among organic, Amish, graziers and conventional farmers in Wisconsin. This approach is called oikonomia from the Greek word for economics which here consists of four key realms: economic, social, spiritual and ecological. This framework also recognizes limits to time, information, and abilities when attempting to live out one’s oikonomia and thus maps out various bounded rationality possibilities. A bounded rationality approach is particularly appropriate for studying organic dairy given the systems based nature of organic and the many unknowns associated with it. State-wide surveys and sixty semi-structured interviews were conducted and coded on relevant themes. Qualitative analysis is presented in the form of narratives which highlight oikonomia and bounded rationality. Organic dairy seems to be a promising system given the high satisfaction levels amongst organic dairy farmers. Pasture based producers including the Amish are a focus of this study because they are particularly close to the organic system. There are many reasons why farmers go or don’t go organic which can be related to their current context. For example, farmers who are closer to the system seem to be most concerned with economic and agronomic issues. More conventionally orientated producers may be hesitant to adopt organic systems because of a focus on production. In contrast, organic and intensive graziers are more orientated towards positive synergies in the systems based approaches. Perhaps the most revealing is that many farmers do not seem to be considering the organic option in a systematic way. Bounded rationality issues, such as anchoring, satisficing, and status quo bias, are especially relevant. Two settlements of Amish studied are a good
example of the possible ways oikonomia and bounded rationality play out in decision making processes about adoption decisions. Organic and MIRG dairy are likely to play a significant role in the future of the agricultural landscape, and a broad household decision making framework that incorporates bounded rationality concerns should be helpful for guiding farmers and for those advising them on adoption decision making.
Preface

The primary conceptual research objective of this dissertation is to explore complex decision making using an alternative version of household economics based on oikonomia and bounded rationality. This focus is motivated in part by the common sense observation that these farming choices involve lifestyle considerations as well as financial ones. Decision making factors may involve a unique interaction of these dimensions at different stages of the decision making process. Oikonomia is an integrated approach to decision making that stems from the origins of the word economics “oikos” which translates as “household” (Meeks, 1985; Young, 1992). Oikonomia incorporates social, spiritual and ecological as well as economic dimensions. Bounded rationality refers to decision making that occurs without full information and the cognitive ability to weigh every advantage and disadvantage systematically.

The empirical application of this framework is to help understand the divergence in Wisconsin dairy farming systems with special emphasis on organic adoption. Farmers have complex reasons for adopting or not adopting organic dairy that involve values (oikonomia), the current farm and family situation, personality and bounded rationality issues. There is a specific emphasis on pasture based and smaller conventional farmers as they may be the most likely to adopt organic practices. Wisconsin is an ideal study site given the growth of organic dairy and other diverse systems in the past couple of decades. There is currently a dearth of literature that explores these types of questions amongst alternative dairy farmers. This research should be of interest to academics, extension and policy makers as they assist farmers in making complex
decisions especially adopting organic dairy. This research may also be of interest to other
decision makers given the unique and subtle interplay between values and bounded rationality.

Chapter 1 argues that over the past 25 years there has been significant structural
divergence in the dairy sector in terms of size and management systems. This chapter is a
modified and shortened version of the article “Farm structural change of a different kind:
Alternative dairy farms in Wisconsin: graziers, organic and Amish” published in 2009 in
*Renewable Agriculture and Food Systems*. Our take off point is that Wisconsin farming systems
divergence is an expression of farm household decision making. In addition to the rise of larger
confinement dairy operations, organic, management intensive rotational grazing (MIRG) and
Amish are also important on the Wisconsin farm landscape. In a sense, Chapter 1 gives a bird’s
eye view of dairy management systems in Wisconsin based on farm survey data. Organic dairy
farming, at the time of the survey in 2004 seemed particularly promising given the high level of
satisfaction with quality of life and milk prices.

Chapter 2 introduces the conceptual framework of oikonomia values and bounded
rationality in decision making as well as the interview and qualitative methodology which is
most appropriate for this kind of framework. The framework is particularly appropriate for
studying alternative dairy systems especially the adoption choice of organic dairy. Bounded
rationality theory recognizes internal constraints (i.e. cognitive limitations and biases) and
external constraints (i.e. uncertainty, limited time and resources). Organic farming is
information intensive and there are a lot of unknowns, so it may be particularly susceptible to
bounded rationality challenges.
Chapter 3 uses farmer narratives to demonstrate how farmer decision making involves complex processes based on oikonomia values and preferences. Conventional, graziers and organic farmers with pseudonyms articulate why they are farming and what motivates their management decisions. The narratives also hint at examples of bounded rationality especially as it applies to how farmers’ utilize information. This topic will be developed further in upcoming chapters. The narrative discussion reveals some overlapping and divergent values between and within the management groups. For example, the family is a motivator in farming for conventional farmers, graziers and organic farmers. However, production is more heavily emphasized amongst conventional operators. This chapter also illustrates the diversity within each management group and how oikonomia values can shift in response to life events. These farmer narratives will be referenced in Chapters 4 and 5 as the oikonomia and bounded rationality framework is used to further explore the organic dairy adoption decision.

Chapter 4 explores the economic and agronomic concerns of conventional and grazing farmers with organic dairy. Some of the major concerns raised are production, profitability, organic feed sourcing, grain and forage production, labor, herd health, and environmental/nutrient management. Organic dairy farmer experience often runs counter to the concerns of outsiders. Farmers’ oikonomia frameworks, farm and social situation and bounded rationality issues can help explain why organic farmers may not have analogous concerns. There are numerous gaps in the literature addressing the concerns that organic farmers and graziers raise with organic. More integrated studies are needed in this arena as Chapter 4 illustrates the gaps between the perceptions of non-organic farmers and the experiences of organic farmers and the
lack of information available on agronomic and economic dimensions of organic dairy. These information constraints, in part, set the stage for Chapter 5.

Chapter 5 argues that the decision to not adopt organic (& MIRG) can be more fully understood in the context of bounded rationality. Many farmers are apparently not considering the information that is available on organic because of bounded rationality issues like status quo bias and information satisficing. The current farm structure that the farmer is embedded within is also important to consider. The social context in which farmers operate can influence their exposure to information and their impression of organic farming. Different factors can shift farmers out of their bounded rationality situation and consequently their perceptions and values related to organics. Social setting and observing a successful organic farmer who is similar to the farmer in question can be critical factors that help farmers consider different possibilities. An affinity for information and experimentation can also be important. These kinds of interactions are particularly powerful when combined with a personal health or an economic crisis.

Chapter 6 claims that decisions as to why and how to farm involve a complex blending of oikonomia and bounded rationality, and the Amish best typify this blend particularly on the social/spiritual dimension. Cashton and Hillsboro, two Old Order settlements, both immigrated to Wisconsin primarily from Ohio and Indiana respectively to maintain a farming lifestyle which they believe helps maintain their Christian values and social cohesion. Social and spiritual values blended with bounded rationality issues are highlighted with discussions from Amish farmer interviews. The Amish continue to practice dairy farming, in many ways, using similar methods as they used decades ago (i.e. refraining from the use of bulk tanks) despite the financial
and legislative challenges. They are concerned with the possibility of losing common values if they were to shift out of farming, adopt certain technologies or participate in different management systems. This combination of oikonomia values and bounded rationality issues can be applied to the farmer’s decision to adopt organic and MIRG systems. There is diversity across the different settlements in the way oikonomia intertwines with bounded rationality frameworks which may be due in part to the loose overarching structure of the Amish church. Therefore, some settlements are more likely to convert to organic or adopt other practices than others. This diversity also indicates the subtleties and complexities of these types of issues not only for the Amish but for the larger farming landscape.

The final chapter will build on Chapter 6 and further describe how the complexities of adopting organic dairy involves an interplay of an oikonomia framework and bounded rationality framework as well as the current situation of the farm and farmer. The current management system of the farmer as well as the information available and the methods used to acquire that information is important in studying adoption decisions. Information seeking is highly related to bounded rationality. More information is needed about alternative dairy farm systems particularly organic. For example, a holistic study on profitability taking into account the diversity of farmers’ goals and objectives is needed to assist farmers in a variety of situations so that they can more fully consider alternative management systems like organic. Information of this type may be utilized more frequently by a diversity of farmers if more was known about bounded rationality issues and how to overcome them.
Literature Cited

Chapter 1: Farm Structural Change of a Different Kind: Alternative Dairy Farms in Wisconsin: Graziers, Organic and Amish

Introduction

This introductory chapter explores the continued persistence of small to moderate sized dairy operators during an era of significant expansion in the number and scale of large confinement operations (Cross, 2006; Foltz & Lang, 2005; Jackson-Smith & Barham, 2000). Because of the very recent take-off in organic dairy farming, as well as the difficulty in identifying Amish farms from standard surveys, this chapter offers a pioneering effort to describe the structure, characteristics and performance of multiple alternative dairy farm strategies: organic, management intensive rotational grazing (MIRG) and the Amish. The Amish will be described in this chapter as a farm strategy but it should be recognized that they may be operating conventionally or practicing MIRG and or organic. The first empirical section documents the recent divergence in the structure and management strategies on Wisconsin dairy farms and presents a general description of the alternative dairy systems. Next, there will be a brief discussion of performance indicators and quality of life measures amongst the different kinds of farmers. The conclusion will consist of a discussion of how this divergence may reflect an expression of different values and lifestyles on the rural landscape.

In addition to large scale confinement (over 200 cows) and traditional semi-confinement (under 200 cows), there are three pasture based management systems which have become important in recent decades. The largest (in terms of farm numbers) of these three systems is broadly identified as management intensive rotational grazing (MIRG), a strategy that is often characterized as “low-cost” or “low-input” because it relies substantively on intensive managed
animal grazing rather than solely on forage and grain produced, mechanically harvested, and physically delivered by the farmer or from other farms. This strategy has become widespread in a number of traditional dairy producing states (Dartt et al., 1999; Nott, 2003; Parsons et al., 2004; Taylor & Foltz, 2006) and may account for almost 25% of producers in Wisconsin.

Managed intensive rotational grazing may have sustainability benefits, such as reductions in soil erosion, fossil fuel expenditure, (Rayburn, 1993) and nitrogen volatilization (Soder & Rotz, 2001) as well as providing enhanced dimensions of soil ecological health (Johnson & Pfleger., 1992; Rabatin & Stinner, 1989) and better habitats for fauna. Intensive rotational grazing, especially on improved pastures, may also offer additional agronomic benefits in terms of productivity, forage and soil quality (Henning et al., 2000; Kuusela & Khalili, 2002; Martz, 1999; Pratt et al., 1962). The MIRG farm strategy is a combination of a very old technique involving heavy reliance on pasture (Voisin, 1959) with more recent management knowledge (Hassanein, 1999) aimed at managed intensive use of the pastures. Technically, we define a farmer as MIRG based on their reliance on pastures as a source of feed during the grazing season and by their movement of cows to a new paddock about once a week. In that sense, I use a relatively liberal definition compared to other works (e.g. Lloyd et al., 2007; Taylor & Foltz, 2006) but I consider variations on the definition from less to more intensive MIRG operations. Please note that the words “high intensive” or “intensive” are used here to distinguish farmers who are more active in their management style. Generally a high intensive grazier rotates their cows once a day or more.
The second type of alternative dairy farm strategy is certified organic. These farms produce and market milk as free of agrochemicals and synthetic hormones, and their numbers have grown more than ten-fold over the past decade (Barham et al., 2006; Dalton et al., 2005). Wisconsin is the state with the most organic dairy producers. Organic dairy farms account for roughly 3% of the dairy farms in Wisconsin (Blazek et al., 2010). Organic dairy producers generally but not always overlap with MIRG farms in their intensive use of rotationally grazed pasture as a feeding system. Organic dairy is in part a reaction to environmental concerns and to the social problems associated with conventional agricultural systems. Pesticides, in particular, can have detrimental effects on ecological and human health (e.g. Pereira & Hostettler, 1993; Porter et al., 1999; Schreinemachers, 2000; Spiewak, 2001). The degradation of soil quality caused by destructive agricultural practices may lead to increasing needs for inputs like fertilizers and irrigation (Cassman, 1999; Fox et al., 2007). The common practice of prophylactic treatment of antibiotics in confined livestock production is causing antibiotic resistance problems in both animals and humans (Gorbach, 2001; Smith et al., 1999). Organic farming may also offer social and environmental benefits such as increased biodiversity, erosion control, increased soil health, and reduced usage of chemicals and antibiotics (e.g. Cederburg & Mattsson, 2000; de Boer, 2003; Haas et al., 2001; Pacini et al., 2003; Rigby & Caceres, 2001; Smolik et al., 1995).

Amish dairy farms are the third farm type, which are also pasture based although they often use extensive rather than intensive methods. They continue to have a strong presence on the agricultural landscape in well established Amish communities like Pennsylvania, Ohio and
Indiana (Luthy, 2003; Parsons et al., 2004). But, in the past couple of decades, Amish dairy farmers have migrated to states with newer settlements often where non-Amish farmers are exiting farming such as in Wisconsin, New York, Michigan and Missouri (Cross, 2004; Cross, 2007; Hostetler, 1993). Amish farmers are estimated to be around 10% of Wisconsin’s dairy sector by 2010 (Cross, 2007).

The analysis primarily exploits data from two surveys done by the Program on Agricultural Technology Studies (PATS) at the University of Wisconsin-Madison (data used from outside sources will be cited as such). Both surveys were conducted using a modified Dillman method (Dillman, 1978). In order to mitigate response bias, each non-respondent was contacted three times over a three month period.

The first survey includes a random sample of the entire state dairy sector conducted in the winter of 2003. The statewide dairy survey generated over 700 usable surveys and had a 45% response rate. There were 164 management intensive rotational graziers (MIRG) farmers, and 491 confinement farmers who responded to this 2003 Wisconsin Dairy Farm Poll. Please note that a random sample component of a survey from the winter of 2005 is also utilized to a limited extent in the analysis below. The 2005 PATS survey was done with some assistance from an affiliated institution, the Center for Integrated Agricultural Systems, with the explicit purpose of examining various measures of quality of life on different types of dairy farms. Many questions on this 2005 survey are identical or overlap closely with those on the 2003 Dairy Farm Poll which made robust comparisons possible. Because organic and Amish dairy farmers were not
separately identified or significantly represented in the random sample component of the 2005 data, there is only information available on the MIRG and confinement groups.

The second survey undertaken in the spring of 2004 focused on two alternative dairy farm groups: a sample of Amish farmers from Old Country Cheese from several settlements, an Amish cheese cooperative based in Cashton, WI, and a statewide sample of organic dairy farmers (members of Organic Valley and Midwest Organic Services Association organic certified operators). This survey also had a 45% response rate, with 100 Amish and 85 organic producers responding to the survey.
Divergence in Dairy Farm Structure and Management Strategies

Although large dairies (those with herd sizes over 200 cows) produce over half of the nation’s milk; 90% of the nation’s 75,140 dairy farms have herds with less than 200 cows (USDA National Agriculture Statistics Services (NASS), 2006) and most of these small to moderate scale dairy farms are concentrated in the traditional dairy states: Wisconsin, Minnesota, Ohio, Pennsylvania, Michigan, and New York (Blayney, 2002). With 12,000 operations of less than 100 cows, Wisconsin – “America’s Dairyland” – had about a quarter of the nation’s operations of this size category (Cross, 2006; USDA National Agriculture Statistics Services (NASS), 2006). These smaller sized farms are more predisposed to adopt alternative production and marketing strategies which have become much more common since the mid-1990’s (Guthey et al., 2003; Welsh & Lyson, 1997). This dissertation examines the divergence in structure and strategy that is occurring in the United States dairy sector by looking closely at the rapid growth of alternative dairy farms in Wisconsin.

Twenty years ago, the structure of dairy farming in America’s Dairyland was relatively homogenous. Almost all farms utilized semi-confinement methods, where the vast majority of the feed was provided to cows in the form of forage and feed harvested mechanically and delivered to them in the barns. Pastures were used non-intensively mostly for animal health purposes (USDA United States Department of Agriculture, 1987). Stanchion and tie-stall barns were the predominant structures used as combined housing and milking facilities. Milking parlors were rare, there were only occasional organic dairy farms with no major market presence, and the Amish were just beginning to make serious inroads into Wisconsin agriculture.
Increasing diversity in the past several decades can be seen first in terms of the changing size structure of the industry and different management types.

Divergence in the Wisconsin dairy sector in the past 20 years can be seen through the 1.6 fold decrease in the percent of farms with herds under 100 cows and the almost 10 fold increase in the percent of farms with herds over 200 cows. Nonetheless, in 2006, 81% of Wisconsin dairy farms were still under 100 cows and 94% were under 200 cows; in contrast to western states like California where 89% of herds were larger than 500 cows; herd sizes smaller than 200 cows are moderate sized indeed. These Wisconsin moderate sized farms produced 64% of the state’s milk supply (USDA National Agriculture Statistics Services (NASS), 2006).

Divergence in the size and management structure in Wisconsin’s dairy sector can be explained by changes amongst existing farmers as well as the characteristics of entering and exiting farmers. Many of the moderate-sized semi-confinement farms from the 1980s and 1990s have exited which explains the decrease in dairy farm numbers from 36,500 in 1987 to 14,900 in 2006 (USDA National Agriculture Statistics Services (NASS), 2006; USDA United States Department of Agriculture, 1987). About 500 of those confinement operations converted to large scale confinement in the past couple of decades. The majority of expansions that led to this increase in large confinement dairy were due to incremental size changes, often followed by major expansions (Jackson-Smith & Barham, 2000); as a result, it is likely that many of the operations currently in the 100-199 size category could move in that direction. It is fair to say that an even larger number of the moderate-sized semi-confinement farms were converted to
MIRG operations by existing operators or replaced by entering farmers utilizing MIRG including around 700 farms bought by Amish farmers in the past several decades.

In contrast to the rapid growth in average herd size seen in the Wisconsin dairy sector overall in recent years, the alternative farms did not change dramatically in herd size from 1997 to 2002-2003. The MIRG farmers in this study have a mean average herd size of 48 cows (median 42), and organic dairy farms have an average herd size of 65 cows (median 47). Average herd size of Amish owned farms in this survey is 15 cows (median 14) which is considerably smaller than other herds (Cross, 2004). At the other end of the spectrum, confinement operators have a mean herd size of 97 cows (median 62).

Overall Structural Change

The emergence of management intensive rotational grazing (MIRG) as a farm management strategy was a major trend in the 1990s in traditional dairy producing states (Dartt et al., 1999; Nott, 2003; Parsons et al., 2004; Taylor & Foltz, 2006) that has seemed to plateau in recent years in Wisconsin. As seen in Figure 1, the percentage of MIRG farmers doubled from 7% to 14% in the four year period from 1993 to 1997. It took another eight years for the percent of MIRG dairy farms to almost double again to 26% in 2005. It is important to note that the overall number of MIRG farms has not doubled twice since 1993 (when the total number would have been close to 2,200 compared to just under 4,000 in 2005), but that the MIRG strategy has become far more prevalent in proportion to the conventional dairy farm strategy.
Figure 1. Wisconsin Dairy Farm Numbers and Percent of Farmers using MIRG Farming.

The left Y axis and the bars correspond to the % of MIRG farmers and the right Y axis and the declining line corresponds to dairy farm numbers.

*The probable lack of response from Amish farmers from the 2005 survey may have led to an underestimation (by 1-5%) of the fraction of MIRG farmers

Historical accounts of the emergence of the MIRG farm strategy highlight the critical role that farmer to farmer information exchange played regarding how to manage pastures most efficiently in a localized area (Hassanein, 1999). This localized information exchange was especially needed given that land-grant university pasture research and support declined significantly after 1950 (Fales, 1992). The clustering patterns of MIRG adoption in Wisconsin may be related to this information exchange and/or the nature of the unglaciated landscape where there are high rates of adoption.
Management Structural Divergence: Organic and Amish Farmers

In recent years, it has become clear that significant structural divergence is also occurring within the pasture based dairy farm strategies in the U.S. with Wisconsin being a prime example of this structural change. The growth of MIRG farms overall may have reached a plateau at about 25% of the farms in Wisconsin, but the diversity within the MIRG farm strategy has increased. At present, Wisconsin provides an ideal context for exploring diversity in dairy farming and may be reflective of the rest of the Upper Midwest as both organic (i.e. third party certified) and Amish farm numbers are increasing in Wisconsin which impacts the dynamics of the MIRG farm strategy.

Organic dairy farmers are a growing fraction of the MIRG farm numbers constituting 1% of the graziers in 1997, 8% of the graziers in 2005,\(^1\) and could account for 10-12% of graziers by the end of 2007 (United States Department of Agriculture-Economic Research Service, 2005). The Amish were roughly 14% of Wisconsin MIRG graziers in 2002\(^2\) (Cross, 2004). The Amish and organic farm types combined constitute about 1/5-1/4 of MIRG farm numbers in the early 2000s, and this percentage will probably expand as these two farm types seem likely to grow at rapid rates in the near future. Both organic and Amish farmers are geographically clustered in similar areas where MIRG farmers overall are clustered (Cross, 2004).

Organic milk production began to take off in the 1990s, and has the fastest growing dairy product sales with demand far exceeding supply the majority of the time in the late 1990s and

\(^1\) Calculations supplemented with data from ERS-USDA

\(^2\) Calculations supplemented with data from Cross, 2004
early 2000s. Some trade journals link the approval in 1993, and subsequent use of the controversial hormone, rBST, as a primary reason why consumer demand for organic milk grew rapidly in the 1990s (DuPuis, 2000). Organic dairy cow numbers in the US have grown from about 2,000 in 1992 to 86,000 in 2005 (United States Department of Agriculture-Economic Research Service, 2005) to well over 100,000 by the end of 2007. Organic farming is also seen as a promising alternative towards the goal of keeping smaller scale farms operating particularly in the Midwest and in the Northeast (i.e. traditional dairy producing states) (Barham et al., 2006). Wisconsin is the leading producer of organic dairy products in U.S. markets and is the home base to the largest organic milk cooperative, Organic Valley (CROPP), which now has members in 29 states. Organic dairy farm numbers in Wisconsin have grown from approximately 54 farms in 1997 to over 350 farms in 2005³ (United States Department of Agriculture-Economic Research Service, 2005) and will continue to grow to over 400 by the end of 2007.

Amish dairy farms comprise roughly 1/8th of all dairy farms in the US as estimated by US Farm Service Agency officials in 2005 (Cross, 2007). The Old Order Amish dairy operations are an independent phenomenon from the other alternative groups (organic and MIRG overall) as this farm type is defined by their Anabaptist Christian religious and cultural identity. For the Amish, “living in a redemptive community, separated from the world, is essential to salvation” (Hostetler, 1993) as exemplified by one Wisconsin Amish farmer interviewee who stated “confess[ing] Christ with our farm” was the primary motive for farming. The geographic areas that have the highest concentration of farms with the smallest dairy herds correspond well to

³ Calculated from USDA-ERS
maps where there are dense concentrations of Amish dairy farms in states like Wisconsin, Iowa, Indiana, Ohio, Pennsylvania, Missouri and Kentucky. Some of the states with really high percentages of Amish dairy farms include Indiana with 3/5 of dairy farms and Pennsylvania and Ohio where over 1/4 of the farms are Amish owned (Cross, 2004).

Many Amish who have a desire to farm as a way to maintain religious and family values have migrated from eastern urbanizing states to other states like Wisconsin which have more available farm land. Amish owned dairy farms constitute roughly 5% of the dairy sector in 2004 and were estimated to comprise 10% of the state’s dairy numbers in 2007 (Cross, 2007). Wisconsin has the 2\textsuperscript{nd} largest concentration of Amish church settlements in the U.S. (Luthy, 2003). While only 22% of Wisconsin farms have dairy herds, the majority of Amish farmers in Wisconsin (80%) have dairy herds (Cross, 2004). Amish dairy farms are occupying barns which would otherwise be abandoned or torn down as the number and proportion of non-Amish dairy farms decline rapidly (Cross, 2004).

Across the state, 18 settlements were founded between 1920 and 1990 that are still in existence today, and at least 21 more have been founded since that time (Luthy, 2003). Many of these settlements have been growing rapidly given large family sizes and high retention rates to the Amish faith. The Kickapoo Valley settlements in this survey chose to start their own cheese co-op which would be committed to buying milk in cans. In contrast, some other Amish settlements in Wisconsin and from where the Amish emigrated chose to adopt bulk tanks and electrical means to cool milk several decades ago partly out of necessity to market their milk under an increased regulatory structure (Kraybill, 2001).
The Amish dairy farmers surveyed for this article also have some distinctive demographic characteristics such as lack of schooling beyond the 8th grade. These dairy farmers have fewer years of farm operating experience than other dairy farmers which may reflect their younger age (average age of Amish is 41 years old versus an average of 48 years old in the other types of farmers). A relatively small proportion of the Amish obtained their farm from their parents as many emigrated from other states.

Amish farm acquisition stands in contrast to the majority of dairy farmers in the other farming strategies examined in this analysis as farm transfers from parents are common. Because the elevated price of agricultural land (reflecting residential and recreational demand) serves as a significant constraint to other new entrants in farming, the number of “new” Amish farms is notable. However, the Amish are not immune to some of the same financial stresses which many other farmers face on the landscape. Despite these stresses, survey results from the Wisconsin Old Order Amish settlements of interest, Cashton and Hillsboro, report relatively high levels of life satisfaction.

Performance and Satisfaction

Organic farmers report relatively high levels of satisfaction with net farm income and with overall quality of life compared to other types of dairy farms (see Table 1). Well over half of organic farmers (57%) are satisfied or very satisfied with net farm income, and 76% are satisfied or very satisfied with overall quality of life. By contrast, only 5-10% of the other dairy farmers reported being satisfied or very satisfied with net farm income in a comparable survey. The high levels of satisfaction with income that organic farmers express likely reflect significant
improvements in income over the previous five years that other farmers have not experienced (Figure 2). It should be noted that the average organic milk price received by organic dairy farms in 2003 was $19.50 per cwt ($18.20 base price), or roughly $7.00 greater (or 60% higher) than non-organic operations. Hence, the striking difference in satisfaction levels with net farm income and quality of life in the 2003-2004 data may be muted in other years like 2005 when there was not as stark a contrast between conventional and organic prices (Figure 2). Organic dairy farmers\textsuperscript{4} also seemed to fare better when conventional prices were low in the 2008-2009 price year (Barham, 2010). MIRG and confinement farmers did report a more positive view on their overall quality of life with 68% of the former reporting satisfaction levels that were satisfied or very satisfied in 2005 compared to only 46% in 2002. Over half (59%) of the confinement farmers reported being highly satisfied in 2005 compared to only 42% in 2002. When asked what price they would need to remain profitable, organic farmers, on average, reported needing $16.80 per cwt, which was well below the price they were earning at the time and at any time during the past decade. Since 2004, the mean organic milk price has been well above $18.00 per cwt, buffering organic farmers from the down-side price pressures that have been so challenging for other types of dairy farms.

\textsuperscript{4} Some farmers who were not a part of Organic Valley may have ended up selling milk conventionally as some of these buyers did not maintain an organic dairy option through this period. Organic Valley continues to use a conservative approach to managing a business with strategies like supply management so they can maintain their business through the highs and lows of conventional milk prices (Barham, 2010).
Large confinement operations (greater than or equal to 200 cows) report somewhat higher satisfaction levels with respect to income than other dairy farm types, but they do not have levels of satisfaction comparable to those reported by organic or Amish dairy farmers. Relatively high levels of satisfaction in larger confinement farms are also evident in other studies on dairy farm modernization (Bewley et al., 2001) and quality of life (Lloyd et al., 2007), and appear to be explained both by higher incomes and more freedom to take time away from the farm. Because
over 80% of household income comes from farming across all types of dairy farms in our sample, the strong performance of farm income on organic dairy farms indicates that they are also more likely to experience satisfactory overall family income levels compared to other farm types. In the 2002 and 2005 data analyzed, satisfaction with income and overall quality of life did not consistently vary with grazing intensity level. Grazing intensity also did not affect the farmer’s intention to stay in farming or the farmer’s intentions to expand or improve farm infrastructure. Note though that again both organic farmers reported higher quality of life outcomes than other types of dairy farmers.

Organic farmers are more likely than other dairy farm types to report plans to stay in farming for the indefinite future which is consistent with their high overall satisfaction levels with quality of life. 70% of organic farmers and 74% of Amish farmers expect to stay in farming for the indefinite future (i.e. beyond 10 years), compared to 27% and 24% of MIRG and confinement farmers, respectively.

If we combine the two satisfaction measures in Table 1 (Satisfaction with Net Farm Income and Satisfaction with Family’s Quality of Life), we see that the majority of Amish dairy farmers have high satisfaction levels with respect to overall quality of life (91%), but the majority do not have high satisfaction levels with respect to net farm income (30%). In 2003, Amish farmers were only receiving $10.03 per cwt for their Grade B milk. The Amish farmers’ high satisfaction with life and thus their survival on the farm may be a reflection of their dedication to living simply and having contentment with life (1 Timothy 6:6-9) (Hostetler, 1993).
Table 1. Dairy Farmer Satisfaction by Management Type (% of farms)

<table>
<thead>
<tr>
<th></th>
<th>Amish</th>
<th>Organic</th>
<th>Grazier (Overall)</th>
<th>Conventional</th>
<th>Large</th>
<th>Small</th>
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<tbody>
<tr>
<td>(Percent Indicating)</td>
<td></td>
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<tr>
<td>Net farm income</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Satisfied &amp; beyond</td>
<td>29.7 bcd</td>
<td>57.3 acd</td>
<td>5.9 ab</td>
<td>5.1 ab</td>
<td>9.8 f</td>
<td>4.8 e</td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.2</td>
<td>14.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with your family's quality of life</td>
<td></td>
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</tr>
<tr>
<td>Satisfied &amp; beyond</td>
<td>91.0 bcd</td>
<td>75.9 acd</td>
<td>45.9 ab</td>
<td>42.0 ab</td>
<td>35.9</td>
<td>43.2</td>
</tr>
<tr>
<td>2005</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>68.4</td>
<td>58.7</td>
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<td></td>
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<tr>
<td>Expected length of farming career</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Beyond 10 years</td>
<td>74.4 d</td>
<td>70.4 cd</td>
<td>27.3 b</td>
<td>24.1 ab</td>
<td>30.8</td>
<td>23.7</td>
</tr>
</tbody>
</table>

To test the statistical significance of differences in behavior and performance across the different farming systems, I use standard t-tests with a 95% confidence interval cut-off. These are denoted in the table by letters (i.e. Amish=a, organic=b, MIRG=c, confinement=d). The table also includes a comparison with medium-sized confinement (under 200 cows = e) and large scale confinement (over 200 cows = f). For example, the “b” for a given number or percent in the first column of a table denotes that there is a statistically significant difference between that outcome and the outcome in column b.

**Summary**

The emergence in the past two decades of alternative pasture based farms which are typically smaller in scale and less capital intensive contrast the more commonly documented theme of industrialization with the proliferation and growth of large scale confinement farms. Alternative dairy farming systems will likely become more prevalent on the agricultural...
landscape of Wisconsin as indicated by the structural change and satisfaction indicators in this dissertation.

In this way, diversity in dairy farm systems provides multiple avenues for farmers to match the management system to varying landscape and biophysical conditions and to meet their own personal goals. These farm systems may be an expression of the role of personal values, environmental stewardship, and other non-pecuniary dimensions which may be central to decisions made by dairy farm families. The MIRG farm strategy overall continues to be a low input and perhaps low cost strategy in the conventionally priced market. Amish dairy producers have a solid and growing presence on the farm landscape. For the Amish, their motivations and purpose in farming are not strongly tied to income levels or other standard economic measures. As an entry in an Amish newsletter states, “Farming is not a top paying job... Isn’t farming still the most important and best for the family?” (Anonymous, 2006). Many of these Amish individuals are committed to farming despite low levels of satisfaction with farm income.

Although organic dairy farming appears to be growing, one may wonder why more Wisconsin farmers do not adopt organic practices considering the significant number of graziers and Amish who are set up well to consider the option. The organic farm strategy seems to be especially vibrant based on farmer satisfaction levels with overall quality of life and income which is also reflected in their high expectations for their future in farming. Organic farming is often viewed as a way to live out values on health and the environment especially amongst some of the originators of the movement. One distinguishing aspect of the MIRG strategy is that it may provide an easier transition to other farming or career endeavors given the lower levels of
sunk investments involved compared to the infrastructure necessary to implement confinement systems (Barham et al., 1994). It is also important to emphasize that MIRG farmers are in a better position to switch to organic given their pasture based focus though some may decide that the knowledge and investments costs associated with transitioning to organic are too high. The Amish would also seem naturally well suited to organic management systems given their size and pasture based methods. The following chapters will discuss these management decisions in the context of existing farm structure, differing values, bounded rationality issues and personality differences.

**Literature Cited**


Chapter 2: Conceptual Framework for Organic Dairy Adoption:
Oikonomia and Bounded Rationality

Introduction

This chapter develops the conceptual framework of oikonomia and bounded rationality used throughout this dissertation to study dairy system divergence in Wisconsin. An oikonomia framework reflects the holistic beginnings of economics described in Adam Smith’s *Theory of Moral Sentiments* (1759) (Chouinard et al., 2008). Oikonomia as defined here consists of four key realms, “economic,” “social,” “spiritual,” and “ecological.” In this chapter, I discuss these four realms, their potential interactions, and the ways they shape farmers’ management decisions.

I argue that the increased diversity of dairy farming systems that have emerged on the Wisconsin landscape since the 1980s reflects the possibility that certain farming systems may be a better match for farmers who weigh outcomes in the four oikonomia realms differently. I include bounded rationality in the conceptual framework, because I argue that farmers may also view the likely performance of the systems differently given their level of understanding of the information available on the distinct farming systems. I also recognize and incorporate that difference in context, such as the biophysical conditions of farms and other household and social factors can shape these farming systems choices. I adapt the ”rational choice” approach of economics in our household decision model, but I move beyond the limits of most household models by incorporating social, spiritual and ecological values explicitly and by including bounded rationality in a variety of ways to help understand management choices that can be quite complex and uncertain.
The core contribution of Chapter 3 is to present holistic farmer narratives for three distinctive dairy farming systems: conventional, management intensive rotational grazing, and organic. These narratives help to demonstrate the diversity and commonalities across farmers in terms of how they value the four oikonomia realms in the context of personal and family goals. They also illustrate how synergies and conflicts between different oikonomia realms can impact decision making. These farmer narratives also begin to suggest how divergent views on management, to some extent, can reflect limits to information on economic and agronomic dimensions of the organic management system. However, what seem to be bounded rationality issues may also reflect conflicts across oikonomia realms. This divergence of views on management systems is illustrated more concretely in Chapter 4 when conventional farmers and graziers discuss their economic and agronomic oikonomia concerns with organic dairy. This comparative analysis across several diverse systems is richer than most other organic adoption studies because in addition to conventional farmers, this study also focuses on intensive graziers and the Amish who in many respects are well set up to go organic and yet may choose against this option for various reasons.

At the core of the bounded rationality discussion are the information constraints and uncertainty associated with adopting organic dairy. These features are delineated in Chapter 5 with examples of how uncertainty and learning appear to impact farmer decision-making. It can be challenging to identify the difference between oikonomia values and bounded rationality issues and the influence of other contextual factors in the field. For example, a farmer may be very knowledgeable about alternatives like organic farming but have a conflict between social
pressure against organics and the potential economic benefits of converting. Or the farmer may be in such a challenging economic situation that they are unwilling to make farm management system changes because there is such a strong possibility that their farm enterprise may not survive the transition. Oikonomia and bounded rationality also overlap and interact further complicating the situation. This interaction and overlap is illustrated in the comparison and contrast of how two different communities of Amish households pursue dairy farming management choices in Chapter 6. Several aspects of the oikonomia framework are discussed in Chapter 6, but the interplay of social and spiritual realms are especially highlighted as I examine how the church community influences farm decision making. In addition, I highlight a bounded rationality concept known as value-loss aversion, in which a particular farm practice or technology may be avoided because of the concern that treasured family and community values may be lost with the changes that could ensue.

In one sense, this research is similar to household economic models of decision making, because it views farmers and their families as optimizing oikonomia with the possibility that this optimization may take place under bounded rationality. However, this research is also similar to the literature in rural sociology and anthropology that discusses household farm decisions (e.g. (Barlett, 1993; Bennett, 1982; Salamon, 1992) and the adoption of alternative agricultural methods (e.g. Bell, 2004; Duram, 2000a; Hassanein, 1999; Lunneryd, 2003; Padel, 2002a). The empirical methodology is more consistent with rural sociology and anthropology, because it relies on a semi-structured interview approach in order to explore the diversity in choices and the reasons as expressed by the farmers in their own words. As such, it does not attempt to
incorporate statistical approaches to explain the diversity and reasoning for adoption decisions. Hopefully, some of the findings can be used to help frame multivariate econometric models of adoption in future research efforts. It is worth adding that the choice to focus on qualitative methods is in part because I am considering diverse dairy farming systems, where there may be significant information barriers at play (Padel, 2002a). This larger and potentially more complex decision context means that there is a strong need for an integrated framework more so than for the analysis of more discrete technologies, such as GM seed adoption for conventional hybrid grain farmers.

In summary, this research explores how the different realms of oikonomia are actualized in farm systems choices, and explores the possibility that farmer’s decisions may be influenced in a substantial manner by bounded rationality factors. Throughout the thesis, I consciously try to avoid pinning down any particular farmer’s choice in terms of the complex interactions between oikonomia dimensions and bounded rationality. In a fundamental sense, as a researcher, I too am in a bounded rationality situation as I do not have access to all of the information or the ability to fully comprehend every farmer’s situation, especially as they may evolve over time. As such I cannot make a precise “call” on what is happening in the field. Therefore, readers need to be aware of the “discovery” theme of this research, as it seeks to gain new insights from its integration of oikonomia and bounded rationality in understanding farmer’s choices.

The Oikonomia/Bounded Rationality Approach: Connections to the Literature

The oikonomia approach in this dissertation expands the conventional household economics approach of profit and consumption maximization by incorporating the potential
influence of broader oikonomia factors explicitly into the analysis of farming systems choice. In fact, the term economics is derived from the ancient term, “oikonomia” in which economic, social, ecological and spiritual elements are all considered a part of household decision-making and assessments of well being/utility. The terms “economics,” “ecology,” and “ecumenism” overlap as they all have in common the root word “oikos” (Meeks, 1985; Young, 1992) which translates as “household”. These terms are inherently tied together because in ancient times the household constituted land holdings, animals, the people who worked the land, the knowledge required, and human relations within the household (Petrochilos, 2002). Moreover, “ecumenism” is the management of a household’s values, morals, and spiritual resources. The combination of religion and economics has deep roots as “oikonomia” is mentioned several times in the New Testament. “Economy” in the Biblical sense can also mean the way the Creator manages His household and the way humans are called to steward the creation (Gottfried, 1995; Goudzwaard, 1997, 2000; Worster, 1994).

This dissertation’s use of economic argumentation resembles that of Adam Smith’s Wealth of Nations (Smith, 1776) where the assumed definition of economics differed from the majority of economists of the past several centuries. In Smith’s view, economics was not a separate discipline as it is considered today but a branch of philosophy which was integrated into all human activity and assessments of overall well being (Daly & Cobb, 1989; Goudzwaard, 2000). Although the philosophers of the ancient world serve as helpful reminders of the more holistic origins of economics (Daly & Cobb, 1989; de Coulanges, 1958), they also stand in contrast to the strong overarching focus in economics for the past century on models that delimit
the problem to maximizing pecuniary outcomes such as income or wealth. In agricultural economics, especially dealing with U.S. farm decisions, the focus on production economics has become predominant post World War II (Gasson & Errington, 1993), and is based on the basic premise that households can separate consumption or broader objectives from production related ones. In this view, the farm is a business where profits or some other economic objective of the firm is maximized, and those returns are then an input to broader household decisions. It is also important to point out that the term “oikonomía” has a holistic connotation that extends beyond the farm to consider long term values for the other households and the surrounding community (Daly & Cobb, 1989), which can make farmers happier in their own lives (Berry, 1981). This dissertation’s use of the oikonomía framework only intersects community when I discuss the social dimensions of oikonomía that might shape farmers’ adoption decisions.

This dissertation argues that farming system choices are, in fact, not separable from the household's broader oikonomía preferences. This perspective stands in contrast to the assumption of conventional economic models where work and other enterprise choices are treated independently of other components of a decision maker’s life. This may be reasonable for contexts where there is indeed more separability between work and the larger household

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5There is also a rich body of household economics literature which applies to peasant economics and developing countries where the farm and the firm are intertwined by their very nature as in (Chayanov, 1977; Wolf, 1966) discussed in (Adams, 1988) as household producers are unable to “make a distinction between family wages and returns to capital” (Chayanov [1925] 1966) and (Friedmann, 1978a; Friedmann, 1978b, 1986) discussed in (Roberts, 1996). Rational decision making for a firm would not be applicable in these contexts. Use values rather than exchange values are the most useful concept for understanding family farms in these contexts. The market imperfections most paramount in the development literature involve unreliable access to markets and transportation, and unreliable government policies which would normally secure markets for products that exist in the developed world. Thus, farm households rely on internal production for much of their consumption goods. The Amish with their prolific gardens, food preservation and labor trading are most like these peasant economies except their activities reflect their social/spiritual values more than they are the result of necessity as in peasant economies.
dynamics for decision makers. However, I assert that farming systems choices are in fact fundamental lifestyle choices especially for the modest sized operations of Southwestern Wisconsin where the family contributes the majority of the labor and spends most of their time as a family on their farm. It is the integrated essence of the “family farm” experience where work, consumption, leisure, and relationship to others, the environment, and spirituality all occur largely in the same place that seem to make for a large degree of “inseparability.” Or, we can turn the logic around by noting that because the farm system choice shapes so many aspects of their daily activities, it is not sensible to separate the firm from the family when it comes to understanding the logic of these decisions.

My oikonomia framework starts from the assumption that farmers themselves determine what is considered as a success rather than just assuming the sole goal of utility or profit maximization in all cases. When the “farm household” is referred to in this dissertation, it includes the farm enterprise and the farm household (in the narrower sense) as well as their connections to the surrounding agroecology, social networks, spiritual institutions and values. It is important to note that some farmers may not be able to articulate a linkage between farm decision making and each of the oikonomia realms. Also, our broader usage of the term “farm household” builds squarely on holistic farming systems choice literature in the United States and Canada (Barlett, 1980; Bell, 2004; Bennett, 1982; Lunneryd, 2003; Padel, 2002a; Salamon, 1992). All of these studies, like mine, look at broader motivations for farming and for farm decision making.
A distinguishing feature of this research is its emphasis on and explicit attention to the social/spiritual dimension (Salamon, 1992). Clearly, incorporating the Amish producers could be argued to demand that emphasis, but this research takes them as highlighting a dimension that is often overlooked among other farmers. Put differently, the Amish embody obvious social/spiritual dynamics in how and why they are farming that may reflect larger dynamics that are often overlooked on the farm landscape. As in this dissertation, Salamon’s research also emphasizes how religion, ethnicity, and culture influence motivations toward farming by contrasting farming communities in Illinois (Salamon, 1992). This dissertation will discuss religion more than ethnicity and culture. Salamon develops a contrast between two types of farmers: Yeoman and Yankee. The former are from various Catholic and Protestant areas of Germany, who typically have a strong social support network that blends farm and community. She conjectures that the “yeoman model of limited expansion and conservative management” may mean Germans end up managing the majority of modest size family farms, thus allowing family farms to persist longer than otherwise predicted by economic analyses. In contrast, “Yankee farmers” who mostly originated in the Protestant British Isles, with more recent descendents from Northeastern and Middle Atlantic states, emphasize profit making and entrepreneurial motives towards farming rather than seeing farming as a lifestyle. She conjectures that they will probably manage the larger agri-business ventures in the future. In other words, for the yeoman farmers the farm and the household are more inseparable than they are for the Yankee farmer.
Most of the farmers interviewed for this thesis research probably better match the Yeoman persona considering the predominantly Germanic and Scandinavian settlers to the area, as most of them farm at a modest scale. Salamon speculated that the farmers operating under a yeoman strategy may be more likely to adopt sustainable practices in the 1990s and beyond. Following Salamon’s conjecture, this dissertation assumes that these Yeoman farmers may be most likely to adopt organic which in part is why this research focuses so much attention on smaller pasture based producers and their decision regarding organic adoption.

This dissertation also has a strong emphasis on the social dimension of knowledge exchange in relation to adoption of sustainable farm practices, similar to Michael Bell’s book “Farming for Us All” (2004). Bell explores larger reasons beyond economics for why farmers are farming and what factors may explain adoption decisions of sustainable practices in a broad sense. Bell’s book offers a more recent work in a similar style of integrated household farm decision making, and is specifically applied to the adoption of sustainable management systems (Bell, 2004).

The social dimension of acquiring knowledge is highly interconnected with bounded rationality issues given the nature of information required to manage organic systems (much of which is tacit or local knowledge) and the limits to acquiring information on organic farming (Morgan & Murdoch, 2000) and MIRG practices. There has been some reference to bounded rationality in the farm household literature as Bennett refers to bounded rationality thinking while discussing the multifaceted nature of farm households and even cites March and Simon (1958) where the goals and rationality of farms are “limited by the give-and-take of the real
social world and by variable capabilities of human beings” (Bennett, 1982; March & Simon, 1958).

Bell’s work discusses how bounded rationality issues particularly in the social dimension impact adoption decisions of sustainable agriculture without using the term explicitly. Farmers have to negotiate a lot of uncertainty and this may explain a reluctance to try different strategies. As Bell states, “farmers can't spend all day reading farming magazines, cruising the Internet, talking to sales people and having coffee with locals at the café in town” when they are making decisions about their farm (Bell, 2004). Likewise, Lunnyerd’s dissertation focuses on decision making factors particularly on information use with organic dairy adoption. He refers to bounded rationality and prospect theory, but it is not a major theme of his research (Lunneryd, 2003) as it is in this dissertation.

The personal disposition of farmers also affects their oikonomia and potentially their susceptibility to bounded rationality issues and ultimately their decision making. For example, the persona of a “cost minimizer” embodied by the yeoman producer style is common amongst the farmers I interviewed. I will discuss passive and reactive farmers (Barlett, 1993; Bennett, 1982) with reference to bounded rationality in a loose way which refers to the farmer’s approach to getting information and experimenting with different farm management systems. This research will not highlight the influence of personality traits explicitly but it will be difficult to ignore their influence in Chapter 3 as the narratives are presented. It is important to note in the context of a discussion of personalities that farmers cannot be categorized into static farm management approaches because farmers’ oikonomia values can shift. Farmers are able to
counter bounded rationality issues of information constraints and access through knowledge exchange via social networks. This dissertation shows how networks of family and friends, organizations like Organic Valley and area grazing networks have helped farmers to counter bounded rationality concerns and have inspired farmers to shift their oikonomia values. Bell’s research emphasizes the power of social networks in information exchange and social support for sustainable agriculture practices. In some sense, the farmer network group, Practical Farmers of Iowa (PFI) in Bell’s research, helps individuals counter bounded rationality issues by making “sustainable agriculture socially possible by guiding and encouraging farmers in being better at talking with others…and thus better at the practical matter of getting things done in the world.” Hassanein (1999) focuses on the exchange of local knowledge explicitly and on the power of grazing networks to counter bounded rationality issues (although she also does not use the term explicitly) in the adoption decisions of MIRG in Wisconsin (Hassanein, 1999).

My dissertation focuses on describing and explaining dairy farm management divergence rather than addressing the inner complexities of household dynamics like the broader farm household studies (e.g. Bell, 2004; Bennett, 1982; Salamon, 1992). Thus, the research that focuses more on the organic adoption decisions is most similar to my research. For example, my research highlights the diversity of motivations and challenges to organic in a manner similar to Fairweather’s (1998) research involving 83 interviews from both organic and conventional New Zealand producers. However, my research will not be confined to the limits of the decision-tree model as is Fairweather’s (Fairweather, 1998). My research is also similar to Duram’s (2000)
research on 20 organic farmers in Illinois that relies on a conversational style of interviews centered around the broad “operational and personal factors involved on the farm.”

Holistic organic dairy adoption research performed by Padel (2002) in England and Lunneryd (2003) in Sweden is particularly similar to this dissertation research given the unique factors involved with organic dairy management and the ways in which they combine data from interviews and surveys. Padel’s work involves a case study of eight organic dairy farmers, and she provides an analysis of the agronomic and economic impact of organic conversion. She has an extensive literature review associated with the issues raised in the interviews with a theme of identifying information needs associated with organic management. She also acknowledges that there are issues associated with the “fear of the unknown” that may prevent operators from converting to organic dairy. Lunneryd begins with three detailed interviews and then analyzes 480 surveys from both organic and conventional producers to construct a model of decision making for organic dairy adoption.

Adoption diffusion theory also informs this work; however, the very integrated nature of organic and MIRG practices requires a critical awareness of the problems with past applications of this framework (Padel, 2002a). Adoption diffusion theory has been used in farm decision making literature since the 1940’s (Rogers, 1995; Ryan & Gross, 1943). There has been very little attention to conservation practices within this framework as it tends to be focused on a single dimension rather than a systems-based change (Vanlay & Lawrence, 1994). Rogers distinguished the adoption of “software” innovations like organic which are information intensive (Rogers, 1995) from other types of innovations. My research also focuses on the use of
information in adoption decisions (Padel, 2002a). Additionally, this approach is similar to recent studies of adoption decisions of environmentally-oriented technologies or management practices (Mawapanga & Debertin Source, 1996; Pampel & van Es, 1977; Rogers, 1995; Willock, et al., 1999).

The classic application of adoption diffusion theory to conventional practices is quite different because knowledge is viewed as originating from centralized research centers and communicated to farmers by extension (Kloppenberg, 1991; Murray, 2000; Susanne Padel, 2002a; Vanlay & Lawrence, 1994). Technologies are generally assumed to be beneficial and farmers are generally assumed to adopt these tools overtime. The later adopters were labeled as “laggards” which clearly has derogatory connotations (Hornik, 2004). However, those farmers who are considered “laggards” by some may actually be acting in the best interest of their families and farms (Haggerty et al., 2009).6 Kloppenburg advocates that if sustainable agriculture is to be promoted this top down approach needs to be reconstructed so as to bring the farmer into the discourse. The discussion and promotion of local farmer knowledge is the beginning of this reconstruction process (Hassanein, 1999; Kloppenberg, 1991). The learning processes for organic dairy and MIRG highlight this emphasis on local knowledge and hence the adoption process is very different than conventional agricultural technology.

6 It should be noted that the way adoption diffusion is depicted in the entirety of the book Diffusion of Innovations gives a more nuanced approach. There are explanations discussed for differing adoption decisions (Hornik, 2004).
The ability to apply adoption diffusion theory in a more direct way to adoption decisions of conservation based practices is controversial. These dimensions may not be predictive of more complex adoption decisions like those associated with sustainable practices (Napier & Sommers, 1994; Nowak, 1987; Padel, 2002b; Pampel & van Es, 1977; Roberts & Hollander, 1997; Saltiel et al., 1994). Environmental technology adoption decision making is different than standard technology adoption literature in terms of the factors involved in decision making (Pampel & van Es, 1977). For instance, the adoption motivations may be better explained by lifestyle choices, (Lloyd, Bell, and Stevenson 2007) attachment to the land, and personal satisfaction (Chouinard et al., 2008). These decisions are also embedded in time and in changing external circumstances with significant information barriers (Padel, 2002a) compared to the more discrete profit oriented technologies. Research has found that farmers may value human health and the environment as much as profit maximization (Mawapanga & Debertin Source, 1996), but the psychology involved with adoption of conservation based technologies parallels, to some extent, the adoption of other technologies.

Despite the lack of predictability of adoption diffusion on conservation based practices, it may be useful to look at the learning styles and characteristics of early adopters (Kaltoft, 2001; Padel, 2002a). There is a theoretical void in providing clear alternative frameworks to the traditional application of adoption diffusion (Murray, 2000; Vanlay & Lawrence, 1994; Wandel & Smithers, 2000). The holistic approach of this dissertation is unique even within the conservation behavior literature as the majority of the literature either only focuses on profits and if social and/or stewardship factors are included, they are added in an ad hoc way (Chouinard et
al., 2008). However, the adoption decisions of technologies/management styles associated with environmental benefits are not predicted well by economic models partly because the profitability motives are mixed (Mawapanga & Debertin Source, 1996; Pampel & van Es, 1977; Rogers, 1995). Researchers studying adoption of organic practices have taken what is useful from adoption diffusion theory like the decision making stages and the use of information (e.g. Kaltoft, 2001; Padel, 2002a).

It is important to recognize that there are reasons that a farmer may not adopt organic aside from the limits to information, and the farmer’s use of that existing information. The farmer’s oikonomia framework may lead them to adopt another farming system. The larger situation that the farmer is embedded is also a significant factor. This qualitative research will consider this larger framework that would not be possible with a demographic quantitative approach focused exclusively on identifying statistical characteristics which impact adoption decisions.

The aforementioned works also do not focus on smaller pasture based producers like the Amish when looking at adoption of organic and motivations for farming, nor do they explicitly consider the oikonomia framework to help explain the specific alternative farm systems choice made by those farmers. Other research broadly discusses Amish sustainability practices, such as discussion of counter plowing patterns amongst Amish in the Kickapoo Valley (Heasley, 2005). There is also research comparing the sustainable aspects of Amish farming (Stinner, 1989) with other types of farmers (M. Jackson, 1998; Sommers & Napier, 1993). One study compares the sustainability of Amish farmers to other religious groups (Dilly, 1994). However, no other
published works on adoption decisions of alternative practices such as organic and MIRG use semi-structured interviews with Amish farmers and embed their experience in a larger study that includes non-Amish farmers.

**The Oikonomia Framework**

As stated above, the oikonomia framework used in this thesis incorporates social, spiritual, economic and agronomic dimensions and possible synergies and conflicts between these realms. I assert that farmers maximize their oikonomia in their farming system and farm management choices with different degrees of emphasis placed on the four realms. In Figures 1-4, I provide a graphical demonstration of these realms of oikonomia as overlapping circles, in which farmers are likely to have different configurations of these realms. In the figures, the placement of the circles with respect to the four axes (social, spiritual, economic and agronomic) indicates which dimensions farmers emphasize, and the further out a circle falls on an axis indicates how important that dimension is to the farmer. There are potentially many different factors to consider within each oikonomia realm, and the circles are only meant to capture the relative importance and degree of integration of these realms rather than the full complexity of an oikonomia decision framework.

First, consider the character, Productionist Peter, who in Figure 1 mostly emphasizes the economic realm. In particular, Productionist Peter focuses on production and profit maximizing within the economic realm. He is interested in the agro-ecological dimension of his dairy operation to some extent, but much of this focus revolves around increasing production rather than larger ecological pursuits. This character receives information relevant for increasing production
from the university and extension and from other kindred spirits at church and in other social circles. To this extent, he is involved with the social/ spiritual dimension. Peter is inspired to continue with the farm because of his family connection to the farm, and because he has a strong desire for his son to take over the operation some day. His strong focus on production and profitability means that the information he seeks out and the social relations he engages in revolve around this focus. Thus, he anchors his decision making on production related information and may dismiss information that emphasizes other realms of oikonomia because of this intense production focus. Thus, the size and scope of Productionist Peter’s circle is fairly small and it centers on the economic axis. The concept of separability of some realms may be true for Productionist Peter, as he may have a strong spiritual dimension that he relates to his farm household but does not relate directly to how he manages his farm.

Social/Spiritual Samuel (shown in Figure 2) focuses most of his energies on the intersection of the social and spiritual realms as implied by his name. He is farming primarily because of his social and spiritual identity that could be shaped by the values of the Amish church. Overall, there is little separability between the farm and the household although he may not be able to articulate oikonomia realm connections to all farm decisions. Samuel filters much of his information through the lens of the spoken and unspoken values and rules of the Amish settlement. For example, Amish in his settlement farm with horses, milk by hand, and sell their milk in cans. As a result, there is only one marketing outlet for his Grade B milk, and certain farming management choices are decided for farmers. Thus, the agronomic and economic factors that Productionist Peter values might consider key could be less relevant for Samuel.
While he needs to consider the economic dimension to keep his farm afloat, he is able to get by on less financial resources than are non-Amish farmers because of his family’s simple consumption objectives and the emphasis on the value of contentment within his church. One of his main economic foci is cash cost minimization, because the Amish often have limited liquidity. His cost minimization focus may be partly a result of necessity, but it may also be a reflection of his contentment theology that will be discussed later in the chapter.

Samuel also typically uses the same farm management strategy as his father in keeping with the traditional values of the local community. Cost minimizing and aversion to change may limit his farm management possibilities. Moreover, the social setting that Samuel is embedded within may discourage him from accessing information from outside sources. The Amish farmer’s oikonomia will be described more in Chapter 6, but prior to then I encounter non-Amish farmers who also highly value the social/spiritual dimension.

Holistic Hannah depicts how a farmer may intensely value all of the oikonomia realms at high levels, and this is illustrated in Figure 3 with a larger and more multidimensional circle than either Peter or Samuel. Strong emphasis in one dimension of oikonomia does not always necessarily imply less of an emphasis towards another dimension. She values the social and spiritual aspects of family life, and these aspects help to keep her on the farm. Holistic Hannah is also proactive about getting information from many sources and social circles, so she may be more likely to consider alternative systems, such as MIRG and organic in a rigorous way. She does not anchor on issues like production or cost minimization or rely on others as a filter for information. This active information seeking and experimentation helps her to consider the
complexities of ecology in her farm management system, yet farmers like Hannah who have a broader oikonomia may also have a difficult time making a decision given all the factors they have to consider.
**Figure 1-4.** These are diagrams of the four realms of the oikonomia framework. The circles illustrate where different farmers are located on a continuum of the four realms.

**Figure 1. Productionist Peter**

![Diagram of the four realms of the oikonomia framework, showing the productionist Peter with emphasis on economic realm.](image-url)
Figure 2. Social/Spiritual Samuel

Economic

Social

Agro-ecological

Religious/ Spiritual

Figure 3. Holistic Hannah

Economic

Social

Agro-ecological

Religious/ Spiritual
Finally, consider Figure 4, which includes the oikonomia framework for all three characters. This combination enables one to better compare the different oikonomia frameworks. Holistic Hannah for instance overlaps with Samuel and Peter but she does not have quite the same degree of emphasis on economic dimensions as Peter and not the same degree of social/spiritual focus as Samuel. These sorts of comparisons will be more complex when I discuss the different components within each oikonomia realm. But for this illustrative purpose, this figure gives the reader a sense of how one may begin to compare and contrast value systems for different types of farmers.

**Figure 4. A Combination of Figures**
The Different Realms in the Oikonomia Framework

The oikonomia framework helps to explore why farmers choose a certain farm management system to describe broad motivations towards farming. It incorporates social, economic, spiritual and ecological values for household farm decision making. I need to consider next the different factors that help to constitute each of these four realms. In the context of farmer decision making, there are many factors that could be incorporated under each of these realms; however, here I focus on those factors most relevant at the household level. Those components which operate at levels above the household but are still nevertheless impacting household decisions will loosely be referred to as “context.” For example, larger social-political influences will not be an explicit focus of this study. However, there can be a fuzzy line between context and the components discussed at the household level as larger economic and political factors clearly have influence at all levels. Components of the oikonomia realms will be primarily described through the lens of farmer’s own perceptions of their situation except when discussing the economic data and the state of the science on a particular issue.

It also should be noted that it is not always clear which realm of oikonomia different farm decision-making factors fall under, but the divisions are a useful base for discussion. Indeed, issues that are influential to adoption decisions and other farm management decisions will oftentimes weave different realms together. Farmer viewpoints /frameworks can also change over time based on their access to information and changing circumstances. Thus, oikonomia can be, and is in this thesis, expanded to incorporate bounded rationality concerns and the dynamism associated with changing information and perceptions. There will be some
introduction to bounded rationality possibilities especially in the social realm. The concept of separability between oikonomia values within the farm management system and the broader household is important to consider in this discussion. Although the oikonomia realms will be presented here as distinct units, there will be follow-up discussion on possible synergies and conflicts between the different realms.

Oikonomia: The Social Realm

Factors in the social realm may be especially relevant for understanding why individuals are farming and why they are farming in a certain way. Social influence can alter and expand individual oikonomia frameworks and can have a strong influence on a person’s susceptibility to bounded rationality issues. The social dimension for purposes of this research includes family and larger social network involvement. The importance of family and how that plays into farmer decision making will be discussed. At the family level, there will not be a focus on the inner dynamics of the household except as it may be related to adoption decisions. The farmer’s social network also includes farm and non-farm organizational involvement as well as connections with neighbors who may exchange information about farming. Information gleaned from newsletters and other published source is also considered part of the social realm. The general social climate for different sorts of production practices is important to consider. Therefore, perceptions of farming practices can get amplified through verbal and written/informal and formal social mediums.

Social networks are “groups whose principal activity is to organize opportunities for information generation and exchange among farmers” (Hassanein, 1999). There may be implicit
or explicit restrictions to certain practices or avenues of obtaining information within the social dimension. The most explicit example of structural rules is the Ordnung (church district rules) amongst the Amish. Other farmers follow social guidelines constructed from common values and beliefs that influence decision making. Although these forces are not explicit as the Amish Ordnung, they are nevertheless influential. It is important to note that what one knows depends on the network that you are embedded in, so it is not only an attribute that one may want to maximize, but it also determines one’s vision for how to make decisions and the bounded rationality principles which may be at play.

Networks can also provide risk sharing (Rogers, 1995; Valente, 1995), encouragement (Alders et al., 1993) and information which is important in farming endeavors. Information seeking may vary between the different farm management types and there may be selective exposure and interpretation based on social networks that decision makers are embedded within (Skerratt, 1998). The social realm serves as a powerful filter/influence on the other realms. For example, conventional farmers may typically read farm newsletters that do not give much attention to alternative farm management practices so that their information searching confirms what they already know. Thus, the social influence has a big impact on how farmer’s information satisfice which will be described more in the bounded rationality section. The social realm can have a powerful impact on motivations to farm and on what kinds of management practices farmers are familiar with. The Amish are a clear example where their social networks encourage farming and the farming lifestyle in turn seems to solidify the community.
Information from your closest neighbors may be the most valuable in heterogeneous circumstances (Manski, 2004) for activities like farming; therefore, information from family and local networks is especially important. The importance of family life and the connection to a “home place” (Salamon, 1992) plays an important role in farm decision making and is often a motivating factor in farming (Bandiera & Rasul, 2006; Barlett, 1993; Bennett, 1982; Salamon, 1992). The influence of parental background/perceptions and the influence that farm children may have on farm decisions are probably far greater than a more diffuse social network (Smidt & Kaiser, 2006).

Social networks can also be a way to perpetuate misinformed ideas which can dissuade some farmers from fully accessing information about certain farm management practices. Social amplification which magnifies beliefs through group polarization can occur through storytelling and legends and can make people fearful of particularly small risks. This can lead to anchoring and extremetizing on certain factors and can prevent decision makers from accessing information that they may otherwise gather. A proactive farmer may be particularly active in organizations (Duram, 1997) of different venues and more discerning in their use of social networks as an information source. In summary, this dissertation will focus on the importance of the social sphere and particular social networks to transfer knowledge and values related to farm management (i.e. household) (Kloppenberg, 1991).

*Oikonomia: The Religious/Spiritual Realm*

For this research, the importance of religion and spirituality may be expressed in church attendance, connections to sermons and scripture and other larger views and beliefs that shape
motivations to farm and specific methods of farming. Adam Smith viewed the religious dimension of human life as embedded in rational choice theory (2002), but religion has not been addressed by economists very often for the past few centuries. There will be a focus on the Christian faith framework within this dissertation as it relates to farm decision making while also recognizing that spirituality as a broader concept may also apply to different kinds of farmers. The focus on the Judeo-Christian framework within this dissertation reflects how churches play a significant role in rural America (Swierenga, 1997) particularly in the Midwest (Barlow & Silk, 2004; Chalfant & Heller, 1991). The Amish will be the most explicit example of the influence of religion on farmer decision making. Christianity has been embedded in rural culture and traditions for many generations; thus, religious teachings may influence the farmer’s approach to farm management decisions.

Taking a step back from the religious focus per se and thinking more broadly about spirituality as it ties in with farming may be expressed by beliefs and aspirations that make life meaningful which does not fit neatly into the other oikonomia realms. This will be illustrated broadly in the farmer narratives in Chapter 3 and more specifically with the Amish in Chapter 6. Despite the importance of the religious/spiritual dimension and how this realm intersects with other dimensions, it is often the most difficult for the decision maker to articulate. This may be one of the many reasons why few researchers have explicitly incorporated it into decision making models (Curry-Roper, 1997; Curry, 2000; Iannaccone, 2002).

The spiritual/religious sphere is often intertwined with the social dimension which include networks, community structure and cultural differences (Salamon, 1992) and can
influence farm management decisions (Dilly, 1994; Hockman-Wert, 1998; Swierenga, 1997). Social activities like time spent with family on the farm can have spiritual connections for farmers. Farmers may also get information about farming while visiting after church.

**Oikonomia: The Economic Realm**

For this research, the economic realm mostly constitutes the more narrow modern definition of economics at the household level. Instead of the broad concept of oikonomia, I will discuss “chrematistics” which can be translated as the art of money making (Daly & Cobb, 1989) or “goods, property” (Finley 1970). More specifically, farm economics exploits concepts like profitability, productivity, costs of production, net-farm income, debt-to-asset ratios, labor, and access to different milk buyers, milk prices, farmer’s health and well being as related to the farm. The farmer’s economic situation and their emphasis on certain components of economics will be discussed through interviews and survey data. These concepts are embedded in the farmer narratives in Chapter 3 and discussed in more detail in Chapter 4 in reference to organic adoption decisions. For example, Productionist Peter puts an emphasis on the economic realm specifically focusing on production. Many other farmers who operate moderate sized operations focus on (variable) cost minimization or reduction. Economic forces above the level of the household are mainly discussed in a way that farmers would describe these issues.

How the farmers think about economic decisions and the current economic situation is particularly important when considering reasons for farming and for farm management adoption choices. It is important to remember that the farmer’s perception of their situation maybe different than their actual economic situation. There are various costs and benefits to converting
to a specific management type based on the current farm management structure that may be real or perceived. For example, a farmer who is currently heavily invested in confinement equipment would probably not find it as economically profitable to convert to a grass based system (Barham et al., 1994; Kriegl & Frank, 2004) and/or an organic system. An economic crisis may motivate farmers to think differently about the economics of their farm and different farm management possibilities. Economics can be a motivator to converting to organic. According to some, more recent adopters of organic dairy farm systems tend to have a more profitability-oriented value structure than the earlier ideologically minded organic farmers of the 1980’s and 1990’s (L. Duram, 1997; Flaten et al., 2006; Lunneryd, 2003). Personal approaches to problem-solving and bounded rationality principles may play into economic decision making related to adoption choices. The uncertainty related to economic outcomes is often an area of concern for potential adopters of organic (Fairweather, 1998; Kroma & Flora, 2001).

Oikonomia: The Agro-Ecological Realm

For this research, the agro-ecological realm of oikonomia includes the farmer’s agro-environmental ethic, the farm setting, pasture/crop manure management, feed self provision and herd health. There are many other factors to consider on the farm but there is a focus on components that give a sense of the overall situation the farm and management practices especially as related to the farmer’s larger motivations in farming which may impact decisions about organic and MIRG. These factors are focused at the household level as the farmer would describe her situation and values. It is difficult to describe the farm situation independent of the farmer’s emphasis on certain agronomic aspects of the farm and thus they are presented together.
Farm management practices and the ecological dimensions will be included with the agro-ecological realm. Chapter 3 will discuss the farmer’s agronomic management and their environmental ethic in general. Farmers are also impacted by the actual and/or perceived challenges of what management systems are possible based on the lay of the land, the microclimate, the capability of the land and the implications for what management system might be the most relevant as is described in Chapters 3 and 4. There will be a focus on agronomic practices that characterize dairy management divergence especially the choice to go organic, but other management practices will be described to give background about the farmer and farm.

The cultivated ecosystem is vital to these dairy systems. A decision maker’s environmental ethic impacts their decisions and their assessment of well-being. Farmers may differ in how they view environmental ethics. For example, survey results indicate that conventional farmers may be likely to view stewardship more in productionist terms linking the environment with agronomic production goals (McCann & Sullivan, 1997).

A number of researchers have found that environmental reasons were a big motivating factor to convert to organic production especially in its early beginnings (Beus & Dunlap, 1994; Egri, 1999). Further, sometimes farmers convert for personal or animal health reasons (Padel, 2002a). Also, it is important to note that organic farmers have been found to rank the environment higher on a list of priorities over economic risks compared to conventional farmers (McCann & Sullivan, 1997). Indeed, the obvious assertion here is that the environmental ethos of the farmer may shape their adoption decisions related to alternative farming systems.
Conservation based practices like organic dairy involve a significant amount of agronomic knowledge with many agronomic subcomponents to consider. Uncertainty associated with weed, pest, disease management (Fairweather, 1998) and animal health care (Flaten et al., 2006) are big barriers for converting to organic as will be discussed in Chapter 4. These concerns will be contrasted with organic farmer experiences. Organic dairy is a systems-based adoption choice, so it is difficult to reduce problems into subcomponents like the ones listed above. The systems based nature of organics and the many unknowns of agronomic decision making can make it difficult to approach the adoption decision in a rational way. Farmers may want to observe a farmer who they perceive to be in a similar situation convert to the practice, so they can use a recognition heuristic with respect to conversion. Farmer decisions are also defined by the real and perceived opportunities and challenges of the agroecological realm. There may be a great deal of ambiguity involved with environmental decisions.

**Oikonomia Realm Interactions: Possible Synergies and Conflicts**

Our core argument is that adoption decisions and motivations for farming are best explained by an integration of the social, spiritual, economic and agro-ecological oikonomia realms. The adoption decision of organic dairy is a good example of a decision that can invoke many of the different oikonomia dimensions. Farmers are motivated to adopt organic farming systems for many reasons such as core beliefs, social networks, profitability, environment, health and personal experiences. These different types of motivations may be operating simultaneously. There are also a variety of reasons why farmers choose not to adopt organic production, such as perceptions that organic is not financially viable, animal health care
concerns, and/or not believing in the organic philosophy (Duram, 2000b; Lunneryd & Öhlmér, 2006; Padel, 2002a).

Synergies and conflicts across oikonomia realms can arise in farm decision making, and are potentially well illustrated by the hypothetical character, Social/Spiritual Samuel. As is common among Amish (and perhaps other) farmers, Samuel feels that farm labor requirements can be an asset or a positive, because it brings the family together in a manner that allows them to develop their spiritual lives. For that reason, organic dairy may fit well with this positive view of labor, because it can involve the substitution of labor for other inputs. Indeed, as I will explore more fully in Chapter 6, for the Amish, the labor-intensiveness of dairy farming is a core motivation for this choice of activity and lifestyle. The integrated nature that farm labor plays in farm decision making illustrates how more than two realms can be operating at once. A work ethic is strongly instilled in the Amish. There is a Biblical mandate for hard work after the fall in Genesis 3:7-10, and this work ethic is highly intertwined with family life (Dilly, 1994; Hostetler, 1993; Kraybill, 2001). This interconnection between family, farm labor and spirituality is probably also at play on a larger scale across the farm landscape. Labor can also have an agro-ecological element as some farmers feel a connection to the land and animals while working intimately with them. Sustainable agriculture proponents argue that a high “eyes-to-acres ratio” is essential for land to be used sustainably (e.g. (Berry, 1997) and (Jackson, 1980)).

For some, like Samuel, there is a connection to farm stewardship values and their faith at least in some general sense. Farmers may accept an endowment of Biblical or spiritual responsibility over the land that they steward, even if this connection is not clearly stated or
understood. Some farmers may recognize a connection between Christianity or spirituality and stewardship. The Bible speaks of the earth as the Lord’s Creation\(^7\) and possession\(^8\). Some Christians may recognize that the land is so explicitly God’s that “humans are but alien tenants,”\(^9\) and there are serious consequences for mistreating the Lord’s land\(^10\) (DeWitt, 2005).

Networks of family and neighboring farmers can be instrumental in information exchange when making a systems based change like organic (Nyblom et al., 2003; Risgaard et al., 2007; Skerratt, 1998; Taylor & Foltz, 2006). Conversely, local knowledge does not necessarily always imply sustainability as more destructive practices can also become popular due to tight social networks (Flora, 1992). Farmers may not want to switch to another farm management system because it may strain or destroy relationships with friends and family (Bell, 2004). Samuel’s networks have a strong influence on how he farms and how he thinks about farming. For example, Samuel might have learned how contour plowing was better for soil erosion after he moved to Wisconsin, but he had a conflict between the agro-ecological and social realms as his immediate social surroundings did not encourage his desire to contour plow. Since that time other farmers in Samuel’s environment began to contour plow, so Samuel no longer feels this conflict. Thus, conflicts between oikonomia realms can come and go depending on the situation.

Samuel’s social/spiritual network emphasizes living in a way that is consistent with contentment theology. Dairy farming, especially Amish farming, almost demands this value.

\(^7\) Genesis 1:1  
\(^8\) Psalm 24:1  
\(^9\) Lev. 25:23-24  
\(^10\) Revelation 11:18
system considering the minimal income earned on a small dairy farm. A farmer’s contentment ethic may be connected to religion and may motivate the farmer to be more frugal with respect to economics. The value of contentment with simplicity may also be a secret to their survival on the land (Hostetler, 1993). The Biblical conception of contentment is depicted in 1 Timothy 6:6-9\(^\text{11}\) where followers of Jesus are essentially instructed to live simply and to be content with it. As one Amish newsletter writer states, “We live simply because we are neighbors…We live simply so that others may simply live. Could good neighbors, let alone Christian neighbors, even think of doing less?” (Anonymous, 2003).

The rise of off-farm jobs amongst the Amish has translated into the emergence of social classes in some Amish settlements. Some of the Amish fear that disposable income will cause their children to leave the church (Kraybill & Nolt, 2004). When asked what is the biggest obstacle for the Amish people, an Amish elder responded by stating, “The devil. He’s very busy…In prosperity; the devil gets a lot of people. When prosperity goes too far, it is dangerous—we should make a living but not more.” Some of the Amish have moved to Wisconsin to maintain a rural lifestyle away from possible temptations. Non-Amish farmers also embody an importance of living simply, and this may also have a spiritual dimension. However, this

\(^{11}\) 1 Timothy 6:6-9: But godliness with contentment is great gain. For we brought nothing into the world and we can take nothing out of it. But if we have food and clothing, we will be content with that. People who want to get rich fall into temptation and a trap and into many foolish and harmful desires that plunge men into ruin and destruction. Philippians 4:12-12 I know what it is to be in need, and I know what it is to have plenty. I have learned the secret of being content in any and every situation, whether well fed or hungry, whether living in plenty or I want. I can do everything through him who gives me strength.
emphasis is not related as strongly to the fear of temptation and to falling prey to evil forces as it is with the Amish.

It is important to note that there other examples of synergies and conflicts will emerge in the narratives of in the following chapter and in the rest of this dissertation. If we return to the characters, Productionist Peter, one can envision positive synergies between his productionist focus within the economic and the agronomic realm and his connections to the social community and to information sourcing. His social networks and the information he accesses reinforce this productionist focus. Holistic Hannah probably has the most potential for synergies and conflicts of oikonomia as she emphasizes so many possible dimensions of the oikonomia framework as implied earlier when it was conjectured that she may be immobilized in making decisions. An example of positive synergy that Hannah may be keenly aware of is the long-term economic benefits of more sustainable agronomic benefits. On the other hand, she may be cognizant and care deeply about the negative social and agro-ecological ramifications of making decisions which may be beneficial in the short term economically. As will be discussed throughout this research, there are many other examples of synergies and conflicts between oikonomia realms as well as ways that oikonomia realms interact which are not necessarily negative or positive. It is important to acknowledge as well that these interactions and the ways they influence farmer decisions can be mistaken for bounded rationality issues which is the subject of the next section.
Bounded Rationality

“As we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns -- the ones we don’t know we don’t know.”

Donald Rumsfeld Department of Defense Speech, 2002

The statement above illustrates how decision makers can be faced with multiple levels of uncertainty which is particularly relevant for farming systems. An oikonomia decision making framework is influenced by how a person’s psychology responds to complex decisions when information is limited (Simon, 1955). Utilizing the holistic concept of oikonomia along with a bounded rationality framework to discuss complex decisions is this thesis’ unique contribution to the literature especially within the sustainable agriculture arena. This research will assume that a bounded rationality framework explains farmer decision making better than the assumption of full rationality given information, time constraints and other limits to processing information. Full rationality assumes individuals choose the best action according to stable preference functions and constraints facing them, and that they have access to full/perfect information and the cognitive ability and time to weigh all choices relative to each other. In contrast, research on decision makers within a bounded rationality framework is viewed in light of how human’s frame problems and minimize the complexity of reality (Egidi & Marengo, 2002). Since Simon first coined bounded rationality as a concept, there has been much empirical evidence in support of this way of thinking compared to empirical evidence for unbounded rationality (Conlisk, 1996; Gabaix et al., 2006). These kinds of decisions may be described as boundedly rational rather than irrational as I live in a world of uncertainty, limited time, resources and capabilities.
Bounded rationality will be explored in the context of the adoption decision of organic and MIRG dairy; thus, no conclusions can be made about individuals who are susceptible to bounded rationality in other aspects of their lives. Indeed, one could argue that all decision makers operate in a bounded rationality framework. Specifically, individuals have to negotiate the complexities of the world; therefore, being boundedly rational is not a derogatory concept and does NOT imply that people are irrational nor is it synonymous with the term “laggard” in adoption diffusion. It is also important to remember that as a researcher trying to make sense out of a complex reality with limited information and time that I am in a bounded rationality situation in terms of how I work with the interview data. It is for this reason that I hesitate to make a definitive call on whether farmer’s statements that reflect bounded rationality concerns or concepts necessarily mean that the decisions were in fact driven by those limits.

Bounded rationality theory recognizes internal constraints (i.e. cognitive limitations) and external constraints (i.e. uncertainty, limited time and resources) within which an individual. The result of these limitations is that individuals may not really consider all possible alternatives in a choice set. It may mean that relying on hunches, intuitions (Forester, 1984) and rules of thumb can close off certain possibilities. It is contestable if this always has a negative impact on decision makers. Bounded rationality has typically been assumed to lead to biases and to decision results that are not ideal (Todd, 2007; Tversky & Kahneman, 1974). Human decision making is often characterized by settling on a readily available option based on quick assessments where information is not really fully considered. For example, many people make decisions about their stock investments based only on name recognition (Goldstein &
Gigerenzer, 2002), and receive their information from a quick search on the Internet (Huberman et al., 1998). There is also growing interest and support for the possibility that bounded rationality heuristics can lead to good decisions (Gigerenzer & Goldstein, 1996; Gigerenzer & Selten, 2001) as it utilizes a mechanism that contains only a few parameters to deal with an uncertain, competitive, and time limited world (Gigerenzer & Goldstein, 1996; Todd, 2007).

The dislike of change and the uncertainty associated with it may be one of the main reasons more people do not practice sustainable agriculture (Bell, 2004; Clark et al., 1999; de Buck, 2001; Fairweather, 1998). There are simply a lot of unknowns with alternative systems and bounded rationality may be a way people negotiate the many unknowns. The uncertainty related to economic outcomes is often an area of concern for potential adopters of organic (Fairweather, 1998; Kroma & Flora, 2001). Organic dairy may be a viable option in terms of oikonomia values but farmers may not have seriously considered it for bounded rationality reasons or because of contextual issues. Bounded rationality emerges as an important sub-theme in Chapter 4 as I encounter the stark differences between perceptions of non-organic dairy farmers, and lived experiences of organic dairy farmers as well as the limits to high quality, third-party information that resolves the uncertainty. Bounded rationality issues relevant to organic adoption are explored systematically in Chapter 5.

The high cost of information particularly with respect to the management of organic pasture systems makes it a particularly good case for a bounded rationality framework approach. The inability to access full information and the uncertainty involved with making a systems change often means that farmers live day by day through habits and routines making them less
likely to adopt new management techniques/technologies. There is a lot of knowledge needed to understand organics with many subcomponents to consider as discussed in the agro-ecological realm. Many farmers are fairly dependent on external standardized codified forms of knowledge. The development of formal knowledge on organic and intensive grazing has lagged far behind conventional agricultural systems. Information is particularly difficult to attain with the organic system because it is much more dependent on tacit knowledge compared with the conventional system which is more based on codified knowledge.

Many farmers may not be seriously considering the information that is available on organic or MIRG systematically because of bounded rationality issues. The contrast discussed in Chapter 4 between conventional and grazier perceptions and organic farmer experiences prompt a discussion of bounded rationality. Chapter 5 offers a more explicit discussion of bounded rationality possibilities. There are a number of heuristics and principles that are characteristic of bounded rationality that would seem pertinent to the decision of adopting organic or MIRG farming; there will only be a select few discussed here for purposes of illustration leaving a more thorough discussion for Chapter 5. In general, farmers may rely on local searches for information sources and on people who are readily available particularly in complex situations (Hogarth & Reder, 1987; Kleindorfer et al., 1993; Lunneryd & Öhlmér, 2006). Individuals typically repeat the same pattern of behavior until another option shows them tangible benefits (Napier & Sommers, 1994). In this way, farmers may be operating under status quo bias when it comes to considering alternative management strategies.
Farmers who are focused on the conventional farming base as a reference point may value the losses from switching out of this known system more than the potential gains of the alternative system. This concept is highly related to loss aversion and prospect theory (Bandiera & Rasul, 2006; Kahlenman & Tversky, 1979) within bounded rationality. Loss aversion and prospect theory can help explain how humans approach decisions in uncertain situations. Profit is characterized by how much higher an outcome is than a reference point. If the outcome is lower than the reference point it is considered a loss. Individuals operating in prospect theory have a significant decline in their utility function for a loss. An equivalent level of profit gained would result in a much less significant increase in their utility function. In contrast, rational decision makers only value the final end point as variable costs and sunk costs are not generally considered relevant for rational decision making (Samuelson & Zeckhauser, 1988). Loss aversion/prospect theory can lead to a status quo bias (SQB) where decision makers give automatic preference to their current situation/management practices since they are more concerned about their past investments than future possibilities (Kahneman et al., 1991; Samuelson & Zeckhauser, 1988).

Another example of a bounded rationality issue that relates to farm decision making is satisficing. The bounded rationality framework acknowledges that individuals typically “satisfice” which entails selecting a solution to a problem that is satisfactory rather than maximizing profits as is typical in unbounded rationality (Simon, 1955). The heuristics and learning processes described above as well as individual value differences may explain why “satisficing” tends to be more common in complex decision making with limited information.
Perhaps, most importantly, decision makers can only go on their perception of the situation; they can only “optimize” with the information they know and understand (Gasson & Errington, 1993; March & Simon, 1958). Satisficing may in part explain why different farmers stop their thinking based on an attitude about something early on in the decision tree framework described earlier. For example, people have been found to stop their information searching process because it “seems like a waste of time” (Mansourian & Nigel, 2007). Decision makers may satisfice because of limited time, knowledge or computational capacities. In these situations it should be noted that satisficing strategies can outperform optimization in accuracy and speed (Gigerenzer & Goldstein, 1996).

**Oikonomia and Bounded Rationality Blending**

There is considerable overlap between bounded rationality and oikonomia. Oikonomia values at one level can be bounded rationality issues at another level of analysis. For example, it is very easy to utilize one reason decision making with respect to economics. Farmers may focus on one aspect of farm decision making like productivity instead of holistically analyzing the overall economic situation of the farm. Focusing on a certain component of a decision making process is arguably indicative of oikonomia values in that area. A focus on cost minimization amongst many farmers can reflect an oikonomia value. However, when these oikonomia values are anchored in such a way that outside information is not being considered, this anchoring can also reflect bounded rationality processes. Anchoring is a way to drastically simplify complex problems (Gigerenzer & Goldstein, 1996; Lunneryd & Öhlmér, 2006) and prevent a decision maker from fully considering the advantages and disadvantages of a decision.
There are also examples of explicit interactions between bounded rationality and oikonomia. This overlap and intersection is particularly well illustrated by Amish decision making discussed in Chapter 6. Pertinent examples of oikonomia/bounded rationality intersections included value-loss aversion and the principled satisficer concept (Chua & Juurikkala, 2007) or “cultural evaluators” (Kaiser, 2006). Value-loss aversion involves a fear that some oikonomia values will be threatened by making a certain decision. Thus, even though this decision may not conflict directly with values, it will be avoided because of the possibility that the values may be lost. For example, the Amish emphasis on farming forces members of the community to live simply as some of the Amish fear that disposable income will cause their children to leave the church (Kraybill & Nolt, 2004). There is an unknown element to value loss aversion. As an example, I compare the hypothetical decision to adopt cars to the decision to adopt some farm management system within an Amish settlement. The Amish leaders may have seen the devastating ramifications of the decision to adopt cars on numerous other settlements so there is a lot of information available. Once lay members of the Amish church had cars, they had increased mobility and the community life suffered. In other words, although the impact of a decision to adopt a certain kind of technology in farming may be unknown, Amish leaders may decide against it because of the possibility of it creating problems that threaten their core values.

The principled satisficer is a concept where the decision maker’s values and cultural framework is critical in assessing how they satisfice factors involved with complex decisions. Decision makers may satisfice financial goals because they are more interested in other elements of the operation. Farmers may exert tactical sub-optimizing which involves sacrificing some
utility in one oikonomia realm for the sake of greater well being in another oikonomia dimension (V. L. Smith, 1998). The values of the principled satisficer govern the type of heuristics farmers may use and ultimately how they navigate between the different realms of oikonomia. An example of principled satisficing is an emphasis on the kind of labor demands which enable families to work together. This ethic has led farmers to choose a less profitable career to achieve these values. Please note that there is overlap between the principled satisficing and contentment theology concepts as both can lead to living simply for value based reasons. However, contentment theology goes behind the principled satisficer concept as it also includes an explicit focus of attempting to live like Christ. Farmers operating under contentment theology may be more aware that they are not accessing all of the information and resources with regards to a decision and that they are making an explicit point to not pursue these things whereas a principled satisficer would not be as aware of this tradeoff.

**The Personal, Physical and Social and Cultural Context**

The personal, physical and social context of the farmer can influence their oikonomia and bounded rationality framework and operate independently on farmer decision making. It is important to remember that although oikonomia and bounded rationality are important themes of this work they cannot explain all the dynamics involved with farmer decision making. How a person’s oikonomia is actualized in decision making may be influenced by their demographic characteristics (Rogers, 1995), current farm and family situation (Gasson & Errington, 1993; Salamon, 1992), personalities (van der Ploeg, 1985; Willock et al., 1999), attitudes (McCann & Sullivan, 1997; Padel, 2002a). It is well established in the literature that demographic and
structural characteristics influence adoption decisions in general (Rogers, 1995). Individuals may be more or less susceptible to bounded rationality principles when trying to live out their oikonomia values depending on their personality/disposition and external factors, but these factors may change with additional information, changing circumstances and influential people. Farmers can be characterized by their personal approach to farm management decision making (Barlett, 1993; Bennett, 1982; L. Duram, 1997; Salamon, 1992; van der Ploeg, 1985; Vanclay et al., 2006). Farmers who practice alternative techniques may have different personalities than the overall farming population (e.g. Padel, 2002a; van der Ploeg, 1985; Vanclay et al., 2006). Personality type and experience may emphasize different dimensions of quality of life (Lloyd et al., 2007). A persona which involves superior information processing and a higher tolerance for ambiguity and risk (Chavas & Barham, 2007) can be helpful for earlier adopters.

Farmers may be shifted out of their bounded rationality situation through a disposition for proactive information searching, through a crisis that may lead decision makers to consider other alternatives or through knowing influential farmers who are practicing alternative techniques. This complexity will be described in Chapter 3 in the farmer narratives. Although the personal traits and the physical and social context described cannot be related to motivations to farming and adoption decisions directly, they may be related in some way as is supported by the literature. These factors are not treated as exogenous but rather provide background on the farmers and may give further insights into these complex adoption decisions.

For example, adopters of alternative agriculture practices tend to lack an extensive farm background (Burton et al., 1999; Duram, 1997). Organic and MIRG adoption is more common
with farmers of younger age (Foltz & Lang, 2005; Ostrom & Jackson-Smith, 2000; Susanne Padel, 2002a) except for a few studies (Lloyd et al., 2007; Ostrom & Jackson-Smith, 2000) where that association was not observed. Farmers who lack a farm background may be more open to alternatives as there is no loss aversion associated with human and non-human capital investments than farmers who have certain investments and farm management ideas instilled from their upbringing.

Although there is an awareness of the potential correlations between demographic characteristics and adoption decisions this research does not attempt to fully explain this trend but rather recognizes that it is a significant influence. The purpose of this research is to explore the decision making factors and contextual information by conducting in-depth semi-structured interviews with different types of farmers. The physical and social context can also be very important to the extent that information (especially tacit knowledge) can influence adoption decisions. The social situation of farmers as discussed earlier may help them respond to bounded rationality issues if other farmers can lead them to consider information that they may have not otherwise. Tacit knowledge on organic farming may be best transmitted through shared experience (Morgan & Murdoch, 2000) which is also known as learning by doing (Arrow, 1962) and learning from others (Foster & Rosenzweig, 1995) in a particular geography and culture (Lewis et al., 2010). The role of learning and knowledge is very critical as an “oikonomia” framework may evolve over time as the four spheres may broaden or confine how individuals perceive their options and assesses their viability.
The situation of the farmer can also make it difficult to pin down if the farmer is operating in a bounded rationality situation or if there are other contextual factors that may make a choice like adopting organic dairy an infeasible option. Larger or agronomic economic factors that operate behind the farm level to some degree can be considered as a part of context. The cultural and political context also needs to be considered. This will be discussed to some extent as some impressions of organic and MIRG agriculture may not be solely the result of personality, oikonomia and bounded rationality issues operating at the level of the individual. There will be also exogenous political factors that have an influence on farmers. The cultural/social religious context will be discussed extensively as related to the Amish farmer decision making.

**Dairy Management Divergence: Bringing the Conceptual Framework to the Field**

The divergence in the Wisconsin dairy sector described in Chapter 1 is explored through farmer interviews using an oikonomia and bounded rationality conceptual framework and contextual factors in this dissertation. Wisconsin provides an ideal context for this study due to the recent emergence of graziers, organic farmers and the Amish. The interviews were concentrated in the Southwest region of Wisconsin where over 20% of the state’s MIRG farms and over 30% of the state’s organic dairy farms are located. About a quarter of the state’s Amish dairies are located in that region (PATS survey data) (Cross, 2004). The interviews were conducted in Vernon, Monroe, Crawford, Iowa, Richland and Sauk Counties. These counties are in the Driftless Region of Wisconsin which was mainly untouched by glaciers and is especially ecologically fragile. In the past, this region has experienced large-scale erosion due to destructive agricultural practices. The Driftless area is home to Organic Valley, the largest
organic dairy producers’ cooperative in the country, a number of grazing networks and Old
Country Cheese Co-op (an Amish cheese factory) located in Cashton, Wisconsin. These
organizations serve as a center for marketing and knowledge and as a social support network for
these pasture based management practices.

Semi-structured interviews were conducted with approximately 60 dairy farmers in the
Driftless Region of Wisconsin. The majority of these farmers are respondents from the 2003 and
2004 PATS surveys which were described in the previous chapter. Farmers were categorized by
the farm management type indicated on the PATS surveys (organic, conventional or MIRG),
though a number of the farms had since switched farm management systems between the time of
survey completion and when the interview was conducted. This change in management practice
will be a part of their story. Most of the farmers interviewed were small to mid-sized operations
as these types of farms are prevalent in the Southwest area and are considered to be the most
likely to go organic. Interviews followed a protocol with an introductory letter.¹²

Eighteen organic dairy farmers and 15 grazing (non-organic) farmers were interviewed
with the majority (12 organic and 12 graziers) of these being respondents of PATS surveys. Six
conventional farmers were also interviewed. There was a focus on pasture based producers as
they were considered most likely to convert to organic. Twenty five Amish farmers from the
Hillsboro and Cashton settlements were interviewed, the majority of which were from the PATS
survey sample (21) aside from a few Amish informants. The two largest Amish settlements in

¹² Introductory letters were sent to potential interviewees explaining the project with a list of the general topics that
would be covered (Appendix 1). The introductory letter was followed up with a phone call a week later. A return
postcard was included in the letter for the Amish who do not have phone access for the purposes of scheduling a
time range for interviewing. Interview participants completed a consent form (Appendix 2).
the Kickapoo Valley are Hillsboro and Cashton. Roughly half of the Amish sample was selected from the Cashton settlement and half was selected from the Hillsboro settlement.

There was also a deliberate attempt to interview a mix of organic and graziers (including low and high intensity graziers). Six grazing network leaders were also interviewed toward the end of the interview process to insure a perspective from more intensive graziers. In addition, key informants were interviewed to expand upon themes and offer further background and perspective at a more aggregate level than the individual. Two of the grazing network leaders had grazing cow dairy operations, and all of the grazing network leaders had some kind of grazing livestock on their farm. A couple of Organic Valley staff, an organic educator, a few conservation agents, nonprofit representatives and Amish cheese company representatives were also interviewed to gather additional perspectives on the challenges and opportunities in terms of the future of organic, grazing and Amish dairy farming in the state. An organic focus group was conducted with other PATS staff which included eight organic dairy informants consisting of Organic Valley employees, organic certifiers, organic dairy representatives, and state/extension employees. The number and types of farmer and informant interviews were based primarily on gathering a diversity of farmer opinions on organic and intensive grazing adoption decisions. The number of interviews was partly based on a sense that major themes were starting to repeat from interview to interview.

The primary goals of the farmer interviews were to explore why farmers farm and why they farm the way they do. Oikonomia motivations in the social, spiritual, ecological and economic realms are explored and discussed in Chapter 3 in the form of narratives. Exploring
the value of an integrated oikonomia perspective was a goal of the field work from the beginning. In contrast, the bounded rationality framework emerged from an analysis of a substantial number of early interviews, because it helped to elucidate the divergent perspectives and arguments offered by farmers on common issues. There is limited information on if the farmers are really operating under a bounded rationality framework aside from general statements in interviews. The interviews centered on questions that spanned the following themes:\textsuperscript{13} (1) general farm background (2) preferences, i.e. the adoption process related to farming strategy (3) pasture management and other agronomic aspects of the farm (4) economic situation (5) environmental ideas (6) information and organizational connections and the (7) future of the farm (see Appendix III for the survey instrument).

The interviews were approximately one and a half hours but varied in length depending on time availability and conversation style of the farmer. All of the interviews with individuals were conducted solely by the primary researcher (Caroline Brock).\textsuperscript{14} A stipend\textsuperscript{15} ($50 for non-Amish farmers, and a donation to the community for Amish farmers) was offered but was not always accepted. All farmers (except the Amish) participants consented to have their interviews

\textsuperscript{13} The exact presentation of questions in Appendix III will vary based on the farmer. There were specific interview questions for Amish farmers, grazier network leaders as well as organic and MIRG farmers as indicated in the interview guide. The demographic and farm structural survey data when available were linked with the farmer responses to some degree.

\textsuperscript{14} However, there were a few interviews with Amish elders and other informants which were co-conducted with Dr. Dail Murray, a professor from UW-Marinette who was studying other socio-anthropological topics related to Amish in the Kickapoo.

\textsuperscript{15} The farmer stipends did not seem to impact survey participation. There were only a couple of farmers who refused to be interviewed. However, there were a significant number of farmers who either retired or that I was not able to reach to schedule an interview.
taped. Initial exploration revealed that it was culturally appropriate and respectful to not ask Amish farmers to tape record their interviews. The Amish interviews tended to be shorter on average because of scheduling problems associated with lack of phone access. All of the interviews were digitally recorded and transcribed. Notes on the Amish interviews were typed up shortly after each interview by the researcher. Many other issues relating to farm decision making and viability were raised in the interviews themselves, and they were transcribed using open and closed coding.

A select number of farmers (non-Amish) of each management type were given pseudonyms, and are described in holistic narratives in Chapter 3 to illustrate the diverse way in which the four realms of oikonomia appear to play out across farms and farmers as well as to demonstrate the broad scope of the interviews. Although the interviews were structured through the use of a standard survey instrument, their flow and focus varied substantially depending on the individual, their current farm strategy, and the complex real life issues they brought to the table. The fourteen individual narratives in Chapter 3 offer the most complete view of the farmers and their farms. For each type of farming system, summary and comparative statements are developed in an effort to broadly characterize the oikonomia logic and contrast it with the other main systems. This summary in Chapter 3 was conducted by coding oikonomia themes and management decisions using qualitative coding methods.

This coding provides one of the core bases for the analysis in Chapter 4 where the coding related to farmer views on the agronomic and economic factors associated with organic are used to depict the shared and contrasting perceptions of non-organic and organic farmers. The
divergence in views about organic farming that emerges from Chapter 4, and the lack on many fronts of definitive empirical evidence from scientific studies, helps to elucidate the salience of bounded rationality concerns related to the choice of farm systems. The potential importance of information constraints and the possibility that farmers may not consider all, or even much, of the information available emerge as substantive concerns in Chapter 4. Statements are coded and organized into bounded rationality issues such as status quo bias and information satisficing. Chapter 5 then documents the various ways that bounded rationality appears to be in play in farm system analysis and decision-making while considering other possibilities. Chapter 5 also brings forth the role that networks (e.g. family, neighbors, and farm organizations) play in shaping how farmers may manage bounded rationality issues. There is an attempt to use neutral terms when discussing potential bounded rationality issues. Chapter 6 explores the intense interplay of oikonomia and bounded rationality concerns as they emerge in Amish farmer decision making. There is also further discussion of contentment theology and other oikonomia themes that are particularly well illustrated amongst the Amish. In particular, motivations for farming and for adoption decisions towards organic and MIRG are discussed using statements from Amish farmers coded by their different perceptions and beliefs regarding those systems.

Summary

This chapter introduces the conceptual framework for this dissertation which is a unique combination of a holistic oikonomia framework and the perspective of bounded rationality. This framework was broadly suggested by the divergence in the dairy sector described in Chapter 1. It is the researcher’s contention that there are many factors that shape why farmers farm and how
they farm even behind the broad oikonomia and bounded rationality framework. The word oikonomia is the ancient translation of economics which reflects the holistic origins of economics that incorporates the major realms of household decision making, namely social, spiritual, economic and agro-ecological dimensions. The framework helps to explain diversity in farm management systems, because fundamentally farmers may emphasize different realms with distinct weights, exemplified by the contrast between Productionist Peter who focuses almost exclusively on the economic dimension and Holistic Hannah who attempts to balance and integrate outcomes in the four realms. That contrast of archetypes is of course only meant to provide a sharp characterization of what are generally much more subtle differences between different decision makers as they balance and try to understand outcomes associated with the oikonomia realms.

This complexity is reflected in the farmer narratives presented in Chapter 3. The social realm is particularly important because most information is filtered through a social medium and thus can lead naturally into talking about bounded rationality issues. The family is a big motivator to farm and for farm decision making that has spiritual meaning for some farmers. The spiritual/religious realm is highly intertwined with the social dimension and can best be depicted through the discussion of Amish decision making in Chapter 6. There may be more separability between a farmer’s emphases on certain oikonomia realms and how it applies specifically to the farm as a business as opposed to the broader farm household context, but that is in and of itself a reflection of their approach to oikonomia.
Literature Cited


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Chapter 3: Farm Management Choices: Oikonomia/the Farmer’s Story

Introduction

This chapter argues that farmer decision making involves complex processes based on values and preferences (oikonomia in the economic, social, spiritual and ecological dimensions). This chapter will present narratives of conventional, grazier and organic farmers with pseudonyms that explore why farmers are farming and what governs their farm decision making process in a broader sense. The narratives will describe how different kinds of farmers balance the four oikonomia realms in their choice of farming systems. This dissertation will also be looking for “footprints” of bounded rationality elements in these narratives. The narratives introduced here will be revisited throughout the dissertation to illustrate themes in farm decision making.

Conventional farmer narratives are presented first, then graziers and finally organic farmers. Overall, fourteen narratives are offered: four conventional, four graziers and six organic. More organic farmers are presented in part to capture the diversity of organic farmers especially related to the time of conversation. The order of presentation of the narratives (Table 1) reflects the history of farming system emergence as described in Chapter 1. The narratives help to illustrate the distinctive characteristics of the different farm management systems and also the diversity of oikonomia considerations that exists within them. In general, we see that a more multi-dimensional oikonomia emerges later in the chapter, because the intensive graziers and organic farmer respondents offered more holistic responses in the interviews. It is possible that farmers who are doing something different than the mainstream (i.e. organic and MIRG
farming) may be better able to articulate oikonomia motivations and positive synergies between different oikonomia realms.

All of the narratives present the agronomic and economic orientation of the farmer, in part because this is a typical take-off point for farm system discussions and in part because all farmers described this realm of their oikonomia in reasonable detail. The agronomic and economic dimensions also give the reader background on each of the farmer’s context. A large scale conventional farmer, Larry Wagner, is introduced first, and he provides a real-world example of the productionist archetype described in Chapter 2. Andy Son, the next conventional farmer introduced, represents a frugal (cash) cost-minimizing, more risk averse type of farmer. The contrast between Larry and Andy offers our first example of the diversity of oikonomia frameworks within a farming system type. Some themes carry over across management systems. Cost-minimizing strategies are common across all of the dairy farm systems, and overall may be more common than the productionist persona. The social-spiritual dimension of oikonomia may be more important to many farmers than pure economic reasoning because it can heavily influence the economic strategies described above.

Family is a primary social/spiritual motivator for all types of farmers to continue in farming despite the challenges. Thus, these farms are orientated in such a way where their household is highly intertwined with the farm as a firm. Farmers in Wisconsin are often involved in local churches and have a spiritual connection to the land and farming overall. These social-spiritual issues will be developed more in Chapter 6 where Amish farmer statements will serve as the foundation for discussing how the social-spiritual realm can impact other realms of
oikonomia and bounded rationality. The Amish especially illustrate the importance of labor for maintaining family values. Labor is not expressed in the same intensity on non-Amish farms but working with the family is important. A few non-Amish farmers stated they appreciated farm labor because it was good exercise.

The oikonomia/bounded rationality framework is embedded in the current social/political context of the individual. Farmers are situated in a farm and family situation as well as larger issues that can impact farm decision making. Knowledgeable friends and relatives can determine how open a farmer may be to alternative management systems. It is important to note that an individual’s oikonomia may shift before and/or during the adoption process to organic and MIRG systems. A number of the organic farmers experienced a shift in their oikonomia framework because of a crisis and/or the influence of family and friends. This context can cause people to shift their oikonomia framework in different ways. Changes in context can also lead people to make different connections with different oikonomia realms in ways that they may not have before the change. For example, a family or farm crisis can push people to consider information that they may not have otherwise. Farmers need to be proactive to find information about organics and intensive grazing in order to make the conversion and also to be successful with these alternative management systems. Each of the farmer narratives presented below offer rich insights that are used in upcoming chapters to inform this analysis of farm decision making.
Table 1. Farmers in the Narratives

<table>
<thead>
<tr>
<th>Code Names**</th>
<th>Management Type</th>
<th>Current # of cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andy Son</td>
<td>Conventional</td>
<td>30</td>
</tr>
<tr>
<td>Randy and Rhonda Rod</td>
<td>Conventional</td>
<td>75</td>
</tr>
<tr>
<td>Fred and Susan Teiner</td>
<td>Conventional</td>
<td>100</td>
</tr>
<tr>
<td>Larry Wagner</td>
<td>Conventional</td>
<td>300</td>
</tr>
<tr>
<td>Jerod Lackey</td>
<td>Grazier</td>
<td>38</td>
</tr>
<tr>
<td>Paul Flecker</td>
<td>Grazier</td>
<td>35</td>
</tr>
<tr>
<td>Wes Pander</td>
<td>Grazier</td>
<td>75*</td>
</tr>
<tr>
<td>Nick Nader</td>
<td>Grazier</td>
<td>225</td>
</tr>
<tr>
<td>Scott and Sally Smith</td>
<td>Organic</td>
<td>45*</td>
</tr>
<tr>
<td>Devin Dooley</td>
<td>Organic</td>
<td>45</td>
</tr>
<tr>
<td>Matt Drake</td>
<td>Organic</td>
<td>42</td>
</tr>
<tr>
<td>Ben and Bonnie Crank</td>
<td>Organic</td>
<td>45</td>
</tr>
<tr>
<td>Dan Crank</td>
<td>Organic</td>
<td>45</td>
</tr>
<tr>
<td>Tom and Jerry Serts</td>
<td>Organic</td>
<td>300</td>
</tr>
</tbody>
</table>

* Out of out dairy
**Other farmers are described in Appendix IV

Oikonomia Framework Amongst Conventional Farmers

Conventional farmers, the predominant farming strategy in the state, typically have a family connection with their farm and often have either a production focused oikonomia framework and/or a cost-minimizing oikonomia framework. The narratives provide a sense of the conventional decision making framework as well as the diversity amongst conventional farmers. Producing milk in larger volumes is a commonly understood way that dairy farmers deal with rising input costs and falling milk prices (as will be discussed more in Chapter 4). The benefits associated with economies of scale have been promoted by farm policy, industry and university/extension as the way to thrive on the farm landscape for the past several decades. So
in some sense, the Productionist Peter persona has both broad social and economic support. Larry Wagner and the Teiners provide narratives that represent the production focus of larger scale conventional confinement producers. Larry Wagner, in particular, serves as an anchor for the other conventional narratives with his Productionist Peter persona. There also tends to be focus on the power of technology amongst these kinds of conventional producers.

There are many conventional farmers who are smaller in scale and focus on chipping away at costs (i.e. both variable and fixed costs but not necessarily per unit costs) rather than increasing their production per se, and they often have a conservative and frugal management style. Although some conventional farmers operate large-scale confinement farms, as discussed in Chapter 1, the majority of farms in Wisconsin still have less than 100 cows especially in the Southwest region of Wisconsin where the farmer interviews were conducted. The cost-reducing strategy also has both an economic and social dimension that is more widely expressed on the farm landscape. For example, Andy Son is on the minimalist end of the conventional continuum in terms of size, scale and technology. There will be some overlap with low intensive graziers on this kind of farm management strategy as will be discussed later.

**Larry Wagner: A Top Producer**

Surrounded by very small farms and rolling hills, Larry Wagner and his son, Chris, operate a conventional confinement operation with over 300 cows and 670 acres of cropland. Larry is one of the largest producers in my interview sample. I drive up the long driveway to the office embedded within the pit parlor barn structure which stands out in stark contrast to the farm landscape around it. Occasionally, a Hispanic worker comes into the office to fetch something
and silently goes back into the barn during the interview as I try, with some broad questions, to learn the primary factors which motivate Larry in terms of farm decision making.

Larry Wagner might be considered a typical farmer of the region since he himself grew up on a farm. Since then, and since 1980, when he began running the farm on his own, he says, “Times have changed.” Larry expanded his operation quite substantially and quickly since 1997 when he only owned 60 cows. The Wagner’s current herd productivity is at about 80 pounds per cow per day. Larry proudly states that “We have one of the top herds in the state…in milk production. We would be in the top 1%. I know that.” Larry is clearly proud that he has been progressive about implementing changes in technology on his farm. Larry employs a free stall barn for housing his cattle, and he milks three times a day in a pit parlor with state of the art technology, which is atypical for this area of Wisconsin. He makes use of computers and the Internet, uses TMR, rBST (prosilac), regularly schedules vet services and stores manure in a lined structure.

Larry’s strong convictions about modern technology is evident in the way he compares the changes in dairy farm structure with the transformation in retail store structure, an assessment that not many dairy farmers would be prepared to make given that many farmers see themselves as victims in this transformation. Larry states:

“Things have changed. You gotta progress. If you stay like you were 50 years ago you’ll be gone. It is like your Ma and Pa stores and your Walmarts. If you farmed the same way Ma and Pa did you’ll be in the same shape as Ma and Pa stores.”

To follow up on this line of thinking, I ask Larry if he believes he would have been able to continue operating on his own with 60 cows. Larry responds that he could have done it. But he
would have been “nuts” because he hated working in an old stanchion barn; the modern milking facility has greatly improved things for him.

Much of Larry’s motivation in expanding his operation seems to come from having someone to move it into the future. Having his son Chris work with him is very important to Larry. When explaining the reasons for his expansion, Larry maintains, “Yeah, you would be foolish to do something like this if you didn't have someone to take it over … the thing is, you can't take it with you.” In other words, it would not make sense for Larry to get so big if he did not have his son planning to take it over. As Larry reflects on his son’s involvement, he states that his son is passionate about farming, and he often tells Larry “I can’t wait until it is summer and we can work nights in the field.” And Larry responded laughingly “you need to get your head examined.” Larry explains the connection he has to his son, Chris, by stating, “He has been at my side since he was 7 years old.” Working with Chris seems to be the most treasured aspect of Larry’s farm life in addition to the numerical statistics associated with production. Larry talks about his son at various points in the interview. When I ask Larry to discuss other larger reasons why he farms, such as lifestyle and spiritual reasons, he talks about how he enjoys being his own boss. He says he works hard but he also can take trips to Florida and Mexico. Yet, the conversation circles back around to production again when Larry further responds to my questions about larger motivations in farming when Larry says, “I kind of like to achieve things. To me, it is important to get good production.”

Larry’s high-production model of farming directs his information gathering process related to farm decisions as well as the social dimensions of his life, both on and off the farm.
For many years he took night classes, and he still attends extension and agro-industry informational meetings. Larry also gets information from about a dozen trade journals. This information better enables him to “produce high quality feed and good fertility because having good fertility,” he says, “is the first step to high production.” Larry is very progressive in terms of getting information tied to extension and to the university. Yet, when it comes to discussing his son’s farming-related education, the interview returns to a high production theme when Larry asserts, “I am not trying to brag but he has a fairly good teacher. In the last 25 years - probably since ’89 - we have been over 24,000 pounds for herd production.” This indicates that Larry’s farm was one of the top producers in the state for a long time.

For Larry, social interactions tend to revolve around his farm. Larry is involved in the community in terms of church leadership but does not indicate any strong social connections to farming from his church involvement. Thus, Larry’s social spiritual oikonomia realm may be somewhat separate from his farm decisions, or at least he was not able to articulate this connection. On the other hand, he states that he gets a lot of enjoyment out of showing people his farm and hosting events. Larry became enthused when he showed me a picture of his farm with many people taking a tour. He wins awards and is recognized because of his ability to produce at high levels and is clearly pleased with these accomplishments. The social networks that Larry is embedded within clearly give him positive reinforcement for the management model he has chosen for the farm. Thus, there are positive synergies between Larry’s social oikonomia and his agro-ecological realm as related to his production focus.
The theme of production in and of itself is incorporated into Larry’s concept of stewardship as indicated by his terse responses to stewardship questions. When I ask about what it means for him to be a good steward of the land, he says:

“We do a lot of no-till. That’s a good way to keep the soil from eroding...When you’re organic you don’t no-till, you plow it up and get more erosion...It’s easier to run conventional, you can run more numbers, you can run more acres, it’s easier to do, you get more production.”

I am concerned that he is defining stewardship mainly in response to some earlier discussions we had about organic, so I persist and ask “Independent of organic, no-till is a way that you feel [you are] a good steward of the land?” He responds with a one-word “Yeah,” so it seems that I was not able to get beyond that.

Larry seems confident that he will continue in farming and pass on the farm to his son. In this way, Larry typifies the Wisconsin dairy research which found that larger scale confinement farmers are quite content with their life situation (Lloyd et al., 2007). Larry is clearly proud of the progressive nature of his management system. He had some family changes so that could have also contributed to his increased satisfaction levels. Additionally, it is possible that he was less willing to share his true feelings of how things were in an interview setting.

I had a bit of an uncomfortable feeling throughout much of the interaction. In general, Larry seems to think the questions I ask are trivial and that they reflect a lack of the basic knowledge of the dairy industry. He wants to know what I am majoring in since it seems to him like I know very little about agriculture. I do not think that his dismissive attitude towards my general questions necessarily led him to cloud his responses in any dramatic way; the answers
just may have been more “dumbed down.” Other farmers take my general questions and talk about different aspects of their farm so most other interactions did not seem to have this uncomfortable tension. It would appear from his attitude that Larry is accustomed to being supported by the university and extension and has been interviewed before in other contexts. These discussions probably enabled him to delve much more in detail as to how he has increased his production and what sorts of innovations he was using. Larry receives a lot of information, but it all seemed channeled towards improving his production efficiency. The proximity of many organic and pasture based producers in the rolling hills provides an interesting contrast for this kind of farm which may have colored a discussion focused on organic production. I strategically do not bring this topic up until later in the interview but with Larry it seems especially important to do so. He seems the most expressive in responding to questions about organic and grills me at the end to try and figure out if I am funded by Organic Valley, the leading cooperative in that sector, which will be discussed later.

I entered the farm thinking about the stark contrast Larry’s large structures and long driveway made on the landscape, and I leave thinking about the clear ideological contrast the Wagners offer in comparison to the views expressed on many of the smaller surrounding farms. While all farms are concerned about production, I had not experienced such a focused objective throughout the discussion on any of the smaller conventional or alternative farms.

**The Teiners: We Keep Hanging On and the Power of Technology**

In contrast to the Wagner farm, the Teiner’s farm seems to blend much more into landscape of other surrounding farms. Instead of conversing in an office, I enter into the family
scene at the heart of their home, the kitchen table. Thus, at least as an outside observer, the Teiner’s home seems more intertwined with the farm. Their son, Bob, joins us later. Susan has a gentle pleasant voice that puts me at ease. They have a great sense of humor about their lives even though I sense a lot of misgivings about dairy farming especially on the part of Fred who is currently managing the farm. Fred and Susan operate a 100 cow dairy farm with 230 acres. They are both about 50 years old and have been operating the farm for about 17 years. The Teiners are atypical, in that they did not inherit their farm from their family. Fred’s father was a herdsman and never owned his own farm, and Susan does not have a farm background. Fred works full time on the farm, and Susan works part time but spent most of the recent past being a full time mom. Susan is knowledgeable about the farm, but does not engage with many of the farm details. Their lack of farm family history on the land may explain some of their struggles as well as the open nature they have about the future of their farm.

Although the Teiners’ attitude about management and production is not as focused on a high production model as Larry Wagner’s, they do have more of this kind of attitude than one might anticipate based on their size. Their herd production is at 52 lbs/day per lactating cow. The Teiners use rBST, TMR and have regularly scheduled vet services. They have 40 acres in pasture which Fred acknowledges is really mainly just an exercise lot and not a real nutrition source for the cows. The Teiners are a proponent of rBST which is another indication of their focus on short term production and how they think like a larger farm. In contrast, many of the smaller producers felt that rBST pushes the cows too hard and burns them out. Fred is also very interested in other high producing technologies and went on at length about some of the
developments he saw at farm progress days. One technology in particular he talked about was robotic milkers. This technology can be helpful for labor savings on a small farm which is particularly pertinent for the Teiner farm situation since Fred is struggling with a lot of back problems which seemed to influence his overall view of farm life. On the other hand, the Teiners typically manage their manure by daily haul (which is labor intensive) except in the case of deep snow. In this respect, they are similar to other smaller farmers in the area.

Fred Teiner makes some connection with his focus on technology and production to ideas about stewardship and taking care of their land in general. Early on in the interview, the discussion gravitated towards a government watershed program to improve drainage. Although they were not satisfied entirely on how it was implemented, Susan felt really good about making decisions that would not harm “the land, the animals, or the woods or anything.” As Susan states about Fred, he “has always had this attitude like, this is not our land.” The Teiners are also proud of a drainage system they implemented on the farm and for generally keeping things looking nice compared to some previous owners. Fred also connects stewardship with producing food in general in an indirect way as he states, “I don’t think it’s stewardship, but I like producing something that people need…somebody has to produce milk and meat.” And Susan resonates with this sentiment to some degree as she says maintaining the land as a farm and keeping it from becoming a housing development is also a form of stewardship. Although Fred states that producing an agricultural product may not be stewardship directly, there must be some kind of connection for him with stewardship or he would not have brought it up in this context. The Teiners have an intimate connection with the animals and talk extensively about the
characteristics of the different cows; working with the animals may also be a source of motivation for their involvement in farming.

The social dimension is clearly important, and is highlighted in the good natured dialogue between Susan, Fred and their son, Bob, when he later joins the conversation. The Teiners gather together with some other farm families to play cards. There is a long history of this group, and they are happy to be a part of it. Fred gently teases Susan that the men folk mainly talk about their wives at these events rather than their farms. The Teiners also seem to identify with a red and white Holstein interest group that seems primarily focused on breeding related issues rather than larger questions about farm management. Fred also jokes that he does not really like people as opposed to Susan who is very involved with church and other non-related farming groups. They receive information through the red and white Holstein society and from reading newsletters. Like Larry, it seems that they get information about other farm strategies in a selective way, so that they are not really exposed to alternative management techniques as will be discussed later.

Susan is especially thankful that she raised the children on the farm. As she states “I think you end up with young people who know what the value of a dollar is…All five of them have a really good work ethic and they’ve never asked us for money. Plus they had a lot of fun growing up around the animals.” The Teiner farm family is different from most in that their children were not forced to work on the farm, as Fred and Susan viewed farm work like any other kind of occupation, so child labor especially without compensation is not considered
appropriate. The family element remains central their decision making as there is a possibility that Fred and Susan’s son will take over the farm.

The Teiners have had significant financial and physical health struggles managing the farm. The challenges are part of the reason they had to expand their herd size. As Susan states, “12 dollars a hundred is what we made 20 years ago. How many people can survive on the same income that they made 20 years ago? You have to hand it to farmers to be able to do what they do. That is why we are milking so many more [cows].” Even though Fred has strong negative opinions about other farm management strategies as will be discussed later, he does not appear to be content with his current situation. The quotation above seems to indicate that at least the decision to get more cows was made as a survival strategy to increase household income.

Fred seems to be on the fence as to the future of the farm. He describes farm life as “The job sucks, but all businessmen, the owner/manager is pretty much on call. McDonalds would be much easier to manage...nothing is as hard as this.” It is interesting how Fred compares the farm to a business here indicating a degree of separability between the farm and the household at least in the way he makes comparisons. Although this statement may have been made in jest, Fred’s attitude about the farm is highly intertwined with his physical condition. As Fred states, “When I was young and felt better working all the time was a drag. But it wasn’t that bad. Now it’s just a drag.” The Teiners are getting Fred ready to go to the doctor during the interview hoping that the doctor could help to figure out the problem with his shoulder. Since the Teiners have not been on their farm that long, the deep connection to the land that is often found on other farms seems absent on this farm. There is a connection to the farm and family, but the future is
uncertain given the presence of many challenges such as Fred’s physical health and the love-hate relationship with farming.

**Andy Son: A High Tech Amish**

I enter through a cluttered kitchen on a cold winter day to spend several hours with Andy Son, a farmer in his early 30s at the smaller end of the conventional spectrum. In contrast to Larry Wagner and the Teiners, he only has around 30 cows because that is what his 1920s barn will hold. He has 208 acres and less than 20 acres in pasture. The contrast with Larry and the Teiners is even more evident when I ask Andy about his milking facilities, and he responds that he has bucket system as “we are high tech Amish.” The emphasis on his low tech approach is further reinforced when he states that he does not do “TMR [or] nothing fancy like that.” He also does not use rBST, computers or regularly scheduled vet services, and he puts manure directly in the spreader. He is very dissatisfied with net farm income and milk farm price but is satisfied with overall quality of life.

When I ask Andy to describe what kind of management system he uses, he states “pretty much conventional I guess.” He does not seem to do anything distinctive in his mind except that his equipment is similar to the Amish which he has a humorous attitude about. Andy is most focused on retaining his farm lifestyle because it is what he knows best. He lives with his parents on the farm that he grew up on. His mom works off the farm but the rest of the income comes from farming. Farming is what Andy knows as he states “[I] ha[ve] been milking cows since I was nine. Doing [it] ever since…[The farm] goes back three generation on my Dad’s side.” Thus the farm has been highly intertwined into Andy’s life.
I ask Andy in a couple of different ways why he is farming, and he stated both times “[I] wanted to play in the dirt and run big machinery.” His reasoning did not seem to extend beyond that level of thinking perhaps because farming is so ingrained in his identity. It seems that the biggest change that he made from the way his Dad and Grandpa ran the farm was that he makes round bales instead of square bales of hay; this management shift consumed a large portion of our conversation. Andy’s thinking about the farm seems to be focused on similar sorts of details. He does not seem very motivated to attend meetings or to read lots of material where he might be introduced to alternative ideas or given the opportunity to experiment with different techniques.

It does not seem like he receives much social support because most of the farms in his area are gone. He describes the social scene around him by saying “there is not that many around here to talk to anymore…Lots of folks sold their farm out or they got really really big.” He jokingly describes how much younger he is than others at farming meetings. During the interview, he gives me a lot of details about everything, but the information is often not very relevant to management practices per se. I wonder if his chatty nature is a reflection of his isolated condition because it seems like he gets very little outside social stimulation. This interview may have been the only farming related conversation he has had in quite some time.

It seems that Andy Son feels that he is a victim of a number of outside circumstances including the lack of social support. Andy feels like he is trapped in his situation where he is not doing well economically with his current strategy and does not see any viable alternatives. He views himself as the victim of changing markets for quite some time as he used to grow tobacco and that crop is no longer viable in the area. Life seems to be highly determined by milk price
and fuel price. When I ask Andy to state what he thought about the farm in terms of economics, he states:

“I could be getting paid more, that’s for sure. That is the only option when the price gets real low is to put out more milk but if the price goes too much lower than fuel is higher, that will be a challenge...it has been about the same the past few years--try to push up the milk and the price of fuel goes up. [You] don’t get anywhere.”

He states, “I was happy in 98 when it was 15 [then you would] get the milk check and there is actually something there [laugh].” Even before I mentioned organic production, he states that the milk price was too low compared to organics. This comparison with organic reflects how Andy feels like the victim of external factors and feels helpless to change his situation.

When it comes to expanding or increasing production Andy states, “Concrete, lumber, steel, it’s all high,” and he is also restricted by the size of his barn. He goes on to say if you “invest [in] anything to expand you can spend a million dollars, who knows if you would make it back.” The structure and design of his operating farmland also makes him feel restricted from expanding or switching to a more management intensive rotational grazing system as he had trouble acquiring good pasture and cropland nearby.

When I ask about what stewardship means to him, Andy states that it is about leaving the land “like you found it pretty much. Don’t tear it up, make holes, having it wash away. Keep the dirt, make sure you have your strips and water ways.” He also mentions that in another part of the interview that he does not use many chemicals because using more than you need is a waste. In contrast, he states, “a lot of the guys [around him] are no-till [and they] spray, spray, spray…Spraying at planting time. Spraying in the summer. Spray all the time.” He also says earlier in the interview that he tries to make sure that he does not spread the manure too heavily
in the winter time as he sees some of his neighbor’s fields are just black. Again, external forces, particular future environmental regulations, may determine how long Andy remains in farming as he states, he will farm “as long I can…as long as [there] isn't … too much buildings required. As long as they don’t start tacking on new laws-environmental stuff. The DNR starts getting fussy and you have to buy a new manure storage tank.” It was clear that he is concerned about the future ramifications of regulations on his farm and how that would influence a farm at his scale and size. This concern seems to fit into the theme of his feeling like a victim of outside circumstances.

It seems that Andy’s primary objective is to keep the farming going despite economic challenges because it is a lifestyle that he is accustomed to. Andy clearly felt he faced many challenges. He was not able to express the motivations for farming in a holistic sense, but he is clearly grounded on the farm in part because that is what he knows best. Andy clearly seems frustrated with the economic dimension of his farm. Although he really sees increasing production as the main strategy to increase profits, he sees that costs are important as well, and he believes he has too many external constraints to try new things.

**Randy Rod: Specialization and a Little on the Stingy Side**

Like Andy Son, Randy Rod seems more focused on frugality although he operates at a larger scale and is more specialized on livestock compared to Andy. He is only a few years older than Andy Son. Randy operates his farm conventionally with about 75 cows. His herd productivity is 63 lbs per day. He operates 175 acres of farmland and only a small fraction of it is viable pasture. Randy does have some pasture, but he does not do much management with it.
His milking system is a stall barn with pipeline, and his primary housing is a tie stall or stanchion barn. Randy does not use computers, rBST, TMR or regularly scheduled vet services and stores his farm manure in a lined structure. He typifies a lot of Wisconsin farmers in that he came from a farming background and acquired the farm from his family. He bought it from his father after renting it for a number of years.

Randy is focused on production but probably more importantly seems to represent a frugal version of the conventional strategy within a mid-sized farm. Randy is more on a specialized model than the other conventional farmers and is more like the intensive graziers because he buys his shell corn. He finds that it is more economical and less labor intensive; thus, he can spend most of his time on the cows. However, it does make sense for him to raise his haylage and silage. When I asked how he has been able to keep going at his size and scale, he says it helps to have family labor, and “I operate a little on the stingy side too…I don’t buy a lot of new stuff.” His dedication to the farm and his ability to get by on limited income was illustrated in the statement that he would keep farming even if he earned only one hundred fifty dollars per cow.

Randy also tinkers with some management practices like reducing his use of fertilizer which may reflect his stingy side as well as his stewardship side. As Randy states, “I started out using what my father used, [but then when] the cost of fertilizer goes up, I ask other farmers about how much fertilizer they use.” Once he finds out that reduced amounts of fertilizers work for other farmers, he decreases his application. He also sometimes reduces the amount of pesticides recommended on the labels because if “the stuff kills weeds…it could kill other stuff.”
too, so you cheat on it a little, a little on the light side, if it kills weeds I’m happy.” He did stick with the amount of lime that his father put on but if the prices go up with the rise in trucking prices, he may scale back on that too.

Randy’s approach to getting information is illustrated by his attitude towards pesticide and fertilizer applications. These quotations also indicate that when there is consensus amongst a number of people who already tried something, he will get on board later. He is with a co-op that he hears is one of the poorest paying around, but he says he will probably stick with them mainly because of his history and loyalty. He says that “I’m not one to make rash decisions either and jump all over the place.” He obtains information from other farmers but only uses it to a certain point when it comes to systems based changes because he wonders if farmers do not want to admit making a mistake. This hesitancy to experiment will be discussed more in Chapter 5.

It is clear family is important to Randy for both social and spiritual reasons, and the farming lifestyle enables him to spend more time with family. Randy embodies the social/spiritual sense when he states that his motivations to farm involve being “with the family…We sit down and have breakfast together every morning.” Randy seems to be primarily motivated by the lifestyle that farming offers his family; family labor is very important to the farm. He ranks his satisfaction with net farm income, milk price, family quality of life and herd health as quite high and expects to farm indefinitely. He feels good enough about farming so that as long as his children are interested he said he “would be willing to help them out.”
Summary: Oikonomia of Conventional Farms

The conventional farmers tend to focus on the economic and social reasons for why they farm. The conventional framework in the narratives center on the economic dimension with some farmers focused more on a productionist model (Wagner and Teiner) and some, such as Andy and Rod, more focused on a frugal strategy (Darnhofer et al., 2005). Most of the conventional farmers in the sample were smaller in size and more on the frugal end of the spectrum. This frugality may partly be in response to the challenging economics of the farm that was quite poignant in these narratives except in Larry’s case. An example of this frugality is that a number of the producers in the interviews only put in a pipeline operation in their parlors within the past few years. The reader may recall that Andy Son was still operating with a bucket milking system. However, a productionist ideology may still be embedded in all farmers across the farming landscape to varying degrees as “entire cultural and symbolic systems can, and have, been constructed based on the productivist role of the farmer” (Burton, 2004).

Most of the conventional farmers would not be farming if it were just about economics. The social aspect is also critical to their oikonomia especially in terms of the family dimension and the historical connections with farming. These family and other social interactions matter in different ways. All of the narratives emphasize the importance of the family and/or the family connection to that piece of land. The smaller conventional farmers, like Andy Son, bemoan the social support that used to be evident on the farm landscape. However, some of the farmers like the Teiniers still have some channels for socialization like card playing groups. There are some farmers like Larry who have been proactive in terms of getting information to maintain their
goals. However, Andy Son reflects the other extreme end of the continuum in that he is limited in terms of possibilities, and he does not get a lot of outside information (aside from a few farm newsletters). He seems to be more on a “low cost and hang on as long as one can” approach rather than accessing information from a lot of different places to refine the way in which the farm is managed. This response may be related to real economic constraints of the farm.

Stewardship does not really come up as a topic of discussion on its own for most of the conventional farmers. However, the farmers clearly have thoughts about this potential oikonomia dimension. Their focus tends to center on erosion control probably due to the hilly nature of most of the topography of the area. Stewardship combined with cutting costs was also mentioned by other conventional farmers besides Randy Rod. Also, survey results indicate that conventional farmers may be likely to view stewardship more in productionist terms linking the environment with agronomic production goals (McCann & Sullivan, 1997). To some extent, that belief is demonstrated by the pride that the Teiners feel to be producing food for consumers. Conventional producers have variable environmental views with some connection to production and some concern about the impacts of environmental regulations on small producers as demonstrated by Andy Son.

It does not seem like the farm management system per se is really on the forefront of many of the conventional farmers’ minds. Aside from the focus on improving production and reducing costs, it is often other factors that seem to shape the continuing commitment to farm. For example, the Teiners are most concerned about Fred’s physical condition as that will determine if they continue in farming. Another large scale conventional confinement farmer,
who was much more focused in particular on marketing his cash grains, responds to my different questions about management systems by stating “Your questions are making me think that you’re trying to take me down this road that farming should be simpler, it’s just not. Life is not that way; when you get older you see that.” It was clear from his statements that he thought that I was a starry eyed girl from Madison with idealist ideas about farm operations. Hence, it seems that other decisions such as how to organize their farm and finances are much more important than management systems *per se*. Farmers like Larry seem content and feel that their expansions and emphasis on production works well for them. Some conventional farmers appeared more likely to make changes at the margin regarding management practices rather than drawing holistic connections between their oikonomia values and management decisions. This is somewhat surprising given the aching bodies and pervasive financial concerns amongst some of the conventional producers. These conditions could lead them to consider other options such as alternative management systems. These challenges, at a more extreme level, could inhibit farmers from considering other farm management options.

**Oikonomia Framework amongst Grazing Farmers**

Grazing or pasture based production may reflect both a cost reduction approach (as seen amongst smaller conventional farmers) and a systems-based change. I discuss four graziers, three who are intensive graziers here. Paul Flecker, Wes Pander and Nick Nader illustrate the oikonomia frameworks that lead people into MIRG farming. These farmers are all highly involved in grazing networks and proactive about getting information. Indeed, for Wes Pander, the major motivation to remain active in farming is the grazing aspect, and he does not
understand why more farmers do not adopt MIRG. Overall, these high intensive graziers clearly identify themselves with this grazing system and have no interest in returning to a conventional system. Jerod Lackey reflects an older school way of grazing that is less intensive in terms of tight rotations and paddock set up. As a result, he shares many similarities with smaller scale conventional farmers (or the Amish farmers as will be discussed in Chapter 6).

Similar to conventional operators, there is a lot of variety in the oikonomia motivations associated with MIRG grazing. The more intensive graziers emphasize economic and environmental motivations and often receive social stimulation and support from the MIRG grazing community. The less intensive graziers are similar to smaller and more frugal conventional farmers. Lower intensive graziers have large paddocks and do not rotate very much and typically have never ever been to a pasture walk. These farmers obtain their information about MIRG by reading. The more intense graziers tend to have more ecological reasons for converting to MIRG as will be discussed below.

**Jerod Lackey: Savvy Ways of Milking the Tax System**

I pull into the Lackey farm on a foggy day. Judy was outside and instructed me to come into their kitchen. Jerod sits down at the table with me, and Judy pipes in occasionally while she is cooking. Jerod and Judy Lackey suggest that I would probably not be very interested in their farm because they only have 38 cows and have about 200 acres of operating farm land - about 15% of which is in pasture. They raise all of their own feed. The Lackeys are in their early 50s and have 26 years of farm operating experience. They have a tie stall barn, and they recently installed a pipeline system six years ago. He does not use computers, rBST or TMR. Jerod puts
manure directly into the spreader and uses regularly scheduled vet services. He is not very happy with milk price as described later.

Jerod grew up on a farm, but he is not currently on his family farm so he had to counter many financial obstacles to get where he is at - owning and managing his own farm. Jerod stayed in farming because he really enjoys it. He really loves “being out in the country” and with the “animals.” Jerod does some rotational grazing and identifies himself as a grazier, but he does it in a very relaxed/ non-intensive way with rotations about once a week in plots that are quite large (about 15 acres or so). The Lackeys did rotational grazing when they first arrived; however, he and his wife emphasized that they did not take any crop lands out of production but rather the pastures consist of non-tillable land. They get some nutrition after the first three weeks and then they end up feeding them out of the bunk. Jerod did some reading about more intensive grazing, but he has never been to any pasture walks.

Although I kept asking about different management practices, the conversation seemed to gravitate towards different ways of organizing the farm financially. His biggest fear is going into deep debt. Jerod expresses concern over other farmers who are “never going to see the day that they’re out of debt…they’re not very good managers. Every year they’re borrowing 50,000 dollars, would you do that?” He says that they complain that they no longer can handle it on their own. I ask about how to avoid this situation and what advice he would give to young farmers. Jerod responds by stating that farmers should only improve when they are capable financially; instead, focus on using “good old stuff that you can fix yourself.” His attitude about cost minimization is similar to Randy Rod’s attitude. Jerod recommends young farmers follow
these guidelines in terms of book keeping for tax purposes, “I usually try to end up at zero by the end of the month because then you are not killed by Uncle Sam. You are paying your bills, you have an even keel and you’re making a living and enjoying it.” They are able to find creative ways to end up with a net income of zero. Judy, in fact, goes into great detail describing how they can retain more of their income by doing things like having Judy be included as Jerod’s employee so she can deduct big expenses like health premiums. Judy and Jerod seem far more focused on talking about ways of organizing their finances than about different management options.

The social aspect of farm life has some importance to the Lackey’s, but like Andy Son they talk about the broader demise of social support. The Lackeys stress the importance of relationships as they state there used to be more farmers sharing equipment. Judy attends church a lot but does not think there are any explicit connections between church and farming. They do have a group of neighbor friends who get together to play cards. I ask Jerod if they talk about farming at these gatherings. He says, “Yes, we talk [and] complain…Of course, we always complain about the prices, of course we do that. I mean milk is 9 dollars a hundred, it’s pretty hard not to complain.” It was not clear what farming topics they talk about with their friends besides complaining about prices. It is possible that having an outlet to vent frustrations about the economic challenges of the farm makes it more tolerable. This is a possible economic and social synergy. It does not seem like Jerod goes out of his way to get information as he seems comfortable relying on folks such as his farm input supplier as he states, “He knows what he’s doing so I just go by what he tells me to do.” The only farm related meeting he has been to in
years is related to manure management because he was concerned about how some winter spreading regulations would impact him.

When I asked Jerod and Judy to talk about stewardship, they responded initially that it was important to them and they were on a conservation plan. When I followed up with what the conservation plan entailed, they said that they followed the guidelines about crop rotations that all farmers were required to follow. It does not seem like they necessarily take land stewardship ideas too much beyond that, and the stewardship element does not seem to be connected to their management rotational grazing system. They actually let their cattle drink from the creek and have some land in continuous corn (albeit, the land in continuous corn is on level ground). The Lackeys do feel that operating at a smaller size enables them to be better caretakers of their cows because they can get to know each of them individually. The attention he puts on his cows is also evident when he explains why he would never use rBST as he states, “I don’t believe in that. The cattle are like kids to me, why burn em out?”

Staying small also is part of Jerod’s economic approach to the farm because he is able to stay out of debt and keep expenses minimal. It seems that the biggest concern for Jerod is getting out of debt as he talks about how scary it is that so many other producers will never be able to pay off their debts. It seems that the solution to this possibility is to be frugal and creative as to how you fill out your paper work for taxes rather than thinking about management possibilities at a systems level. He plans to die on the farm and it seems like it is a part of his lifeblood. Jerod walks me out and shows me his modest tie stall barn which is a real contrast to the swing parlors I will see on more intensive grazing farms.
Paul Flecker: MIRG Makes Perfect Sense

As I settle into a couch across from him, I am looking forward to hearing the perspective of, Paul Flecker, who is practicing MIRG in a much more intensive manner than Joseph Lackey. Paul has a similar number of dairy cows (35) as Joseph Lackey but also has 35 beef cows. Paul operates 540 acres of farm land. His herd productivity average is about 50 lbs of milk per cow per day. He is in his late 40s and has 25 years of farm operating experience. Peter manages his farm with a friend and lives on the farm by himself. Like the Teiners, the physical condition of he and his partner will impact their decision to transition to beef farming which is less labor demanding. But physical ailments were not a big part of the interview like it was with the Teiners. Paul is very articulate about his farm management decisions and his dedication to the farm. He states that he had a better start than most beginning farmers because his grandparents gave him a good deal on the farm. Paul uses computers and the Internet but does not use rBST or TMR. He rotates his cows about once a day, and he used to rotate twice a day. He generally hauls his farm manure daily.

Paul Flecker shows that he has intertwined oikonomia values that lead him towards farming and to MIRG farming specifically. Paul, like Andy Son, is single so the connection with the farm is more related to the land and its family history than his current family’s well-being. As Paul states, “I lived here all my life…This is a century farm…You kind of feel a connection that way.” Paul did not have any initial hesitations about the MIRG adoption decision as he describes, “really it seemed like it made perfect sense to me…This grazing is just something that has worked good for us and I can see it working for other people.” Paul cannot imagine why he
would ever go back to conventional farming. As he states there are ecological benefits to MIRG farming as it is, “healthy for the land. Of course, any place you are grazing with sod established you are not eroding.”

It makes economic sense to be a good steward when you are a farmer, according to Paul because “you don’t want to mess up your own nest…and the soil is how you make your livelihood.” Randy Rod, conventional farmer, also made this point that there is an obvious interaction between economic and ecological motivations for farmers given the incentive. In addition to ecological benefits of MIRG farming, Paul is conservative about fertilizer applications and does not put on more than he needs.

Paul likes to “keep experimenting” with different farm management techniques. The decision making aspect of farming is an attraction for him. He seems particularly interested in different kinds of information as he states “actually it is amazing the amount of information that is out there…There is a wealth of information.” He goes to a lot of pasture walks and works with extension folks closely. Paul has a road running through his pastureland that for many farmers would be a barrier to implementing MIRG farming. Paul, however, had a cattle chute constructed under the road. The ability of farmers like Paul to counter obstacles, gather information and embrace challenges will be discussed more in Chapter 5.

**Wes Pander: MIRG is the Reason for Farming**

I approach Wes Pander’s farm anxious to hear more about MIRG farming knowing that he will probably be an even more intense grazer than Paul Flecker because I got Wes’s name off of a grazing network list. I pass by Wes’s hybrid car parked outside, and I settle into a cup of tea
while I chat extensively with Wes in his rustic cabin-like house. Wes’s wife, Wanda, worked an off-farm job (which seems common for intense graziers as is consistent with the idea that grazing is less labor intensive). Wanda sits off at a distance and offers a few comments while reading a book. Wes is in his late 50s and just retired from intensive seasonal grazing dairy, where he rotated once a day. He is presently raising beef. Wes had about 40 cows right before he retired from dairy farming but at his peak, he had between 75 and 80 cows. He has about 200 acres of farmland operating and almost all of it is pasture. Wes said that the farm’s milk production was about 60 lbs per day during its peak years. He was using a swing parlor when he was dairy farming and did not have any housing. He probably did not use rBST, computers or the Internet. Wes piles his manure, but he does not have very much to pile because of his focus on grazing, and he never raised any crops.

Wes is highly satisfied with his family’s quality of life and the farm’s milk price, and he had a medium level of satisfaction with net farm income. He and his wife do not have a farm background which is very uncommon on the Wisconsin dairy farm landscape. Another grazier in the network who I interviewed commented on how he admired Wes’s fresh perspective and his ability to contribute new ideas to the group that those who had always been farming would probably never have considered. Wes’s open attitude may be reflective of the fact that he does not have a farm background, so he does not confine himself to certain ideas on how to farm.

Wes describes himself in the “back to the land movement” in the 1970s where a number of folks like him were trying to homestead and live off the land. His first farming venture was in bee keeping before he developed strong reactions to bee stings. Wes then decided to go into MIRG
grazing which he originally did with sheep. He is the most passionate about MIRG of anyone that I interviewed as he states that grazing is the real reason he is farming. For him what kind of livestock he is grazing is not important. They did push more for farm profitability in earlier years when they were milking around 75-80 cows as he states “those were the pushing years.” After they became better off financially they did not have to have focus on production as much. Perhaps in this instance, earlier success in the economic realm allowed them to rebalance the oikonomia of the farm at a later point. Overall, Wes says finances were not a major issue for the family’s survival because his wife worked off the farm.

Wes Pander has a very holistic oikonomia in terms of his motivations to farm and his chosen farm management system. Wes talked about the MIRG grazing system in a way that takes into account the full system like the ecology of the farm and even the farmer’s body. Physical ailments are frequently cited as an issue on conventional dairy farms, and that is part of the reason that a pit parlor system is encouraged. He says what mainly drives the folks in their local grazing group is “more a lifestyle thing.” Wes referred to another guy in the grazing group that he knew I had interviewed, and he stated, “He’s not a money guy. He wants to earn a living, but he doesn’t sit down in the evening and start to look at the Internet at seed costs and futures, that’s not what fires [him up].” In other words, Wes’s grazing farmer friend and other graziers tend not to focus on cost minimizing or single farm inputs. They have a bigger picture in mind. For them, grazing is about seeing the whole picture like a work of art, or as Wes explains his pasture is “the canvas,” and he is “able to create this thing that looks beautiful and is beautiful, just the harmony of it.” Wes goes onto say “I think [for] most of us [in the grazing group] it’s
just a life style or just the beautiful complexity and the ecology of the whole system even including the family.” Wes feels that MIRG is the only way they would have been able to make it financially even though his operation is quite modest. If he was conventional he feels like he “wouldn’t have had a chance.” In contrast, conventional farming is stressful, and Wes sees, “those guys so wound up…the labor, costs, inputs, just all the stress that goes with more machinery. For me it is, some people love it, but for most people, more machinery is more stress.” He is frustrated that despite the problems with conventional farming there are not more farmers interested in MIRG.

Wes is part of a grazing group that is very tight and has lasted longer than some of the other networks as he states everybody “just kind of likes each other and everybody really wants the others to succeed…[there is a] … sense of belonging.” They build swing parlors together on each other’s farms. Wes says that these joint work projects bond the group together, and they all want to help each other do well. The grazing network was establishing about the time that Wes started dairy farming, so he was able to obtain information from experienced dairy graziers. We conclude the interview by discussing faith connections to farming, and Wes is one of the most articulate farmers on this subject. He relates it to a branch of Catholic theology where “things are to be taken care of in the smallest unit possible” which he relates to how he farms. Wes states that his faith cannot explain why he farms, but it “has everything to do with how I farm and why I farm the way I do and I couldn’t even begin to separate the two.” He feels like his farmland has been improved by MIRG farming.
He is an atypical farmer in that he has open mind about many aspects of farming. Wes is also unusual because he was motivated to farm because he loved grazing so much whereas most of the other graziers transitioned into the system from conventional management. He like other grazing network leaders is unsure about the future of the grazing movement. He ended the interview by emphasizing the synergy between the spiritual and ecological dimensions of his oikonomia by stating, “And another thing that is fundamental, is that the land does not belong to us and that it never has.”

**Nick Nader: Most Farmers Can Do Grazing**

Nick Nader, like Wes Pander, is highly involved with a grazing network. I interview him at his work place where he is employed full time. Nick Nader manages a farm with around 200 dairy cows and 230 acres of operating farm land which is mainly in pasture. He is around 50 years old. He did not really mention his wife’s level of involvement in the farm, but I am gathering that she had an off farm job. Nick’s farm is very similar to Wes Pander’s farm in terms of structure and involvement with grazing networks. Most of what he discussed involved trends on the farm landscape in terms of adoption decisions of MIRG and organic. We discussed less about the details on his individual farm, so this narrative will be relatively brief as a number of details need not be described. Nick is convinced about the merits of the grazing system relative to the organic system. He compared his system to organics even well before I ask him about organic farming. He talks about his quality of life on the farm by stating, “Things are just great. And they’re continuing to be great. And even when they’re not great, I don’t have to screw around with being organic. I love it, organic sucks.”
Nick Nader is included here because he has a lot to say about reasons to not go organic and about bounded rationality issues related to why others do not adopt MIRG farming discussed in Chapters 4 and 5. Grazing is often about specializing and the intensive graziers in his area purchase their feed. From the grazier’s perspective, because they are dairy farmers, it is much cheaper for them to buy the corn because they “couldn’t even come close to raising grain for that low a price.” The graziers also minimize these expenses by reducing the amount of grain they feed their cows. Nick feels like MIRG farming would be a strategy that would improve the economic and ecological situation for most farmers, and he is frustrated that more farmers do not adopt MIRG farming. He describes the challenges in ways that would suggest bounded rationality thinking on the part of many farmers. These issues will be discussed more in Chapter 5.

**Summary: Oikonomia of Graziers**

Overall, the graziers’ oikonomia framework is quite multifaceted, reflecting all four dimensions of oikonomia discussed in Chapter 2. MIRG is a systems based movement that emerged for economic and ecological reasons and spread due to the influence of grass roots social networks and information exchange. For graziers like Wes Pander, production levels *per se* are not a big deal in the grazing movement. In terms of economics, intensive grazing is more about systems based unit cost reduction. Thus, there can be a positive synergy between economics (in terms of cost reduction) and the agro-ecological dimension. Recall that small scale conventional farmers are also concerned about cost reduction, but it is often more about finding the best deal on conventional inputs (as implied by Wes Pander’s discussion). There is
evidence in the conservation literature that the potential for increased long-term profits may be the most important motivator for switching to conservation based practices along with the sense of personal satisfaction that can be achieved (Chouinard et al., 2008). Overall though, there are perceived lifestyle benefits to practicing MIRG that go beyond economic benefits and link to broader household goals.

There is a lot of variability in how intensely MIRG is practiced and the respective oikonomia framework of different grazing farmers. For some farmers like Wes Pander, MIRG defines them, and they would not be farming if they were not embedded in that movement. High intensive graziers are very excited about their management system as it seems to make sense to them on so many different levels that they wonder why other farmers do not consider the system. However, the low intensive graziers like the Lackeys did not seem to associate their oikonomia values much with a MIRG identity. It seems that both the lower intensive graziers and some of the conventional farmers had an overlapping message that management system \textit{per se} is not that important. The Lackey’s focus on cost reduction is similar to that of the smaller conventional farmers, and they tend to focus on finding the best prices or reducing the quantity of these inputs. Or in Joseph’s case, this cost reduction approach is lived out by filling out his taxes in a way that reduces tax payments. The conservative view of not making what are viewed as unnecessary purchases is practiced by both small conventional farmers and graziers. Intensive graziers also reduce their amount of conventional inputs but it is more as a part of a systems based change rather than an input by input focus.
The ecological realm is generally important for intensive graziers, as the system inherently combines ecological motives with cost minimization. For example, graziers generally do not use a lot of chemicals. Paul discusses the economic incentives for farmers to take care of their land. Many of the graziers stress the connection between the economic and the ecological realms. As outside research states, long-term productivity at least on the horizon of the individual farmer can be impacted by their stewardship practices (Chouinard et al., 2008). Graziers often feel that there are ecological benefits to the intensive grazing approach, and Wes even compares his pasture to a work of art.

Intensive graziers also seem committed and proactive about information seeking in the same manner as large scale conventional farmers like Larry. But, they are doing something different than the mainstream, so they have to get support from places such as grazing networks. Grazing networks are very important to some of the intensive graziers, and they integrate social and ecological dimensions of oikonomia. Grazing networks bring people together for fellowship and also provide an avenue for the exchange of local knowledge that may be ecologically appropriate for a given microclimate (Kloppenberg, 1991). Although not mentioned explicitly by the narratives presented, a number of graziers commented on the inadequacy of conventional information sources, and the negative peer pressure they experienced in the early days. Negative social pressure can serve as a conflict between the social and the agro-ecological realm. This peer pressure has declined significantly but not entirely, and the grazing networks still serve as social support.
The most intensive graziers like Nick and Wes praise the multiple oikonomia merits of the grazing system. They talk about the stress of the conventional system both economically and physically. Some graziers feel that the management system is better for the farmer’s physical condition. As graziers, they are puzzled as to why more farmers do not consider adopting this system given the economic and environmental benefits. They think the reasons may include a conventional focus on high production and an excessive reliance on corn as well as simply not considering systems with many unknowns. Some of the intensive graziers also state that farmers will be most successful with the grazing model if they adopt it in the most intense way with frequent rotations, astute pasture management and adopting a swing parlor milking system. At the same time, graziers also emphasize the flexibility and the user friendly nature of the grazing system. Graziers are clearly satisfied by the multiple positive dimensions of the grazing system.

**Oikonomia Framework amongst Organic Farmers**

Like MIRG farmers, organic farmers have multifaceted and interconnected oikonomia motivations for farming organically. The different organic farmers\(^\text{16}\) presented here demonstrate how the motives to go organic are intertwined, and there can be multiple positive synergies between different oikonomia realms (e.g. low-cost motivations, organic price premiums, ecology, and family health and economic crisis). The Cranks will give a powerful testimony about how a cancer diagnosis leads two farming brothers into organics. Also, social dynamics

\(^{16}\)Please note that this selection of organic interviews is not a totally representative sample as none of the organic farmers in the narratives are practicing MIRG at any real intensity. However, overall 46% of organic farmers in the survey (2004) were rotating more than once a day.
are important in positive and negative ways in how farmers view different farm management systems, and are a key element in many of the farmer’s narratives. The narratives are presented roughly in a historical timeline to illustrate the context in which farmer’s system choices interact with their oikonomia. For example, early organic dairy farmers often wanted to move away from agricultural chemicals for both ecological reasons and cost reduction motivations, which they summarize as eliminating their “dependence on agro-industry.” Like Scott and Sally Smith, who converted in the 1980s, a number of these early organic farmers were already producing organically before there was much, if any, price premium. This section ends with the Sert’s narrative, who like other more contemporary converts to organic, are primarily attracted to the organic price premium and stability and perhaps less to the other oikonomia motivations at least initially when they first convert to organic.

**The Smiths: One of the Early Organic Pioneers**

I settle into the Smith’s comfortable living space to hear about the historical context for the organic movement in Wisconsin, and their personal story on the farm which they have clearly shared with many other eager listeners. Their excitement about organics and their proactive nature despite many challenges was palpable. Scott and Sally Smith are the earliest converts to organic dairy farming among the farmers I interviewed. They had just recently retired from dairy farming. The Smiths are in their late 60s and trained another young organic dairy farmer who is now farming on the Smith’s brother’s farm. The Smiths had 45 cows and 200 acres of farm land operating with about 50 pasture acres before retiring. The Smiths do not practice
management intensive rotational grazing, and they do not use computers. Scott piles his farm
manure, and they have a stall barn with a pipeline and a tie stall or a stanchion barn.

The Smiths start talking about their farm history by stating that when they were
conventional, “we were spinning our wheels here with the costs of inputs...‘so’ even though our
prices went up [in the 1970s], we weren’t making more money.” The Smiths went organic in
1980 and even though there was not any market premium at that time they state they could make
more money because of this low cost approach. The focus on the reduced cost approach is
illustrated further by the following quotation:

“We had our [farm] pretty well paid for and we were never in deep debt and one of the
reasons for that is we never really went out and invested in anything new. A lot of these
young people have to get everything new...It’s hard to tell people that it isn’t the money
you make; it’s the money you spend. ’’

Although the Smiths give a low cost motivation for organic adoption as well as for their ability
to keep their farm alive, there was clearly a lot more to their decision. Sally talks about Scott in
a way that illustrates the integrated nature of his decision making:

“Scott is an altruist. He does the right things for the right reasons. He thought it was
the best thing for the cows, the best thing for the land, and it didn’t matter that we
didn’t get any more for our milk, he thought it was the right thing to do and he did
it...what’s good for the planet, the air, the cows, and your family.”

This statement illustrates that Scott Smith emphasizes the ecological and social dimensions over
pure economic reasoning in his farm management decision making.

There was almost no information available about organic/low input agriculture when the
Smiths converted and there was a lot of negative social pressure. As Sally states, “People would
just laugh at us and they would mock, ‘I think I’ve got some pamphlets back from 1940.’” These
statements indicate that other farmers viewed organics as a way of going ‘backwards.’ To the extent that organic management does in fact require historical knowledge, it probably helped that Scott Smith grew up with organic management practices as he had some pre-Green Revolution farm experience given his older age at the time.

The Smiths were one of the earliest organic farmers in the area so people were coming to them for information. They have been very involved in outreach and research especially through an organization known as the Wisconsin Rural Development Center which is now no longer operating. They probably forged some unique social bonds with the few pioneers who were active at the time. They felt that they were “pretty successful about how we got the word around about organics with pasture walks and doing some local grassroots organizing, getting our neighbors involved.” Organic Valley (OV) / Coulee Regional Organic Produce Pool (CROPP) started eight years after the Smiths had been managing organically. The Smiths state that “it was a group of same-minded people…It was fun and exciting.”

Local knowledge and tight social networks played a big role in the Smith’s learning about organic agriculture as the University and industry were not supportive. As the Smith’s explain “We learned by our own mistakes and we learned from our neighbors...everybody was doing their own research.” They spoke of their ability to show that both significant yields and nutrient balance was possible with organic management. For example, they were able to show that 160 bushels of corn was possible. They wanted to build up the support for more organically managed systems so that eventually, the “university was dragged kicking and screaming into it”
as they felt that the University was primarily focused on research that was not useful for small family farmers.

The Smiths also had a stewardship/spiritual dimension that may have been connected to their alternative agriculture practices as they were active in Churches Center for Land and People, an organization involved in bridging these connections. But the Smiths have not been active for quite some time because they felt that the group never evolved past a certain point in terms of topics discussed and activities. Though it was clear the Smiths had not really kept up with the recent developments of the organization so their ideas were formed based on an earlier era. They had been highly involved in a church but have not been active because they did not feel the church was focusing on important issues. The essence of these connections between social and spiritual values and land stewardship is clearly important to them and they seem more able to articulate these connections than many of the other farmers.

The Smiths clearly have an experimental/entrepreneurial spirit and enjoyed learning from experience and their neighbors. Further, they are flexible with complex systems despite the lack of support from industry and the university and extension. Mr. Smith’s proactive temperament can be expressed by the following statement:

“I told Sally that I’d quit farming when I got the far end of the field to produce as much as the front end of the field. I felt that we accomplished that over a period a few years because we just concentrated on doing things differently and that’s what sustainable ag. is.”

Scott Smith’s love of challenge is connected to his stewardship goals as is evident by the above quotation. The type of farmer who is able to counter bounded rationality issues, information constraints and other challenges, is discussed more in Chapter 5. Though personality can only
partially explain farm decision making behavior as the context of the farmer can change and as a result their oikonomia and bounded rationality issues may also may shift. The Smiths were driven by ecological motivations and cost minimization as well as the desire for farmers to be free from the agro-industrial complex that was taking a hold at the time. Although the Smiths represent how the organic adoption history is tied to reduced costs, a number of other converters to organic (especially the earlier ones) had dramatic stories of adoption where they went through a paradigm change instigated by a problem situation. However, it is important that the economics is intertwined with other motivations like “doing the right thing” as well as a persona that loves a challenge.

**The Crank Brothers: Health Crisis and Family Solidarity**

The Crank brothers adopted organic practices in the mid to late 1990’s over a decade after the Smiths converted and with different motivations. I did not connect that these two fellows were brothers until after I scheduled the interviews, so I had two separate but similar perspectives on their story. Ben and Dan, in their 40s, own two separate farms which are each around 45 cows, but they share equipment and they farm some rented land together. They and their spouses both work full time on the farm; they both grew up on a farm. The Crank brothers have milk productivity levels at about 60 lbs per day and each have around 40 cows. Ben farms about 215 acres, and Dan farms around 125 acres and only a small fraction of either is in pasture. The Cranks both have a stall barn with pipeline for a milking facility, a tie stall barn, use TMR, store manure in a lined structure and do not practice MIRG at an intense level. They are both fairly satisfied with net farm income, milk price, time off, herd health and family quality of life.
In 1988, Ben stopped spraying because he was diagnosed with cancer, and he “wanted to get away from using the chemicals and the harsh fertilizers and stuff like that.” He had read a study from Michigan State at the time that linked his type of cancer to pesticides. Ben felt that pesticide exposure may have contributed to his cancer because he sprayed chemicals and did not wear any protective clothing. Thus there is a synergy between his health (the economic dimension) and the agro-ecological dimension (spraying pesticides). Ben converted to organic farm practices prior to his brother. Dan had some initial questions about organic that held him back from converting, like many other farmers, such as, “What is organic? Why is it better?” But a few years later after Ben converted, Dan decided to go organic as well after “seeing [that] some of the things Ben was trying were working.” Ben states that having other farmers demonstrate that organic farming works is “what changes people's minds. If you can [get] them to try things, then they can see some results…They might say well maybe I don't need to spray.” Ben later expresses that it is unlikely to change people’s minds just from talking alone rather farmers need to see how things work in an experiential way.

Ben and Dan were on a high production and high input model in the 1980’s following the advice of agro-industry. As Ben states, “Their goal is to get 90 lb average... basically at all costs. We were kind of in that track too, focused on production.” Bonnie, Ben’s wife, adds more context by stating, “We were young… We were just starting out and trying to make as much money as we could. There was that pride with having that high producing herd, that’s what’s important.”
Both brothers indicate that in terms of management “there is a weaning stage to get out of conventional to organic.” The real time it takes for the land to adjust as Ben states is not a set time “like it is 2 years…3 years. It takes some time to change it over. It just like a person's body, it takes awhile to wean [it] from one type of living to another type of living. It is just a process.” Ben continues that their system is working much better now than when they first started managing organically. Now they do not need to use the inputs they were using at the beginning of the transition to organic which consisted of “homeopathy and tinctures.” Part of the struggle of their transition may have been attributed to the kind of high production model that they were previously working under, where as Ben describes “We used to have so many milk fevers and so many ketosis problems.” In contrast now, he proudly states, “We have none absolutely none now.” This indicates that there may be positive synergies within the agro-ecological realm between their management system and the improved health of the dairy cows.

Many conventional and grazing farmers are concerned with how they are going to manage herd health issues organically, as Ben states “that was the big scare with many of my friends that have converted to organic, [like my brother] Dan, anybody…[they proclaimed] ‘you can't do it. You can't control mastitis.’” Ben gets a kick out of the fact that when his friends ask him about mastitis with organic management he can now respond by staying that “I have virtually none. It is fun.” Ben declares laughingly, “we are letting [our cows] be themselves. Be who you want to be…we are to the point now that it is just a blast to milk cows. It is just so much fun.” They also have not totally given up their attention to productivity as Ben states, “[The cows] are really responding well to the system. We are at 21,000 lb herd average…and
actually our livestock numbers are up. We have more livestock numbers than we ever had.”

Overall, he feels that the organic system is superior in a number of ways as he states “[Put it this way] if I couldn't have the organic price out there and the market. Would I go back to conventional? Never...because I enjoy it and I believe in it and it works wonderfully.”

Ben states that in terms of information about organic, “ Seriously, in the early 90’s there was nothing else out there.” Midwest Bio Ag was very influential as an information source for the Crank brothers during the transition process especially considering there were few other information sources around. There, they learned, “the key to any type of farming is you start with [fertility] with good nutrients balanced, you are going to get a good crop... [and] your cows will be healthier.”

Ben is enthusiastic about illustrating that organic farming is possible and that they are doing it successfully. He feels that there is a negative impression of organic that is out there in the mainstream farming culture. They feel that this is partly attributed to some organic farmers who “create that image if you are farming organically you are not going to get good production...the idea of organic by neglect.” Ben describes that these folks think that “because they woke up one day and they don't put nothing on their farm” that they are organic. But Ben feels strongly that organic is not about what you do not do but rather, “To be organic you have to be a good manager.” He emphasizes the proactive nature that is necessary for success in organic farming.

Ben depicts the negative social pressure against organic when he describes how he overhears conventional farmers “talking about so and so and they are organic. Sometimes you
feel like what a black person would have felt like in the 30’s and 40’s.” His wife says with a
laugh, “maybe not quite that bad.” But Ben interjects, “but they are kind of shunning ya…There
are some that say. I'll quit farming before I go organic they'll say that to your face.” Ben goes
onto say that some of the farmers are envious about the high organic pay prices, but Ben always
responds to this sentiment by stating, “the only one stopping you from getting that price is
yourself...it’s a free world.”

Although Ben states that these negative attitudes persist, he currently does have a positive
social situation. The Cranks sometimes go to Midwest BioAg meetings, where “You can sit
down at a session and if you don't ask a question someone else probably will. Sometimes you go
to the meetings [and] you get more excited about what you’re doing.” The Cranks have been
active building up the social networks in the area. Dan states that because their farm land is on
the main road, “the neighbors could all see us and so then there were some followers.” In other
words, the Cranks influenced some of their neighbors to switch to organic. As Ben describes,
“When I started they thought I was nuts. They thought I could never do it…We have always
been close friends and it makes me feel good that they are happy that they made the change and I
maybe had something to do with convincing them that it can work.”

There is a social/spiritual element to some of this interaction as Ben’s close friends are all
involved with his church as he states, “We are pretty close. We see each other every week and
we’re talking all the time about [farming]. The church is very important to all of us up here. We
are all very active in it.” The faith aspect of their lives is evident as you could see a painting of
Jesus above the piano and a cross on the wall of Dan’s house. They feel the spiritual element ties
in with how the farm bonds them as a family. But when it comes to the organic adoption decision, they state, “It is not that specifically connected.” The family emphasis is evident as Ben Crank’s interview ended with Bonnie rushing around trying to get dinner ready and asking me if I was almost done with the interview. I leave thinking about the central family focus of the Cranks’ farms especially as Ms Crank highlighted how the sign out front says that it is a family farm and that they all work like “cogs in a wheel” to keep the farm going.

The Crank brothers were motivated by a health crisis in the family which led them to reconsider their use of chemicals on the farm. The Cranks initial concerns with pesticides seem to be primarily motivated by individual welfare concerns rather than wider ecological issues. Thus, their initial motivations may be more accurately categorized in a broader sense of economics since their own self interest was at stake though there are clearly broader connections to these wider concerns like the ecology of the system. They attribute the success with organics to the positive synergies in the organic system (which will be discussed more in Chapter 4) as well as their active management style (discussed more in Chapter 5). The family connection roots the Cranks to the land and to the farm.

**Devin Dooley: Organic as a Survival Strategy and Courted into Organics**

I was grateful to be sitting at the other end of a desk at Devin Dooley’s off-farm job as he tells an organic adoption story similar to the Smith’s that was based on the need for a low cost solution to economic challenges. Devin Dooley had been very difficult to schedule for an interview as he has many demands on his time. Devin Dooley and his family live on the same dairy farm where he grew up. He spends about 50% of his time on the farm. He farms with his
brother who also lives in a nearby house. They have 80 milk cows and 140 cows total, and the cows produce at 55 lbs/per day. Devin is in his late 50s and has been operating the farm for 36 years with around 400 farm land acres and 80 acres in pasture. He does not use TMR, regularly scheduled vet services and does not practice MIRG but does store his manure in a lined structure. Devin is very satisfied with his family quality of life, and he is fairly satisfied with milk price. He has a medium level of satisfaction with regards to net farm income and herd health.

Devin states that what really motivated his family to adopt organic practices, like the Smiths, was that they were struggling financially. Although for Devin, unlike the Smiths, they were able to achieve higher pay prices in addition to reducing costs. Devin had converted to organic in 2003 but had actually been managing that way for four to five years before that. As conventional farmers, Devin states that “economically things were so tough that we were three years behind on our taxes.” They were not able to afford to buy inputs like herbicides and pesticides. He felt at that point that based on economics, they could either “get a lot bigger, get out, or go organic.” He felt that he was too old to make investing in the infrastructure to expand substantially an economically feasible option. It seemed to be a natural transition to go into organic farming because they already were not using as many conventional inputs.

Devin also said that organic farming was something that originated in his neighborhood. Like the Cranks, Devin refers to some of the social stigma against organic farming at the time. Devin and his brother are highly regarded in the conventional farming community as they were once in the high production mindset and were heavily involved in the community. Devin feels that they may have been courted specifically by Organic Valley because of their positive
reputation in the community so that “maybe a lot of other folks might see that and think well I guess it’s okay, those guys decided to make the switch.”

Devin is very happy that he switched to organic because he feels that his “bottom line is a lot better.” He admits that it is costing them “a little more to buy the feeds because [we are] organic. But we were buying before too.” He feels that their expenses have shifted because they are saving on vet bills and on chemicals and “those things have been very helpful.” Devin says that they are “thrilled that [they are] producing organic now.” In contrast, Devin, like Wes Pander, talks about the stresses of conventional farmers:

“It almost pains me to look at some of the guys that are my age who farm their whole life and are still struggling so much...The economics of conventional dairy farming is just very stressful, there’s always the cyclical thing of the high prices... and mostly low prices...the up and down and the uncertainty of things.”

When I ask Devin why more farmers do not go organic considering the bleak state of conventional farming, he responds by stating that conventional farmers are often concerned about herd health management. They wonder how they are going to manage mastitis and other herd health issues in an organic system. Devin acknowledges that “those are legitimate concerns,” and he admits that he has had to treat cows and sell them for meat, but he only had to do that three or four times. He states that he just deals with these problems as they come in a very matter of fact way.

Although he did not mention it, Devin must have accessed some information when he was transitioning to organic farming as he has organic farming neighbors. But currently, it seems that he has very little time to access and process information. Since Devin has an outside job, and his wife has a high stress job, there is not much time for learning and experimentation.
Devin would like to do more management intensive rotational grazing, but he says he just has to take the time to learn about it and set it up and he has not found the time yet.

Stewardship has always been of value to Devin, and he even won a conservation award. He bemoans the changes in the land because of conventional agriculture practices as he states “putting herbicides and pesticides on the ground year after year after year you’re going to destroy a lot of life that has an important function.” Devin remembers seeing a lot of worms and snakes when he was growing up on the farm and then it got “to a point when you didn’t see them anymore.” Devin has faith that the land will be improved through organic production to how it was when he was growing up.

Despite Devin’s satisfaction with the farm, he also enjoys his off-farm job and not working on the farm all of the time. Currently, the future of the farm is uncertain as it is not clear if his kids or his brother’s kids will be interested in taking over the farm. It was a quick interview as Devin needed to get back to work, but I was grateful for the time I had to hear his story.

Devin Dooley is an example of a more contemporary version of the Smiths as they were also on a cost cutting mission when he and his brother started on the organic pathway. It sounds like their economic situation may have even a bit more economically challenging than the Smiths. Even though the Dooleys did have this cost cutting mission, it is clear the price stability of the organic market was also a motivating force. Also, Devin had encouragement from Organic Valley given his prime location and positive social position in the community. Devin has ecological motivations intertwined with the economic motivations as he hopes that organic
management will bring back the wildlife that he enjoyed as a child. Devin, like the Cranks, is pleased with the positive agronomic synergies with the organic system. For example, Devin and the Cranks feel their cows are healthier as a result of organic management.

**Matt Drake: I Once Didn’t Sit with Folks Talking the “O-word”**

Similar to Devin Dooley, I interviewed Matt Drake at his work place, and he also had a difficult time making the economics of the conventional system work even with an outside job. Matt officially converted to organic farming about a year after Devin. Matt does some part time agricultural support work and his wife works off the farm. Matt Drake is a smaller farmer with about 30 cows with 90 acres of operating farm land and 20 acres which is in pasture. Matt has a milking facility that is a stall barn with buckets. He manages his farm manure with daily haul and rotates his cows about once a week. Matt does not use computers. He was extremely dissatisfied with net farm income, milk price, time off, herd health and family quality of life when he filled out the survey. At the time he filled out the survey, he was managing his farm conventionally (albeit pasture based) and it seems as if life had improved for him dramatically under organic management.

He was steeped in a conventional mindset which made sense to him until about 12 years ago when he decided that he did not feel comfortable with where he was both economically and ecologically, and he was looking for alternatives to the conventional system. When he found out about Midwest Bio Ag and the principles of biological farming like focusing on soil nutrient balance and not pushing the cows for more production, it made a lot of sense to him. Matt talks about the conventional system and how they push their cows for high production at the expense
of herd health which Matt and his friends refer to as the “burn and turn theory.” For him, it was an “an easy sell going from conventional to biological;” thus, he moved into organic farming. He states explicitly that his motivations for converting to organic were 50% economic and 50% environmental. After managing the farm biologically for a few years, Matt recognized there were improvements on his farm, and he was pleased that he was “not pollut[ing] streams and rivers…[our] drinking water.”

He is happy with the economic aspect of organic farming. This thinking towards an organic system was also intertwined with economic motivations because as Matt states even when he was getting started, the organic premium “was about $3 a hundred weight more” which was not that big of a difference and the organic prices were more stable which made it a lot easier to plan. Now that there is a more substantial pay difference for organic, it makes it possible to “go out to eat if you want, maybe take a couple of days off if you can find someone to milk. Whereas before, you were just trying to make ends meet maybe living off of your savings account if you had one.” He goes onto say that “It is just a hell of a way to live when you work that hard.”

At the beginning, however, when Matt first started attending the Midwest BioAg meetings he was not comfortable with socializing with organic people much. He stated when “I heard the O word, [then]…I joined the other table. Pretty soon, I joined that table and I got a wealth of information.” Initially, Matt had stereotyped images of organic farmers that were based on the early organic movement which he thought were “guys in the ponytails and the flip flops and the ripped shorts.” More recently, however, Matt sees that “there are a wide variety of
people practicing organic farming for a wide variety of reasons,” and he thinks that is a good thing and it makes him comfortable to be a part of it.

Matt learned a lot through the process of transitioning to organic farming and feels that it is necessary to be proactive in management. Matt like the Cranks also refers to “lazy organics” and how you have to be a good manager. Matt says that similar to conventional farming, there are “good organic farmers and bad organic farmers.” Matt refers to another farmer who had not fertilized since he converted to organic farming 10 years ago and his corn really was in poor shape. Some farmers think that when they go organic they do not have to use any inputs which is not true, there is active management involved according to Matt. The land like the farmer changes in the process of going organic. Matt enthusiastically compared converting the land to organic to getting a human body off of drugs. This was similar language to the way the Cranks described the process.

One common complaint against organic is the extra labor required, but Matt argues labor issues may be more a matter of choice/convenience. Matt figures he spends 20 hours extra cultivating with an organic system and “essentially that is the only thing I am doing different management-wise or time-wise. It takes the same amount of time to milk the cows, to get up and to make the hay.” Matt is also alluding to how farmers may focus on a particular aspect of their farm like a few hours saved in tillage. Labor issues on organic farms will be discussed more in Chapter 4, and this kind of focus or anchoring may lead farmers to lose sight of the larger context of their situation which will be discussed more in Chapter 5.
When I asked about connections with the farm and Matt’s church life, he states that he heard a sermon at his Dad’s funeral about the critical parable of the man who stored up his barn with grain. Matt states that was one of the first things that “really tripped my trigger”. He connects the sermon to the idea that you should always keep learning and making improvements both personally and professionally. Matt exchanges a lot of information with other people, and he says that organic farmers are really open about sharing information and he really loves to keep improving by learning from others. In contrast, Matt feels that conventional newsletters are not that useful and that they keep discussing about the same things. He does not find that same desire for learning in the conventional farming circles. Matt like Devin also wants to learn more about MIRG farming, but he has not found the time to do it.

Matt, like Devin and the Cranks, had a shift in his oikonomia framework towards organics. After Matt was introduced to the ideas independently of organics specifically, he saw that it worked economically and agronomically. Devin really likes how open the organic movement is and the information intensity of the systems approach. He is anxious to learn more, and he even connects the desire to improve and to learn with the spiritual dimension of his oikonomia framework.

*Tom and Jerry Sert: An Unexpected Convert to Organic*

I approach a farm similar in scale to Larry Wagner. When I had called the Serts to schedule an interview, I was surprised to find that they were in the process of going organic. They do not fit the typical picture of a convert to organic given their size and their confinement system. But the interview has a totally different tone than Larry’s as I chat with father and son
around a kitchen table. The Serts are the most recent adopters and they provide an interesting contrast to the Smiths as well as the other organic farmers who converted earlier. The Serts are still transitioning to organic at the time of the interview. Tom, the father who is retiring from farming, and Jerry, the son, who has become the primary decision maker are eager to share their story and it is an especially rich interview having both the father and son present. The Serts, like the Smiths and the Dooleys, also were immersed in a challenging economic situation, but they had much more invested in the conventional system.

The Serts were conventional when they filled out the survey and had a productivity level at 70 lbs/per day at that time. They have well over 200 cows with 900 acres of farm land operating which is a large size operation for this part of the state. Jerry is in his early 40s and has been operating the farm for about twelve years with his Dad. He has a pit parlor in an old barn for milking equipment. The Serts use computers, the Internet, rBST, TMR, regularly scheduled vet services and store manure in a lined structure. As stated earlier, the Serts are atypical converters as they were not set up well for organic farming. The Serts were more focused on high production even more so than when the Cranks and Devin were engaged in conventional farming. The Serts are more comparable to the Teiners and Larry Wagner in their use of technology and their focus on production. They were following the high production recommendations of extension and industry. Overall, their interview reveals a lot about issues in adoption decision making.

The Serts are also a good example of a later adopter who seems to be primarily motivated by economics. As Jerry states “One of the reasons we are getting into the organic milk market
[was the] the up and downs of the conventional milk market with no stable milk price.” The organic market, in contrast, “doesn't go up and down so you kind of plan a little more.” However, it is clear with the Serts that it is more than economics that is motivating them as is probably the case with other farmers who converted more recently. The Serts are enthused about other elements of going organic even the pasturing element as he states, “I am kind of excited about grazing the cows. I think it will be better for the cows.” The Serts point out that those farmers who are motivated primarily by economics are weeded out in the transition process because this period is very challenging economically. Although the stewardship element was not discussed explicitly, they were excited about the pasture component of organic as well as having a farm management system that made them more independent from agro-industry than they were as conventional farmers. They feel the transition period is what can break farmers, “but if you can make it through…and you are a good manager. You are going to be okay.” They state that their milk production “plunged tremendously” in the first part of the transition but now the production levels are rising again.

Farming friends played a pivotal role in the Sert’s adoption decision process and their encouragement was probably helpful in getting them through the challenging transition process especially considering their former conventional structure. Some of the Sert’s organic friends were particularly persuasive because there is an Organic Valley processing plant very close to the Sert’s farm. The Serts, like Matt, had some initial reservations towards going organic. Their friends had encouraged them to convert several years ago, but the price was not high enough for them and with their size they were not ready as they state to take the “big plunge to make the
switch and you have to have a mind set in that direction.” He said that they eventually had enough low prices that they re-considered it. Their organic friends took them to another large farm that went organic, so the Serts were able to identify with that farm and learn from their experiences. It is pivotal for farmers to see a farm that is similar to their own make the switch to organic. Jerry’s wife, Laura, also was focused on the idea that organic and conventional milk are the same in quality. When they had their organic friends over to talk about organic dairy more recently, Laura “loved everything they had to say and she said the final question is. ‘Is your milk better than ours?’” Since their organic friends said that organic milk was not any better, Laura felt okay about adopting organic practices. This focus on equivalent milk quality as a reservation against going organic will be discussed further in Chapter 5.

It seems like the organic adoption decision caused them to shift their social circles to some degree. Tom talks about how members of the dairy promotion committee were giving him a hard time about organics by stating that “organic farming was leading to destruction of the rainforests in South America.” Tom feels that these conventional arguments are not very valid and that really “they don't want to see that change because it is going to interfere with what they are doing.” In contrast, when Tom and Jerry discussed their relationship to their group of organic friends after they decided to go organic, they stated proudly that, “Yeah I am in now. I am in now…He told us that we were in now because you were going to go organic.” It was clear that the sense of belonging was important to the Serts.

The social element is really important to the Sert’s story more so than economics and ecological realms, as their friends convinced them to go organic (this was true for some others).
They were excited and joked about the organic clique. Farmers may not want to switch to another farm management system if it means straining and or sacrificing relationships with friends and family. Different farm management choices like organic farming can lead to social divisions as will be discussed more later in Chapter 5 and 6 (Bell, 2004). Organic farmers may be more willing to experiment and leave old familiar social networks (de Buck et al., 2001; Padel, 2002).

**Oikonomia Summary of Organic Producers**

Organic producers have a multi-dimensional oikonomia framework very much like intensive graziers. They also have the same kind of excitement with their system, if not more so. Almost half of the organic producers stated or implied that they would not be farming if it was not for organics. Although the initial motivations of organic farmers towards their farming system can appear similar to that of conventional farmers, they articulate a more integrated oikonomia framework overall. For example, Matt Drake states that his motivations fell into the economic and ecological spheres of oikonomia in equal proportions. Organic farmers are pleased with the economic benefits such as cost reduction and higher prices. They also talk about the problems with the conventional system such as the stressful cycle of ups and downs in prices and the “burn and turn theory” where cattle get worn out with the high input system. These problems can be a burden on the farm and the farmers.

The cost reduction theme amongst organic farmers, like the Smiths and Devin is similar to small scale conventional farms and graziers (and the Amish as will be discussed in Chapter 6). Some of the organic farmers state that the organic system is a way for small farms to survive.
Kerry Martin (cf. Appendix IV), a young entering farmer, says that organic is a way for him to be able to start up as a new entrant in dairy farming which he would not have been able to do as a conventional farmer. This is because it can be a relatively low cost way to start and because of the benefits of the organic price premiums once you are certified.

The oikonomia framework for some of the organic farmers was shaped during a crisis and/or through close contact with organic farmers more so than with conventional or even the graziers. Some organic farmers initially had a productionist framework, although they all, with the exception of the Serts, were pasture based before going organic. Dan Crank was more convinced about the benefits of going organic after seeing his brother do it, and after he experimented with it himself. Matt Drake eased into organics despite some initial prejudice after practicing biological farming. Some of the organic farmers like Teddy Packer (cf. Appendix IV) were motivated initially by economics, and then were later convinced by other benefits such as improved soil and animal health reasons. In addition to economic crisis, personal health crisis has also led farmers to organic practices as illustrated by the Crank narrative. Two other farmers mentioned knowing a relative or friend with cancer which motivated them to question the safety of chemical application on the farm. Some other farmers mentioned less dramatic health/environmental connections with their conversion to organic farming, such as one farmer who had headaches while spraying chemicals.

Earlier organic converts to organic farming like the Smiths may have started with deeper philosophical goals than the more recent converts (e.g. (Duram, 2000; Flaten et al., 2006; Lunneryd, 2003). The organic option has appealed to many farmers’ values of keeping costs
low. This is evident in how the Smith’s contrast their frugal values with young people who want to get everything new. This is parallel to the cost reduction theme of intensive grazing discussed earlier as well as the cost reduction focus of smaller conventional farmers though they tend to focus on specific inputs rather than a systems wide change that may reduce costs. Although the literature refers to later adopters as being more motivated by economics, perhaps it would be more precise to say that earlier adopters had more a low cost emphasis whereas later adopters were more focused on the higher and more stable prices. There may currently be more farmers who are attracted by the higher and more stable price premiums than earlier days.

However, newer organic farmers also have integrated other oikonomia motivations for pursuing organic farming. This is demonstrated when Tom Sert states, “farmers who are purely motivated by economics would have a difficult time getting through the transition process.” For example, Tom was very excited to get his cows on pasture, and it was clear they seemed to have decided the production did not make sense on multiple levels. (Most farmers who convert to organic were pasture based farmers prior to going organic with the exception of the Serts.) Another recent convert said she was motivated by the higher prices, but she also was not much into chemicals anyway. There are often multiple reasons why farmers convert to organic and MIRG that are often interwoven together.

It is important to be proactive and astute when managing organically. Matt Drake, the Cranks and the Serts all refer to passive organic farmers who may not be very successful because they are not proactive in their management. In some ways, the active organic farmers are similar to the active conventional farmers or graziers but their form of active management is much more
complex. For example, Larry Wagner can be considered an active conventional farmer, as he is able to make many intensification decisions based on information from extension and the university. Although Larry, like an active organic farmer, is concerned about fertility, he is even more concerned with the conventional focus on nitrogen, phosphorus and potassium. What constitutes as an active management system in organics is much more complex with more unknowns than an active conventional approach. The organic farmer tends to be more focused on soil properties such as organic matter composition. It is important to recognize these parallels between the different systems.

Social dynamics are important to adoption decisions for positive and negative reasons. Farmers can struggle with negative social pressure against organics. On the other hand, organic farmer friends and the Organic Valley/Midwest BioAg social networks have been helpful to the Serts and to other farmers in their transition. Other social networks like a church community which has a spiritual dimension was also helpful as in the Crank’s case. The importance of social networks will be discussed more in Chapters 5 and 6. Although like other farmers, organic farmers are not necessarily big proponents of meetings, the ones they do attend are inspirational and farmers speak highly of that interaction. Some of the farmers like the Cranks talked about negative social pressure. They seem to have overcome this potential conflict in oikonomia dimensions. Negative social pressure is probably more severe for the organic system than for the grazing system for a variety of reasons that will be discussed in more detail in the next two chapters. This negative social pressure may be connected to the productionist ideology so, for example, the weed pressure concerns with organic conversion in grain fields may be a
social/aesthetic concern rather than just an agronomic concern. This will be discussed more in Chapters 4 and 5.

Conventional, graziers, and organic farmers all refer to the importance of reducing erosion and make connections between cost reduction and stewardship, but organic farmers seem to discuss stewardship more in terms of biological indicators. Recall that Devin Dooley’s cost minimizing and stewardship motives led him to reduce conventional inputs. This connection was similar to that of a conventional farmer like Randy Rod. However, Devin had the encouragement of others to lead him into a fully organic system. The graziers like Wes had biological success stories about soil improvement. Teddy Packer (cf. Appendix IV) refers to the increases in the number of earthworms since they have become organic. Another farmer found that after organic management “the ground and the soil is looser, before it all seemed like it was driving over rocks.”

A number of the organic farmers talked about how they were motivated to take care of their piece of the earth. As one organic farmer states, “We’ve got to take the responsibility for what we do, whatever our little place on earth is.” It also seems like stewardship comes up more on its own in the discussion with organic farmers and some of the intense graziers than other kinds of farmers. Although the Teiners are proud of improvements on their land it is more technology based. More specifically, they are a proud of a drainage system on their land that was just put in place. It also seems like stewardship came up more on its own in the discussion with organic farmers than it did with other kinds of farmers.
The connection with land stewardship and faith was discussed in general terms with most of the farmers. A number of the farmers talked about how they try not to let the land get run down like their previous owners. An organic farmer (who was also an intense grazier) stated that she kind of gets the connection between land stewardship with Christianity, but she could identify more with a figure like Aldo Leopold when she thought about land stewardship. Another organic grazier found her main inspiration for farming was the experiences she got in nature “looking at the Milky Way.” So it seems that for her there was a more spiritual connection in a general sense with being out in nature. Although one pasture based farmer could see the references to grazing and stewardship in the Bible, it was not necessarily the reason that she was managing the farm the way she was. A number of farmers acknowledged that there was some kind of stewardship and church connection, but it is a more general connection that served in the background of what they do and how they farm.

A few farmers mention that their ministers may have made some stewardship connections for them. Church leaders were often referenced rather than relying on their individual ideas of these connections. This is certainly true for a number of the Amish farmers as will be discussed in Chapter 6. Recall the sermon that Matt Daby referenced with the importance of always striving to be the best in his farming. Wes Pander, who did teach adult Sunday school, was really able to articulate that the Earth was the Lord’s. He was unusually well read in this area.

Summary

Farmers from all the management types expressed a broader oikonomia framework than just economic factors when explaining why and how they farm. The divergence in values
between different farm management types in combination with interactions with bounded rationality issues may explain why only certain kinds of farmers gravitate towards alternative management strategies like MIRG and organic. Family is important to all farmers because of a social/spiritual connection to the farm, a view of the farm as the ideal place to raise children, and/or a family’s historical connection with the land. The low cost ethic or simplicity focus is shared by many of the small scale conventional farmers, graziers and organic farmers. However, overall, it seems that there is a more complex and holistic approach for more intense graziers and organic farmers.

Farmer’s oikonomia values differ, but an individual’s oikonomia framework is not static either individually or in the context they face. As one organic network leader states, “The bleak economics of the farm leaves farmers with the option of exploring something like organic or getting out of farming.” Another organic farmer states that “people have to be pushed before they get out of their comfort zone.” For example, Ben Crank decided to stop using chemicals after he was diagnosed with cancer, and his brother followed once he saw that the organics system worked for his brother. Again, as we saw in the case of the Serts, it took a significant price premium to lure them into organics as well as an encouraging group of friends. The Smiths, in contrast, had neither of these incentives but were instead convinced that organics was better for “the planet, the air, the cows, and your family.” It seems that as farmers gain experience on alternative strategies like organic farming, they recognize more of the positive synergies in the system. Experience can also lead to connections with the negative conflicts in the systems. It seems that this was the case with the Serts as they realized that the high
production model led to significant amounts of additional expenses. Though of course other producers can pursue the same strategy and potentially experience distinctive outcomes as is the case with Larry who found that the high production model was best way to help his family farm prosper when many other farmers are going out of business.

Although a number of farmers of different farm management types discuss the demise of social networks in their area, a number of the organic and intensive graziers also highlighted the exchange of information and camaraderie that they have experienced in these alternative system networks. Social networks are particularly important for getting people into organics. Knowledge about MIRG farming has also been embedded in social networks (Hassanein, 1999). There has also been negative peer pressure inhibiting the spread of organics and MIRG which could serve as a challenge for some farmers to consider these systems. Farmers that love the challenge of farming and getting information from diverse sources seem to gravitate towards alternative management strategies and thus are able to counter information constraints. Organic farmers emphasize that farmers need to be proactive to be successful with conventional farming and this point is especially emphasized for the organic system.

There are many motivations for farmers to stay on the land. The top reason for farming, not surprisingly, is the importance of working together with family on the farm. In contrast, a couple of conventional farmers find that the stress of the farm has put negative pressure on family life. Family life as well as interactions with neighbors can be described in a spiritual light. The spiritual/religious sphere will at times be indistinguishable from the social dimension which includes networks, community structure and cultural differences (Salamon, 1992). Local
religious congregations play an important role in building human and social capital (Smidt, 2003). The Cranks and Wes Pander illustrated this well with their discussion of faith and how it intersects with their social networks and the way they manage their land. These connections will be discussed more again in Chapter 6.

The family focus is also related to a heritage and identity with the farm. One farmer states, “You go back to a tradition, when you’ve gone five generations on the farm … you and your family have been on the same ground for almost 150 years and there’s quite a connection to that plot of ground.” Another farmer states “That’s all that I’ve ever wanted to do, so that’s what I do, it’s a good life.” Perhaps the most extreme example of this connection is the farmer who stated that farming was “in his blood.” Some have a sense of humor about their intense connection to farming. One older farmer states that “A lot of people think that I’m nuts, but a lot of farmers are.” It is as if this farmer is suggesting that he knows that farmers are not completely economically rational.

When asked about land stewardship, conventional, graziers and organic farmers in general will have something to say about stewardship, and erosion control is a common concern in the Kickapoo Valley. Organic and MIRG farmers are more likely to stress that their chosen management system offers ecological benefits. Some make connections between stewardship and economic benefits. Although as Wes Pander states for the intensive graziers, economics is often not what it is about. Organic farmers tend to point to biological indicators of improvement.

Based on the rich narratives that help to compare and contrast the oikonomia frameworks and management systems of different types of dairy farmers, readers are now in a stronger
position to consider the adoption decision of organic and MIRG. Chapter 4 will discuss the perceptions that conventional and grazing farmers have of the organic system along with the experiences and views of organic farmers on these same issues. Chapter 4 serves primarily to illustrate a serious disconnect between perceptions and experiences with organic, based in part on the limited information available regarding the logic and performance of organic systems. This potential for bounded rationality issues sets the stage for a further look at how oikonomia, and bounded rationality may together offer a deeper explanation for why some farmers may not seriously consider changing systems. Amish farmers are examined in Chapter 6 to demonstrate how the complex and subtle interplay between oikonomia values (especially social/spiritual factors) and bounded rationality impact their broad farming and particular system adoption choices.

**Literature Cited**


Chapter 4: Why Farmers Do Not Adopt Organic Dairy -- Counterpoints from Organic Dairy Farmers: A Discussion Based on Oikonomia, Context and Bounded Rationality

“I can make just as much as anybody in organic. With more volume, I get more milk than any organic people have ever began to think of. We probably get twice the milk that the average organic person gets.”

Larry Wagner, Large scale conventional farmer

“[Put it this way] if I couldn't have the organic price out there and the market. Would I go back to conventional? Never... because I enjoy it and I believe in it, and it works wonderfully.”

Ben Crank, Organic farmer

Introduction: Oikonomia Reasons for Not Adopting Organic

Conventional and grazing farmers choose not to adopt organic dairy based on their oikonomia framework, their current situation and bounded rationality issues. Many organic farmers are very content with their management system as Ben Crank’s (cf. Chapter 3 (same as the other farmers with pseudonyms mentioned below)) above statements indicated. Thus, they wonder why other farmers do not actively consider the organic system given the economic challenges of conventional farming. Some farmers like Larry Wagner are enthused about the benefits of conventional farming, and are convinced that organic farming is not an option that warrants their attention because of issues like reduced production. However, quite a few conventional and pasture based farmers are discontent with their current situation and are especially disgruntled with the level and volatility of conventional prices and net returns. This dissatisfaction may make one contemplate why they are not adopting or at least considering an alternative system.
Chapter 3 illustrates the complex and nuanced nature of farmers’ motivations towards farming and farm decision making. Oikonomia values (economic, social, spiritual, and ecological), farmer’s personality differences, information seeking habits, the current situation of the farmer and their social connections influences where and how they get information about their farm. The presentation of the farmer narratives suggest which farmers may be in a better position to consider adopting an alternative system like organic dairy without discussing it explicitly. We get some sense of the barriers to adopting organic systems in Chapter 3, as organic farmers describe some of the challenges obtaining information and support as well as the negative perceptions and social pressure against organic farming. Organic farmers also describe how conventional farmers tend to focus on high production and chemical fixes to crop management and herd health issues. This chapter builds on the narratives presented in Chapter 3 to discuss why conventional and grazing farmers do not adopt organic practices focusing on economic and agronomic concerns.

I begin with the conventional and grazing farmer perspective because the main focus of this chapter is exploring the stated reasons why farmers choose not to adopt organic systems. More specifically, these same oikonomia values discussed in Chapter 3 influence how the farmers articulate their concerns with organic systems. Conventional and grazier dairy farmers raise the following concerns, and the order reflects roughly their prevalence in the interviews: herd health, feed sourcing, grain production, labor demands, milk production, nutrient/environmental concerns, and overall profitability. These concerns have also been highlighted in other organic dairy adoption research (Duram, 2000; Fairweather, 1998; Flaten et
al., 2006; Lunneryd & Öhlmér, 2006; McBride & Greene, 2007; Padel, 2001; Peterson et al., 2007; Smit et al., 2009). Farmers may also have other reasons why they do not adopt organic practices that fall outside of the aforementioned economic and agronomic concerns. Indeed, as explained in Chapter 5’s discussion of bounded rationality, many farmers appear as if they do not consider the option deeply enough to be able to articulate specific concerns or have some serious constraints which made investigating in alternative system unfeasible.

This chapter on organic dairy systems also contrasts the perceptions of conventional farmers and graziers with the experiences of organic farmers and the scientific literature that evaluates organic dairy outcomes. Although there will be some speculative discussion about how relevant these concerns are given the farmer’s situation, the chapter is not designed to resolve which concerns are valid. As part of the “state of the science” discussion, I feature Wisconsin survey data analyzed for this dissertation and for related projects along with literature on organic dairy farm performance outside of Wisconsin. Overall, many of the concerns raised about organic dairy remain in need of systematic study. Much of the literature that does exist is more on the order of extension bulletins than peer-reviewed journal articles, and is not directly applicable to farms in the U.S., much less Wisconsin. The relatively weak state of knowledge on a number of these topics illustrates how, at least in terms of codified knowledge, farmers and those advising them are in a bounded rationality situation of limited and/or conflicting information on organic dairy farming. Later in the chapter, the ideal data one would need to help resolve issues related to the performance of organic farming will be discussed. In this chapter, considerable emphasis is given to the experience of organic farmers in part because of the
limited evidence base that scientific studies offer and because their experiences and satisfaction tend to offer a stark contrast to the perceptions or concerns expressed by conventional and grazing farmers.

**Perceptions of Conventional/Graziers of Organic Dairy**

A farmer’s current farm management system plays a key role in explaining the diverse reasons why farmers choose not to adopt organic systems. Conventional farmers (both small and large), high intensive graziers, and low intensive graziers have distinctive reasons for adopting organic systems. Pasture based and smaller conventional farmers make up the majority of the sample, and *prima facie* their situation would make for an easier transition to organic farming given that they have fewer capital investments in conventional equipment and structures. Intensive graziers are particularly likely candidates for an organic system because their farming system includes a key aspect of what organic farming requires, and they may already be moving away from the herd productivity maximizing approach that conventional farms tend to emphasize.

This distinction between relative likelihoods of organic conversion is reflected in the broad way that grazing farmers tend to focus on specific economic and agronomic related concerns when discussing the organic option, while conventional farmers are more likely to raise larger situational and social issues with respect to organic farming. In other words, profitability losses associated with organic management are discussed in a more direct fashion amongst pasture-based producers than amongst some conventional farmers. As stated earlier, and explored in Chapter 5, some conventional farmers may have not thoroughly considered the
organic system enough to be able to articulate specific economic and agronomic concerns that they have with the system.

Productivity (often measured as production per cow) and cost-minimization are important foci that shape farmers’ perceptions of and experiences with profitability. The focus on productivity amongst farmers is reflective of the mainstream approach of agribusiness and the university. Thus, the larger social-political context can influence household decision making. Farmers can be concerned about it for their own sake, or for achieving higher net farm income. Increased productivity can lower per unit costs of production, raise dairy profitability, and/or raise net farm income. This relationship is strong due to the fixed costs of maintaining dairy cows and dairy farm infrastructure as well as the amount of time it takes to milk cows. This time constraint may be especially important for farmers who are limited with respect to expansion possibilities as many farmers’ barns and land bases can only support a certain number of cows. Because dairy farming is particularly capital and labor intensive, farmers may also focus on limiting exposure to sunk costs and figure out ways to improve returns to scarce labor if they are farming with only family labor which may explain the focus on productivity to some extent.

Recall how conventional farmers like, Larry Wagner and the Teiners, are embedded in a conventional high production management mindset in both their capital investments, learning and social circles; thus, they have trouble envisioning why they should consider an alternative system. Larry expresses the high productivity model in the clearest terms when he asserts his statement about production at the beginning of the chapter. For Larry, high productivity seems to be the main goal and the best way to reach a higher net income, and this emphasis is also true
for other producers and can make it difficult for them to consider organic farming in a serious way. Some smaller conventional producers are also concerned about reduced production with organic farming. Jerod Lackey, low intensive grazier, also resonates with these sentiments when he responds early on to questions about organic farming with the statement, “With organic, you get more money for your milk, but you’re only shipping half the milk.” Both of the large conventional producers and a few low-intensive graziers mention production related issues some of which were more specific to transition times.

An issue even more emphasized than reduced production is the herd health concerns with organic farming. Herd health concerns are often one of the first issues that farmers raise in response to the questions in interviews about organic farming. Different kinds of conventional and grazing farmers have a lot of concerns about the perceived challenges with organic herd health management, specifically the inability to use antibiotics. It is clear as you will read later in Chapter 5 in the context of bounded rationality that many farmers think the herd health challenges with organics are extremely risky with a lot of unknowns.

Another common concern that seems to involve uncertainty with the profitability of organic farming more explicitly is the increased cost associated with organic farming. A higher organic milk pay price is not generally an enticement for intensive graziers like Nick Nader, because they believe that the additional costs of organic farming may outweigh the higher price premium. As he exclaims, “so often I hear people focusing on that it is 26 dollars a hundred weight, and that’s great, and what’s the cost?” Nick is a firm believer as a MIRG farmer you will make a lot more money by “eschewing organic, rather than going into it.” Nick Nader
emphasizes that most graziers are doing well economically, so they do not have much of an incentive to look elsewhere. Andy Son, a small conventional farmer is concerned about buying feed which is “5 or 6 dollars for organic or whatever they charge” so in the end Andy feels that you “would be [at] the same [place] as where [you] are at with conventional getting our low[er] milk price[s].” This story implies that additional costs associated with organic farming will mean reduced profitability for organic systems. For graziers and smaller conventional farmers, there is not generally much discussion around organic profitability overall before the conversation jumps to the costs of organic feed. These cost issues are raised by all kinds of farmers even the Amish (who were silent on a number of the other issues).

Despite the concern about the additional costs of organic feed, Jerod Lackey and Andy Son both raise virtually all of their own feed as is the case for the majority of Wisconsin farmers with the exception of the most intensive graziers (Kriegl, 2008). Andy Son actually states, “I haven't had to buy any corn since 88 [which] was a drought [year].” Andy Son, like other farmers, is wary about higher organic feed prices. Although many farmers are not necessarily aware of the organic feed prices and thus the situation may have some bounded rationality issues at play such as ambiguity aversion. Although feed sourcing and buying concerns with organic farming are the most common in conversation rather than crop production concerns, there may also be some ambiguity aversion associated with the logistics of raising organic feeds that is not expressed directly here. Thus, this issue may relate more to the concerns with growing the crops organically than it does with the purchase prices of the feed. This point is discussed below.
A larger reason why farmers may be focused on organic feed costs despite being feed self-sufficient is the broad uncertainty with respect to both milk and feed prices. As Figure 1 (cf. Chapter 1) demonstrates, there has been dramatic variability of late in conventional milk prices but ironically not nearly so in organic prices (Barham, 2010). Figure 1 also reveals considerable variability in conventional corn prices. While it is also true that organic corn prices on average in the Upper Midwest are significantly higher than conventional prices, organic milk prices on average have offered a 41% premium over conventional prices over the past two decades with much more stability as well.\(^\text{17}\) Variability in calculating milk prices versus feed prices may induce farmers to focus on input costs instead of the attraction of a higher price, but given that most organic dairy farmers do not regularly purchase much of their organic feed this may divert their focus from the actual profitability potential. Although organic dairy prices have been much more stable, including in the recent recession, conventional farmers may not be conscious of this difference and/or trust that it will continue. The stability and increased pay prices of organic milk would make organic dairy farming seem like an option that farmers should at least be considering.

Other areas of concern pertain to the additional costs of labor associated with organic farming, and if the benefits of converting to organic would outweigh the costs for older farmers. The potential for increased labor demands related to organic management were expressed more by intensive graziers. MIRG grazing is often preferred by its practitioners as a labor efficient

\(^{17}\) The ability to keep organic price premiums higher than conventional prices may only last “as long as there are [only] three or four operations nationally” (Guptill, 2009).
management strategy. Yet, the system is quite similar to the organic system aside from the additional tillage and weed management associated with crop cultivation using organic methods. Lonny Latch’s (cf. Appendix IV), an intensive grazier, initial response to if he ever considered organic farming was “I couldn’t handle organic, it’s too much labor.” Frequently, the concerns around producing adequate quantities of feed with organic management practices are intertwined in the discussion of labor demands. Farmers, like Andy Son, are also concerned about the paperwork associated with organics. In sum, conventional farmers and graziers generally assume that organic production involves more labor and, at least for graziers, this additional labor is generally attributed to the extra time required to grow organic grains.

Paul Flecker, intensive grazier, raises the issue of organic conversion not paying off when you get older by stating “It takes 3 years to get certified [and] by the time we get certified it will be about the time that we want to quit dairying anyway.” This concern with being too old was most expressed amongst the intensive graziers whose farm system is similar to the conventional system where they are more likely to have considered and compared these types of factors. In a similar vein but to a lesser extent, some farmers are not confident in the long term viability of organic (especially the pasture based producers). As Douglas Acker, an intensive grazier, states, “I like organic, but personally…I think that it’s going to plateau off…It looks like conventional milk is going to catch up.” Greg Biddy, conventional dairy/cash grain farmer, thinks that the high prices for organic will stimulate consumers to buy a middle grade product like rBST-free similar to consumers buying middle grade gas versus the premium variety. In this way, the higher organic premium will not persist into the future.
Intensive graziers, like Nick Nader and Robert Doll are frustrated by how organic certification can limit management options, and they also raise specific agro-ecological concerns. Nick Nader states that the organic rules really tie the hands of the farmers in terms of options that they have. As Robert Doll points out, “even the people in organic families [when] they get sick, they go to the doctor and get an antibody shot, so why can’t you use them on the cattle?” Nick Nader refers explicitly to reduced production per unit land base with organics, “Generally you can do one cow per acre with conventional but your damn lucky to get one cow for two acres for organic, and sometimes one to three acres.” When I pressed Nick Nader on where he got these calculations, he admitted that there might not be any support in the peer-reviewed literature, but he knows anecdotally that these calculations are true. The concern with reduced pasture production with organic farming amongst some very intense graziers, like Wes Pander, may reflect concerns with long-term soil fertility under organic management since conventional fertilizers are not allowed. Thus, some graziers think it is possible that organic farming mines the soil of nutrients. Wes Pander also feels that using Roundup® very selectively is better than tilling up the land to manage the weedy plants in his pasture. Nick Nader argues graziers use only small amounts of chemicals and seem to be “very environmentally aware.”

Conventional and pasture based farmers do not go organic because of economic and agronomic reasons that reflect their oikonomia framework, their current situation and perceptions of the costs and management challenges which will be discussed more in Chapter 5. The focus on productivity and cost minimization highlighted in Chapter 3 are key reasons why farmers may not choose to convert to organic. Farmers who are closest to the organic management system
often give more specific reasons why they do not adopt organic. Intense graziers are more focused on specific issues such as pasture productivity, additional costs and labor requirements and how organic certification limits management options. Conventional and pasture-based farmers raise more general issues such as milk productivity. Farmers of all management types mention concerns with herd health, and it is often the first issue that they raise in interviews. Smaller conventional, pasture farmers and intense graziers raise concerns with accessing affording organic feed. However, most of the farmers raise their own feed, so it may be the uncertainty of the market and concerns about raising feed organically that farmers do not state explicitly that is most pertinent.

The Experiences of Organic Dairy Farmers

Organic farmers like Matt Drake describe their previous financial situation when he was conventional as “just trying to make ends meet,” whereas now they are in a much more comfortable situation. Kerry Martin (cf. Appendix IV) emphasizes the importance of a stable milk price for a beginning farmer by stating “there’s no way that we could have gotten started financially with the conventional market...because organically you know pretty close to what you’re going to get for your milk, and that conventional roller coaster would be pretty hard when you first start.” Another organic farmer expresses how the organic option enables farmers to farm at a smaller scale. Jeremy Hack (cf. Appendix IV) states, “I probably wouldn’t be farming still if I was only milking 32 cows conventionally, it would be mighty tough.”

Some organic farmers view organic dairy as a lower cost strategy, in contrast to the perceptions amongst conventional and grazing farmers that it involves higher costs. The Smiths
and Devin Dooley converted to organic for that reason. Devin Dooley, an early adopter, states that he was on a cost-cutting mission as he could not afford the chemicals when he began to farm organically. He felt as if organic was his only option since he was too old to expand and invest in additional infrastructure to reduce costs in other ways. One of the cost saving aspects of organics has been lower vet bills because of improved herd health, a theme we return to below.

The Cranks, like many organic farmers, feel that herd productivity in and of itself is not the most important component of successful organic farms because of better prices and positive organic system synergies like improved herd health management. Even though a few organic farmers do report lower yields, they find that their reduced yields are not a big concern because of some of the other cost benefits of going organic. Nonetheless, organic farmers do view the transition period as challenging and potentially involving some “hard learning years” with crop and milk production challenges. Matt Drake explains that the land had to adjust to the organic system, comparing it to the weaning process of getting a body off drugs. The Serts said that their cows’ productivity “plunged tremendously in milk” as they were transitioning. They say that “now [the cows] are coming around,” and they have not finished the transition process. A number of the dairy farmers who were just starting to manage organically were concerned with how they were going to counter weed pressures and maintain crop production. Jon Edwards, organic farmer, (cf. Appendix IV) states that organic crop production challenges created a “couple of bad learning years… [figuring out the] different types of cultivating that needed to be done on a timely basis.” Currently, Jon is very proud of his crop production, and he encouraged me to check out his corn on my way out of the interview.
As suggested by Jon Edward’s statements, learning by doing is a critical way that organic farmers achieve successful management. A number of organic farmers stated that once they completed the transition, milk yields have proven to be not that different from when they were conventional. Farmers like the Crank brothers who consider themselves proactive farmers did not entirely give up their productivity focus. Ben Crank proudly asserts, “[Our cows] are really responding well to the [organic] system. We are at 21,000 lb herd average.” (The Wisconsin conventional mean production level is 17,617 lbs). Similarly, Kerry Martin cheerfully explains that he has maintained a 65 pound per day per cow average all year and in his fields he was able to produce 160 bushels of corn to the acre. He exclaims that, “the custom combine guy says that I cheated.” Kerry is not only excited about his production levels but also about how he is able to do it with a low input system. Kerry Martin and Ben Crank talk about innovations that make cultivating less labor intensive like the buffalo cultivator and the flame weeder.

It is also important to note that some organic farmers may not consider herd or land productivity levels as the key to economic or even broader farm outcomes on organic farms. For example, Sam Donny, an organic farmer, places more emphasis on the cow’s health and well-being rather than on production per se. Sam runs the calves with their mothers and feeds small grains instead of corn, practices that are not typical on farms concerned with tighter measures of herd productivity. Whether this reflects balancing economic and non-economic goals or a long-term economic strategy of improving herd health and performance is an open question.

To some extent, organic farmers also affirm the concerns of non-organic producers with sourcing organic feeds at affordable prices. One organic farmer felt that the transition could
“financially break a person.” This organic farmer recommends farmers who want to transition 
“raise their own feed for three years first and then do it because it is almost financially 
prohibitive now to get into organic.” If the farmer transitions their crops first, they do not have 
the period of buying organic feed and forage and receiving conventional prices. One grazing 
network leader who was transitioning to organic, is generally grain self-sufficient, yet this farmer 
is still unsure about the added cost of production associated with organic. Last year this grazing 
farmer was unable to grow all of their necessary organic feed, which deepened her concern with 
the potential additional expense and even the inability to source organic feed and hay locally. 
This farmer concludes the topic of additional costs of organic production by stating, “Let me see, 
I have to think about that some more.” The unknowns associated with the state of the science are 
illustrated by this experienced grazier’s hesitation, as this farmer is extremely knowledgeable 
about pasture-based systems. There is ambiguity aversion even amongst the most informed 
farmers like the aforementioned grazing farmer even though this farmer is mostly grain self 
sufficient.

Feed provision can also be a concern amongst those who are self sufficient because of the 
potential cultivation challenges and the additional labor time associated with organic crop 
production. Although organic farmers acknowledge that there are more hours spent in the field 
with the extra cultivation, it is not clear how the total labor hours overall compares with 
conventional systems and how this labor increase affects their final returns after the transition 
period. The extra labor associated with organic crop production is highly related to weed 
management. Organic farmers suggest that the comparison of conventional and organic farming
should look beyond the additional hours spent in cultivation and rather compare labor requirements across the whole system. Matt Drake argues that labor differences between organic and conventional dairy farming may be more a matter of choice and convenience. Matt figures that overall he only spends 20 hours extra labor hours per season to take the additional passes through the field: two more additional rotary hoeing passes and one extra cultivation pass. Essentially, he states “it takes the same amount of time to milk the cows, and to make the hay.” According to his calculations, he can pay himself $180 an hour for weed management considering the higher returns of the organic system and the amount he is saving in chemicals. Matt concludes that spraying instead of tilling is really about convenience because organic weed management seems to pay for itself. Kerry Martin also points out that there are additional labor demands for conventional farmers, such as manure management and the production demands of grain and hay that organic farmers do not face.

Another contrasting perception among organic dairy farmers is herd health. They tend to view herd health as an interconnected part of the whole system, and they focus on prevention and alternative treatments rather than on the constraints associated with not using antibiotics. Many organic dairy farmers feel that they have better herd health than they would if they were conventional. The Crank brothers state that organic herd health management “was the big scare with many of my friends that have converted to organic…[they proclaimed] ‘you can't do it. You can't control mastitis.’” Yet, Ben Crank gets a kick out of the fact that when his friends ask him about mastitis now he can respond, “I have virtually none. It is fun.”
Devin Dooley, like many other organic farmers, attributes the improvements in his herd health to his minimal use of high-energy feeds. Ms Ray states, “We [used to] feed more protein and have the cows milking really good…[but] the only one to come out ahead was the seed guy …You just burn out the cattle faster.” Ms Ray’s statement illustrates that by not pushing the cows for higher production input costs can be reduced by improving herd health. About half of the organic farmers emphasize that they are not pushing their cows for higher yields by feeding them with high-energy feeds, and this seems to be a key part of the organic system.

Overall, organic farmers agree that if there is a serious health problem on organic farms, it can be very challenging. Kerry Martin states, “There’s nothing that you can do about it...Let’s face it, the key to organics is prevention.” Kerry emphasizes that when he first started farming, there was an outbreak of pneumonia in the herd and it set him back by eight months. “When you get pneumonia organically, you’re screwed.” Yet this extreme case of a herd health outbreak is relatively rare on organic dairy farms. Currently, Kerry is proud of his herd health status and he states that, “even conventional farmers tell me that, ‘God your cows look great.’” How rare these events are and how severe they can be remains poorly understood, and could be a source of uncertainty for farmers considering the organic option.

The additional paperwork involved with organic certification was not discussed much by many organic producers, but they do emphasize that you have to stay on top of the paperwork to be successful in an organic system. Mitch and Lynn Lacy found that paperwork was a challenge at first but not once they became accustomed to the routine. A couple of organic dairy farmers
explain that they reduce paperwork demands by simplifying their management systems and by minimizing their use of inputs.

It seems that the organic farmers who are proactive and convinced of the benefits of organic farming are able to counter the challenges of the organic system depending on their flexibility with respect to their situation. Devin Dooley, who is not totally feed self-sufficient, partly dealt with the organic feed concerns by scaling down his herd from 85 cows to 60 cows. Devin states that with a smaller herd, “there’s less overhead and labor [and] with the organic prices per hundred weight of milk. We didn’t have to produce as much milk…in fact revenue wise we’re way up.” Organic farmers also feel that they are on a more ecological and sustainable path as is evident from the narratives presented in the previous chapter. An intensive organic grazier, Jeff Jensen, countered the concerns of the non-organic graziers about nutrient management. He states, “There [is] loads of nitrogen, it’s in the air, and legumes can take it out of the air and put it in the soil.” Jeff compares the nutrient cycling of his farm to the ideal of the prairie. After 25 years without tillage, the percent organic matter went from 2.2% to 3.7% which he says is “unheard of” on other farms.

In summary, organic farmers are convinced of the economic and agro-ecological benefits of the organic system. It is important to look at the oikonomia framework of the farmer, and the larger system benefits of organic farming when analyzing specific variables across systems like production levels. A number of organic farmers are not focused on comparing per cow or crop yields. Yet, those organic dairy farmers who did compare productivity outcomes argued that their yields were similar to what they would have been if they were managing conventionally.
The Current State of the Science

Milk Productivity

Organic dairy research based in Wisconsin indicates that overall there are lower milk yields on organic dairy farms compared to conventional farms and similar levels to grazing farms. Organic dairy average productivity levels reported on the PATS survey results (cf. Chapter 1) were similar to MIRG farms (52 and 55 lbs per cow per day, respectively). In that survey, organic milk production levels were about 20% less than on conventional farms (64 lbs per day). Organic dairy yields (11,791 lbs per year) were 30% less than conventional farmers (17,617 lbs per year) according to 2005 ARMS data. Another Wisconsin based study found that organic dairy farms sold 30% less milk than conventional farmers but only about 5% less than intensive graziers (Kriegl, 2006).

Lower production levels on organic dairy farms are also evident in studies outside of Wisconsin. Organic farms produced 25%, 35%, and 31% more milk per cow in 2004, 2005, and 2006 in the Northeast, respectively, than did conventional farms (Dalton et al., 2008). While in Canadian and European studies (Kristensen & Kristensen, 1998; Ogini et al., 1999; Stonehouse et al., 2001), organic milk yields ranged from 70% to 105% of conventional yields depending on the study and the country (Offermann & Nieberg, 2000; Shadbolt et al., 2004) in (Nicholas et al., 2004). It is possible that part of the higher milk yields on conventional farms are in part due to higher concentrated feeds (Ellis et al., 2007; Roesch et al., 2005; Rozzi et al., 2007; Sato et al., 2008).

In general, production levels per acre are also lower than conventional farms in the more extensive European studies (Nicholas et al., 2004). Organic dairy farmers may have 20-40% lower forage production (Shadbolt et al., 2004). Although one longer term study found that yield differences are reduced over time and organic farms are able to maintain higher stocking rates once the system is established (Fowler et al., 2002) cited in (Nicholas et al., 2004). Thus, the comparisons reported above may capture the transition dynamics of organics rather than the steady-state yields. This concern is consistent with the transition dynamics discussed by the organic farmers above.

**Labor Demands**

On average, according to the few existing studies, total average labor hour requirements seem to be somewhat higher on organic dairy farmers, but this may be reduced after more years in organic management. Moreover, higher labor demands do not seem to impact satisfaction levels. European research found that comparative labor costs of organic dairy farms ranged from 70% to 450% of conventional values though the differences may equalize after more years of organic dairy experience (Offermann & Nieberg, 2000) cited in (Padel, 2002). Higher labor costs may be in part due to increased labor hours in weed management with organic farming (Stonehouse, 1996). Organic dairy farm labor demands are met mainly by family labor (e.g. Butler, 2002; Kriegl, 2006) (Offermann & Nieberg, 2000) cited in (Nicholas et al., 2004), so comparative calculations are challenging which may account for some of the variability in European research. Although paid labor hour expenses are typically lower on organic farms (e.g. Bhuyan & Postel, 2009; Butler, 2002), unpaid labor hour totals are higher on organic farms
which can mean that adjusting for this labor costs, organic profitability levels are lower than conventional levels (Bhuyan & Postel, 2009; McBride & Greene, 2009).

Locally, the Wisconsin ARMS data indicate that operator labor hours and total farm labor hours per cow were slightly higher for organic dairy farms. The number of hours spent on the farm per week is similar with organic farmers spending about 20 more labor minutes per cow per week. Despite higher labor demands, organic dairy farmers seemed more satisfied with farm labor according to PATS survey results. Well over half of organic dairy farms are satisfied with their amount of time off from farm labor. In contrast, only around a third of other dairy farms are satisfied with their amount of time off (34% for graziers and 36% for conventional farmers). Organic farmers were also slightly more satisfied with the physical demands of farm work with 80% being satisfied or beyond in contrast with 66% of graziers and 70% of conventional producers being satisfied or beyond.

**Crop Yields and Weed Management**

Increased labor demands are often attributed to the challenges of organic crop production particularly weed management issues. It is not clear based on the literature if organic management always leads to lower crop yields. The U.S. literature available reveals mixed results in terms of yield comparisons. A Wisconsin dairy based multi-year study found that cropping systems which are managed organically or in a low-input manner can have equivalent dry matter yields with sufficient quality for a dairy system (Posner, et al., 2008). Other than a few research projects, studies on crop production are unfortunately not focused on the dairy farm system as a whole but instead on crop production as a unit. Studies on organic crop production
yields show mixed results in terms of comparative productivity. Some research indicates that there is reduced crop productivity with organic management (Berardi, 1978; Crosson & Ostrov., 1990; Halberg & Kristensen, 1997; Helmets et al., 1986; Klepper et al., 1977; Mahoneya et al., 2004; Posner et al., 2008). A few studies indicate that crop yields between the systems are comparable (Cacek & Langner, 1986; Lockeretz, 1981; Lockeretz et al., 1978). Management is important for maintaining crop yields with organic farming. Management practices like a complex rotation, attention to varietal selection and nutrient management are important for achieving higher yields in an organic system (Delate et al., 2003; M. Liebman et al., 2008; J. L. Posner et al., 2008).

Weed management is the biggest concern with organic grain production. Research on weed populations in the organic transition indicates mixed results with some studies showing increased weed populations (Archer et al., 2007; Riemens et al., 2007) and one study showing decreased weed populations (Ngouajio & McGiffen, 2002) following conversion to organic management. Integrating multiple crops into a rotation is helpful in maintaining weed populations in the transition (Liebman & Davis, 2000; Porter et al., 2003; Smith et al., 2009; Teasdale & Cavigelli, 2008) so that weed control is possible even in a reduced tillage organic system (Teasdale et al., 2007). Careful weed cultural practices are also helpful in avoiding initial failures in weed management (Smith et al., 2009) because when tillage is not feasible due to weather conditions organic yields can suffer (Posner et al., 2008).
Profitability

Organic dairy farmers had lower profitability levels than conventional dairy farmers but higher relative levels of satisfaction according to two Wisconsin surveys. Recall that in Chapter 1, organic farmers had high relative satisfaction levels with net income at least in 2003 which was a year when the organic premium was substantially higher than conventional. Organic farmers also were extremely satisfied when they were interviewed in the years immediately following the survey. According to the 2005 ARMS data, a very good conventional milk price year, the average conventional dairy farm household income was $62,656, or over 160% greater than the average organic dairy farm income of $38,392. However, the per-cow income level differences were less dramatic as organic dairies have a mean income per cow of $719 compared with a mean income per cow of $802 for conventional farmers (Table 1). Although organic dairy farms look less profitable according to these data, statistically these differences were actually insignificant because of the large variation in herd size and income within and across the two systems. Some very large conventional farms tend to drive up the average income and farm size figures of non-organic farms. It would be ideal if medians had been calculated and compared for all management types as that analysis may have demonstrated profitability levels that were more similar (Foltz et al., 2008). In contrast, another Wisconsin based study of a small, non-random sample of farms found that over a seven-year average organic farms

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19 From Chapter 2, well over half of the organic farmers (57%) are satisfied or very satisfied with net farm income and 76% are satisfied or very satisfied with overall quality of life. By contrast, only 5–10% of the other non-Amish dairy farmers reported being satisfied or very satisfied with net farm income in a comparable survey.
($732.04) and graziers ($737.18) had similar and higher net farm income from operations than did conventional farms ($521.50) (Kriegl, 2008).

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<th>Table. 1 Farm Financial Information from ARMS Data</th>
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<td>Net Household Income</td>
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As shown in Table 2 below using data from the 2003 PATS survey, debt-to-asset ratios and debt-to-cow ratios indicate that overall debt exposure is comparable among organic and other farmers. The debt levels per cow were just under $3,000 for all types of farms. Graziers were slightly less likely to have farm debt with one quarter of them having no farm debt compared to about one fifth of organic and conventional farms. In the 2005 ARMS survey, organic dairy farmers had lower farm net worth (although again there was a lot of variability in the data), but as shown in Table 1 the debt-to-asset ratios were similar amongst farm types in the ARMS survey (Foltz et al., 2008).

<table>
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<th>Table 2. Farm Financial Information from PATS Data</th>
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<td>Percent with No Farm Debt</td>
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<td>Debt/Asset</td>
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Overall it seemed that in terms of cost structures, that the “similarities were as striking as the differences” (although there was not enough data to do statistical analysis) (Kriegl, 2008). The costs to produce organic milk (79% of farm income was used up by allocated costs - basic and non-basic\textsuperscript{20}) are slightly more than the cost to produce grazier milk (75% of income) and slightly less than conventional milk (86% of income). As the interviews indicate “feed is the single largest cost item as a percent of income in all systems” (Kriegl, 2008). The cost of raising feeds turns out to be similar across systems. Since more organic farmers raise their own feed, they only spend 14% of their income on feed purchases versus 19% of conventional and 21% of grazier’s income. Organic, graziers, and conventional farms all had about quarter or more of their income going to the cost of feed as calculated by the cost of raising feed plus the cost of purchased feed combined. These calculations may underestimate the full costs for all systems (Kriegl, 2008).

Overall, the literature outside of Wisconsin indicates that organic systems are competitive in terms of profitability but the results are by no means homogeneous. Studies from the Northeastern states and California have found organic dairy profitability was higher in some studies (Butler, 2002; McCrory, 2001) and lower in other studies (Bhuyan & Postel, 2009; Butler, 2002; Dalton et al., 2005; McBride & Greene, 2007). However, an ARMS based study in Vermont and Maine found that organic dairy farmers increased in revenue per cow over the length of the study, so that they had a 4% lower return for 2004 and 2005 and a 36% higher return in 2006 (Dalton et al., 2008). In some cases, lower profitability was attributed to higher

\textsuperscript{20} Allocated costs equal total cost minus the opportunity cost of unpaid labor (which is often not calculated by the producer).
costs of production such as feed, labor and transition costs (Butler, 2002; McBride, 2007). Most of these studies are based in the Northeast where organic feed costs are relatively high (Guptill, 2009; Kriegl, 2006). The significant amount of expense associated with unpaid labor on organic farms as discussed earlier can also significantly reduce organic profitability calculations (McBride & Greene, 2009). Some studies in the international literature overall found lower gross margins with organic dairy (Nicholas et al., 2004), and some studies find higher gross margins even without a price premium (Lampkin & Padel, 1994; Ogini et al., 1999; Stonehouse et al., 2001). However once an organic premium is paid, higher gross margins are more consistent in the international literature.

Organic Herd Health – The State of the Science

Overall herd health seems to be similar or better on organic dairy farms compared to conventional according to the available research but as indicated earlier there are a lot of unknowns on the state of the science. PATS Wisconsin survey data reveals that organic dairy farmers were actually slightly more satisfied with their herd health than non-organic farmers. (96% of organic dairy farmers were satisfied and beyond compared to 87% of graziers and 88% of conventional farmers).

Although typically conventional farmers and graziers do not mention specific health concerns, mastitis (Kaneene & Miller, 1992; Nicholas et al., 2004; Pol & Ruegg, 2006) and infertility (Nicholas et al., 2004) are big concerns for many dairy farmers, so both of these issues will be discussed. Clinical mastitis incidence levels and culling rates were similar on conventional and organic farms in Wisconsin (Ruegg, 2009; Sato et al., 2005). Another
Wisconsin study found slightly increased bulk tank somatic cell (BTSCC) count numbers in organic herds, but the organic herds also had fewer cows (Zwald et al., 2004) and higher BTSCC numbers are generally found on smaller herds regardless of management (Rodrigues et al., 2005).

According to the European literature, organic dairy farms may have similar levels of mastitis and reproductive performance (Nicholas et al., 2004; Ruegg, 2009; Vaarst & Enevoldsen, 1997) or lower levels of mastitis (Berry & Hillerton, 2002; Busato et al., 2000; Hamilton et al., 2006). Organic and conventional dairy farms were ranked similarly with respect to animal welfare in the one existing study (Langford et al., 2009). Almost no data is available that supports the clinical efficacy of any of the alternative veterinary products such as homeopathy (Abaineh & Sintayehu, 2001; Ruegg, 2009). The one existing study showed that homeopathy could be used to effectively treat diseases with comparatively low costs (Lorenzini et al., 2009). There are a lot of unknowns with respect to herd health management in organic herds.

**The Ideal Data to Resolve**

There are many empirical and conceptual challenges that thwart efforts to arrive at definitive conclusions about organic dairy viability indicators, such as profitability and herd health. Most of the datasets available on profitability are cross-sectional. Productivity and profitability are highly variable from year to year based on a variety of factors but especially volatile milk-feed price ratios. Longitudinal data would better incorporate the learning by doing
effect as discussed in the interviews. A longitudinal approach could also study the resilience of organic dairy profitability compared to other systems over time.

It should be relatively feasible conceptually and empirically to get better data on productivity of organic, conventional and grazing farms with a range of feeding structures. For example, many dairy farmers participate in the National Dairy Herd Information record system (McBride & Greene, 2009) where farmers keep track of on farm productivity. This could make it possible to obtain productivity data from a wide range of dairy farmers. Farmers could also be surveyed as to what extent productivity is a goal for them so farmers who were working towards higher levels of productivity are compared with those working to achieve similar goals. That way organic farmers like Sam Donny (see above) would not be compared with conventional farmers like Larry Wagner as they have vastly different goals with respect to productivity. More studies are needed on organic pasture productivity given the state of the science, and indeed these outcomes could be responsive to better science as well.

Very little is known about organic herd health management in general. Overall, the majority of the research is European (Nicholas et al., 2004). There have been no published studies comparing organic and conventional herd health in the U.S. (Ruegg, 2009). Insights from European studies are not easily transferable to Wisconsin because of major management differences. For example, European organic rules allow for some use of antibiotics whereas the rules in the United States do not allow milk to be sold after the cows have been treated with antibiotics. Disease monitoring may differ between organic and conventional farms (Ruegg, 2009) so consistent measurements need to be taken for both kinds of farms. There is also very
limited information about alternative herd health management and treatments independent of what farmers do on their own farms.

In addition, the information that is available on organic herd health primarily focuses on single indicators instead of a holistic way of assessing herd health. A multi-dimensional method is needed to measure herd health to make any distinct conclusions. For example, it would be ideal to have data on the cow’s lifespan in organic and conventional herds. It would also be ideal to look at connections between a multi-dimensional indicator of herd health and profitability both in the short and long term.

Organic dairy can have increased efficiencies associated with the integrated nature of the system. The dairy farm also needs to be researched as a multi-enterprise firm (Andersson et al., 2003; Barbieri & Mahoney, 2009; Ikerd, 2006). Organic operations grow more of their own feed (Kristensen & Kristensen, 1998; Krutzinna et al., 1996; Lampkin & Padel, 1994). Organic dairy farmers will often have reduced levels of concentrate feeding compared to conventional producers as documented by a number of European studies (Freyer et al., 1994; Kristensen & Kristensen, 1998; Krutzinna et al., 1996; Lampkin & Padel, 1994; Nicholas et al., 2004). Thus, organic feed costs may be over estimated if the farmer’s “production costs [are] lower than the market prices charged for these inputs” (McBride & Greene, 2009; McCrory, 2001).

These scope economics are being recognized by organic dairy farmers who are responding to raising organic feed costs by increasing their use of pasture (Guptill, 2009). More research should be directed towards the benefits of an intensively focused pasture and forage production system (Johansson & Holtenius, 2008; Rotz et al., 2008). There are also limits to the insights
that can be gained from comparison studies which focus solely on conventional and organic dairy farms. The one study that did look at organic production in the context of a pasture based situation found that there were clear financial benefits for pasture based producers compared to adopting organic systems although the benefits were associated mainly with the organic premium (Rotz et al., 2008).

It is also necessary to have characteristics of the farm and farmer incorporated into viability assessments. The existing data are based on averages which hides a lot of variability. There are observed and unobserved differences of the system and the farmer which can influence farm viability indicators. Observed characteristics include education, years in farming, and feed self-sufficiency. Unobserved characteristics include the ability, knowledge and effort of farmers. A detailed econometrics study (looking at costs of production explicitly) combined with qualitative data would be valuable in eliciting some of the unobserved characteristics. This kind of information would also enable one to compare the most active conventional farmers with the most active organic farmers.

Finally taking a step back from the narrow conventional neo-classical economics approach, one could construct indicators of farm viability overall that incorporates some different realms of the oikonomia framework. Qualitative data would assist in piecing out the oikonomia of the farmer. The effort that farmers expend increasing profitability may be related to other lifestyle choices. For example, it could be that farmers like Sam Donny do not value productivity of their operation as much as other aspects of the farms.
Summary

Farmers’ have divergent perceptions and experiences with organic dairy farm systems. The concerns that non-adopters have with organic farming systems include: herd health, feed sourcing, grain and milk production, labor demands, nutrient/environmental concerns, and overall profitability. The approach that farmers take on these issues seem to reflect some key themes in farming culture such as a focus on production, cost minimization, reducing labor and relying on chemicals and antibiotics when managing pests, weeds and diseases. Small and large conventional farmers, low intensive and high intensive graziers all share some of the same concerns. However, smaller conventional, pasture based and high intensive graziers were more focused on reducing costs than larger conventional producers. High intensive graziers tend to have more specific reasons why they do not adopt organic systems like reduced profitability with higher costs of feed and nutrient management concerns. The differences between farmer perceptions and experiences and the paucity, focus and availability of existing research illustrates the gaps in the state of knowledge of organic systems. The integrated and complex nature of organic management was an underlying theme of this chapter and will be expanded upon in the next chapter.

There are many unknowns associated with these concerns especially considering the state of the science on these issues. For example, there is often not any locally based information available on these questions as much of the literature that does exist on these issues is European (Nicholas et al., 2004). The state of knowledge on a number of these topics illustrates how the farmers and those advising them are in a bounded rationality situation of limited and/or
conflicting information. Although the research on organic dairy has been growing the past few years, it remains thin and often limited in its local value or coverage. A recent literature review of organic agriculture found that there is six times more ‘grey’ literature on organic agriculture than peer reviewed literature (Watson et al., 2008). Much of this research is in conference abstracts and other unpublished sources, so both access and validity are at issue.

Understandably, farmers put a lot of value on local (often) anecdotal information, so the experiences of organic farmers could carry a lot of weight if framed in the right way especially given the existing state of the science on each of the issues of concern.

Although there is evidence that certain types of organic dairy operations are profitable and competitive with conventional dairies, there is no consensus among researchers and practitioners as to the specifics. An Organic Valley representative talks about how it would help if they knew more about costs of production as he states, “that that [is one way] the land grant universities could really help out the organic industry is by doing some studies [on] what is the cost of conversion and what are the economic returns.” He also says that the cost of production is hard to predict as, “there is a wide range of management strategies…because the grazing guys that ha[ve] almost no overhead and it is really easy for them to transition and then you got the guys buying a lot of feed [with] a lot of acres to manage.” Clearly the transitions costs are going to vary a great deal from farm to farm. Ideally, he hopes that, “the universities will…objectively say…here is a farmer in this situation [and] here is their transition costs based on feed and labor and really show where the costs centers are.” It should be clear from the discussion in this
chapter that we are a long way from providing the kind of answers that this Organic Valley representative is referencing with regards to organic systems.

**Literature Cited**


Chapter 5: Venturing Deeper into the Unknown: A Bounded Rationality Framework for Studying Organic and MIRG Adoption Decisions

“...for young guys starting out, they’re still enamored with machinery and money. And so that stops them when they are young, and then when they get smart and older, by then they’re saying, “I can’t afford to change... and learn a new system.”

Jeff Jensen

Introduction

This chapter on adoption decision making is a unique contribution to the sustainable agriculture literature because it combines a holistic concept of oikonomia with a bounded rationality framework. Interview and survey studies have found that decisions about sustainable agriculture practices (i.e. organic agriculture) are complex and involve a lot of uncertainty (e.g. Abaidoo & Dickinson, 2002; Bell, 2004; Clark et al., 1999; Darnhofer et al., 2005; de Buck et al., 2001; Duram, 2000; Fairweather, 1998; Guthman, 2004; Kaltoft, 1999; Lunneryd, 2003; Padel, 2001; Salamon, 1992). Different structural issues with organics may be more important for some farmers than for others (Duram, 2000; van der Ploeg, 1985), so that “structural factors may be mediated by [the decision maker’s] perception” (Hansen et al., 2004). As we saw in the previous chapter, intensive grazing farmers tend to focus more on specific economic and agronomic related concerns than do conventional farmers. It is also possible, however, that some of the outside perceptions of organic and MIRG farming may be attributed to bounded rationality issues as will be discussed in this chapter. Some of the concerns raised about organic dairy discussed in the previous chapter (e.g. herd health, feed sourcing, grain production, labor demands, production, nutrient/environmental concerns, and overall profitability) are revisited here in the context of bounded rationality possibilities. As discussed in Chapter 4, the emphasis
that non-adopters place on some of these concerns do not necessarily reflect the degree to which these issues have proven to be substantive challenges for organic dairy farmers. Organic and MIRG farmers are often the voice identifying the bounded rationality possibilities amongst other farmers.

This chapter argues that oikonomia and bounded rationality as well as contextual factors may better explain organic and MIRG adoption decisions than economic and agronomic oikonomia reasons alone. Although adoption of organic may not be a choice that is feasible for every farm, many farmers may not take the choice of adopting organic seriously. Farmers may not really consider the adoption choice of organic or MIRG for a number of reasons as the opening quotation from Jeff Jensen summarizes. For example, they may be overly focused on the power of technology and machinery at a younger age, become comfortable with a certain way of doing things, and then later decide that they are too old to try something different. They also may have already invested in significant amounts of capital that make it difficult to try alternative systems considering the uncertainty and unknowns involved with some of these systems.

Bounded rationality theory recognizes internal constraints (i.e. cognitive limitations and biases) and external constraints (i.e. uncertainty, limited time and resources). These constraints may explain why perceptions about the challenges of alternative dairy do not always match up with the experiences of practitioners (as discussed in the prior chapter). How farmers’ access and process information may be the most important factor in how bounded rationality issues play out in farmer decision making. All people exhibit bounded rationality issues to some extent, but
I am presenting the case of farmers considering major systems changes to organic and MIRG. It is important to remember that conventional farmers might suggest similar lack of careful assessments by organic farmers regarding information on conventional high production management systems. However, these alternative types of farming may be particularly susceptible to bounded rationality in part because there are more “unknowns” and hence uncertainty involved with these systems changes. This chapter offers a discussion of bounded rationality issues specific to the adoption decision of organic and/or MIRG dairy practices. Thus, I am not arguing that conventional farmers are necessarily more subject to bounded rationality than organic and grazing farmers in a general sense; rather, it is in the context of these adoption decisions, where we can see different kinds of bounded rationality. One would really need to do a psychology lab experiment in order to build a strong case that bounded rationality issues are present and influencing farmers’ decision-making processes. As mentioned earlier, there are ontological issues with this kind of research as some of the same information constraints that may shape farmers’ decisions also mean that there are limits as to what can be revealed through interviews.

Bounded rationality issues associated with organic adoption decisions are connected to information constraints and knowledge transfer (Morgan & Murdoch, 2000). Farmers may also not be as responsive to potential economic incentives associated with complex decisions like adopting organic as neoclassical theory would predict because individuals are often guided by habits and routines (Todd, 2000) which help decision makers negotiate a complex world. The importance of information and knowledge transfer has been researched in the context of organic
and MIRG systems (Hassanein, 1999; Lunneryd & Öhlmér, 2006; Padel, 2002). Individual temperament and/or cognitive approaches may matter as well. Some farmers are more proactive and innovative as opposed to being more reactive or more risk averse in response to alternatives, such as the organic adoption choice (Duram, 1997; Flaten et al., 2005; Gardebroek, 2006; Lunneryd & Öhlmér, 2006; Padel, 2002). However, it is important to note that circumstances can impact farmers and thus organic and MIRG practices may simply not be appropriate for farmers in certain contexts.

It is important to recognize that social networks also influence individual decision makers and their exposure to information in positive and negative ways. Social networks can reduce bounded rationality limitations through helping producers overcome the challenges of limited information. Social networks can also reinforce cognitively challenging situations or conversely they can reinforce biases or even provide negative peer pressure against the consideration of alternatives. The social networks and experience within which farmers are embedded can influence the final outcomes of these kinds of adoption decisions.

Bounded rationality issues are presented in a logical order given their connection to each other, and move from considerations of costly information gathering and different types of human capacities for processing information to approaches that appear to almost purposively exclude use of available information. Thus, I consider a spectrum of bounded rationality issues. I start with the broad issue of information being costly to gather and process and move toward what might be called bounded rationality biases, such as ambiguity aversion, ‘status quo bias,’ anchoring, extremetization, and information satisficing. Ambiguity aversion is probably the least
extreme bounded rationality phenomena because the decision maker may be quite aware of their avoidance of uncertainty. This might contrast with other forms of bounded rationality, where the decision maker is often not aware of their own biases.

**The Adoption Decision: Not Really Being Taken Seriously**

Farmers often do not explore in depth the pros and cons of different complex adoption decisions. This assertion seems to ring true for all types of farmers even for smaller scale farmers who utilize pastures. Both organic and MIRG farmers state that there are some farmers who would never seriously consider the option. Nick Nader talks about trying to share the benefits of MIRG farming with his neighbors and, as he says, they can see the system is working as he is right across the road from them. He has had field days and talks to them about MIRG but he states that his conventional neighbors “would rather go bankrupt”. In fact, two of those families did go bankrupt rather than try something else. Nick exclaims “For the life of me, to this day, I can’t figure that out.” Nick is not sure how to introduce the MIRG system in a way that they would consider it.

The Teiners (Chapter 3), like quite a few other producers in the interviews, do not seem to consider the organic or MIRG options with open minds (i.e. accessing available information and weighing seriously the pros and cons). The Teiners demonstrate this lack of consideration of organic, as the lead operator was not even aware that pasture management was required on organic farms. Andy Son also did not really understand what MIRG grazing was as he talked about an article that involved rotating cows through high sugar corn. He was not sure that the cows could get used to a MIRG system which may indicate that he had not considered it as he
did not know what was required and how it works for others. The ways producers show that they have not really considered organic and MIRG practices systematically may demonstrate they are operating in the arena of bounded rationality.

**Costly Information Gathering: There is Not Enough Time and Information**

Recall that full rationality assumes full access to information and the time and human capacity to wade through the information available whereas bounded rationality recognizes time and human capacity constraints (Kahneman, 2003). Farmers under the assumption of full rationality would have access to perfect information on organic farming and the time to process it, so they can weigh all of the pros and cons involved. Full rationality assumes individuals choose the best action according to stable preference functions and the constraints facing them. In contrast, farmers may be framing problems so that they minimize uncertainty, or at least their perceptions of it by how they represent reality (Egidi & Marengo, 2002). As discussed earlier, organic and MIRG adoption decisions may be particularly susceptible to bounded rationality behavior because the information on the full range of organic practices and pasture management can be challenging to access, process and implement.

The assumptions of unlimited time and full information in full (or unbounded) rationality are obviously unrealistic and may lead to many farmers dismissing alternative management systems in an uncertain world. The idea that time is limited is very common in farm interviews. Although time and information constraints may be very real, these issues may also be used as an “excuse” in a sense for farmers to not fully consider other management systems. Some farmers “make the time” to investigate different farming systems under the right circumstances. These
time constraints are not always raised directly in the context of organic and MIRG. Since both practices are information intensive, a deficiency in time spent information gathering can be a barrier in adopting information intensive systems based approaches like organic and MIRG. The discussion below gives a sense of the time constraints and information seeking behavior of farmers.

Farmers state that the milking routine can keep them from going to many meetings where information about organic and MIRG gets exchanged. Andy Son also raises the time constraint issue as he says he has a few thoughts about improving the pasture but when he thinks about it something else comes up. Perhaps the stress of farm life and in many cases an off-farm job can make the farmers more time sensitive. Many of the Amish farmers have sideline operations, so they also face significant time constraints. One Amish farmer expresses how the daily operations of the farm can be challenging with a sideline business as he states, “farmers can be sloppy with management when they are balancing multiple jobs.” Alternative farmers themselves can relate time limitations more to management decisions. The organic farmer, Devin Dooley, states this about MIRG farming, “I see the information about the pasture walks and I should be going to them and I have not…I don’t have time…just look at me.” Devin Dooley has a part-time job off the farm and his wife has a stressful job in town.

Alternative farmers also say that there is limited information addressing some of the questions raised in the previous chapter. Opportunities for farmer-to-farmer interactions (especially those that may be fundamental to information exchange about alternative agriculture) may be more difficult to come by than in years past. The Smiths, early organic adopters, indicate
how information on alternatives was difficult to access in the early days and what little information that existed was transferred farmer-to-farmer. Many farmers complain about how the number of farmers has fallen over the years so that the nearest farmer is much further away than they used to be. In the same vein, farmers say that the grazing networks are too dispersed and far away. This makes attending meetings challenging. The issue of distance to pasture walks and grazing networks may be particularly binding for the Amish as one farmer states that pasture networks are just too far for the Amish since their primary mode of transportation is a buggy. The point is that knowledge on alternative agriculture may have spread much more readily if the same depth and proximity of rural support networks existed that were around years ago.

It is not clear that the majority of information that non-adopters receive about organic and MIRG is really a fair portrayal of these systems. The more readily available information tends to be biased against organic. Matt Drake, organic farmer states, “A lot of the articles about organic are negative. A lot of this negative feedback is from the conventional industry.” Billy Donneker, (cf. Appendix IV) intensive grazier, states “Hoard’s Dairy [a popular farm magazine] is often b.s. from industry.” Information from agriculture support agencies on alternative agriculture is also limited. Tom Sert, felt that he was “sold a line of goods with the conventional paradigm” from extension and agribusiness. Alan Martin (cf. Appendix IV), intensive grazier, was told by a local agent that he “had to be on concrete to survive.” Some current alternative farmers said they were entrenched in a conventional paradigm because of available information from extension and industry so this larger context mattered. As a grazing network leader states,
“their view of pasture … it’s what you do with wasteland - The University and industry, their neighbors, everybody has told [farmers] that for 30 years. There is also more research needed in areas like better crops and breeds developed for organic systems.”

Overall, there is a significant concentration of organic and grazing operations in the research area, so tacit knowledge on the systems should be relatively available if farmers seek it out. But farmers have to go out of their way to access and utilize information on alternative dairy, as they may need to talk to farmers who are outside of their normal social circles. Organic and MIRG farmers both state that conventional farmers very rarely ask questions about their management systems even out of curiosity. On-farm interviews indicate that many conventional and low-intensive pasture based farmers often just read the typical conventional newsletters (i.e. basically Hoard’s Dairy and Agri-View). They generally read for curiosity and background rather than taking information directly and experimenting on their own farms. This pattern is probably similar to other types of decision makers and information sourcing.

There seems to be an attitude amongst farmers that they just need to make sure the basic farm management is covered on the farm so they do not need to keep themselves open to different farm management possibilities. Phil Thicky compares his farm strategy to baking a potato as he already knows how “to cook a potato. You know how to do it, but you might want to change a little bit here and there. That’s kind of like farming.” In other words, he feels like he already knew the basics of farming so why would he spend a lot of time getting more information on the farm just like reading different recipes will probably not totally revolutionize how one cooks a potato.
Farmers tend to anchor on the negative stories of organics and discount the positive stories. This is true for farmers of all types of management systems although again this anchoring on negative stories seems most common amongst the lower intensive graziers and conventional farmers including the Amish rather than high intensive graziers. A number of the farmers state that they know people who had bad experiences with adopting organic related to issues like organic feed acquisition and herd health issues and as a result are not doing well economically. For example, Jerod Lackey talked about a farmer who tried to go organic and he didn’t think that he would ever be able to pay back his debts, which is one of Jerod’s biggest fears. Fred Teiner talked about another farmer who went through the process to get certified and then the organic buyer did not need his milk. As Fred Teiner states, “He was officially an organic farmer and had organic milk but was still getting the lower price.” Fred focuses on the negative example of the organic farmer, yet he clearly knows another organic farmer who has been doing it successfully for a long time but does not mention this farmer in the discussion about organics. It is strange that none of the organic farmers interviewed experienced such negative setbacks as the stories of Fred and others imply. This may relate to the differences between perceptions and experiences discussed in the last chapter. This also may be connected to why Randy Rod stated that he was skeptical of other farmers’ information because “people don’t want to admit making a mistake.” In a separate interview, the organic farmer that Fred knows feels that she is not received well by other farmers as she states, “I am not respected as a farmer and that hurts.” This sentiment may be why Fred did not mention her in the context of organic farming.
**Status Quo Bias/Avoiding Change**

Family farmers may be especially susceptible to a bounded rationality situation considering that they are embedded in a system where knowledge is generally transferred through the generations and there is significant inertia to overcome in order to consider organic and MIRG adoption decisions seriously. Where there is limited information, time and/or abilities, there is often a focus on daily heuristics which can lead to status quo bias (Tversky & Kahneman, 1974). For pressing reasons, farmers may tend to focus strongly on their current system of conventional farming and may be more concerned about the losses from switching out of this known system than the potential gains from switching to an alternative system.

Decision makers who are operating under status quo bias (SQB) often emphasize losses in a decision more than gains (i.e. loss aversion) (Bandiera & Rasul, 2006) based off a certain reference point (Kahneman et al., 1991; Samuelson & Zeckhauser, 1988). This is in contrast to a situation of rationality where only the final end point/income is valued so losses and sunk costs are generally not considered relevant (Kahneman et al., 1991; Kahneman & Tversky, 1979; Samuelson & Zeckhauser, 1988). Thus, loss aversion may lead farmers to focus on yield declines within an organic system or the investment in the certification process in general. It is important to remember that the adoption of organic and MIRG involves a lot of uncertainty because of the unknown factors involved, and so it is reasonable that farmers may want to wait and observe how well these systems perform before they feel comfortable risking the possibility of abandoning previous or making new sunk investments.
Many farmers state that except for some specific technological changes they are farming the same way as their parents. When asked about looking at different management systems, the farmers respond that we have always done it a certain way, which may imply that there are sunk costs related to knowledge acquisition as well as the comfort associated with known systems. In this same vein, Douglas Acker states, “I guess, we’re stubborn, and I don’t want to change what I do,” and thus he goes onto say “there has to be a big reason for me to change.” This kind of response is common when asked about considering other management possibilities.

When I asked if Randy Rod has thought about other strategies like going organic or using pasture more intensively or getting bigger, he states that the system he has going now:

“works so you kind of stick with it...and the thing is that I would hate to upset the apple cart, you go with some other strategy and you say hey this ain’t working; now you’ve lost time and money fiddling with it, and to go back is going be costly too... If it’s not broke, don’t fix it.”

The apple cart for Randy is in a sense the status quo. This statement reflects a common attitude among many farmers. This type of status quo bias may be related to confirmation bias (Klayman & Ha, 1987) where farmers have a difficult time finding fault with the management system that they are immersed within. Farmers state that they are doing fine with where they are at so they do not see any need for change. Yet, it is not clear what “fine” means to them. How the farmers gauge what is working is unclear since it may just involve keeping the farm above water as some of the farmers describe. This could be related to their relative contentment levels that will be discussed in the next chapter.

It may be a “conventional mindset[s]” that keeps many farmers from making systems based changes. These farmers tend to have a high productivity mindset in their investments,
learning and social circles. Although the narratives of Larry Wagner and the Teiners demonstrate this most dramatically, the smaller conventional and pasture based farmers can also demonstrate these tendencies. The grazing network leaders Nick Nader and Wes Pander are able to reflect on this in an articulate way. Nick Nader ponders why conventional farmers do not consider MIRG as he states, “I believe that they think that it couldn’t be done, so therefore there is no use to explore it.” Wes Pander describes this conventional mindset by stating, “I think that there are a lot of farmers that don’t really have a plan, they’re just trying to get through the day.” As such, they are not necessarily thinking about, “What are my broad range goals?” They focus more on how they are “trying to get through the day and get [their] next crop in.” This common framework of just trying to get through the day may make them less apt to explore systems based approaches with many unknowns.

**Ambiguity Aversion /Fear of the Unknown**

Ambiguity aversion appears to be a common responses to situations of uncertainty especially when information that may help to address the uncertainty is difficult to access (Epstein, 1999) like the adoption of organic and MIRG farming. Recent research suggests that organic farmers may be less risk averse (Acs et al., 2005; Flaten et al., 2005; Gardebroek, 2006; Serra et al., 2008) than conventional farmers particularly in regards to economic risks (McCann & Sullivan, 1997). This literature may be confounding risk and ambiguity aversion given the inherent lack of clear information about the true “risks.” It is assumed that “risk averse” decision makers have some method of assigning probabilities to the likelihood of events as opposed to
acting in a completely uncertain environment (Knight, 1921 [1964]). Decision makers seem to act as if they can estimate probabilities even though they oftentimes cannot (Ellsberg, 1961).

Ambiguity averse decision makers cannot estimate probabilities of different events based on their decisions and are aware of this deficiency. A decrease in economic risks does not necessarily mean that farmers will convert to organic (Burton et al., 1999; Pietola & Lansink 2001) so it may be the perceptions of risk (Darnhofer et al., 2005) or as I argue ambiguity aversion that may better explain why farmers do not adopt organic. Farmers may have an especially difficult time realistically assessing probabilities given the complexities of organic systems. For this particular section, ambiguity aversion will be used primarily to describe those farmers who explicitly state that there are elements of the organic and MIRG systems that they do not understand. Ambiguity aversion (i.e. perceptions of risk) can be a preventing factor in adopting organic (Gardebroek, 2006) especially in the area of economic and agronomic concerns.

There are a lot of unknowns associated with adopting systems-based changes although the farmers themselves do not always express this directly. An organic educator finds that farmers are often concerned about all the little details they would have to be aware [of] with organic farming.” An active grazier sums up these kinds of issues when he states why farmers do not adopt MIRG farming, “I think it’s the fear of the unknown, I think that we don’t understand pastures and we don’t understand it as a crop.” These fears of the unknown may explain why Nick Nader states for some farmers the “hardest thing [for them] to do [is] set that first post” when it comes to adopting an intensive grazing system. In other words, farmers may
be so stymied by the ambiguity of the situation that they have trouble even beginning to approach a systems based change.

Farmers who are ambiguity averse may be focused on the technical challenges with organics and necessary changes with conversion (Darnhofer et al., 2005). Organic herd health and growing feed organically are both areas of concern where there may be a lot of ambiguity aversion. One organic farmer echoes these sentiments of the overwhelming nature of the unknowns associated with organics when he states, “I was worried about keeping the cattle healthy without drugs. I was worried about how to raise hay without fertilizer. I couldn't understand any of that.”

Generally the farmers who admit to the most ambiguity aversion are those farmers who are most knowledgeable of the system and are less likely to be susceptible to more extreme forms of bounded rationality. The intensive graziers are more likely to be ambiguity averse towards organic than farmers whose system is further away. Informed graziers may exhibit ambiguity aversion about feed sourcing and other issues as it is difficult to get information about the advantages and disadvantages of organic management when it comes to feed provision. Paul Flecker, intensive grazer, is an example of a farmer who is operating under upfront ambiguity aversion. Paul says, “It can also be so easy to let the weeds take over. I don't disparage the people that do it and do it successfully. They've got it going on.” He also states that organic dairy “presents some challenges as far as herd health...Those challenges can be overcome because obviously there are a lot of people doing organic dairy. But I just haven't.”
Ambiguity aversion can be overcome in the proper context with resources and knowledgeable people around them. For example, as we learned in the narrative chapter, Dan Crank expressed how he experienced ambiguity aversion initially about organic as he wondered “What is organic and why is it better?” However, his brother, Ben, was able to eventually persuade Dan to adopt an organic system, perhaps by helping him to answer these fundamental questions with direct information. This illustrates how perspective and oikonomia values can change with social influence and additional information.

Anchoring and Extremetization

“Anchoring” is a way to drastically simplify complex problems (Gigerenzer & Goldstein, 1996; Lunneryd & Öhlmér, 2006). In other words, decision makers may simplify a complex decision making process by anchoring on a detail that they use to help them make a decision. Anchoring entails focusing on a limited component of a problem which may or may not be the most relevant fact to consider (e.g. the car buyer focusing on the odometer mileage as a way to decide if it is the best car to buy) (Lunneryd & Öhlmér, 2006; Todd, 2000; Tversky & Kahneman, 1974). Anchoring can prevent farmers from gathering information about the larger context and thus not fully consider a system like organic or MIRG. As Jeff Jensen’s opening statement implies, young farmers may anchor on the allure of new machinery and that may distract them from thinking about their farming system in a holistic way. Thus they may not obtain new information about different possibilities. Decision makers tend to anchor on goals that are not as abstract and that have a relatively narrow focus. Examples of issues that farmers
anchor on include concrete sub-goals like crop prices and the cost of inputs rather than looking at the whole farm system.

Farmers may anchor or focus intensely on goals that reflect different preferences. Some of these different oikonomia preferences can lead farmers to anchor and extremetize when producers are highly focused on these issues. Fears of the unknown and status quo bias can lead to anchoring and extremetizing. Some of the farmers who anchor or extremetize may be focused on science and technology and a production/modernization paradigm (Beus & Dunlap, 1990; Darnhofer et al., 2005). For example, conventional farmers may assess economic viability by focusing on production goals whereas many grazing farmers focus on profitability or returns and labor flexibility (Lloyd et al., 2007; Merrill, 2006) and thus conventional farmers assess the difference between status quo and desired states in different ways than do alternative farmers.

The strong preferences and values that can lead to anchoring include the common focuses on production and technology. The “fixation on productivity” evoked by Productionist Peter to some extent may be a form of anchoring that dissuades conventional operators from analyzing the benefits of MIRG or organic management at a systems level. As stated in Chapter 5, farmers can be concerned about it for their own sake, or for achieving higher net farm income. This focus on high production is also described in the narratives including farmers like Larry Wagner and the Teiners as well as other farmers. There is a sense of “pride” expressed by conventional farmers with regard to productivity (e.g. Larry Wagner) that can prevent farmers from considering information on other systems. According to a statewide grazing network leader, “In our dairy farm culture we really are into production per cow…bringing all the feed to the cow
and catering to her every need.” By contrast, among organic (and MIRG) farming systems, production levels may be lower, but other performance measures may be stronger as discussed in the previous chapter.

The focus on cost minimization is another example of anchoring that we see in Chapter 3 and 4. Randy Rod and other smaller farmers exhibit cost minimization by focusing on the cost of inputs or the labor involved rather than looking at the system as a whole. We will see this discussed more in the satisficing section that is used in the next chapter to discuss Amish farm decisions. It is important to emphasize again that making some decisions based on cost minimization is not anchoring; it is just that when this focus becomes overly restrictive, it can prevent farmers from considering information about other possibilities.

Another example of anchoring is the focus on having “clean corn” or just crop production in general. Some of that emphasis may be primarily social as is alluded to in the earlier section. One farmer states, “[The] biggest fear of one converter is the look of his organic corn to his neighbors. In other words, the farmer is worried that the neighboring farmers will make fun of him if his corn is weedy.” Grazing network leaders provide a more general form of anchoring when they point out that a big stumbling block for potential adopters is the “obsession with corn.”

Conventional farmers may also anchor on the latest technology and machinery as indicated by the introductory quotation and this too can prevent consideration of alternatives. The Teiners, for example, focus on the benefits of new technologies in the conventional farming system. Kevin Cassidy, a grazing network leader, states that the “desire to work with big
“machinery” is a hurdle to going organic, and he adds that this may be particularly an issue with males given their fixation with mechanical devices. As Kerry Martin (cf. Appendix IV) states about his young peers in farming, the “big deal” for them is when their dad gets new TMR equipment. Mr. Smith states, “A lot of these young people have to get everything new.” The conventional belief that antibiotics are the only way to manage livestock healthcare may reflect a larger emphasis on the power of technology to address the issues in agriculture. The potential of genetic engineering and other modern developments is emphasized amongst farmers like Billy Donneker as he exclaims, “what they can do with corn is phenomenal.” Thus, he could not comprehend why a farmer would want to go organic and not be able to utilize that kind of technology.

Amongst some of the graziers and conventional farmers, this fixation on the power of technology makes the idea of going organic equivalent to going backwards. This idea is captured in the Smith interview, where they report that other farmers mocked them by saying they have information on organic farming from the 1940’s. Some farmers state that they do not want to go back to the labor-intensive farming practices that they experienced a couple of generations ago. Harry Tricky, an intensive grazier, compared the organic movement to the Amish as certain kinds of technologies are restricted for reasons that are unclear to outsiders. It is possible that this focus on technology may reflect the conventional farmer emphasis on aspects of farming that offer more control (Abaidoo & Dickinson, 2002; Lloyd et al., 2007). Sam Donny, an organic grazier, comments that conventional farmers “have to be right in control of everything [and] organic farming [is about] letting nature take its course.”
Anchoring and fixation at an intense level on these issues can lead to “extremetization” related to organic and pasture management. “Extremetization” is an even more rigid form of anchoring where it becomes difficult to see the wider perspective on the issues at hand. Farmers may extremetize based on initial impressions and it may be a way to dismiss information about other unfamiliar management systems (or about more intense forms of their current management system). In contrast to ambiguity aversion, which tends to apply to farmers who are closest to the organic system, farmers who are further away from the organic system are more likely to extremetize. Also, farmers are more likely to extremetize about organic than MIRG and this is most likely because they see organic as very different with far more unknowns.

Herd health is one area where producers tend to extremetize, and this may explain in part why it seemed to be the number one concern of many different kinds of producers. Most of the concern with herd health hinges on the specific restriction against using antibiotics. As discussed in the previous chapter, the Teiner’s son, Ryan, responds to organic health care by stating, “to hell with that when I get a sick cow I want to zap her with her medicine and get her going again. None of this fu fu pixie dust crap. That @#*! stuff doesn’t work.” In this same reactionary tone, Jerod Lackey, low intensive grazier, states that “you can’t do nothing for [the cows] if they get sick.” Luke Miller, another low intensive grazier, states he knows “an organic person that lets the cows die.” We know that Jerod Lackey’s statement is extreme because there are organic treatments for managing herd health. Organic farmers are not able to use antibiotics and continue to sell milk from the treated cows. Yet, organic farmers are also not supposed to deny antibiotic treatment to any cow in dire need, so even if Luke Miller knows someone that
has let cows die, this is not standard practice. Other non-organic farmers also make extreme statements in response to organic adoption questions based on stories and anecdotes.

The statement that organic is a religion is an example of this fixation with rules that do not necessarily make sense to outsiders. Some of the non-organic farmers refer to some organic farmers as “believers” and treat it as a religion. Nick Nader, intensive grazier, states that organic is “basically a religion,” because it consists of “what’s blessed and what’s not blessed.” In other words, the list of inputs that can be used as opposed to what cannot be used on organic farms is not understandable to Nick Nader. He goes on to say, “To me organic is intellectually dishonest, but that’s a personal thing.” He feels that the decisions are not well grounded on any foundation that an outsider can understand. This illustrates how Nick Nader feels that the organic sector is anchoring on attributes of the farm that inhibits them from seeing the full picture. One Amish farmer felt that it would not be appropriate for him to go organic as he was not a “believer” in the organic system. It seems in some sense that would serve as a motivating factor to ensure that he and others follow the regulations.

**Anchoring/Extremetization: An Example “Milk is Milk”**

There is a predominant idea in dairy farm culture that all milk is wholesome and nutritious regardless of management system. This idea is evident in the statement that “milk is milk,” which is a phrase that many of the interviewed farmers seem to anchor on and can lead to extremetization. According to Darnhoefer (2005), this question of whether organic food is any better was the first criterion in determining if farmers would consider organics and may be connected to the emphasis put on being a believer in organics when making the adoption
decision. For example, when I asked the Teiners about organic farming, Susan Teiner, pipes in and asks her husband, “Aren’t you going to get on a [soap] box and tell her what a crock this organic is?” and then Fred states “You could take two glasses of milk and there’s nothing different. It’s like buying premier jeans. The jeans are probably the same material…but just twice the price, just because of the name [so]…Why [do] people pay for it?”

The Serts’ conversion story to organic provides another intriguing example of this “milk is milk” perception. The Serts’ organic adoption decision was reportedly decided by their organic friend’s response to the question of whether organic milk is any different from conventional milk. Tom states that his wife, Laura “loved everything the [organic farmer friends] had to say [about the organic option] and she said the final question is: Is your milk better than ours?” And he said, “No.” Because the organic producer friend did not say or imply that conventional milk was of poorer quality than organic milk, Laura was at peace with becoming organic. Ms Sert’s hesitation may reflect the hostility conventional farmers have towards the organic sector as they feel that marketing based on the idea that organic milk is superior to conventional milk is flawed.

The “milk is milk” perception connects to the idea that organic production is associated with cheating in the minds of non-organic producers. This focus on cheating may be reflective of some kind of resentment with organics or a sense of unfairness for some farmers that is discussed further below. Andy Son, small conventional farmer, questioned “how organic” are organic farmers in reality as he thinks that some organic producers may use pesticides on their fields and antibiotics on their cows. He goes on to say, “It doesn't seem fair that people pay that
much money for the same thing we do.” Andy Son’s reflects potential jealously issues with organic.

Larry Wagner echoes Andy Son’s sentiments by stating, “Well, there’s chemicals and hormones that are being used on cows that are organic. There’s medicines that are treated to the cows. I’m not going to lie or cheat.” By the end of the interview, Larry thought that Organic Valley was funding me, as he was quite suspicious of the interaction. Larry went onto say “the milk isn’t any better.” He says there may be an issue with chemicals on fresh produce but with “the way a cow purifies the milk, I don’t think that it’s any better. What really gets me is [the] organic producer will come out and say in the paper that their product is so much better. There’s no proof to that.” Larry Wagner concluded this line of discussion with the following paraphrased quote:

“There are chemicals everywhere yet we are overall living longer than we ever have before. Course there is more cancer and such and there might be a connection there but you might get run over by a train tomorrow...you never know what is going to happen. Is organic milk really going to keep you alive?”

Although Larry eventually acknowledges that there may be some negative effects of chemicals, he feels that in the grand scheme of risks symbolized by the train wreck, organic milk seems to be a bit of a joke in his mind. So Larry seems to imply that organic consumers may be overly focused on the risks of pesticides and this could turn into a type of anchoring.

Craig Pinkney’s statement about organic farmers having relatively high somatic cell counts reflects a “pervasive myth among dairy professionals that the quality of milk” is lower on organic farms than on similar conventional farms (Ruegg, 2009). There are no real comparative studies on milk quality between organic and conventional in the United States (Ruegg, 2009).
However, probably the most important point to make about this issue is not whether the organic milk quality is better or worse than conventional but rather why this is such a critical question to ask about organic dairy farming in the first place. Perhaps ironically, it is Edmond Bontrager, an Amish elder, who argues that the quality is not the main point; for him, it is really about “if the consumer is willing to pay more for the milk.” Indeed, consumer demand is ultimately what drives the organic market, and arguably they are paying for a bundle of attributes that could include other features beyond whether the milk is better or healthier (Antle, 1999).

**Information Satisficing**

Farmers may “satisfice” by stopping their search for a management system after they find one that exceeds some aspiration level rather than weighing all of the information in a systematic way to reach an optimal decision. All farmers may exhibit information satisficing with respect to different management systems, and it seems that this is true for small pasture based farmers as well as larger conventional farmers. Farmers, like other kinds of decision makers, may tend to stop seeking out information and ideas about different practices well before they have exhausted the possibilities for exploration (Simon, 1955). Farmers may rely on local searches for information particularly in complex situations (Kleindorfer et al., 1993; Lunneryd & Öhlmér, 2006). Information satisficing is a crucial concept because it captures another reason why farmers may not consider an alternative or only adopt a low intensive form of the practice. The issues that farmers anchor on may be highly related to their “aspiration level” that serves as their benchmark for satisficing. Sometimes it seems as if there can be too much information to wade through given the farmer’s time constraints especially when quality is difficult to discern.
Walter Reshy (cf. Appendix IV), currently a conventional farmer, probably reflected the sentiments of other farmers when he said, “there is so much information out there” and “if you did everything that everybody said, you would be lost.”

Farmers often may satisfice with respect to information gleaned from social settings. In turn, this satisficing may keep them from utilizing networks and other information sources to their full potential. Socially specific satisficing behavior could be especially crucial to the adoption of alternative systems given that a significant amount of information is transferred in social settings. Other organic dairy farmers may be the most important source of information (Kroma, 2006; Lunneryd, 2003; Padel, 2002). Farmers often like the idea of their independence with respect to information and practice, so that too can result in information satisficing. Indeed, it may be the independent nature of farmers that makes it difficult for them to take full advantage of information from other farmers, and leads them to downplay the extent that they find helpful information from other farmers. Kevin Cassidy, grazing network leader, wonders, “if some people just have trouble asking for help sometimes.” A number of other farmers indicate that they simply don’t like people. Disliking people is the reason why they work with cows instead of people. One of the grazing network leaders confirms that, “farmers don’t really talk to each other much and share information like they could.” Many farmers say that they do not get out much or are not a “meeting goer.” This may be because they feel wedded to their farm chores.

Farmers often want to see a farm that is very similar to their own that has considered different management systems, so that they can identify what type of changes they would have to make on their farm. Both conventional and pasture dairy farmers would like to see farmers who
they can identify because many of these farmers will have reasons that they think MIRG farming or organic farming is suitable for this particular situation. This identification may be particularly pertinent for farmers like the Serts who appreciated visiting with another large farm who was also organic. Yet, many farmers seem to focus on perceived differences between farms, so that they may even discount neighbors of fairly close proximity and instead prefer information that they feel is more self-generated (Foster & Rosenzweig, 1995). For example, Larry Wagner responds to questions of adopting MIRG farming with the statement “what works for one does not always work for someone else.” Randy Rod, conventional farmer, finds that talking to other farmers is the best way to get information because, “they’ll give you an honest opinion for the most part.” Yet, when I asked if Randy gets any specific information from other farmers about different management systems, he stated, “Well, for the most part I find that people [who choose a particular management system]…are happy that they did it. I guess I’m always left with the question if they don’t just want to admit to making a mistake.” This focus on farms very similar to one’s own may explain how in one region a grazing network participant stated that the emergence of organic has fractionalized the grazing movement. Organic farmers tend to attend more pasture walks on organic farms and vice versa for non-organic farmers.

Randy Rod’s sentiments also echoes the Cranks “to each to their own attitude” by expressing how they do not want to be required to do intensive rotational grazing as organic producers. Focusing on farms that are similar can by a savvy way to minimize the complexity involved with decision making. They state, “To dictate that everybody has to graze the same way…I thought that was way wrong. That works for some people, that’s fine, if that’s how they
want to do it.” But both of the Cranks wanted to keep managing their pasture in a low intensive way as they felt strongly that was the way that worked best for them.

All farmers exhibit information satisficing at some level. Even for those farmers who pursue different farm management practices, they often stop getting information after a certain period and they may stop being active in farmer networks or other activities that help them gather information. Wes Pander reflected on how some of the newer members of the grazing network do not go on pasture walks. Some farmers may try a system but then decide after a short amount of time that it does not work. This was true of Keith Neddy (cf. Appendix IV) who decided that he was going to experiment with MIRG, and then he basically decided it did not work for him after only trying a pasture mix that did not come up well. He did not seem to explore or ask any nearby graziers about why it did not work and/or what he could do differently. This may explain to some extent the lazy form of adopting MIRG and organic that the more intense organic and MIRG farmers criticize.

**Social Networks Shape the Oikonomia Values Associated with MIRG/Organic**

Farmer adoption decisions especially regarding complex systems like adopting organic are embedded within networks of existing organic farmers (Egri, 1999; Kroma, 2006; D. Lunneryd, 2003; Morgan & Murdoch, 2000; Warner, 2004). Social networks influence the access and selective exposure to information (Forester, 1984) and can shape individual farmer’s oikonomia either positively or negatively with respect to adoption decisions. The network within which the farmer is embedded is also an important factor in determining how and when farmers may satisfice with respect to factors like information and finances which can influence adoption
choices. About 60% of organic farmers were located in the South West and West Central regions of Wisconsin (in 2004) while only 30% of the overall state’s total dairy farms were located there. While this regional clustering certainly stems from the organizational efforts of local cooperatives like Organic Valley and biophysically from the unglaciated landscape that makes pasture based farming more appropriate, the clustering patterns are even more concentrated on the landscape and grow out of farmer-to-farmer interactions (Lewis, Barham, and Robinson, Forthcoming; Nyblom, 2003; Risgaard, 2007). The narratives indicate the power of social networks in information exchange and adoption decisions. The Smith’s narrative in particular is indicative of the power of information exchange that occurred among organic and prospective farmers in the early days of the movement when there was limited information. These network influences are particularly important within the Amish community considering the close family ties and the inter-related community and religious values associated with the Amish.

Family connections and farm background have a significant impact on individual adoption decisions. The Cranks brothers’ narratives illustrate the strength of family connections to overcome bounded rationality as Dan seems to get through his initial hesitations and lack of understanding about going organic by seeing his brother, Ben, go through the process. There are a number of other examples like the Cranks where family members influenced each other in the organic adoption decision. Farm families can also discourage each other from adopting alternative systems. For example, Craig Pinkey practiced MIRG for awhile but then went back
to conventional as he states, “I liked the idea of seeing cows out on pasture…but reality sets in and [my son] wanted to [do] more fieldwork.’’

Sometimes the adoption to organic means farmers have to break away to some extent from their existing social networks to switch systems and this may be particularly true for farmers who are further from the organic system. The Sert’s narrative is a key example as they were relatively intensive conventional farmers and were converting to an organic system at the time. University and extension as well as other social networks like the dairy promotion committee influenced the Serts to focus on a high production model initially. A few of their organic farmer friends were influential in encouraging the Serts to consider other options and move out of the conventional mindset. As depicted in Chapter 3, the Serts were thrilled to become a part of the organic social network. A few other organic farmers identified some of the same established organic farmers who had influenced the Sert’s as people who were also influential to them. The Serts do not seem to have the same exploratory spirit that the Smiths did with regard to information acquisition and experimenting on the farm. Thus, farmers like the Serts may be more likely to adopt an alternative system if they have both a combination of the motivation of a difficult situation economically or otherwise, and influential people in their lives to help them consider alternatives.

Farmers may find that during the organic conversion process they build or discover “a new set of relationships in which their local knowledge is respected and harnessed, rather than debased and dismissed” (Morgan & Murdoch, 2000). As the Sert’s story indicates, the newly converting farmer may spend more time with other organic farmers during and after the
conversion process, so they also get positive affirmation about their organic adoption decision. Likewise, the Crank brothers, continue to get information and support, because they have a group of friends who are also organic farmers and who all hang out and go to the same church. One grazing network leader confirms the importance of influential people in the context of adopting MIRG systems as she states “[If we had] one intensive grazier in every township, we’d be well on our way…If somebody starts, somebody else starts thinking about it.”

The negative social image of organics may explain why conventional farmers discount information from organic farmers (as discussed earlier). Although, there may be more of a perceived negative image of organics amongst those farmers who are the furthest away from organic farming, all types of farmers can exhibit negative social images of organic. Charles Kenny, organic farmer, refers to some of the negative social images when he talks about how a lot of conventional farmers think that organic farming is “just a bunch of hippies.” But Charles Kenny has a humorous attitude about the negative image of organics in light of how successful organic farming has been for him. He responds by stating, “I’m like, I don’t care if it’s a bunch of hippies, they’re making me money.” The Rays expresses that the negative stereotypes still exist as Mrs. Ray states “everyone around here says organic ehhh…They think it is a hoax.” The negative social images particularly of organic farming may influence farmer’s perceptions of some of the issues mentioned earlier. Farmers may not want to try organic because they might be “laughed at.” For example, Mike Drake says the social aversion to organic may have kept him from exploring it for a long time as he admits there was a time where he did not want to sit with people talking the O-Word (i.e. organic). However, it seems that negative social pressure
related to organic systems is decreasing in some sense as Mike Drake states organic is now for “a wide variety of people.” Mrs. Ray also states the movement has expanded to the point where “organic farmers these days don’t have to have ponytails.”

**External Factors That Can Reduce the Bounded Rationality Challenges**

A number of factors can help reduce some of the barriers to seriously considering adoption decisions in an unbiased way. The presence of key organic experienced farmers and the potential for informal social interaction with these alternative farmers can be critical to countering bounded rationality issues. It also helps if alternative farming approaches are initially presented in a way that does not seem too different from the farmer’s current management system. A personal or economic crisis is another way that can make farmers consider a radical change like adopting organic and MIRG as illustrated by the Ben Crank narrative where a cancer diagnosis inspired a conversion to organic and the Devin Dooley narrative where an economic crisis lead to a similar response.

The role of social networks in sustainable agriculture knowledge transfer is often depicted in positive ways (Bell, 2004; Hassanein, 1999; Hassanein & Kloppenberg, 1995; Jackson, 1987; Kloppenberg, 1991) and sometimes in negative ways (Kroma & Flora, 2001). It is very important to have established and successful farmers practicing organic and MIRG so potential mentors are available for people exploring the adoption choice. Harriet Behar, an organic educator, says one of the questions she asks farmers who are considering organic is if you have farmers nearby that you can talk to about organic management systems. Harriet Behar states well established and successful organic farmers are essential sources of information and
support. A few farmers would mention a friend who was farming organically and who helped persuade them to consider the option. There were definitely “keystone” organic farmers that had influenced a number of other farmers to go organic in the interviews. One grazing network leader states that anyone needs “competency and companionship” when they go into a new thing. However, farmers who are more proactive, experiential and adventurous may require less mentoring than other farmers.

This personal interaction is more likely attained through informal social interaction. Indeed, some might argue that the main reason for farm related meetings is the informal interaction as Mike Drake states “the reason you go [to] those meetings is because of the person you sit with at lunch.” Stories they hear about other farmer’s experiences with different management systems can be crucial when making decisions about their own farm. One farmer even says that he would do MIRG if someone would come and set it up for him. Although most farmers do not explicitly state they need more social interaction, Sam Donny expresses the desire for more of this kind of dialogue as she talks about how a regional based online community for organic dairy farmers would help her to feel less isolated and connect her with some needed support.

A possible way to counteract extremetization is to present organic/MIRG in a more of the middle of the road manner. Phil Thicky, a conventional farmer mentioned earlier, talks about the two extremes of organic and conventional as he states, “there is conventional and there is organic and they are pulling at both ends.” Many farmers may more easily identify with some intermediate state between conventional and organic. MIRG is seen as less extreme and more
flexible than organic agriculture, so it can be a starting place for discussion of organics. Midwest Bio Ag, a biological agriculture input supplier, is an information source that appeals to different kinds of farmers. Mike Drake says he had a lot of initial hesitations about organic farming as he referred to it as the “O-word.” But Mike warmed up to the idea of organic farming by learning about biological farming from Midwest Bio Ag. He said there is less baggage associated with “biological farming” than with organic as there are negative stereotypes associated with organics. Organic can also seem very different from the farmer’s current management system. Thus, illustrating the potential of a management system between organic and conventional may be a way to make inroads even if a whole system is not adopted. These more “middle of the road” management systems may eventually lead the farmer to consider organic agriculture and/or an intensive grazing system. It is also important to show farmers that the proposed management system is flexible. As Nick Nader responds to the farmers who fear wasting time and money associated with MIRG adoption by stating, “we’re going to make this very flexible, this for sure we absolutely know this is going to work out well for you.”

Organic Valley understands some of the direct challenges and bounded rationality issues associated with adoption decisions in a practical way. They use farmer members for a lot of their recruiting because farmers need to “see it themselves or hear it from other farmers” as “that is when the light bulb goes on because they trust other dairy farmers more than any industry person.” Recall that Devin Dooley thought that Organic Valley focused on recruiting him because he was particularly well respected in the conventional community and his family had received production related awards in the past. Thus, Devin was viewed as potentially a good
spokesperson for organic farming in the conventional agriculture community. Another farmer who received a lot of attention from Organic Valley was a young and first generation farmer. Organic Valley has highlighted how organic has helped young farmers thrive on its web site and one Organic Valley promotional calendar even had a theme of young farmers. Some farmers may also be particularly desirable for Organic Valley because they are located near a processing plant. The strong social aspect of Organic Valley recruiting indicates they are working closely with this social dimension and attempting to harness the power of farmer-to-farmer interactions.

**Summary**

In summary, bounded rationality issues intertwined with oikonomia values may keep many farmers from not fully considering the potential benefits of adopting organic and MIRG. Organic and MIRG farming is information intensive, and there are lot of unknowns so it may be particularly susceptible to bounded rationality challenges. Bounded rationality theory recognizes internal constraints (i.e. cognitive limitations and biases) and external constraints (i.e. uncertainty, limited time and resources). Farmers may not fully consider the adoption decision because of time constraints and cognitive limitations.

There are many unknowns even after a thorough review of the literature. Farmers simplify complex decisions by anchoring on certain factors which may or may not be good decision making factors. Farmers often become settled in their own habits and routines. They acquire some information from their families, and actively or implicitly these family ties may lead to sticking with the status quo and avoiding change especially when it comes to confronting
the complexity and the unknowns involved with substantive systems changes like organic and MIRG. Many farmers are ambiguity averse about the many unknowns of organic and MIRG.

Some farmers may also have perceptions (either misinformed or truthful) that prevent them from considering organic and MIRG even if these external constraints were not present. Some farmers who may have biased or have more fears about the unknowns associated with organic systems may be more likely to extremetize. Anchoring and extremetizing may reflect different oikonomia values. An example of anchoring is Productionist Peter who anchors on a productionist framework. All of these bounded rationality issues can lead many farmers to information satisfice or not take full advantage of the information available to them. In general, conventional farmers as opposed to graziers experience more of the “stronger” forms of bounded rationality as opposed to exhibiting lighter conditions of ambiguity aversion. Bounded rationality issues are impacted by farmer’s exposure to information and impressions of organic farming are highly influenced by the social context in which they are embedded.

It is difficult to typify farmers as to their likelihood to adopt organic and or MIRG. However, organic farming is not a strategy that only “certain” kinds of farmers adopt. In other words, these management systems are not just suited for certain kinds of personality types. Intensive graziers and smaller pasture based farmers are more likely to adopt organic although there are exceptional large confinement converts, like the Serts. Adoption decisions also cannot be predicted solely based on a static analysis of bounded rationality issues of farmers. Some organic farmers admitted to confronting bounded rationality issues prior to conversion. Different factors can shift farmers out of their bounded rationality situation and consequently their
perceptions and values related to organic changes. It seems that a farmer’s social setting, especially seeing a successful organic or MIRG farm that is similar to the decision maker in question, is critical to the adoption decision. These kinds of interactions are particularly powerful when combined with a personal health or economic crisis. It seems that a systems based change and the patience and follow through to continue “learning by doing” is necessary to be a successful organic or MIRG farmer. Alternative farmers also experience bounded rationality issues with regard to practicing organic in different ways. Farmers who are “believers” (i.e. who have deep value-based convictions) may be best able to make those types of holistic changes.

**Literature Cited**


Chapter 6: Amish Dedication to Farming and the Adoption Decision of Organic and MIRG: The Oikonomia-Bounded Rationality Framework

Question: “Why don’t the Amish watch television because there are some really good educational shows on?”

Response from a Cashton Amish elder: “In order to kill a rat you got to put some good stuff in with poison.”

Introduction

Many Amish farmers feel that Christian family values (e.g. humility, frugality, contentment, unity and a strong work ethic) are best fostered through a rural lifestyle. This value-based (oikonomia) dedication contributes to the Amish persistent presence in farming despite the many financial challenges that contribute to non-Amish farm exits. Fears of losing values which are viewed as essential to the Amish church are important in understanding motivations for farming, farm management and technology choices. The focus in this chapter will be the adoption decision of organic and MIRG amongst two Amish settlements in Southwest Wisconsin: Hillsboro and Cashton.

Value loss aversion, an example of oikonomia and bounded rationality blended framework, is illustrated by the above conversation about television use amongst the Amish. In particular, this conversation illustrates how the uncertainty associated with the unknown evils of the world (symbolized by the rat) may lead the Amish to avoid some technologies and management practices despite positive elements (symbolized by good educational shows). Overall, the Amish can be viewed as using an oikonomia/bounded rationality approach, because they do not know what factor(s) will challenge their common values to the extent that the church and their community is weakened, or in the extreme case falls apart and assimilates into the rest
of society. If we assume the Amish do have the information that they need to determine the ramifications on values for various decisions, it is possible that they decide against certain kinds of technology and management systems because of a conflict with different oikonomia realms. For example, the Amish may decide against watching television because they do know without a doubt the impact it will have on the community and their social/spiritual values. It is critical to understand that despite popular perceptions of Amish being “frozen in time,” the Amish are not static in the midst of changing times. In fact, a careful appraisal reveals that they adopt technologies and practices in more selective ways. In some ways, they may change more than others, as they are mobile and willing to relocate and start new settlements as needed to maintain a certain way of life.

The uncertainty within which Amish farmers make decisions and the diffuse structure of the Amish church as a whole may lead to diversity in adoption decisions as is evident in the choices around organic and MIRG systems in the Cashton and Hillsboro settlements. These settlements are very similar as both consist of Old Order Amish farmers who milk by hand, farm with horses and sell to the same Amish cheese co-op in Cashton. However, each settlement appears to interpret the potential threats to their core values differently. Despite the popular perception that Amish farmers are organic, not all Amish practice organic and/or other sustainable practices. Organic and management intensive rotational grazing seem particularly well suited to their style of farming and their lifestyle, so the relatively low adoption rates of these practices may be surprising to outside observers. This research indicates that more Hillsboro Amish practice organic and MIRG farming than do Cashton Amish, and accordingly
the Amish in Hillsboro and Cashton have differing views on the adoption of organic and MIRG farming. Moreover, there are also a variety of views on the adoption of organic and MIRG farming within the two settlements, reflecting the diversity we see with non-Amish farmers in the rest of the region. In this sense, even though this chapter highlights certain aspects of how an oikonomia and bounded rationality framework explain the decision of the Amish to use organic and MIRG approaches, we also reflect anew on how this framework can apply to non-Amish farmers on the landscape.

**Oikonomia Reasons for Farming**

The interplay of family, labor, history, and faith are all crucial to understanding the motivations of Amish farming. The Amish in particular think that farming makes them more reliant on God as well as family and community. This idea is well expressed by an interviewee who said “there is a virtue of working with the soil and remembering the Creator.” As an Amish elder cites from scripture you need to rely on “the rain and the snow come down from heaven” when you are farming. Another Amish farmer loosely refers to the scriptures teaching about not worrying about everyday life because God provides for our needs, and he goes onto to say that the farming operation forces him to rely on God’s control. God’s role in the production process is seen in very tangible ways as another Amish responds to compliments about their flower bed with the statement, “The Lord makes them grow, we just try to do our part.”

The importance of working together is what holds both the family unit together and the larger community. Farm work ties in with the Protestant work ethic, which is a primary focus

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21 Isaiah 55: 10  
22 Matthew (6:25 and 6:32)
for the Amish. As mentioned in Chapter 4, the “extra” utility placed upon farm labor, especially when it is done together as a family, relates naturally to the interaction of three spheres of the oikonomia framework, i.e. the social, the spiritual and the economic. Amish see hand labor as a calling described in Genesis as they state they want to do work “by the sweat of our brow.” Farming and other occupations where men are doing “work with their muscles and the aching of their [his] limbs” (Hostetler, 1993) is seen as most desirable according to the Bible. Family labor is also important for non-Amish although the value of work beyond the family unit is not typically emphasized for the non-Amish.

Many of the Amish take their parental role as a divine responsibility. This type of divine responsibility is evident in the following statement from an Amish farmer, “It is my job to bring up the children in the way of the Lord,” and he feels that farming is the best way to cultivate that. According to one Amish Elder who said, “It might be detrimental to our lifestyle to do something else.” Farming provides an environment that is conducive to spending time with family and participating in activities like singing with children during milk chore time. The importance of working together is what holds both the family unit but also the larger community together as stated in one Amish newsletter entry on the important tenets of Amish community: “Number one, work together; number two, work together; number three, work together” (Anonymous, 2007).

For that reason, the Amish may not view a high level of family labor as a cost but rather as a benefit around which family togetherness is constructed. Dairy farming in particular seems to be viewed as the most desirable farm occupation for this region. One Amish elder goes so far as
to say, “Those who have a farm but don't milk cows scare me... milking ties you down.” Based on the commitment required, this elder considers being “tied down” as a benefit not a cost. This positive attitude towards labor contrasts with the common assumption in economics that labor is a cost. There is also an idea that being “tied down” is a negative thing as it limits a person’s options.

Many of the decisions about how and why the Amish are farming relate to the dynamic intersection between the economic and the spiritual dimensions as “almost every parable, every teaching, and every act of [Jesus] had either direct or indirect economic implications” (Vogt, 1983). Financial success can lead to pride and arrogance (Kraybill & Nolt, 2004). An extreme sense of frugality is valued with the Amish community.

Survey results of Amish and non-Amish farmers reveal that the family ranks as the top reason for farming for both groups. As stated in Chapter 3, for the Amish and some other farmers the connection with values solidifies this connection to identity. As one farmer states, “We grew up with it and it is what we know.” Although farming is central to the family and to identifying with the wider farm landscape, the Amish particularly embody these oikonomia dimensions of farming as a lifestyle. As indicated in the above discussion, there is a deep social/spiritual dimension to farming, so that it connects not only to family and to how one raises children, but also to what holds the church community together and nourishes their faith. In many Amish settlements, it is seen as the ideal occupation if one can make it financially feasible, which is why many Amish moved to Wisconsin from other places to be dairy farmers.
Maintaining Oikonomia Values Despite Challenges in Farming

As discussed, the Amish feel that farming is a way to cultivate family and community values and create unity so that farming is considered a critical part of their identity. The Amish face economic challenges to maintain this farming lifestyle. The restrictions governing their lifestyle have contributed to their survivability on the land, but some may argue that in many ways their restrictions have made it more difficult for them to compete on the modern farm landscape. Thus, their technology and management adoption choices are guided by the delicate tension between maintaining their values and the need for economic survival on the land.

Challenges in Farming

Amish in many of the older settlements like in Indiana, Ohio and Pennsylvania are exiting farming because of the economic challenges that can mainly be attributed to the industrialization of farming and to the pressures of urbanization. Indeed, Amish in northern Indiana and Ohio, where many of the Hillsboro and Cashton Amish emigrated from, have largely abandoned agriculture. The land in these areas was becoming increasingly urbanized making it more challenging to access affordable farmland (Kraybill & Olshan, 1994). The industrialization and concentration of agriculture has also been challenging for the Amish with milk companies demanding milk pick-ups on Sunday which goes against the Amish church rules. Milk regulations have also made it more challenging given the resistance of some Amish to adopt milking machines and bulk tanks to cool the milk so that dairy has “become a more uncertain proposition because the rules have gotten stricter.” As one former dairy farmer states “we
couldn’t cope with the milk inspectors. We’d get one thing right and they’d want something else” (Kraybill & Olshan, 1994).

Amish from Indiana and Ohio immigrated to Wisconsin to find more affordable farmland and retreat from the pressures of urbanization and from the loss of a rural focus in their settlements. The Cashton Amish started an Amish Cheese Co-op in the early 1980s in response to foreseeing that dairy receiving plants may no longer purchase canned milk. They wanted a way to keep their community viable as dairy farmers as much as possible. The Amish cheese co-op continues to be the only marketing outlet for canned milk in the area. Other Amish settlements also sell their milk there. The board membership and structure of the factory was already set up and run by the Cashton Amish.

Amish farmers who migrated to Cashton and Hillsboro and who sell milk to Old Country Cheese continue to face challenges in farming. The challenges seem particularly pronounced in dairy farming. Although the Amish in Cashton and Hillsboro sell Grade B milk to the co-op to avoid the strict regulations associated with Grade A milk, the issue of sanitation continues to be a major issue in the Old Country Cheese newsletters. Although they may not experience the same kind of urbanization pressures in Southwest Wisconsin as in eastern states, farm land values have risen in the past decade due to recreational and second home demands from Chicago and Madison. Farm input costs have risen and are more volatile, and milk prices have had several low periods especially for Grade B milk that the Amish produce. It seemed evident from interviews and Amish farm newsletters that the prices of farm products were not enough to cover the cost to produce them. Even though the Amish do not make farming decisions primarily
based on economic criteria, they have to be able to survive. One Amish Cashton farmer bemoans having to work on a sideline business, “It is sad; sometimes you gotta’ do what makes the most money.”

Among the Cashton and Hillsboro Amish who migrated to Wisconsin and were motivated by their desire to pursue a farming-based livelihood, there has been some shift away from agriculture especially dairy farming. As one Cashton elder states, when they first settled here in the 1960’s dairy farming was about 85% of the Amish family income and 15% came from non-dairy income and now it is the reverse situation. If produce were included into the Cashton farm sector income, it would be more like 60% of farm income and 40% of non-farm income. As is well known, the Amish operate a variety of cottage industries on their farms which include saw mills, woodworking, bakery, quilts, and processing food products, all of which are used to secure additional income for the household.

Many of the Cashton and Hillsboro Amish would rather be full time farming and have more dairy cows, but the demands of their shops prevent them from doing so as one Amish farmer closes an interview by stating, “I gotta’ go to the saw mill to support my cows.’’ When he was asked about his financial situation, this same farmer responded that he has “been squeaking by for a long time.” The Amish tend to farm with a few dairy cows and make a significant portion of their living elsewhere. The Amish maintain very small herd sizes (around 13 cows per family). These herd sizes are generally smaller than they were a generation ago. This decrease in herd sizes is probably due to their inability to make a substantial income from the dairy operation.
Amish Oikonomia/Bounded Rationality Contributes to Survival on the Land

Given the economic challenges of farming, one may wonder if there are ways to earn a living and still maintain Amish values. There are discussions in an Amish newsletter about how necessary farming is in maintaining Amish values. Some of the other Amish settlements do not necessarily find that farming is that instrumental to their faith. These settlements can cite the example of Jesus who was a carpenter (Anonymous, 2002)! It would seem that there must be more to the dedication to farm than just oikonomia values within the Cashton and Hillsboro settlements given this broader perspective in the wider Amish community. Many of the Amish in this area would argue that the other settlements where day labor instead of farming is the predominant form of income have made sacrifices in terms of their community and spiritual well being. Thus, the decision to remain in farming may reflect the sense that they do not know exactly how much exposure to the world will cause their church and community to fall apart. Due to the combination of the values that are at stake and the unknown aspects of many decisions, there is some combination of oikonomia bounded rationality blended issues which are at play. Value loss aversion is an example of an oikonomia bounded rationality issue which can be used to explain decisions that are based on fears of losing something that is important emotionally and spiritually but may not necessarily be life threatening. This loss aversion tendency turns on the fear center of the brain where people may act based on their perceived worst case scenario (Camerer et al., 2005).

The Amish dedication to a farm lifestyle is highly related to how labor demands of a dairy operation as described earlier can be an asset in maintaining family values. In fact, this
labor availability is a major driver of the Amish farming style choice. For example, for some Amish families, their farm strategy evolves as their family matures. One young farmer who had small children raised heifers and only had a few milking cows because of limited labor, but he planned to get more milking cows as his family matured. Another Amish farmer started growing more produce because he had older children who could be involved in that kind of labor.

Although the oikonomia bounded rationality issues like value loss aversion are mainly formed in response to a desire to maintain Amish values, these issues may also help explain how Amish farmers survive on the land. Principled satisficing is an example of oikonomia and bounded rationality blending, like loss aversion, which can explain why producers may be satisfied with less than they would demand under the assumptions of rational utility maximization for value based reasons. As opposed to contentment theology which plays a central role in Amish decision making as described in Chapter 2, principled satisficing implies that the decision maker may not fully know what they are sacrificing. The Amish express more satisfaction with milk prices that are much lower than non-Amish producers (based on survey data). Amish embody the concept of the principled satisficer as spiritual values such as contentment leads to satisficing at lower financial levels than other farmers. This extreme sense of contentment is expressed by one Hillsboro Amish who states, “We have had a good living here. We have enough to eat.” It would be difficult to imagine a non-Amish farmer expressing that having enough to eat is a good living. This example illustrates how some Amish require very little to be “satisfied.”
Amish farmers are particularly cost conscious as frugality is greatly revered. Frugality is also emphasized amongst many other smaller scale farmers (at least on the cost side) as discussed in Chapter 3. For the Amish, the reducing cost rubric may be related to their contentment focus as well as to constraints on cash flow. When farmers were asked about what suggestions they have for young farmers just starting out, the common response is that survival on the farm is about keeping expenses low. There are Amish financial adviser committees who can assist a farmer in living simply. As one Amish newsletter states, “Dozens of struggling farmers have been helped to stay on the farm by having a committee advise them.” At least three men are selected to be on the committee (Anonymous, 2008). Community financial advisers are a clear example of a synergy between the social/spiritual realms and the economic. These Amish advisers literally take over the farm in a crisis and go through the family’s books to see how they can make a family farm’s financial situation work. As one Amish elder remarks, this can be a very “painful process” for some families. Other ways that the Amish remain economically viable is through extreme frugality and through collective efforts such as group buying of consumable goods. The Hillsboro Amish own stores which they jointly organize that have bulk items which are bought from suppliers so this minimizes their need to go to retail stores outside of their community.

Oikonomia/ Bounded Rationality, Management and Adoption Choices

The oikonomia and bounded rationality decision making framework of the Amish settlement is helpful in understanding how the Amish decide what technology and management practices are acceptable. It is not that they necessarily object to technology overall (Hostetler,
As one Amish farmer states, “I don’t want you to think that we don’t innovate.” Although the Amish are by no means static in terms of adoption of technology, “changes are clearly not encouraged, vocalized or rewarded in Amish society.” When changes occur, they typically focus on issues of survival. Change can also occur because of diversity in how the rules are enforced within a given district or between different districts in a settlement. The decentralized nature of Amish society facilitates subtle change (Hostetler, 1993). Sometimes practices and technologies just get adopted, and they never really become a serious issue because they are not deemed a public threat. The Amish cognitive framework will be described as well as the structure of their church and rule making process as a way to understand how adoption decisions are made in the Amish church in general and in regards to farming.

The Amish have informal ways that govern how adoption decisions about technology and management strategies occur. The Ordnung, the church rules, reflect the tension between adopting useful ways of the world (e.g. technologies and practices) in the midst of economic challenges and establishing guidelines as they state for the “safety of the people” evoking the value-loss aversion principle. As one Amish scholar, Josh Ruth states, “They have a little seismograph inside them; they know when innovation will disrupt community.” (Nagle, 1978) discussed in (Kraybill & Olshan, 1994). Yet, it is not clear what ultimately will make the church fall apart so some technologies and management practices are avoided as a precautionary measure. The Ordnung or Ordinance of the Amish church settlements give some insights into Amish cognitive frameworks as these guidelines unify the church body and define the member’s lifestyle. It is important to know that “the Ordnung is not written down but is a fluid, dynamic
set of understandings.” (Kraybill & Olshan, 1994). The Ordnung is the social glue and guiding principle of the Amish community and tends to change very slowly over the years (Kraybill & Nolt, 2004). As one Cashton Amish elder states, “If we don’t have an Ordinance to live by, we can’t move forward as a community. What we have in common holds us together…We are trying not to slip like other communities. It is made for the safety of the people like rules of the roads.” The emphasis on safety illustrates the emphasis on caution in the midst of uncertainty. Thus, it is all about a slippery slope or a sliding board as some Amish may describe it. In other words, there may be the idea that if you give an inch, they will take a mile. This clearly corresponds to the concept of loss aversion.

From time to time, the church leaders, with the endorsement of their congregations, will revise an aspect of the Ordnung to adapt to changes in the community environment. However, once “an understanding” becomes inscribed in the Ordnung, it is very challenging to revise it, at least for several years. The emphasis is often on the collective welfare of community. In theory, though the Ordinance gets reviewed before Communion twice a year in church, it is not clear to what extent new practices/technologies are brought up explicitly as the end goal is clearly to create unity before the Communion. It is not evident from conversations with Amish elders that they really discuss the Ordnung in a very systematic way from these meetings. Rather, the meetings seem to center on the goal of unity. This Amish elder describes how different ideas that are discussed are held in suspect. Thus there is more of an emphasis on unity per se than there is on staying the same.
There is a different Ordnung for each self-governed settlement and hence the tension between adopting useful ways of the world and maintaining Amish values plays out differently in each settlement. Settlements are divided up into church districts of about 25 families, and church districts are governed by a bishop and a varying number of ministers and deacons. The only overarching structure the Old Order Amish church has at the state and national level is the Amish Steering Committee. This committee was actually formed mostly in response to various pressures from state and national governments that the Amish felt were a threat to their way of life. The church district bishops govern the Ordnung of the settlement as a whole. Bishops are selected from amongst the ordained ministers who are chosen by lot (i.e. by drawing hymnals to see which has the allotted ribbon in it). There is a lot of diversity in how these adoption decisions play out in different Amish settlements as depicted by the range in adoption patterns of bulk tanks amongst the Amish.

**Farming Adoption Decisions**

Because farming is held so close in Amish values, the rules regarding farming tend to be quite a bit more firm and strict than those governing shop ownerships and other microenterprises (Kraybill & Olshan, 1994). For example, saw mills have diesel engines in Cashton, while Cashton Amish still milk their cows by hand. Amish farmers started diverging from other US farmers around the 1870s. The farms were smaller and not adopting some of the newer technology, but the Amish were still recognized as some of the best agriculturalists. The 1950s and 60s was probably the era when the Amish most diverged from the larger farming culture as many Amish did not accept the tractor (Deeben, 1992) or bulk milk tanks. Contour farming was
initially not taken seriously and labeled “as book farming” but later it was adopted fairly widely on Amish farms. As a general rule, practices that are more visually perceivable like the tractor are more likely to get rejected than management practices and technologies like chemical fertilizers and hybrid seeds.

Technologies impacting dairy farm labor have been particularly slow to change within the Cashton and Hillsboro communities. Other settlements similar to the Lancaster Amish adopted bulk tanks in 1969 whereas the Cashton and Hillsboro Amish continue to use milk cans. One settlement in Indiana resisted installing bulk tanks until the 1990s. They made this decision in order to boost their farm income, but many people had already left the farm by then so very few benefitted from these changes (Kraybill & Olshan, 1994). The decision to adopt a bulk tank for milking or not is another tangible example of the complexity of Amish decision making and how it relates to bounded rationality as well as to the spiritual, social and economic oikonomia dimensions. It seems according to one Cashton elder, other settlements that did adopt bulk tanks and milking machines, incurred additional expenses. Amish in other settlements also wanted more possessions after adopting bulk tanks and thus often eventually exited the farming industry. The Amish elder also had an economic argument for not adopting bulk tanks as he explains “We looked at the costs of running bulk tanks (cost of energy, diesel engine) and stayed with cans.” However, it was not clear from talking to the Amish cheese co-op owners that cans were cheaper especially when it came to trucking costs so this decision may have more to do with values than economics. One Amish scholar actually stated that the Amish settlements who adopted bulk
tanks and had “automatic milkers often show more traces of economic prosperity” (Kraybill & Olshan, 1994).

**Adoption Decisions of Organic and MIRG Amongst Cashton and Hillsboro Amish**

There is a misconception amongst the public that the word “Amish” is in some sense synonymous with the word “organic” or “sustainable” due to their focus on simplicity and at least appearing to be “natural” and “old-fashioned.” Some of the Amish have adopted green revolution technologies such as commercial fertilizers and pesticides. The Amish seem like a good fit for organic and MIRG given that they use pasture, are small in scale, and emphasize hand labor. The lack of knowledge on alternative farming amongst the Amish may be especially surprising considering the popularized image of Amish associated with alternative sustainable practices. The organic option seems to be playing an important role in Amish agriculture in some parts of the country as noted by browsing through Amish newsletters.

However, technology and management adoption rules within the Amish are not necessarily related to stewardship principles but rather revolve around the fears of losing family and church values as discussed earlier. Because the decisions governing stewardship and practices like organic and MIRG do not necessary address overarching Amish values directly, the decisions tend to differ by settlement even for Amish settlements that have a lot of commonalities like the Cashton and Hillsboro church settlements. The Amish cognitive framework and information seeking habits that reflect their oikonomia bounded rationality may help explain different adoption decisions related to organic and MIRG with the Cashton and Hillsboro Amish.
Stewardship in Practice

The connection with farming as a way of life and the focus on simplicity may translate into a stewardship ethic in a sense. It is difficult to get the Amish to state explicitly their views on stewardship. Stewardship values may be more related to specific agronomic management practices, as is true of other farmers. One Hillsboro Amish expressed, “I feel that the Christian God made the earth with laws of the land, and if you go against those laws, there are going to be problems.” A Cashton Elder adds, “It’s always been our underlying thought that being stewards of the earth is not being destructive or detrimental.” There is a focus on being “natural” which could be related to stewardship in a sense. Although there is a commitment to follow God’s rules in terms of what is “natural,” this mainly translates as merely abstaining from the growth hormone, rBST and genetically modified organisms, amongst many Amish church districts (Amish Elder in the Kickapoo Valley, 2004). A Cashton Amish elder expresses that genetic engineering (GMOs) is not “natural” and an entry in an Amish newsletter states that, “It seems unnatural to me to inject genes from a beetle into a plant such as corn, or to mingle a fish with a tomato. That is basically what GMOs are. I could be wrong, but to me that conflicts with the laws of God” (Letters to the Editor, 2006). It is also important to note that an interview with a Hillsboro Amish revealed that there may be quite a few Amish farmers who buy conventional seed not knowing whether the seed is GMO or not. Specific management techniques, like applying lime in the field, makes some farmers feel that they are being good stewards. The intimacy with the farm and livestock could also be a type of stewardship as one Cashton Amish elder states, “I want to know each cow individually.”
Information Seeking

There is a de-emphasis on getting information through meetings and other sources (as discussed earlier) that can serve as an obstacle to farmers considering a systems-based choice which is information intensive. Even though the networks are very tight amongst the Amish, they are often discouraged from seeking out people beyond their small social circles. Amish newsletters discuss the lack of knowledge on alternative farming i.e. intensive grazing, seasonal dairying, produce farming, and specialty niche crops amongst some of the Amish communities. However, there are Amish who still have a lot of hope for the family farm in recent years because of the growth of niche markets and want to illustrate how a family farm can be viable on small plots of land.

Oikonomia values and bounded rationality can factor into adoption decisions as related to information gathering. “The wisdom of the world is foolishness with God” is a verse in Corinthians that embody the Amish (Hostetler, 1993). In terms of knowledge acquisition, the Amish are more focused on practical experiences in localized settings (Donald Kraybill & Olshan, 1994). The Amish are generally encouraged to stay close to home, and this is especially true for big functions like the Midwest Organic and Sustainable Education Service farming conference, so it is only those farmers especially hungry and curious for knowledge on organic farming who attend. A number of the Amish farmers say, “I don’t really like running around. I like staying closer to home.” One farmer said that he always has a lot of church meetings to attend so additional farm related meetings are difficult. This emphasis on hand labor over attending meetings and gathering information at one level is an example of oikonomia conflict
between different components of the social and the social/spiritual realms. However, this emphasis may also lead producers to not fully access information on farm management possibilities. Note in addition that the unknown impact of this outside information is a big part of the story. Because of the two aforementioned reasons, principled information satisficing seems like an appropriate way to describe this situation. The lack of higher education and the dearth of time spent in private study due to the emphasis on manual labor may lead the Amish to bypass outside information. The computer is a huge information source of the modern age, yet an Amish elder commented that the computer might be “the beast” in Revelations that should be avoided at all costs because of its evil nature. It is unclear why the computer may be considered the beast, but it could be because how it works is unknown. For example, when electricity was first invented, many people considered it black magic.

Settlement Differences

The combination of oikonomia, uncertainty and the loose structure of the overall Amish church can mean that two settlements that are relatively similar, Cashton and Hillsboro Amish, have differences in their approach to adoption decisions of organic and MIRG. The Hillsboro Amish settled in Wisconsin more recently on smaller plots of land. As one Amish farmer states, ecological and cultural factors are both necessary to understand the different trajectories that settlements take (Kanagy & Kraybill, 1996).

Some of the theological differences between the Cashton and the Hillsboro Amish may date to a split back in the 1950s when there were some debates occurring amongst the Amish. The Cashton Amish may have come from the Andy Weaver group that was more conservative
side of the split (Nolt, 2003). One sign of this difference is that the Andy Weaver group decided not to set their clocks to daylight savings time or what they call “fast time.” In contrast, Hillsboro Amish decided to participate in daylight savings time. One Hillsboro Amish states, “There is a different blood pumped through them, they are more conservative in some ways.” One Cashton Amish stated this about the Hillsboro Amish, “They are totally different people but not that much different—they have some of the same values about the future of the children.” Another Cashton Amish elder stated, “There are some differences between Hillsboro and Cashton Amish - some hidden things which you [as an outsider] might not understand.”

Interviews revealed that the Cashton and Hillsboro Amish are more likely to connect and relate to members of their mother settlements in Indiana and Ohio rather than each other.

The Hillsboro Amish overall are more deeply involved in farming than are the Cashton Amish. The Hillsboro Amish are more diversified with 46% of the dairy farmers growing vegetables as opposed to only 30% of the Cashton Amish. Only 16% of Cashton Amish were satisfied with milk prices as opposed to 53% of Hillsboro Amish (in 2004). When I asked about a possible explanation for this difference, one Hillsboro Amish farm wife indicated that the Cashton Amish have a slightly higher standard of living. Although this statement was not verified, it does illustrate there is the perception that the Hillsboro may be living more simply which is appropriate for a farming lifestyle. Interviews support the conjecture that Hillsboro Amish get more of their income from farming than the Cashton Amish.

Both Cashton and Hillsboro Amish are exploring some of these niche markets. The Amish farms are more diverse than non-Amish according to PATS Wisconsin survey data as
38% of the Amish dairy farmers in the survey also grow and market vegetables compared to very few non-Amish farmers. Organic dairy as well as produce is being pursued particularly by the Hillsboro Amish. The Cashton Amish have a produce auction and there are several other Amish produce auctions in the state that collectively market produce and ornamentals to area grocery stores and individuals at the auction. The Hillsboro Amish, for the most part, market their vegetables to Organic Valley, although a few have participated in some joint vegetable selling ventures marketing to places like Whole Foods and Homegrown Wisconsin.

**Settlement Differences as Applied to the Adoption of Organic Dairy**

Old Country Cheese has moved in and out of the organic market in recent years. Since all of the five board members who have significant decision making power are all Cashton Amish farmers, they decide what the co-op will ultimately do. For individual Amish, this instability in recent years has lead to some ambiguity aversion or fear of the unknown related to the organic milk market as Old Country Cheese is the only marketing option for grade B canned milk. The cheese co-op was involved with the organic market two times in the past 10 years. Thus, the Amish who invested in organic certification the first time were out of luck when the cheese factory decided to get out of the organic market. There were some farmers who suffered from the cheese co-op’s decisions to move into and out of organic as these farmers invested the time and resources to become certified organic, and there was no compensation during the period where the co-op did not sell organic cheese. One Hillsboro Amish had been an organic farmer when the co-op was selling organic milk, but then this farmer used some conventional fertilizer after the co-op decided to leave organic farming. So when the co-op decided to get back into
organic, this farmer would have had to participate in a three year transition process all over again to get certified. As one could imagine, the farmer was nervous about taking that risk again since he did not know how long Old Country Cheese would continue to purchase organic. Although not many Amish cite this uncertainty directly, it is nevertheless significant.

For this particular Cashton Amish elder, organic agriculture has an association with the government as he was convinced that Organic Valley was able to expand into an expensive large new building because of a government grant. There are negative associations with the government affiliation as discussed earlier given the Amish history of persecution as well as wanting their church family to remain autonomous from political affairs as much as possible. As a matter of fact, Organic Valley did not get a government grant for the building which illustrates the importance of negative story telling. The Amish elder also put a certain amount of emphasis on everyone “being a unit” or “being one body” in a scriptural sense. Thus, the organic option may translate to not everyone being on the same plane as individual Amish are receiving different pay prices. The importance of humility may also be incorporated into everyone being on a level playing field.

However, there are a number of Cashton Amish farmers who are practicing organic despite this elder’s negative views on organic. It seems that the family descendents of this elder had similar negative opinions of organic. Family networks seem to highly determine Amish adoption patterns. This may be especially true in areas where there are divergent views about organic like in the Cashton settlement. As one Cashton Amish farmer states, “It is easier if you
grew up with it,” a reflection on who in the community is organic and perhaps why he is not pursuing it.

Cashton Amish overall seem to have divergent views on adoption of organic and MIRG. At least according to the Hillsboro farmer referenced above, “Cashton are more conservative in some ways but…They see organic as something new.” He feels that most Hillsboro Amish have become more receptive to organic farming ideas and practices. It is difficult to discern what lead to this evolution amongst the Hillsboro Amish and not the Cashton Amish. The mindset according to one farmer can be instrumental in how farmers view alternative farming. There are also more Hillsboro Amish doing rotational grazing; 70% of Hillsboro farmers rotate their cows every six days or less compared to 53% of Cashton farmers. As one Hillsboro Amish states about rotational grazing, “Rotational grazing has to hatch up here (pointing to his head). It had to for me as well…My first thought when I heard about it...was it takes too much time.”

Likewise, the change in mindset related to organic farming was a key turning point. One Hillsboro farmer states, “There was a period in the 80’s where [we] used some pesticides but that was mostly out of ignorance. Now we have more understanding… Later on, the folks that did not grow up that way later come into organic.” This Hillsboro farmer felt that “We were the first ones, we were on the train and then the others have been getting into the caboose.’’ It seems that some of the early settlers amongst Hillsboro Amish were managing their farms organically, and these farmers influenced the other settlers with their organic ideas. So these later settlers represented what this farmer calls the caboose on the train. One Hillsboro Amish farmer indicates that some of the Amish started organic farming while they were in Indiana before
moving to Wisconsin. As he states, “they didn't use spray right before they left but they did before.” Another Hillsboro Amish farmer who arrived in Wisconsin more recently, stated the “community was more organically minded when he got here so he learned a lot when he got here.” There was a shift in the oikonomia frameworks amongst a number of the Hillsboro Amish farmers with regards to organic management.

Also, it is interesting that at least amongst some Hillsboro Amish, there is a positive connection with organic farming and the Protestant Work Ethic because as one farmer in an interview stated “organic farming is well suited to family labor as the whole family needs to all get out there with a hoe and be together” in order to counter weed pressures. Thus, there is a potentially a positive synergy between the agroecological and the social realms with their decision to adopt organic practices. This illustrates that the Amish can change their perspective on management practices based on additional information. The tight social network of the Amish community can actually lead to more rapid changes in management than in non-Amish communities, or so it seems at least in the case of organic management practices within the Hillsboro Amish.

The Cashton Amish who do not adopt organic agriculture tend to focus more on stories of corruption and the idea that organic milk is not any different than conventional milk than the Hillsboro Amish. One Amish elder who was not a proponent of organic challenged an organic Cashton Amish to a bet that the milk from their family farm would test out the same in terms of quality. This “milk is milk” perception may be related to the desire to have everyone on a level playing field within the Amish settlement. The “milk is milk” concept may also be related to the
idea that organic milk is a “marketing scam” that is prevalent amongst non-organic farmers (both Amish and non-Amish). Focusing on the idea that farmers cheat is related to this “milk is milk” idea. This idea was fairly common amongst both Amish and non-Amish farmers as discussed in the last chapter. One Cashton farmer when asked about if he considered organic, retorted that he knows about truckloads of “hot milk” (i.e. milk with antibiotic residue) that was marketed as organic. There are also a number of farmers (mostly within a certain family line inside the Cashton community) who are convinced that a certain feed mill is selling conventional grain labeled as organic grain. Although when cross-checking this story, it seems possible that this information may have been just gossip. It indicates the power of a negative story.

It seems that the cheating idea amongst the Amish may fit more into a principle satisficer concept as well as extremetization. The cheating idea within the Cashton Amish is connected to a subtle temptation idea. Although they say that the Amish would not cheat, a few of these Amish farmers did not feel they should go organic since they were not “believers.” in organics. They seem to have an idea that the organic system created the temptation to cheat. Another Amish elder did not like that organic certification created a system where neighbors were supposed to report others who were cheating. These reactions are counterintuitive in some sense as the organic rules seem similar to the Amish Ordnung as there are rules about what is right and wrong and there is not always direct oversight on the individual’s behavior (as with organic farming management). There are most likely temptations associated with not following the Ordnung rules, and these rules can be only enforced through community.
The cheating emphasis is also related to social perceptions/negative social pressure which may have an influence on adoption decisions. One Hillsboro Amish farmer thought that many of the Cashton Amish may not consider organic as an option because a number of them made a connection with organic farmers and the new age movement. In contrast, according to this Hillsboro Amish farmer, the Hillsboro Amish decided that doing business with the organic English folks (i.e. non-Amish) was not any different than doing business with the bankers or anyone else. According to this Hillsboro Amish farmer, the Hillsboro folks got together to have a meeting and they decided that collaborating with the folks at Organic Valley was no different than collaborating with English folks in other places like the grain co-op or the bank. This story was not validated by other individuals, and it is clear that there were a few Cashton Amish involved at the beginnings of Organic Valley when it was a vegetable co-op. Nevertheless, it is still interesting that there is this depiction of what happened.

The Hillsboro Amish who decide not to go organic opt out for much different reasons than the Cashton Amish. It seems that in general, for the Hillsboro Amish, their reasons for not going organic may be more about reducing costs, keeping prices low for consumers and relations with neighbors (i.e. if they are not certified organic they can buy hay from their Amish neighbors). One of the Hillsboro Amish states that they are not certified organic because they feel pretty well established and they should save “organic for the young struggling farmer.” The principled satisficer complex can carry over to what products farmers feel good about offering consumers. One Hillsboro farmer felt good about continuing to produce milk for the
conventional market even though they were basically producing organically because they “want[ed] to provide quality milk at an affordable price.”

The Hillsboro Amish were able to reduce costs of organic certification by participating in a group certification strategy that significantly reduced the costs for individual Amish farmers to become certified organic. The group of farmers is treated as one farm in a sense by the certification agency, so that they all must agree to utilize virtually the same management system. They are doing this group certification through ICO (Indiana Certified Organic). There are quite a few Amish who are using the group certification strategy. The Hillsboro Amish informed the Cashton Amish about ICO, and the Cashton Amish in turn started a group certification group in Cashton. So there has been some limited exchange between the two groups of Amish though there could be a lot more. In general, the Amish converse more with people in their own settlements as discussed earlier.

The Adoption of a Solar Electric Fence: An Example of Value Loss Aversion

The issue of change and value loss aversion may play a role in decisions regarding adoption of a solar electric fence where it is not clear which specific values are of concern. Solar electric fence is frequently used by intensive graziers to make adopting MIRG easier and may relate to how more Hillsboro Amish are practicing MIRG farming than Casorton Amish. It is clear, however, that values as well as family and community life overall play a critical role in adopting certain farm management systems. When a Cashton Amish community leader was asked about what values are at stake with the decision about allowing solar electric fencing that
is disconnected to the grid, the response was not very specific. It was not clear what factored into decisions like these which may reflect the lack of clear theology and rubric for these sorts of decisions as described earlier.

The Amish elder’s responded to the question about the reasoning behind the adoption of MIRG by stating

“I can see what you mean. You raise a good question. It would be a useful thing to move the cattle. It [has] just been [that way] for years, the electric fence got voted down a long time ago. It is about a sliding board. We really don’t change our ordinances that easily. It would cause fraction or disunity. We have our permanent fences so we can move our cattle around just fine that way...Some just try things ... it makes me wonder what is in [their head]. There [are] always different options but [I] prefer unity. I hate strive. It makes it so I can’t sleep at night. I am wondering if I am doing the right thing or the wrong thing. These sorts of things can create disunity.”

As revealed by this statement, there are not any direct issues with solar electric fencing impacting the values within the community, but rather it is about keeping unity and about avoiding a sliding slope where there may be some possibility of values being lost. It also seems that explorations into alternative ways of doing things are not exactly encouraged by the Amish leaders as demonstrated by the comment about “it making me wonder what is in his head.” This is the same leader who later states, “There are different options but [I] prefer unity.” This focus on unity and choosing against adopting electric fence which is not connected to the grid is an example of value loss aversion.

Some of the Hillsboro Amish talk about how portable electric fencing was used even before they moved to Wisconsin from Indiana. It is not clear how practices such as these get

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23 The Amish do not accept electricity connected to the grid.
accepted in one community and not another but it did not seem that there was a formal process with the Hillsboro Amish for deciding that the electric fencing would be accepted. Rather electric fencing was adopted without much discussion. There are some grazing network leaders that would say it is more difficult to practice MIRG well without the ability to utilize portable electric fencing. This discussion reflects the complexity of decision making about farm management practices. The oikonomia and bounded rationality blending framework illustrates why Amish farmers may not adopt every management system and technology even if it would seem to be well suited to their situation. On the other hand, the diversity and the loose structure of the Amish church leads to diversity in how adoption decisions play out between settlements and can facilitate subtle change overall. This framework may also be reflective of the thinking amongst many other family farmers on the rural landscape.

**Summary**

In summary, the influence of the spheres of oikonomia and bounded rationality in combination can help explain why and how the Amish and others farm on the landscape. The Amish have reasons for farming and for deciding to adopt organic and MIRG that reflect themes seen in the larger farming culture. Contentment theology plays an important role in explaining how and why the Amish farm in the midst of economically challenging times. Many other farmers exhibit principled information satisficing as they seem to value hand labor over efforts to gather information about their farm and alternative farming practices. This can mean many farmers do not really consider alternatives like organic and MIRG.
There can be a tension between maintaining common values and enabling financial survival on the land when Amish elders decide what technology and management systems are allowed. Decisions are made with the goal of attaining unity among the church leaders. Although the focus on unity is not as explicit with other farmers as it is within Amish society, it is clear that social pressure with the larger farm culture can potentially result in less variation in management techniques than there might be otherwise. The Amish have minimal overarching structure beyond the individual church settlements and their written and unwritten rules. This minimal bureaucracy in combination with intimate social relations within settlements may contribute to the diversity in how oikonomia values and bounded rationality themes may play out in complex adoption decisions. The Amish oikonomia framework operates on a hierarchy of interconnected levels that range from the individual, to the family, to the Amish church community. The comparison of the Hillsboro and Cashton settlements in their farm decision making reveal how ways of thinking and knowing are localized and how these frameworks may or may not evolve over time. Thus, the intersection between oikonomia and bounded rationality issues needs to be understood in addition to the complexities of individual personalities when studying farm management decisions and this framework may be helpful for understanding the larger farm values as seen in the rest of the dissertation. All farmers have larger reasons for farming besides economics, and they make decisions in the face of a significant amount of uncertainty.
Literature Cited

Anonymous. (2002, March). Farm and field special section In the Farmer’s Favor Not everyone can be a farmer. Family Life
Conclusions

This dissertation uses an integrated household economics approach to understand dairy systems choice amongst organic, Amish, graziers and conventional farmers in Wisconsin. In addition to the growth of large scale confinement farms, organic dairy and Management Intensive Rotational Grazing (MIRG) practices emerged on the Wisconsin farm landscape in the past couple of decades. The diversity in farm management practices provides more options for farmers with different values. Amish farmers also became a larger component of the dairy sector in Wisconsin in terms of farm numbers, and this dissertation includes farmer interviews selected from two church settlements: Hillsboro and Cashton. Organic dairy seems like an especially promising system option, because survey results indicated organic farmers have high satisfaction levels with farm net income and quality of life. The Amish and graziers would have good reason to contemplate this option because their existing pasture management system makes for an easier to transition to organic.

An oikonomia value framework is shown to be instrumental for understanding adoption choice. There are economic, social, spiritual, and ecological realms in the oikonomia framework. Bounded rationality theory recognizes internal constraints (i.e. cognitive limitations and biases) and external constraints (i.e. uncertainty, limited time and resources). Different values impact the organic adoption decisions as farmers are motivated to adopt organic and other farming systems for ecological, human health, economic and social reasons. A bounded rationality framework is particularly appropriate for studying organic and MIRG farming as they
are systems based choices with a lot of unknowns and the existing information is challenging to access.

This study is unique in using an oikonomia and bounded rationality blended framework to study why and how farmers engage in farming with a particular emphasis on the adoption decision of organic (and MIRG farming). It is also unique in focusing on the organic adoption decisions of intensive graziers and the Amish and by including comparable semi-structured interviews of Amish and non-Amish farmers.

The farmer narratives from conventional farmers, graziers and organic farmers illustrate how oikonomia values, information seeking habits, the current situation of the farmer, their social connections and personality differences influence where and how they get information about their farm. Maximizing productivity and cost minimization are two themes that emerge as important economic focal points for different kinds of farmers. Farmers all value other oikonomia dimensions besides economics with regards to farming. The social realm and in particular the family is important for dairy farmers across the various systems. For quite a few farmers, the family has an implicit spiritual dimension. Families and larger social networks are important for the exchange of knowledge which can have negative and positive impacts on organic decisions. Values on particular management practices like organic can shift with more information, social connections and family crisis situations. Organic farmers are motivated to convert to organic because of ecological reasons, cost minimization, independence from agro-industry, and higher organic milk premiums. MIRG farmers are also motivated by all the same reasons aside from milk premiums. When farmers were asked about ecological stewardship,
concern with erosion is mentioned by farmers with different farm management practices. Organic farmers tend to focus more on biological indicators related to their management practices than do other types of farmers.

Farmers have economic and agronomic concerns with organic but this reasoning does not fully explain organic adoption decision making. The current situation of the farm and farmer and a broad oikonomia and bounded rationality framework all need to be considered in attempting to understand adoption decisions. Conventional farmers and graziers’ concerns are focused on herd health, feed sourcing, grain production, labor demands, milk production, nutrient/environmental concerns, and overall profitability. There are gaps between the perceptions of conventional and graziers about economic and agronomic issues and the reported experiences of organic farmers on the same issues. High intensive graziers tend to be able to articulate specifics about reduced costs more than other types of farmers. The state of the science is reviewed and found wanting on most issues. There is limited information on the logistics and performance of organic dairy and much of it is not easily accessible and not applicable to Wisconsin dairy. The systems based nature of organic is generally not reflected in the existing studies. Transition costs tailored to specific farm and farmer situations would be useful in consulting with prospective organic farmers.

Limited information on organic and MIRG, and the finding that many farmers do not seem to be considering the pros and cons of organic in a systematic manner illustrates how a bounded rationality framework is useful for studying adoption decisions of systems based practices. Ambiguity aversion, anchoring and extremetizing can also dissuade producers from
carefully considering systems based choices like organic. Different factors can help shift organic farmers out of their bounded rationality situation such as encouragement from other farmers especially those who are in a similar situation. Additionally, an economic or health crisis can lead farmers to consider organic dairy when they may not have otherwise. Learning by doing and tacit knowledge can be instrumental for producers converting to organic.

An oikonomia (the social/spiritual dimension in particular) and bounded rationality framework is especially helpful in attempting to understand why and how the Amish farm. The Amish embody the importance of a rural farming lifestyle for cultivating family values. Their contentment theology and tendency towards principled satisficing are examples of oikonomia and oikonomia/bounded rationality ideas. The Cashton and Hillsboro Amish immigrated to Wisconsin in part to maintain this lifestyle. Their Ordnung can be understood in part with the principle of value-loss aversion as it may not be clear that the technology and management practices in question directly threaten their values. Oikonomia and bounded rationality principles as well as the flexible overarching structure of the Amish church help explain the distinctive approach they take to adoption decisions like organic and MIRG. Moreover, given the decentralized nature of decision-making across Amish settlements, there are divergent views and approaches to MIRG and organic. In particular, the Hillsboro settlement seemed to be more open to organic and MIRG practices. Many of the Hillsboro Amish modified their views on organic with additional knowledge on the negative impacts of chemicals. The Hillsboro farmers who do not adopt organic seem to be concerned about additional costs, accessing hay from neighbors, and providing an affordable product for consumers. In contrast, a number of the
Cashton Amish who did not adopt organic mentioned the “milk is milk” idea, cheating and the temptation situation that organic certification systems can create. Ideas like principled satisficing also apply to the wider landscape of farmers as many other farmers value hand labor over obtaining information which can have an impact on decisions about information intensive management systems like organic and MIRG.

The unique approach and insights of this dissertation research has broad applications. There are other states in the Midwest and the Northeast that have a dairy sector largely comprised of small to moderate sized pasture based farms, including Amish who are or who could consider organic and MIRG practices. Thus, this research has implications beyond Wisconsin. The oikonomia and bounded rationality framework could be applied to other complex decision making processes where information is limited.

More research is needed on adoption decisions using a broad oikonomia bounded rationality approach. This research did not start out with a bounded rationality framework rather it emerged after analyzing a number of interviews as the most appropriate way to describe decision making rationale. Hence, if I were to do additional research, I would probably direct questions that would help identify bounded rationality principles and how they might be overcome more explicitly. The testimonials of organic farmers need to be studied more intensely in light of the dearth of literature in this area. There needs to be more studies that look at the systems benefits of organic and MIRG rather than on simply a factor by factor comparison. Econometric models specific to different kinds of farms and farmers would be especially helpful to discern transition costs, and the stream of returns that flow from alternative system choices.
Economic studies should incorporate broad oikonomia goals as farmers of all management types have wider considerations than just narrow financial calculations. Future research on oikonomia bounded rationality issues could lead to insights on how to expand the realm of consideration of farmers so that additional research on organics, other systems choices and management practices could be accessed by a wide variety of farmers. A broader range of indicators is more likely to be utilized by a diversity of farmers. Research on different Amish settlements especially more liberal ones could lead to additional insights on the diversity in how oikonomia and bounded rationality thinking impacts organic adoption decisions. In conclusion, organic and MIRG dairy are likely to play a significant role in the future of the agricultural landscape, and a broad household decision making framework that incorporates bounded rationality concerns should be helpful for guiding farmers and for those advising them on adoption decision making.
Appendices

Appendix I. Letter to Participants

Dear Research Participant,

As you may know, there is a great deal of concern about the future of dairy farming. Decision making and sector choice can make a big impact on viability. The Program on Agricultural Technology Studies (PATS), is a nonprofit organization, which is not affiliated with the government and is not trying to market a product. PATS conducts research on the impacts of public policies and technological changes on farm families and agriculture in the state. You may have participated in a PATS survey before giving us vital information on the dairy sector. Thank you for your participation.

I am writing to invite you to share your experiences and ideas about farm decision making on your dairy farm. I am doing these interviews as a part of my student research under the supervision of Bradford Barham, Professor at UW-Madison. Please note that I am a student and not a journalist for a newspaper or a magazine. I hope to learn more from farmers about their practices to share with other farmers as well as support educators and policy makers in work that supports the diverse farm practices across Wisconsin. It is my hope that this information may be helpful for supporting family farming.

Ideally, I would like to interview the primary decision maker on the farm for about one and one half hours depending on your availability. If you choose to participate, and it is feasible to visit your farm, I want to assure you that your participation and responses to all questions will be kept strictly confidential. I will make every effort to ensure that no information that could identify your individual operation will be released to anyone. I can give you a stipend of $50.00 for your time.

Some topics that I plan to cover include: (1) general farming questions such as motivations (2) preferences related choosing to go organic or not (3) pasture management and land stewardship (4) information and ideas about farming in your community.

I greatly appreciate your time and effort and we look forward to learning about farm decision making factors from you. I will give you a call in a few days to set up a time to interview in the upcoming weeks. This research will have applications for educators and policy making as they tailor programs to the diverse sectors of the Wisconsin Dairy Industry. You will also receive a summary report of this research if you desire.

Sincerely

Caroline Brock, Graduate Student Land Resources 608-772-1047
Appendix II. Consent Form

UNIVERSITY OF WISCONSIN-MADISON
Research Participant Information and Consent Form
Title of the Study: Dairy farm decision making: viability concerns and beyond

Student Researcher: Caroline Brock (phone: 608-772-1047) cebrock@wisc.edu PhD Student
University of Wisconsin-Madison

Principal Investigator: Dr. Bradford Barham (phone: (608) 265-3090) (email: barham@aae.wisc.edu) Agricultural Economics Professor University of Wisconsin-Madison

DESCRIPTION OF THE RESEARCH
You are invited to participate in a research study about decision making about dairy farm
management practices. Participation is voluntary.

You have been asked to participate because you can provide useful information about the variety
of choices and ramifications for these choices for Wisconsin farmers and their landscapes.

The purpose of the research is to study some of sources of the diversity of dairy farm practices
(i.e. farm decision making).

This study will include farmers representing a variety of dairy farm management types
(conventional, intensive graziers and organic farmers).

The research will be conducted in the farmers’ quarters.

We also would like you to consent to the audio-taping of your interview, but if you would rather
not be taped, taping is not a necessity.

WHAT WILL MY PARTICIPATION INVOLVE?

If you decide to participate in this research you will be asked to ask some general questions of
farm decision making.

Your participation will last approximately 1.5 hours (this depends on you). You will be provided
with $50.00 for your time spent interviewing and showing me your farm.
ARE THERE ANY RISKS TO ME?

We don't anticipate any risks to you from participation in this study.

ARE THERE ANY BENEFITS TO ME?

I can provide a summary of the results of my dissertation upon completion of the research. Ultimately, there should be some applications to farmers, educators and policy makers so that materials are more fine tuned to the needs of specific sectors of dairy farmers.

If you do withdraw prior to the end of the study, you will still receive a copy of the research report if you so desire.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

This study is confidential. Your name will not be conveyed in any written documents and every effort will be taken to remove any identifying characteristics. (*This was modified for network people where it may not be feasible to completely obscure their identity. I offered to show them any statements that I would use that link back easily to the individual.*)

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research after you leave today you should contact the student researcher, Caroline Brock at 608-772-1047.

If you have questions about your rights as a research subject you should contact the Social & Behavioral Science IRB at (608) 263-2320.

Your participation is completely voluntary for every question. If you begin participation and change your mind you may end your participation at any time without penalty.

Your signature indicates that you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. You will receive a copy of this form for your records.

Name of Participant (please print): ____________________________

_________________________________________  ____________
Signature                                      Date
Appendix III. Farmer Guide for Interviewing

I will start off the interviews by stating that I really want to know about their stories related to their choices and experiences with different management practices. I will be asking them questions that relate to the following categories in roughly the following order (1) general farm background (2) preferences, i.e. the adoption process related to farming strategy (3) pasture management and other agronomic aspects of the farm (4) economic situation (5) environmental ideas (6) information and organizational connections (7) future of the farm. I referred to this interview questionnaire only as a guide as the interviews were in conversation style; however, a significant fraction of the content below was incorporated into most of the interviews. If the interviewee is a PATS survey respondent, I will have some responses printed from their PATS survey in 2004 to update and to see if anything has changed such as the number of cows (lactating and dry), milk production levels, the use of pastures as a primary source of forage, frequency of rotations, and the number of acres operated and owned. I will also try to obtain this same information from the non-PATS respondent.

Farm background and farm strategy

Tell me about how you began farming…

How did you start out farming? Did your parents farm in a similar way?

Probe- Was this your parents’ farm? If not how did you acquire this farm? (when applicable)

Does someone work off the farm? How much? If applicable – are you producing any other farm products?
Probe- What, specifically, led you (or parents or grandparents) to settle in WI? Where did you settle from? Was your farm land much different there? If so please describe the differences.

Were the farming practices similar there?

Was there cheaper and or more available land for family?

Was it easier to maintain values important to you?

Would you say these values are similar with other members of the group?

Do you exchange information with the other settlement (Cashton or Hillsboro)? Do they farm in a similar way?

Were there many other farmers in your settlement doing similar things at that time? Did you exchange information and support? What about another settlement?

How did the decisions of the Old Country Cheese Board and other Amish factor into your individual decision making about organic? Did it seem like their initial venture in organic a few years ago was going to be a secure thing?

Farm strategy

What about intensive rotational grazing- Do you practice this? (I will be asking more about this..

What do you know about it? Have you considered it? What has kept you from considering it?)

If they are organic—Did you convert from another strategy? Do you also practice intensive grazing?

How did your parents manage their pasture—Did they rotate? How did they otherwise manage the pasture? Did they use chemicals or would you say they were organic?
If you farm differently (i.e. manage your pasture more intensively or organically) from your parents. Can you describe the differences?

When/how did you first find out about your current strategy (MIRG and or organic)?

Where/Who/What was information coming from initially when you were thinking about this strategy? What were your initial thoughts about it when you first heard about it?

When did you seriously start considering this strategy? What seemed initially attractive to you and or what seemed initially risky for your farm situation (MIRG and or organic) (e.g. some folks may identify land requirements)?

What are your thoughts (other challenges with conversion)?

What factors and information sources and or people really pushed you over the edge so to speak in terms of converting to organic and or rotational grazing—and or begin the process? Were there other people/information who/that were discouraging?

For conventional farmers, have you thought about or are you considering other strategies like no-till, doing cash grain, getting bigger?

What about going intensive grazing or organic? What are the challenges barriers that prevent you from converting to organic and or MIRG?

What kind of planning/experimenting did you do before and during conversion? What were the results of this? How did you weigh out some of these advantages and disadvantages? Did you convert the whole farm at once? How did the progression work? How long was the time between the time that you were first exposed to the first trial and error (and or planning) to full adoption? What did you feed before/during conversion? Did you do any analysis in preparation or during conversion (soil/forage/products)? How do you think different strategies compare? How did your ideas about different strategies change through time? Do you feel that you are still actively refining your system?

In general, how do you feel about your decision to adopt alternative practices?
Pasture Management and other Agronomic Issues

What things do you do that you think might have an impact on increasing productivity in your bulk tank? (e.g. rotations, improved varieties of grasses, feed rations etc) How does that influence your decision making process?

Do you renovate your pasture? (seed into, till, spray?) What sort of varieties? Do you have any sense what % of your pasture are legumes? Do you have any goals in particular for future pasture improvement?

How often do you rotate your cows? What factors contribute to this decision of frequency of rotations?

What is the pasture/paddock layout on your farm? i.e. How does it lie around buildings woods, waterways (creeks)? Where do you graze your cows on your farm and how does that change during the year? How do you make these choices as to where to graze your cows on the land? How do you decide when to move to a new pasture?

Are you a seasonal producer?

Are you currently aiming for the majority of your feed to come from pasture during the grazing months? (i.e. how much grain do you feed your herd ( in lbs of head per day and explain the feed ration)?

For the first Amish interviews, I asked them about if they used contour plowing/what was their exposure to it.

Environment

What does it mean to you to be a good steward of the land? How does it apply to what you do on the farm?

And how does this play into your decision making on your farm? Did environmental factors influence your decision to farm with this strategy? Tell me more (positives and negatives).
From your perspective, what are the biggest environmental concerns associated with dairy farming in this area?

I may want to ask contour plowing specifically… (especially for Amish)

Social/Spiritual

What kinds of information do you use when making decisions about your farm? What sort of newsletters do you enjoy? Do you talk to other farmers much? How far away are the majority of farmers located that you talk to? Have you taken any classes or used extension? Do you know anyone else using MIRG?

Do you belong to any organizations? Can you list the organizations you belong to? Are these places where you talk about farming? (i.e. farming organizations, women’s groups, churches) How often do conversations occur and how do they come about? What milk buyer and certifier are you with and why? Are there other places that you talk about farming? Are there any other benefits you get out of belonging to these organizations? Tell me about the nature of these conversations. Do you share the attributes and struggles of your strategy with other farmers?

How have these interactions gone? (Get parents and other family members influence if I haven’t already)

For alternative farmers– How would you say the availability of information changed through time- i.e. were there barriers at the beginning. Do you think there are any areas where you could use information?

Probe- How do you continue to get management information that you need? Are other farmers interested in what you are doing?

Economic

How is your farm working for you now economically in general terms? In other words, do you think your farm is profitable enough for your financial goals? Are you able to have enough left over to do necessary improvements? Can you tell me a bit about your best and worst years in terms of income per cow?

What would be roughly the minimum milk price you would be willing to live on and still remain in farming (and or remain in organic production)? Furthermore, what would be the ideal milk price (so you would be solid and reasonably comfortable)?
If you have a goal of being fulltime on the farm what might be needed for this goal? How does your farm income compare to what it was in 2002 or 2003 (depending on what survey they answered)?

If they seem to be really comfortable talking about farm income information I ask more directly about farm income (but it is highly variable how people report this)?

How important is outside/off farm income to livelihood? Who works on your farm? Are labor constraints an issue for you?

For alternative farmers-- Were financial goals a reason you transferred into the strategy you are in and what about now? Can you share how you balanced economic goals with other goals (family, environmental etc.) when you thinking about converting?

Have your thoughts on the importance of economics and the relative economic success changed in term of your farming strategy as time passes and you continue to practice the strategy?

(When applicable)--What was the impact of sector adoption on the economics of your farm? i.e. Can you describe the transition process and how that might have affected your farm?

**Spiritual**

Intro- Farm decision making is affected by many factors. More folks are starting to realize the connections with spirituality and or the churches influence.. i.e. factors that may not be easily be defined as (economic, social, or ecological) (i.e. the other dimensions covered earlier in the interview).

What are the most rewarding parts of your farm in a broader sense (spiritual)—How might church/faith connect to why you farm? Do you talk about farming at church social gatherings?

Can you give an example? Or perhaps more generally what are the principles that guide you in your farming? Does it impact why you farm the way you farm? Probe- For those not involved with the church—What larger reasons keep you going in farming?
Looking ahead

Are you considering any major changes in your farming operation with respect to dairy or diversification strategies? Probe-Are there any expansions in cow numbers or other improvements in structures/infrastructure that you are planning?

Probe-- Would you consider converting getting bigger going MIRG, organic or some other strategy (if I don’t feel like I got a sense of this before). Probe-Or perhaps switching to another buyer or some other kind of change. Why or why not? How do you feel this farming strategy will work for you in the years to come?

If age seems to be an issue in terms of thinking about different strategies--- I may as …if you were X years younger would you have considered going organic/MIRG or some other strategy?

Probe--- e.g. some folks identify animal care health maintenance/weed management/ labor requirements are issues with organic and or MIRG as challenging with respect to organic. What are your thoughts (other challenges with respect to conversion that we may have not have otherwise discussed that may be relevant to the individual)?

When do you plan to retire? Will children take over the farm operations? Are you encouraging the children to take over the farm? If not, why not.

What are your thoughts overall on the future viability of your strategy (this was mainly asked of organic farmers)?

If they are switching out of dairy into some other farm sector...Why are you switching out of dairy? Does it have to do with milk prices? Labor issues? Some other reason?
Do you have concerns about the Premise ID legislation in Wisconsin and how that might impact your farm? What your thoughts? For some Amish, I may ask if they think land constraints are an issue with the future of farming Amish settlements? Are there other barriers that may be an issue?

What about the future of farming in the area for the Amish and the availability of land for future generations? Any thoughts on what might happen?

What has been your experience with grazing networks? Can you tell me a bit about the one you organize and how long you have been involved it? Was the network a source of information for you as well when you were converting (if they are farmer)? Have you found that folks taper off in involvement after they have the basics down? How active is the network?

Is there a mixture of organic/grazing farms in the network? Are there strong opinions one way or the other?

How do farmers generally get acquainted with networks? Do you think there is something unique about the people who are active in networks?

What do you think is the general trends in MIRG farming across WI? How do you think increases in grain prices may affect these trends? Do you think there are certain kinds of farmers that go in MIRG? Do MIRGers have different overall goals for their farm than conventional farmers? What are the barriers/challenges preventing folks from getting into MIRG? Are there very many MIRGers going organic?

Do you see localized clustering of MIRGers? Are there experienced MIRGers that have a significant influence on a lot of other graziers? Do you think there are quite a few misperceptions about MIRG/ organic? What are the perceptions of structural barriers (land amount/how land is situated with respect to barn/roads/water, time moving fence)?
## Appendix IV. Table of Farmers

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Management Type</th>
<th>Cow number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben and Bonnie</td>
<td>Crank</td>
<td>Organic</td>
<td>45</td>
</tr>
<tr>
<td>Dan</td>
<td>Crank</td>
<td>Organic</td>
<td>42</td>
</tr>
<tr>
<td>Devin</td>
<td>Dooley</td>
<td>Organic</td>
<td>45</td>
</tr>
<tr>
<td>Matt</td>
<td>Drake</td>
<td>Organic</td>
<td>42</td>
</tr>
<tr>
<td>Jon</td>
<td>Edwards</td>
<td>Organic</td>
<td>40</td>
</tr>
<tr>
<td>Scott and Sally</td>
<td>Smith</td>
<td>Organic</td>
<td>45*</td>
</tr>
<tr>
<td>Tom and Jerry</td>
<td>Serts</td>
<td>conventional</td>
<td>300</td>
</tr>
<tr>
<td>Edmond</td>
<td>Bontreger</td>
<td>Organic</td>
<td>14</td>
</tr>
<tr>
<td>Sam</td>
<td>Donny</td>
<td>Organic</td>
<td>30</td>
</tr>
<tr>
<td>Zach</td>
<td>Glick</td>
<td>Organic/MIRG</td>
<td>12</td>
</tr>
<tr>
<td>Jeremy</td>
<td>Hack</td>
<td>Organic</td>
<td>40</td>
</tr>
<tr>
<td>Jeff</td>
<td>Jensen</td>
<td>Organic Intense Grazier</td>
<td>NA</td>
</tr>
<tr>
<td>Charles</td>
<td>Kenny</td>
<td>Organic</td>
<td>39</td>
</tr>
<tr>
<td>Mitch and Lynn</td>
<td>Lacy</td>
<td>Organic</td>
<td>40</td>
</tr>
<tr>
<td>Kerry</td>
<td>Martin</td>
<td>Organic</td>
<td>50</td>
</tr>
<tr>
<td>Ben</td>
<td>Miller</td>
<td>Organic</td>
<td>11</td>
</tr>
<tr>
<td>Patrick and Betsy</td>
<td>Morny</td>
<td>Organic</td>
<td>37</td>
</tr>
<tr>
<td>Teddy</td>
<td>Packer</td>
<td>Organic</td>
<td>22</td>
</tr>
<tr>
<td>Mike and Mindy</td>
<td>Ray</td>
<td>Organic</td>
<td>38</td>
</tr>
<tr>
<td>Jerry and Pat</td>
<td>Seily</td>
<td>Organic</td>
<td>40</td>
</tr>
<tr>
<td>Shippy</td>
<td>Stocky</td>
<td>Organic</td>
<td>42</td>
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* Out of dairy
<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Management Type</th>
<th>Cow number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lonny</td>
<td>Latch</td>
<td>Intense Grazier</td>
<td>27</td>
</tr>
<tr>
<td>Douglas</td>
<td>Acker</td>
<td>Intense Grazier</td>
<td>62</td>
</tr>
<tr>
<td>Billy</td>
<td>Donnecker</td>
<td>Intense Grazier</td>
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<tr>
<td>Robert</td>
<td>Doll</td>
<td>Intense Grazier</td>
<td>41 plus</td>
</tr>
<tr>
<td>Paul</td>
<td>Flecker</td>
<td>Intense Grazier</td>
<td>35</td>
</tr>
<tr>
<td>Harry</td>
<td>Tricky</td>
<td>Intense Grazier</td>
<td>12</td>
</tr>
<tr>
<td>Al and Aly</td>
<td>Martin</td>
<td>Intense Grazier</td>
<td>60-90</td>
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<tr>
<td>Nick</td>
<td>Nader</td>
<td>Intense Grazier</td>
<td>225</td>
</tr>
<tr>
<td>Kevin</td>
<td>Cassidy</td>
<td>Intense Grazier (Beef)</td>
<td>NA</td>
</tr>
<tr>
<td>Wes</td>
<td>Pander</td>
<td>Retired Intense Grazier</td>
<td>40</td>
</tr>
<tr>
<td>Jerod</td>
<td>Lackey</td>
<td>Low Intense Grazier</td>
<td>38</td>
</tr>
<tr>
<td>Mahlon</td>
<td>Mast</td>
<td>Low Intense Grazier</td>
<td>17</td>
</tr>
<tr>
<td>Luke</td>
<td>Miller</td>
<td>Low Intense Grazier</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Management Type</th>
<th>Cow number</th>
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</thead>
<tbody>
<tr>
<td>Andy</td>
<td>Son</td>
<td>Small conventional</td>
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</tr>
<tr>
<td>Randy</td>
<td>Rod</td>
<td>Small conventional</td>
<td>75</td>
</tr>
<tr>
<td>Keith</td>
<td>Neddy</td>
<td>Small conventional</td>
<td>27</td>
</tr>
<tr>
<td>Walter</td>
<td>Reshy</td>
<td>Small conventional</td>
<td>45</td>
</tr>
<tr>
<td>Craig</td>
<td>Pinkey</td>
<td>Small conventional</td>
<td>30</td>
</tr>
<tr>
<td>Fred and Susan</td>
<td>Teiner</td>
<td>Large conventional (100 over)</td>
<td>100</td>
</tr>
<tr>
<td>Larry</td>
<td>Wagner</td>
<td>Large conventional (100 over)</td>
<td>300</td>
</tr>
<tr>
<td>Greg</td>
<td>Biddy</td>
<td>Conventional part cash grain</td>
<td>35</td>
</tr>
<tr>
<td>Phil</td>
<td>Thicky</td>
<td>Conventional part cash grain</td>
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</tr>
</tbody>
</table>