

*Assessing the Barriers to Conversion to Organic
Farming:*

An Institutional Analysis

Submitted to:

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Abstract

Increased domestic and international demand for organic products, along with environmental and safety issues, have stimulated policymakers and governments in some parts of the world to provide incentives for converting from conventional to organic farming. There is growing evidence that increased adoption of such systems can offer numerous environmental, social and financial benefits. Despite high growth rates of organic production in Canada, it remains a very small sub-sector of Canadian agriculture. Investigating the barriers of converting to organic farming can provide valuable information for policy-makers wanting to stimulate further conversion to organic farming.. The focus of this research report is on identifying factors that encourage or discourage farmers considering adopting organic practices, especially the institutional factors that affect the decision whether to convert to organic farming. The data used in the study were collected from a sample of both organic and conventional farmers in Saskatchewan.

The results reveal that conventional farmers lack information in many areas of organic practices, and that the institutions related to organic farming are very useful in providing information about organic farming. Assessing the "willingness to convert" of conventional farmers shows some potential for converting to organic practices. Lack of knowledge and skills needed to manage an organic farm and lack of market opportunities for organic products are the most important reasons for not using organic farming practices. In contrast to some research, the findings showed that non-profitability of organic farming is not a significant reason for not adopting organic farming practices.

The survey indicated that economic factors have the greatest importance in motivating conventional farmers to convert to organic practices. Control of weeds, insects and disease, uncertainty about economic returns, and complications in the process of becoming an organic producer, appear as the most important barriers to implementing organic farming practices. Conventional farmers identified the need for more labour as an important challenge to be faced after converting. Half of the conventional farmers surveyed believe that costs for organic products are higher than conventional products.

Also, most of the farmers believe that all activities in marketing organic products have higher costs, or take more time.

It appears that conventional farmers' beliefs and attitudes are important factors in affecting their willingness to accept organic practices. Despite their concern for the environment, future generations, human health and consumer preferences, farmers on average disagree that organic farming is the way for them to achieve these objectives.

While conventional farmers show low levels of knowledge about organic standards, the effectiveness and protection of organic regulations can encourage conventional farmers to convert to organic practices. Certification bodies can improve organic farming by increasing farmers' satisfaction with organic agriculture. Moreover, marketers have an important role in switching farmers from conventional to organic agriculture.

Conventional farmers' opinions indicate that private organizations in Saskatchewan are important for the development of the organic farming sector; in this regard, private organizations may be more effective than public organizations. Conventional farmers' views on interrelationships between organic and conventional farmers' institutions revealed a conflict in government policies between organic and conventional sectors, and also between organic and mainstream farmers. On the other hand, they revealed a cooperative relationship between organic farming and mainstream farming institutions.

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1. Introduction

“Organic farming is an integrated system of farming based on ecological principles.” (Wallace, 2001). Farmers who farm organically use natural systems to control pests and disease in crops and livestock, and avoid synthetic pesticides, herbicides, chemical fertilizers, growth hormones, antibiotics or genetic modification. Organic farmers use a range of techniques that help sustain ecosystems and reduce pollution (European Commission, 2002). According to the Canadian Standard for Organic Agriculture, at least three years must elapse from the application for organic farming to the time at which the products can be considered as “certified organic”.

Organic food is one of the highest growth sectors in global food production. According to the SOEL Survey (2004), more than 24 million hectares are managed organically worldwide. Currently, most of this is in Australia (about 10 million hectares), Argentina (almost 3 million hectares) and Italy (almost 1.2 million hectares). The percentage of total arable land under organic management, however, is highest in Europe (Yussefi & Willer, 2004). Organic farming is also one of the fastest growing segments of U.S. agriculture (Greene & Kremen, 2003).

Many studies have alluded to the environmental and economic benefits of organic agriculture. The Canadian organic industry has emerged in the last ten years as an economically viable and environmentally sustainable alternative to conventional farming, moving it into the agriculture and food production mainstream (Weseen, 2003). Recent data identify approximately 3200 organic producers on 1.16 million acres of cropland in Canada, and over 320 organic processors. Growth in retail sales is around 20% annually, and in 2000 exceeded \$1 billion (Agriculture and Agri-Food Canada, 2004).

Saskatchewan is the largest producer of organic products in Canada, with about one-third of the nation’s organic producers. In 2003, there were 456 certified processors and handlers in Canada, of which 94 were located in Saskatchewan. Saskatchewan had the largest acreage of organic crop production in Canada, totalling 386,000 acres with a farm gate value estimated at \$92 million (Ferguson, 2004).

Consumers' demand for organic food products follows from perceptions that organic products are safer, cleaner and more ethical than conventional products . Demand has been rising steadily: the organic food market is among the fastest-growing categories in the U.S. food industry (MacInnis, 2004), as well as most EU countries. The consumption of organic products has increased significantly in Canada during the last decade¹.

In 1990, the Canadian government made a commitment to promote the development of sustainable agriculture. Since that time much work has been done to define sustainability and address key problems. In Saskatchewan, potential environmental and economic problems have stimulated a major effort to change farmers to alternative forms of production (Beckie, 2000). Nevertheless, sustainable agriculture in Canada has received less support than its U.S. counterpart. (Hill 1997, MacRae et al. 1990). After years of passive opposition to mainstream agriculture, organic farming is now an instrument of agricultural policy (Dabbert et al., 2004).

Despite its healthy growth rate, organic production remains but a small fraction of Canada's agriculture: less than 2% of all farmland is certified organic. Given the relatively slow adoption of organic farming to date, the potential benefits of organic farming systems are not yet obvious. Nevertheless, growing evidence indicates that adoption produces environmental, social and financial benefits. MacRae (2002) believes there is evidence that adopting organic farming policies can help governments address pollution; reduce greenhouse gases; build consumer confidence by not using controversial products, practices and processes; reduce financial pressures on farmers; decrease government farm payments; and help revitalize rural communities. He points out that with organic food expected to comprise 10% of domestic retail sales by 2010, the organic sector must become a major component of the Canadian food and agriculture system, if Canada is to achieve the national vision.

One could ask why the organic farming sector is still so small. Investigating the barriers slowing the conversion to organic farming is important in helping government and other policy-makers stimulate conversion to organic farming. The purpose of this

¹ Refer to Web site <http://organic.usask.ca/consumer.htm>

research is to identify the factors that limit the conversion to organic farming. The focus is to investigate the barriers, specifically the institutional barriers, to conversion.

2. The Process of Conversion to Organic Farming

Conversion to organic farming is a long process. It covers the period during which a farm changes from existing (conventional) practice to organic management. During this period external inputs have to be, to a large extent, replaced by biological processes such as biological nitrogen fixation and the management of internal resources. In order to stimulate the conversion, policy-makers need more information about the process of conversion.

Padel (2001) modified the Rogers adoption model (Rogers and Shoemaker, 1971), in the light of her empirical research about organic farmers and conversion (Figure 1).

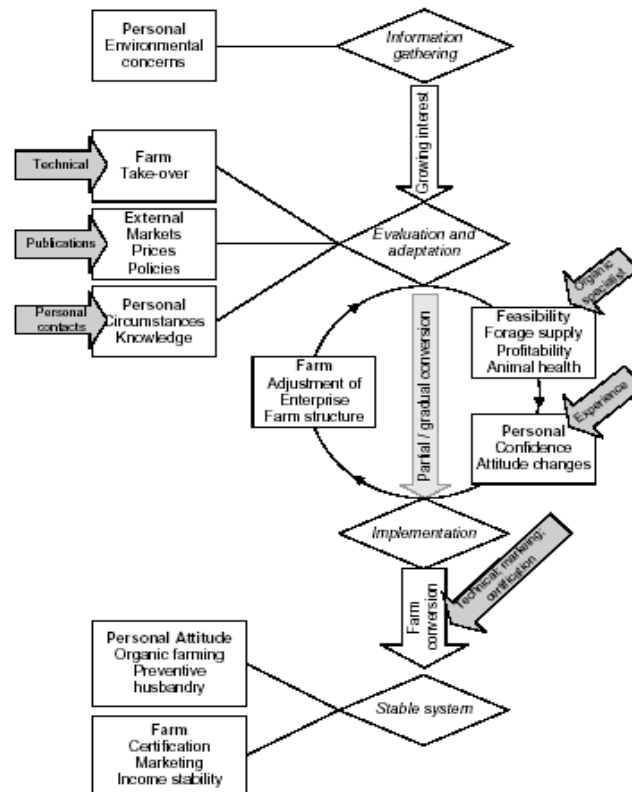


Figure 1: Model of the process of conversion of farmer and farm

As shown in Figure 1, Padel identified three key stages of the conversion process including information gathering, evaluation and adaptation, and implementation. She integrated the first and second phases of the original adoption model (awareness and information) into one stage, information. Her model suggests that better technical, financial and marketing information could play a pivotal role in influencing farmers' attitudes. She proposes that different sources of information would be important during different stages of the conversion process.

Padel's research confirmed the potential impact of personal variables in all three categories. Moreover, she found that for most farmers the move toward conversion was prompted by a change in external factors – organic premiums, changes in conventional agricultural prices, food and farming scares, and financial support payments. The experiences of the case-study farmers for the second phase, evaluation and adaptation, confirmed the importance of on-farm evaluation for the decision-making process, although it was in many cases difficult to distinguish this phase from the following one (implementation).

The marketing perspective on technology adoption places a greater emphasis on the stages of adoption, as opposed to an individual decision-maker's final decision to adopt. This approach describes adoption as a hierarchical process, where the producer first learns about organic farming, and then evaluates all alternatives before making an optimal choice (Aker et al., 2005).

Thus, from one viewpoint, the adoption decision may be divided into five hierarchical stages: awareness, information-seeking and processing, evaluation, adoption, and evaluation after adoption. At the first stage, producers become aware of a new technology through formal and informal information channels. In the second stage, producers actively seek information– from retail outlets, public information, or knowledgeable individuals. In the evaluation stage, producers assess the cost/benefit of the technology and its alternatives. In the adoption stage, producers decide to adopt a particular technology. Finally, in the fifth and final stage, producers determine their level of satisfaction.

From another viewpoint, adoption of new technology may be seen as a diffusion process, as depicted in Figure 2.

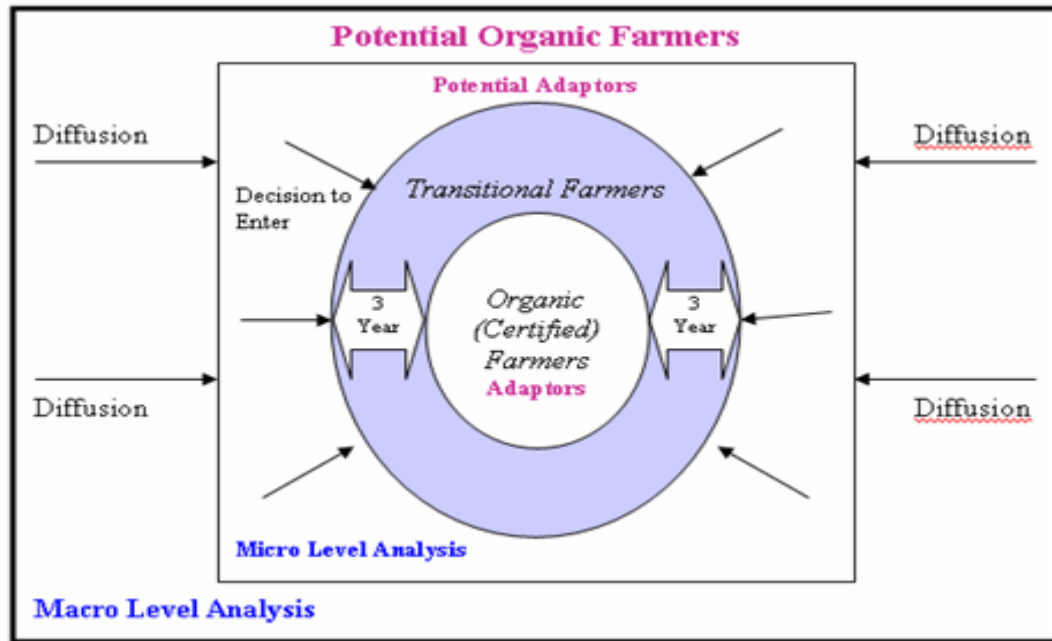


Figure 2: Process of converting to organic farming

As shown in Figure 2, it is necessary to distinguish between diffusion of information and adoption of organic farming². Nevertheless, diffusion and adoption of innovations are both necessary conditions for technological change to occur. There is often a considerable gap between the time when an innovation becomes available, and the time that it becomes widely used (Keyowski, 2004).

When considering the switch to organic farming, producers need to know what organic agriculture is, what is needed for a change to organic management, how organic farming can affect the farm and the farm family, and how long these changes will take. The first step is to collect information about organic agriculture in technical, regulatory and marketing areas. If, after digesting this information, the producer believes organic agriculture can work in his/her situation, steps can be taken toward converting the farm to organic management. Other organic farmers and organic licensing organizations are a

² Most of the studies on technology adoption distinguish between adoption and diffusion. While adoption models analyze an individual producer's decision as to whether to use a new technology, diffusion models analyze aggregate adoption behaviour, or aggregate demand for a technology (Thirtle and Ruttan 1987).

useful information source to ensure that plans are consistent with organic standards– that is, that certification will not be a problem. The final decision for farmers who decide to convert to organic farming is whether to allocate all of the cultivated area to organic practices, and if not, what share of their cultivated area will be converted to organic farming (Khaledi, et al., 2005).

It is also important to keep in mind, however, that all kinds of conditions change from year to year or, indeed, from day to day – the weather, soil life, input and output prices, and the farmer's understanding of how to cope with new challenges. It is therefore important that plans be flexible enough to accommodate a change in the conditions (Wynen, 1993).

Many studies have investigated different aspects of conversion to organic farming. In the following section we briefly review the empirical research on the conversion process and discuss some important issues, barriers and incentives at different stages of conversion.

3. Empirical Research

While Lampkin (1990) argues that most researchers fail to isolate the effects of the farming system from the effects of localized factors, most of the studies mention several factors that influence the conversion process. Marshall (1993) mentions the financial competitiveness of organic farming, the management skills of organic farmers, agro-climatic conditions, and social considerations. Beckie (2000), comparing farmers' perceptions of the factors influencing their management decisions for organic and zero-tillage operations in Saskatchewan, Canada, concludes that organic farming is adopted as a result of a combination of environmental, health, economic, philosophical/spiritual and labour factors.

Howlett (2002) looked, as case studies, at 27 Irish farms considering conversion to organic production, concluding that, while in theory organic farming is a viable option in Ireland, its future is very much dependent on government and EU support and promotion

of the sector in terms of both policy and product. marketing. Financial considerations, environmental concerns, control of disease in animal herds, lack of market outlets, and inadequate marketing of organic products were all cited by farmers as issues. The study nevertheless concluded that all farming sectors would experience moderate improvements to farm income if they converted to organic farming.

Sterrett et al. (2005) analysed conversion to organic production on 142 Virginia farms. They identified multiple barriers to organic production, with the primary barrier being the cost and uncertainty of the certification process. Other barriers included lack of marketing information and cost/budget information, availability and cost of labour, production problems, and lack of production information.

Clearly, classifying studies by topic, approach, or findings is difficult. In the next section we will discuss the process of conversion to organic practices.

3.1. Adoption and Diffusion of Organic Farming

Lampkin and Padel (1994) analyzed the characteristics of, causes of, and barriers to the adoption of organic farming from an international perspective, by summarizing financial support programs from 1987 to 1992 in Denmark, Sweden, Norway, Finland, Switzerland, Austria and Germany. They conclude that conversion subsidies can increase the organic farming sector by 300%.

Rogers' adoption model has been used in the context of organic conversion by a small number of researchers (Burton et al., 1999; Padel, 2001). Padel (2001) tried to understand the relationship between the model and the diffusion of organic farming. The results indicated that the model had some application to the diffusion process of organic farming and the individual adoption or conversion decision. Later studies indicated that more recent converters match the characteristics of early adopters, suggesting that the diffusion process is moving toward the early adoption stage. Padel argues that, while early adopters value economic indicators highly, conversion to organic farming is a complex system change, the principles of which may challenge common agricultural practices, and

may imply lower profitability and a higher risk. She concludes that the conversion decision can not be explained by personal characteristics of the adopters alone, and other factors – policy support, development of the markets, attitudes towards organic farming in the agricultural community, and institutional development, also need to be considered.

By contrast, López et al. (2005) analyzed the diffusion of organic agriculture for olive farmers in the south of Spain, within the framework of the diffusion-of-innovations theory, concluding that diffusion is essentially due to an autonomous “contagion” among olive growers, with little external intervention.

3.2. The Role of Information and Knowledge

Lack of information has been identified frequently as a barrier to organic conversion. Padel (2001) argues that organic farming is not typical of technical innovations, but is instead an information-based innovation, with those engaged actively seeking information outside of the mainstream of agriculture and from others involved in organic farming.

Studies of conventional farmers’ opinions about organic farming reveal, among other issues, their limited knowledge and their interest in more information (Fairweather, 1999; Midmore et al., 2001; Wynen, 1990). Surveys of conventional producers identify lack of information as one of the main barriers to organic conversion (Blobaum, 1983; Fairweather, 1999; Midmore et al., 2001).

Lockeretz (1991) argued that expansion of organic farming would be associated with an acceleration of knowledge accumulation among organic farmers (along with an increase in the technical support available from governments and farm advisors). External inputs would be replaced in part by information and management – yet little is known about what information is needed, when farmers might require it, and where it could come from. Therefore, he maintained, organic farming would be a mainly software-based innovation and, like other low-input systems of agriculture, information-intensive (Lockeretz, 1991).

Wynen (1993) in a case study on organic conversion in cereal/livestock farming, found that information about organic agriculture is important in technical, regulatory and marketing areas. In another study, Wynen (2004) concluded that with regard to farmers' decisions whether to switch to organic farming, it is extremely important that they be well- informed about organic farming.

Waltz (1999) found that the most severe barriers to organic transition were lack of information and experience in organic production, and an inability to identify markets.

In an Italian case study, the diffusion of organic farming was found initially to be limited by the lack of extension, information, and market awareness by farmers, accompanied by some distrust of local agricultural organizations (SIMOCA Project, 2004).

Niemeyer and Lombard (2003) in a study of organic farmers in South Africa, examined socio-demographic aspects, farming operations, motivations, and problems of conversion. They recommended that conversion to organic farming be supported, not necessarily via direct financial support to the organic farmers, but by different instruments such as the development of an improved infrastructure for marketing, networking and information exchange.

Two studies (Fairweather, 1999; Midmore et al., 2001) found the number of farmers with an interest in organic farming to be considerably greater than the number adopting or actively inquiring about organic farming, highlighting the role that better technical, financial and marketing information could potentially play in influencing farmers' attitudes..

3.3. Economic and Financial Comparisons

An eastern prairie study in Canada found that durum wheat, soft white wheat and alfalfa hay were more profitable on organic farms, even without a price premium (Entz et al., 1998). In Ontario, beans and corn were found more profitable for organic farmers, even without the price premium. Sholubi et al.(1997) found the profit for Ontario organic dairy farms was higher than for the average conventional farm.

Marshall (1999), found that economic considerations were the main motive for Scottish producers interviewed, while by contrast, interviewees in France were attracted by the values of organic farming.

Padel (2001) showed that through higher organic prices and reduced costs U.K. dairy farmers can compensate for output reductions in the long term, and in fact many dairy farmers could convert without income penalties with currently available financial support, despite increasing labour and farming costs.

Some researchers have used econometrics models to analyze the economic limitations of organic conversion. Diebel et al. (1993) analyzed the potential economic barriers facing farmers when adopting low-input agriculture. Pietola and Lansink (2001) assessed decisions of Finnish farmers to switch between organic and conventional farming technologies. The results suggest that decreasing output prices and increasing direct subsidies trigger the switch to organic farming. Lohr and Salomonson (2000) analyzed factors that determine whether a subsidy is required to motivate organic conversion in Sweden. Their results indicate that services rather than subsidies may be used to encourage organic agriculture.

Burton et al. (2002) modelled the adoption of organic horticultural technology in the UK. Their results indicate the significance of gender, environmental attitudes, and information networks, as well as longer-term systematic effects..

Kuminoff and Wossink (2005) concluded a conventional corn-soybean grower would need to receive an annual payment of \$228 per acre for a 10 year contract to compensate for conversion cost and cover the long-run higher production costs and market risks.

Acs (2006) analyzed the conversion in Holland from conventional to organic arable farming systems. The results show that over a ten-year planning horizon, despite the economically difficult conversion period, organic farming is still more attractive from an economic point of view. However, when additional constraints were included, notably the effect of future yield and price uncertainty before, during and after conversion, the conversion was not always economically optimal. unless policy incentives such as taxes

on pesticides or fertilizers, or subsidies on organic products, were applied – or unless the market price for organic products stabilized.

3.4. Technical and Managerial Issues

In a number of studies, in addition to greater labour requirements, technical factors are identified that deter interested farmers from going ahead with organic conversion (Fairweather, 1999; Schneeber et al., 2002;. de Buck et al., 2001). These include weed problems, soil fertility, and yield variability..

The level of management skills required can also influence the adoption of organic agriculture. Crosson and Ostrov (1990), for example, assert that organic agriculture involves more demanding management than other approaches to farming, because of the need for substantial knowledge of complex ecological relationships and farming experiences. Schneeberger et al. (2002) investigated the barriers to adoption of organic agriculture by cash-crop farmers in Austria; technical challenges in cropping and additional labour requirements were rated most important.

3.5. Social Considerations

Social considerations impose another possible barrier to the adoption of organic agriculture. Organic farming can be seen as a social movement representing an alternative to mainstream agriculture (Michelsen et al. 2001). Sociological aspects of organic conversion and production, such as adoption behaviour, barriers to more widespread conversion, organic farmers' motivations, and farm and personal characteristics of the converting farmers, are important to the conversion process (de Buck et al., 2001; Fairweather, 1999; Midmore et al., 2001; Vogtmann et al., 1993; Wernick and Lockeretz, 1977).

Attitudinal differences between organic and conventional producers have been found in several studies (de Buck et al., 2001; Fairweather, 1996; Fairweather, 1999; van der Ploeg, 1994; Midmore et al., 2001). Durham (1999) concluded that farmers with broader environmental concerns and a positive attitude to challenge and change appear more

likely to consider organic farming as a potential alternative. Breimyer (1984) contended that not all farmers are in it solely for the money, and social factors such as peer pressure can influence their decision. Morgan and Murdoch (1998) examined the nature of trusted information networks, within the organic movement or elsewhere, in order to explain some of the adoption characteristics of organic farming.

Lockeretz (1997) could not confirm any relationship between different production practices and a number of variables including education, background, gender, age, years in farming and reasons for farming organically, concluding instead that other variables such as personal attitudes to nature conservation might be more important. Lobley et al. (2005) assert that the social space of the farmer is an important aspect in decision-making and innovation, particularly in regard to taking advice or seeking information about organic farming.

3.6. Environment and Health Concerns

Concern about environmental and health issues associated with conventional farming have played a central role in shaping the sustainable agriculture movement (Anderson, 1995). Ashmole (1993) identified environmental concerns as the most important factor for organic farmers. Maurer (1997) found environmental reasons were important for conversion and the improved social acceptance of organic farming in Switzerland. A Finnish survey identified environmental considerations as the main reason for conversion (Kallio, 1997). A comparative survey of organic and conventional producers in England showed the organic farmers, unlike conventional producers, believe that organic food tastes better, is healthier and better for the environment (Beharrell and Crockett, 1992).

3.7. Institutional Analysis

Michelsen et al. (2001) analyzed the formal and informal political institutions relevant to organic farming for six European countries from 1985 to 1997, concluding that the institutional environment of the agricultural sector including organic markets, agricultural policy, self-organization and social context are all important factors in conversion. Following Michelsen et al. and applying their method, Moschitz et al. (2004) examined the institutional context of organic agriculture in eleven European countries

during the period from 1997 to 2003, identifying links with other social institutions –: not just the agri-food industry, but the market, the state, and the larger civil society.

Lynggaard (2001) analyzed the institutional changes that have taken place in the Danish and Belgian organic farming sector in the period from 1985 to 1999. He found major differences between the two countries in the institutions affecting development of the organic farming sectors.

Some researchers have examined transaction costs in organic markets (Ferguson, 2004; Ferguson, Weseen, & Storey, 2005). MacInnis (2004) in a U.S. survey found evidence that existing organic markets impose considerable entry barriers for individual organic farmers, and that transaction costs are not the same for organic and conventional farmers.

Other studies mention specific aspects such as agro-climatic conditions, individual farm situations, and farmer characteristics. For example, Klonsky and Smith (2002) looked at farmers entering and exiting the organic market in California. Among other things, they concluded that entrants tend to be smaller than the incumbent organic farmers, but at the same time smaller growers are more likely to exit the organic market.

The studies cited in the preceding paragraphs leave little doubt that a wide range of institutional factors need to be considered in developing, or encouraging the development of, organic farming.

4. Methodology and Data Sources

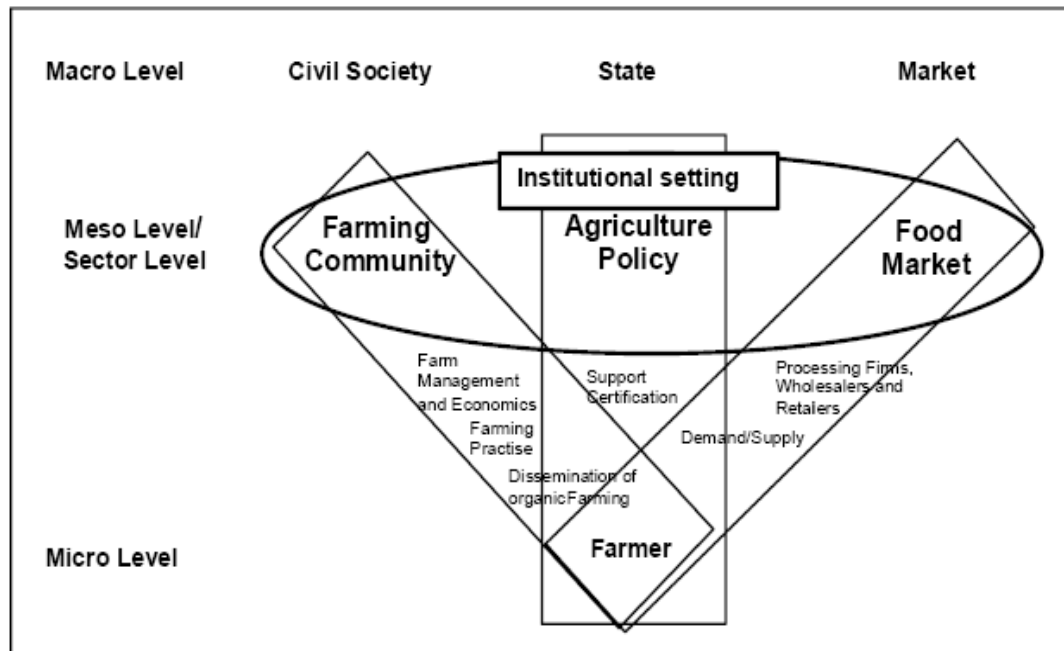
The previous sections have identified factors affecting the development of organic farming. In the context of this study, the barriers and motivational factors affecting adoption of organic practices are investigated, with emphasis on the institutional factors.

Although organic farming has been seen as a technological alternative to conventional farming, it has to be understood as a social and institutional alternative as

well (Laschewski, 2005). Institutions, both formal (the market, laws and regulations) and informal (norms, traditions, beliefs and attitudes), affect farmers' behaviour in choosing the form of farming suited to them in the light of various environmental, cultural, social and economic conditions.

Michelsen et al. (2001) depict the relationships between the farmer and the institutional environment as shown in Figure 3. They conclude that the institutional environment of the agricultural sector within which the individual farmers function can be placed in three domains: the farmer/market, the farmer/policy and the farmer/farming community, all of which exist within the larger social context.

Figure 3: Interrelationship between farmers and the institutional environment



Source: Michelsen et al. 2001

An institutional analysis can explain the interdependencies of these different domains and help identify institutional gaps and opportunities. As elaborated by Moschitz et al. (2004), the organic sector is integrated into the larger context of the general agriculture and food sector, which is further linked to at least three different social systems: the

market, via the food market; the state, via agricultural policy; and civil society, via social networks.

It is possible to investigate the institutional factors from the macro level, looking at the formal and informal institutional environment in which agriculture, both conventional and organic, operates. However, an alternative approach, and the one adopted by this study, is to do a micro-level analysis, looking at what both organic and conventional farmers understand of institutional barriers and motivations.

The aim of this research project was to identify the nature of farmer-perceived barriers and motivations to conversion, and in particular to examine key institutional issues for those who have made the conversion and those who have not. In this context conversion to organic farming is seen as an individual decision, where the individual farmer decides to change his existing farming practice and accept organic production standards. Institutional factors, nevertheless, play an important role during the process of making the decision, as well as the process of converting to organic farming.

The data were obtained from two different sources: a sample of 57 Saskatchewan organic farmers, and a sample of 23 Saskatchewan conventional farmers who have not converted to organic farming. In each group, the selection of farmers was restricted to grain producers.

The organic farmers' sample was collected in a survey conducted by the Project on Organic Agriculture in the Department of Agricultural Economics at the University of Saskatchewan. Questionnaires were mailed to 90 organic grain producers randomly picked from across Saskatchewan. The sample included producers from four Certification Bodies, including Organic Crop Improvement Association (OCIA), Pro-Cert, Canadian Organic Certification Cooperative (COCC) and Saskatchewan Organic Certification Association (SOCA). For the selection of a sample of conventional farmers, a random sample was taken from the grain producers in Saskatchewan, and the data collected using a survey questionnaire. The conventional farmers' sample was supplemented by personal interviews. During the interviews, data were gathered on beliefs about organic farming,

thoughts on problems and challenges, the attitude of conventional farmers to organic farming, the use of information sources, and perceptions on the institutional environment.

In the next section, we report and discuss the results of the empirical analysis of the conventional and organic farmers in Saskatchewan.

5. Results and Discussion

5.1. Information about Organic Farming

The literature shows that information is key to the diffusion of organic farming practices. Lack of information is frequently identified as a barrier to conversion, and information is also vital during the conversion process. In fact, information could produce changes in farmers' attitudes. Midmore (2001) cites lack of technical, financial and marketing information as a barrier to the wider adoption of organic farming systems (Midmore et al., 2001). Padel (2001) suggests addressing these information gaps could help farmers become more confident that organic farming is a viable alternative (Padel, 2001).

The results of interviews with conventional farmers in Saskatchewan show that all farmers had some information about organic farming. On average, they had been informed about this alternative six years ago. In spite of this, their familiarity with organic farming practices is not very high. Table 1 summarizes farmers' familiarity with organic farming practices.

As shown in Table 1, farmers' familiarity is the lowest with the stage involving application and contract process for starting this new technique as the first step in transition to organic farming. As farmers' familiarity with this stage is very important for starting organic practice, government and other promoters will need to increase information in this area. In addition, farmers lack significant information in other areas, including managerial and technical practices, marketing, and regulations.

Table 1. Rate of Farmers' Familiarity with Organic Farming Practices

| Types of practices | Rate of familiarity* |
|---|-----------------------------|
| Application and contract to start organic farming | 2.0 |
| Management of organic farms | 2.7 |
| Technical practices for growing organic crops | 2.7 |
| Marketing organic products | 2.2 |
| Regulations about organic agriculture | 2.4 |

*[1= very low and 5=very high]

Farmers gradually gather information about organic farming in various ways, for example through reading publications, through visiting other organic farms, and through local contacts (veterinarian, advisors). Farmers also mentioned the influence of friends and family during this phase of considering organic farming as a future option for the farm, along with preferences for low-input farming and concerns about the environment.

We asked farmers for their information sources, and to rate the usefulness of the different sources for gathering information about organic farming. Their answers are summarized in Table 2. Saskatchewan's farmers agree that information about organic farming is available from a range of sources including organic farmers, publications, colleges, government and so on. As indicated in Table 2, organic farmers were the most useful source to the farmers— more than 50% of conventional farmers mentioned organic farmers as a useful source for gathering information. Meetings / seminars / conferences / workshops about organic farming, and organic farming associations, are rated second and third by farmers. However, few farmers obtained information from these sources, 9% and 4% respectively. The results indicate that research institutions related to organic farming are useful in providing information about organic farming. The Internet seemed a particularly useful source, as more than 50% of farmers used it for obtaining information. Government agencies have not been used by farmers surveyed.

Table 2. Usefulness of Different Sources in Gathering Information about Organic Farming

| Sources | Rate of usefulness* | Percent using this source |
|---|---------------------|---------------------------|
| Organic farmers | 2.76 | 52 |
| Books | 2.35 | 9 |
| Magazines/journals/bulletins/newspapers | 2.10 | 30 |
| Meetings/seminars/conferences/workshops about organic farming | 2.65 | 9 |
| Organic farming associations | 2.61 | 4 |
| Internet | 2.17 | 52 |
| Universities and research institutions | 2.33 | 17 |
| Radio/television | 1.50 | 9 |
| Government/state and their agencies | 1.65 | 0 |
| Other people (other farmers, families, friend) | 1.86 | 17 |

* [1=Not useful; 2=somewhat useful; 3=Very useful]

Other results indicate that only 22% of farmers have seen any discussion forums on organic farming issues. Moreover, only 45% believe that there is a lot of sharing of information about organic farming between growers.

5.2. Conversion to Organic Farming

In a number of surveys of conventional producers, approximately one-third expressed an interest in future organic production on all or parts of the farm (if they were not doing so already): 38% in a National Westminster Bank survey (Nat West, 1992), 30% to 35% in Burton's survey of horticultural producers in the UK (Burton et al., 1999). Similar results were obtained from producers in New Zealand (Fairweather, 1999), and in a random sample of farmers with different farm types in England (Midmore et al., 2001) .

In order to encourage conventional farmers to convert to organic practices; it is necessary first to assess conventional farmers’ intentions to convert to organic farming, and then to investigate their reasons for not converting, as well as the barriers and the motivation factors for converting to organic farming. Table 3 reports conventional Saskatchewan farmers' intentions to convert to organic farming. Table 4 show reasons for not converting, if farmers considered converting to organic farming, but decided not to.

As shown in the Table 3, about 50% of farmers surveyed have potential (“maybe convert to organic farming in the future”) to convert to organic practices. It follows that governments and policymakers have to identify this group of farmers and provide some incentives to encourage them to accept and convert to organic farming. Seventeen percent of the farmers surveyed have no intention of converting to organic farming

Table 3. Saskatchewan Conventional Farmers' Intension for Converting to Organic Farming

| Farmers’ intension for converting to organic farming | Frequency (percent) |
|--|------------------------|
| Absolutely not | 17 |
| Probably not | 31 |
| Maybe | 48 |
| Probably | 0 |
| Certainly | 4 |

We surveyed “willingness to convert” (WTC) of conventional farmers. The answers rated from 1 to 5, where 1 is very low and 5 is very high. The results indicated that willingness to convert (WTC) of conventional farmers is 2.43, on average. Though WTC isn't high, there are still significant numbers with at least some interest in converting to organic practices.

As shown in Table 4, lack of knowledge and skills needed to manage an organic farm and lack of market opportunities for organic products are the most important reasons for not using organic farming practices. Approximately 50% of the farmers noted these factors as a limitation for using organic practices. In contrast to some research, our findings showed that perceived non-profitability of organic farming did not play a vital role in not using organic farming practices. Rather, 43% farmers state that lack of information about organic agriculture, high risk of organic farming, and lack of sufficient support from government are among their main reasons for not applying organic practices. In addition to the above reasons, unknown returns, difficulty of disease control, expense of conversion, and non-sustainability of organic farming due to intensive tillage were mentioned by many farmers.

Table 4. Saskatchewan Conventional Farmers' Reasons for not Using Organic Farming Practices

| Reasons | Frequency (percent) |
|---|------------------------|
| Don't have the knowledge and skills needed to manage an organic farm | 48 |
| There aren't market opportunities for organic products | 48 |
| Lack of information about organic agriculture | 43 |
| Organic farming is too risky | 43 |
| There isn't sufficient support from government | 43 |
| Organic farming is not profitable | 26 |
| Difficult to access information about organic agriculture | 22 |
| Other reasons (unknown returns, disease control is difficult, conversion is expensive, organic farming isn't sustainable because of a lot of tillage) | 52 |

Following Padel's lead, we sought a better understanding of potential barriers to organic conversion by investigating conventional farmers' attitudes toward organic

farming and conversion (Padel and Lampkin, 1994). Table 5 shows the main barriers for people who want to start out in organic agriculture in Saskatchewan. The responses show that control of weeds, insects, disease; uncertainty about economic returns; and complications of the process of becoming an organic producer are the most important barriers to starting organic farming. Although lack of information about organic agriculture is an important reason for not applying the organic practices by farmers (Table 4), after they decide to adopt this new form of farming, accessing information isn't difficult (Table 5).

Table 5. Saskatchewan Conventional Farmers' Barriers to Starting Organic Farming

| Barriers | Rate* |
|--|--------------|
| Control of weeds, insects, disease | 4.43 |
| Uncertain economic returns | 4.22 |
| Process of becoming an organic producer is complicated | 3.65 |
| Reduced yields and income | 3.65 |
| Lack of or limited markets for organic products | 3.64 |
| Limited government support | 3.52 |
| Extra costs involved | 3.43 |
| Lack of knowledge and skills to manage an organic farm | 3.27 |
| Lack of labour and time | 3.00 |
| Accessing information is difficult | 2.96 |
| Other barriers (please specify and rate) | 0.26 |

*[1 = not important; 5 = very important]

Motivations for organic conversion identified in the research fall into four broad categories: economic and financial, environment and health, personal, and cultural. Much of the literature concludes that economic factors are the primary motivation of farmers interested in any new approach (Heffernan, 1984; Duff, et al, 1990). Thus, we asked some questions regarding motivation for converting to organic farming. The importance of different factors in motivating conventional farmers to convert to organic agriculture in Saskatchewan is summarized in Table 6.

Table 6. Saskatchewan Conventional Farmers' Motivations for Conversion to Organic Farming

| Motives | Rate* |
|--|--------------|
| Higher prices for organic products | 4.00 |
| Higher income for organic farmers | 3.96 |
| Reduction of input costs | 3.77 |
| Reduction of dependency on chemical pesticides | 3.65 |
| Consumer demand for organic products | 3.61 |
| Protecting environment (soil, water, wildlife, etc.) | 3.52 |
| Adequate financial support from government | 3.24 |
| Improvement of health for producers and consumers | 3.00 |
| Market security | 3.00 |
| Producing safer / healthier food | 2.89 |
| Religious and cultural motivations | 1.83 |

* [1 = not important; 5 = very important]

As indicated in the table, economic factors (including higher prices for organic products, higher income for organic farmers, and reduction of input costs) have the

highest role for motivating conventional farmers to convert to organic practices. Among the motives, religious and cultural motivations are not important. Protecting environment rates as more important than improvement of health for producers and consumers.

5.3. Organic - Conventional Comparison

Organic farmers face challenges that are different from what they are used to. We were interested to know the challenges and difficulties farmers would face with organic farming. We asked conventional farmers, if they start to farm organically, how difficult would they find different practices. In Table 7 we summarize difficulties after converting to organic practices in different areas.

Table 7: Difficulties of Practices after Converting to Organic Farming

| Practices | Rate* | Frequency (percent) | | | |
|---|-------|----------------------|--------------------|-----------|----------------|
| | | Not difficult at all | Somewhat difficult | Difficult | Very difficult |
| Employing more labour after converting to organic farming | 3.27 | 0 | 26 | 17 | 52 |
| Marketing organic products | 3.11 | 0 | 22 | 43 | 35 |
| Control of weeds & pests using organic measures | 2.93 | 4 | 26 | 39 | 30 |
| Certification of organic production | 2.74 | 9 | 35 | 30 | 26 |
| Greater level of financial investment | 2.65 | 17 | 26 | 30 | 26 |
| Managing the farm without the use of chemical fertilizers | 2.54 | 13 | 39 | 26 | 22 |

*[1=Not difficult at all; 2=Somewhat difficult; 3=Difficult; 4=Very difficult]

The data show that about 50% of respondents believe that employing the additional required labour after converting is likely to be difficult. Marketing organic products, control of weeds and pests, certification of organic production, greater level of financial

investment, and managing the farm without the use of chemical fertilizers, are relatively decreasing areas of concern.

It is conventional wisdom that farmers will compare costs and profitability of two alternatives before selecting one of them. While some farmers select organic farming for non-profit reasons, most first investigate potential profit and costs of alternatives. Only when they are sure that the new farming is more profitable than conventional farming will they convert to organic farming. As shown in Table 8, compared profitability of two alternative methods of farming show that over half of farmers surveyed don't know the profitability of organic compared to conventional methods. Only 9% believe that conventional farming is less profitable than organic farming.

Table 8: The Profitability of Existing Farms in Comparison to Organic Farms

| Option | Frequency | |
|-------------|-----------|------------|
| | Number | Percent |
| The same | 3 | 13 |
| Lower | 2 | 9 |
| Higher | 6 | 26 |
| Do not know | 12 | 52 |
| Sum | 23 | 100 |

Table 9 shows opinions of farmers regarding the estimated cost difference in producing and marketing organic and conventional grain products. On average, 50% of farmers state that cost components for organic products are higher than for conventional products. As shown in the table, more than half of the farmers believe that grain cleaning (77%), record-keeping (59%), and marketing (77%) of organic products impose higher costs per ton of organic production. Production cost is the only component that is

perceived to have lower cost for organic production. On average, 50% of the farmers surveyed believe that organic farming has higher costs in comparison to conventional farming. As production cost is the most important component for farmers, it could be argued that lower production cost for producing organic products balances, or even outweighs, the higher costs of marketing organic products.

Table 9: Comparison of Estimated Cost Components between Organic and Conventional Products

| Cost Components | % who believe cost of organic compared to conventional is | | |
|--------------------------|---|-----------|-----------|
| | higher | lower | same |
| Production | 38 | 52 | 10 |
| Farm storage | 36 | 18 | 45 |
| Grain cleaning | 77 | 0 | 23 |
| Record-keeping | 59 | 5 | 36 |
| Marketing | 77 | 0 | 23 |
| Transportation from farm | 14 | 9 | 77 |
| Average | 50 | 14 | 36 |

In Table 10 we rank the importance of estimated cost components for producing organic products. As shown in the table, cleaning cost is the most important element. Following cleaning costs are marketing and record-keeping costs, respectively. Moreover, the production cost is the least important element.

Table 10: Ranked Comparison of Estimated Cost Components between Organic and Conventional Products

| Cost Components | Rate* |
|--------------------------|--------------|
| Grain cleaning | 2.77 |
| Marketing | 2.77 |
| Record-keeping | 2.55 |
| Farm storage | 2.18 |
| Transportation from farm | 2.05 |
| Production | 1.86 |

*[Lower=1; the same=2; higher=3]

On the other hand, the process of marketing organic and conventional products is different. It is important to know the challenges within the process of marketing organic products. Table 11 indicate conventional farmers' views on the difference in cost per ton of different stages in marketing organic products as compared to conventional products.

As shown in Table 11, more than 50% of the farmers surveyed believe that all activities in marketing organic products have higher costs or take higher time. Overall, 67% of the farmers mentioned higher costs or time for marketing organic as compared conventional products. Only 7% estimated lower time or cost for marketing organic products.

Since fewer consumers tend to buy organic products (as a result of higher prices), finding these buyers takes more time for organic compared to conventional products. Sellers must convince consumers that what they buy has been grown as organic with good quality. Thus, it is expected (by 73% of the farmers surveyed) that communicating with the buyers takes a longer time. Moreover, enforcement costs were mentioned as an important component by most of the farmers (71%).

Table 11: Comparison of Costs and Times Components for Marketing Organic and Conventional Products

| Components | % who believe cost of organic compared to conventional is | | |
|---|---|-------|------|
| | higher | lower | same |
| Proximity to selling markets (distance) | 77 | 9 | 14 |
| Search for buyer (time) | 82 | 5 | 14 |
| Search for price information (time) | 68 | 0 | 32 |
| Monitoring costs | 57 | 10 | 33 |
| Enforcement costs | 71 | 0 | 29 |
| Communicating with buyers (time) | 73 | 5 | 23 |
| Time for producers direct sale (time) | 55 | 9 | 36 |
| Distribution of products (time) | 55 | 18 | 27 |
| Average | 67 | 7 | 26 |

5.4. Institutions

Both formal (the market, laws and regulations) and informal (norms, traditions, beliefs and attitudes) institutions can affect farmers' choice of the form of farming best suited to them. The institutional environment is the set of values and norms that govern behaviour.. Institutional environment is powerful in shaping farmers' choices. This section sheds light on the role institutions have in development of the organic sector in

Saskatchewan. In this section we consider conventional farmers' views about their institutional environment.

5.4.1. Farmers' Beliefs and Attitudes

Farmers determine their relationship with the environment based on their beliefs and attitudes. The conventional wisdom is that the choice of organic farming is based on fundamental values regarding nature, environment, food production, farming and society. Organic production standards are attempts to find means that may help to realize these values. This section focuses on farmers' values and their attitudes to organic issues.

We report conventional farmers' beliefs and attitudes toward converting to organic farming in Tables 12 and 13. As shown in Table 12, more than half of the respondents express strong agreement with the "respect for the environment", "responsibility to future generations", "responsibility to the community" and "preferences to high quality and healthier production". Most of the farmers agree with the "importance of consumer preferences for growers", "the importance of partner's opinion in their decision to convert to organic farming" and the opinion that "profit is the most important goal for agricultural producers".

Most of the remaining respondents were neutral or disagreed that "conventional farming damages the environment" or "organic farming will make a difference to the environment". Most of the respondents disagreed that "their family will have a better quality of life in organic farming".

It is interesting that over half of conventional farmers don't believe that "organic products are healthier than non-organic products" or the "quality of organic is better than conventional products". In sum, despite their respect for the environment, the future generations, human health and consumer preferences, farmers on average disagree that organic farming is a way for them to achieve these responsibilities.

Table 12: Frequencies of Farmers' Beliefs and Attitudes Regarding Their Environments

| Farmers' Beliefs and Attitudes | Frequencies | | | | |
|--|-------------------|-------------------|---------|-----------------|----------------|
| | strongly disagree | somewhat disagree | neutral | some-what agree | strongly agree |
| Farmers have to respect the environment | 0.0 | 0.0 | 4.3 | 22 | 74 |
| We must be responsible to future generations | 0.0 | 4.3 | 8.7 | 4.3 | 83 |
| We are responsible to our community | 0.0 | 4.3 | 4.3 | 22 | 70 |
| I prefer to produce high quality, healthier products | 0.0 | 4.3 | 13.0 | 17.4 | 60.9 |
| Consumer preferences are important for growers | 0.0 | 8.7 | 8.7 | 39.1 | 43.5 |
| My partner's opinion is of importance in my decision to convert to organic farming | 8.7 | 13.0 | 17.4 | 26.1 | 34.8 |
| Profit is the most important goal for agricultural producers | 8.7 | 17.4 | 17.4 | 26.1 | 30.4 |
| Conventional farming does damage the environment | 13.0 | 30.4 | 21.7 | 21.7 | 8.7 |
| If I convert to organic farming it will make a difference to the environment | 17.4 | 26.0 | 34.8 | 13.0 | 8.7 |
| Organic farming will be dominant in the future | 21 | 22 | 48 | 8.7 | 0.0 |
| My family will have a better quality of life in organic farming | 26 | 35 | 30 | 8.7 | 0.0 |
| Organic products are healthier than non-organic products | 44 | 8.7 | 44 | 0.0 | 4.3 |
| The quality of organic products is better than conventional products | 48 | 8.7 | 39 | 0.0 | 4.3 |

In Table 13, beliefs and attitudes are compared between farmers who are interested in converting to organic farming (positive WTC) and farmers who aren't interested (negative WTC).

Table 13: Comparison of Farmers' Beliefs and Attitudes Regarding Their Environments

| Farmers' Beliefs and Attitudes | Rate* | | |
|--|---------------------|--------------|--------------|
| | Total | Positive WTC | Negative WTC |
| Farmers have to respect the environment | 4.70 | 4.70 | 4.69 |
| We must be responsible to future generations | 4.65 | 4.70 | 4.62 |
| We are responsible to our community | 4.57 | 4.30 | 4.77 |
| I prefer to produce high quality, healthier products | 4.41 | 4.22 | 4.54 |
| Consumer preferences are important for growers | 4.17 | 4.40 | 4.00 |
| My partner's opinion is of importance in my decision to convert to organic farming | 3.65 | 3.80 | 3.54 |
| Profit is the most important goal for agricultural producers | 3.52 | 3.70 | 3.38 |
| Conventional farming does damage the environment | 2.84 | 3.00 | 2.71 |
| If I convert to organic farming it will make a difference to the environment | 2.72 | 2.95 | 2.54 |
| Organic farming will be dominant in the future | 2.46 | 2.65 | 2.31 |
| My family will have a better quality of life in organic farming | 2.24 ^{Sig} | 2.55 | 2.00 |
| Organic products are healthier than non-organic products | 2.13 ^{Sig} | 2.60 | 1.77 |
| The quality of organic products is better than conventional products | 2.04 ^{Sig} | 2.80 | 1.46 |

*[1 = strongly disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = strongly agree]

Sig [Significant at level 10% and lower]

It seems that beliefs and attitudes are important factors in convincing conventional farmers to accept organic practices. There is a positive and significant relationship between belief that "my family will have a better quality of life in organic farming", "organic products are healthier than non-organic products" and "the quality of organic products is better than conventional products" and positive WTC. This suggests that public and private institutions must attempt to convince farmers that organic farming can create a better quality of life for them, and the health and quality of organic products is better than conventional products, in order to change conventional farmers' views toward converting to organic farming.

5.4.2. Organic Regulations

Organic farming involves a regulatory framework that affects the cost-benefit calculations of producers as well as food processors and traders (Laschewski, 2005). We were interested in farmers' knowledge about organic regulations. In this section we first consider conventional producers' perceptions of organic regulations, and then discuss organic producer perceptions of the role of certification bodies.

5.4.2.1. Conventional Producer Perceptions of Organic Regulations

As indicated in Table 14, none of the conventional farmers believe they are familiar with organic standards. Nevertheless, almost all of the farmers (87%) somewhat know about organic regulations in Canada.

Table 14: Conventional Farmers' Knowledge about Organic Regulations

| I know about organic regulations (organic standards) in Canada | Frequency | Number |
|---|------------------|---------------|
| Yes | 0.00 | 0 |
| Somewhat | 0.87 | 20 |
| Not at all | 0.13 | 3 |

Tables 15 and 16 show the level of agreement with organic regulations among conventional farmers surveyed. Table 15 compare farmers' views about effectiveness and protection of organic regulations (organic standards), between farmers with positive and negative WTC.

Farmers who have positive WTC show a higher degree of agreement with the effectiveness and protection of organic regulations. As indicated in Table 15, potential adopters believe that regulatory system in Canada is effective and is more productive for organic than for conventional producers. That is, the effectiveness and protection of organic regulations can potentially encourage conventional farmers to convert to organic practices.

Table 15: The Effectiveness and Protection of Organic Regulations (Organic Standards)

| Answers | Rate* | |
|--|---------------------|--------------|
| | Positive WTC | Negative WTC |
| The organic regulatory system in Canada is effective | 3.55 ^{Sig} | 3.00 |
| The organic regulatory system in Canada is more protective for organic than conventional agriculture | 3.22 | 3.07 |

*[1 = strongly disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = strongly agree]

Sig [Significant differences between the farmers with positive and negative WTC at 10% and lower]

As shown in Table 16, most of the farmers are neutral regarding the effectiveness of organic regulations and the bias of organic regulations to organic farming. This perhaps results from the fact that most of the conventional farmers aren't involved with organic regulations and therefore cannot compare organic with conventional regulations.

Table 16: The Effectiveness and Protection of Organic Regulations (Organic Standards)

| Option | Statements | |
|-------------------|--|--|
| | The organic regulatory system in Canada is effective | The organic regulatory system in Canada is more protective for organic than conventional agriculture |
| Strongly disagree | 0 | 0 |
| Somewhat disagree | 1 | 1 |
| Neutral | 16 | 18 |
| Somewhat agree | 4 | 2 |
| Strongly agree | 1 | 1 |
| Sum | 22 | 22 |

5.4.2.2 Organic Producer Perceptions of the Role of Certification Bodies

Certification bodies (CBs) are organizations that undertake third-party assessments of conformance with established organic standards. Third-party organic certification gives producers an effective means to communicate the organic quality of their product to other firms in the supply chain (Ferguson et al, 2005). Hence, CBs are very important institutions in the organic food supply chain. Organic producers were asked to rate the importance and effectiveness of CBs in performing ten functions. Answers were given on a scale of 1 to 5, where 1 was ineffective or of low importance, and 5 was very effective or of high importance. In addition, by multiplying the effectiveness and the importance value together, the overall rating of producers' satisfaction with their respective CBs is expressed as a single number for each function. There are two groups in the sample: farmers who allocated all cultivated area to organic practices (complete adopters) and farmers who allocated part of their cultivated area to organic practices (partial adopters).

Organic producer responses on the importance of CB functions, the effectiveness of the CB in each function, and each function's appropriateness are reported in Tables 17

and 18. Ratings of producers' overall satisfaction with their CBs follows in Table 19. The CBs were considered more important by complete adopters than by partial adopters.

Table 17: Importance of Certification Bodies' Functions

| Certification Bodies' Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|--|----------------------------------|-------------------------------------|------------------------------------|
| 1) Providing efficient and timely certification | 4.2 | 4.4 | 4.0 |
| 2) Providing objective certification | 3.9 | 4.1 | 3.8 |
| 3) Providing affordable certification ^{Sig} | 4.2 | 4.4 | 4.0 |
| 4) Providing access to the markets that I wish to sell to | 3.7 | 3.7 | 3.7 |
| 5) Helping myself and buyers to connect with each other | 3.0 | 3.3 | 2.8 |
| 6) Providing other marketing information (discussion at meetings, pamphlets, etc.) | 3.2 | 3.6 | 3.0 |
| 7) Providing production/agronomic information ^{Sig} | 3.6 | 4.0 | 3.2 |
| 8) Performing research in agronomy and marketing ^{Sig} | 3.0 | 3.4 | 2.7 |
| 9) Distributing research knowledge to members ^{Sig} | 3.3 | 3.8 | 2.9 |
| 10) Participating in the creation of a mandatory national standard | 3.7 | 3.9 | 3.5 |
| Average Importance ^{Sig} | 3.6 | 3.9 | 3.3 |

Sig [significant differences between the partial and complete adopters at 10% and lower]

Producers' responses on the effectiveness of their CBs' functions are given in Table 18. The average effectiveness rate for the CBs' functions was calculated to be 3.1 (Table 18). Similarly, producers' responses show that all the CBs' functions are more effective for complete adopters than for partial adopters. The average rate for complete adopters (3.4) is significantly higher than for partial adopters (2.8).

Table 18: Effectiveness of Certification Bodies' Functions

| Certification Bodies' Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|--|----------------------------------|-------------------------------------|------------------------------------|
| 1) Providing efficient and timely certification ^{Sig} | 3.7 | 4.0 | 3.4 |
| 2) Providing objective certification | 3.8 | 4.1 | 3.6 |
| 3) Providing affordable certification ^{Sig} | 3.2 | 3.7 | 2.8 |
| 4) Providing access to the markets that I wish to sell to | 3.0 | 3.1 | 2.9 |
| 5) Helping myself and buyers to connect with each other ^{Sig} | 2.6 | 2.9 | 2.3 |
| 6) Providing other marketing information (discussion at meetings, pamphlets, etc.) | 2.9 | 3.1 | 2.7 |
| 7) Providing production/agronomic information | 3.1 | 3.4 | 2.8 |
| 8) Performing research in agronomy and marketing ^{Sig} | 2.5 | 2.9 | 2.1 |
| 9) Distributing research knowledge to members ^{Sig} | 2.9 | 3.3 | 2.4 |
| 10) Participating in the creation of a mandatory national standard ^{Sig} | 3.1 | 3.7 | 2.6 |
| Average Effectiveness ^{Sig} | 3.1 | 3.4 | 2.8 |

Sig [significant differences between the partial and complete adopters at 10% and lower]

The overall rating of producers' satisfaction with their respective CBs can be calculated into a single number. A satisfaction value for a single function can be made by multiplying the effectiveness and the importance value. Table 19 reports the average ratings for all respondents and for different groups of adopters (complete and partial).

Complete adopters reported higher satisfaction for all functions of their CBs. The average satisfaction rate for the CBs' functions was calculated to be 13.3 on average. Table 19 shows that, as whole, complete adopters are more satisfied than partial adopters with the functioning of their CBs. The marketer functions have more satisfaction for complete adopters than partial adopters, and average satisfaction rate for complete adopters (15.7) is significantly higher than for partial adopters (11.2).

Table 19: Satisfaction with Certification Bodies' Functions

| Certification Bodies' Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|--|----------------------------------|-------------------------------------|------------------------------------|
| 1) Providing efficient and timely certification ^{Sig} | 16.9 | 19.3 | 14.7 |
| 2) Providing objective certification ^{Sig} | 17.1 | 19.3 | 15.2 |
| 3) Providing affordable certification ^{Sig} | 14.6 | 18.0 | 11.5 |
| 4) Providing access to the markets that I wish to sell to | 13.6 | 14.0 | 13.2 |
| 5) Helping myself and buyers to connect with each other ^{Sig} | 10.1 | 12.5 | 8.0 |
| 6) Providing other marketing information (discussion at meetings, pamphlets, etc.) | 12.3 | 14.0 | 10.8 |
| 7) Providing production/agronomic information ^{Sig} | 13.0 | 15.3 | 10.9 |
| 8) Performing research in agronomy and marketing ^{Sig} | 9.6 | 11.9 | 7.5 |
| 9) Distributing research knowledge to members ^{Sig} | 12.0 | 15.0 | 9.4 |
| 10) Participating in the creation of a mandatory national standard ^{Sig} | 14.1 | 17.6 | 10.9 |
| Average Satisfaction ^{Sig} | 13.3 | 15.7 | 11.2 |

Sig [significant differences between the partial and complete adopters at 10% and lower]

As shown in the above table, the functions 1, 2, 3, 5, 7, 8, 9, 10 of CBs have significant and positive effects on complete adoption of organic farming. This implies that CBs are important institutions which can improve organic farming by "Providing efficient and timely certification", "Providing objective certification", "Providing affordable certification", "Helping myself and buyers to connect with each other", "Providing production/agronomic information", "Performing research in agronomy and marketing", "Distributing research knowledge to members" and "Participating in the creation of a mandatory national standard".

5.4.3. Marketing

Analysing the marketing process for organic food and products is an important aspect of institutional analysis. In the following sections we first consider the conventional farmers' views about marketing of organic products, and then discuss organic producers' relationships with their marketers.

5.4.3.1. Conventional Farmers' Opinions about Marketing of Organic Products

Tables 20 and 21 show farmers' opinions about the marketing of organic products. As indicated in the two tables, most of the farmers believe that demand for and supply of organic products is growing, and as well that consumers are prepared to pay a premium for organic foods.

Table 20: Frequencies of Farmers' Opinions about Marketing of Organic Products

| Opinion | Frequencies | | | | |
|--|-------------------|-------------------|---------|----------------|----------------|
| | strongly disagree | somewhat disagree | neutral | somewhat agree | strongly agree |
| Demand for organic products is growing | 0.0 | 0.0 | 17.4 | 52.2 | 30.4 |
| The supply of organic products is growing | 0.0 | 4.3 | 13.0 | 60.9 | 21.7 |
| Consumers are prepared to pay a premium for organic foods | 0.0 | 4.3 | 17.4 | 56.5 | 21.7 |
| National marketing initiatives have been created to foster the organic food market | 4.3 | 17.4 | 52.2 | 26.1 | 0.0 |
| There are enough processors of organic food | 13 | 26.1 | 47.8 | 8.7 | 4.35 |
| Marketing organic product is easier than conventional products | 21.7 | 52.2 | 17.4 | 8.7 | 0.0 |

As shown in Table 20, a large majority agree that "demand for organic products is growing" (82.6%), the "supply of organic products is growing" (82.6%) and "consumers are prepared to pay a premium for organic foods" (78.3%).

On average, farmers are neutral (more than 50%) regarding the opinion that "national marketing initiatives have been created to foster the organic food market". Farmers also are neutral on the role of market institutions (national marketing initiatives and processors) that facilitate marketing of organic products. The results show a low degree of agreement that "there are enough processors of organic food marketing" and "marketing organic product is easier than conventional products". These are some beliefs that can limit development of organic farming.

Table 21: Comparison of Farmers’ Opinions about Marketing of Organic Products

| Opinion | Rate* | | |
|--|-------|--------------|--------------|
| | Total | Positive WTC | Negative WTC |
| Demand for organic products is growing | 4.13 | 4.2 | 4.08 |
| The supply of organic products is growing | 4.00* | 4.4 | 3.69 |
| Consumers are prepared to pay a premium for organic foods | 3.96 | 4.1 | 3.85 |
| National marketing initiatives have been created to foster the organic food market | 3.00 | 3.1 | 2.92 |
| There are enough processors of organic food | 2.65 | 2.4 | 2.85 |
| Marketing organic product is easier than conventional products | 2.13 | 2.2 | 2.08 |

*[1 = strongly disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = strongly agree]

As shown in Table 21, comparing conventional farmers with positive and negative WTC reveals that agreement that demand and supply of organic products is growing, is significantly higher for farmers with positive WTC. That is, farmers who agree demand

and supply of organic products is growing are more interested in converting to organic farming.

5.4.3.2. Organic Producer Satisfaction with their Marketers

Based on a list of 16 functions that marketers perform (Marketer Functions – MFs), producers were asked to rate the importance of each function, as well as the effectiveness of their marketer in performing that function. Answers were given on a scale of 1 to 5, where 1 was poor effectiveness or low importance and 5 was excellent effectiveness or high importance. If a function receives a low effectiveness rating and a high importance rating, this indicates that marketers need to improve their effectiveness in that function (Ferguson, Weseen and Storey, 2005).

The producers’ responses in Table 22 show that all the marketer functions are more important for complete adopters than partial adopters. The average rate of importance of marketer functions is calculated to be 2.15. The average rate for complete and partial adopters is calculated to be 2.42 and 1.88, respectively. This means that marketing functions are more important for complete adopters than partial adopters.

Table 22: Importance of Marketer Functions

| Marketer Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|---|------------------------------|---------------------------------|--------------------------------|
| 1) Providing marketing opportunities for me throughout the year | 2.5 | 2.7 | 2.4 |
| 2) Providing marketing opportunities shortly after harvest, when I need cash flow | 2.3 | 2.6 | 2.1 |
| 3) Providing me the option to contract for sale ^{Sig} | 2.0 | 2.3 | 1.8 |
| 4) Provides high prices, given the realities of the market | 2.5 | 2.6 | 2.4 |
| 5) “Fair” marketer fees | 2.4 | 2.7 | 2.2 |
| 6) Provides information on marketing costs, cleaning, transportation, etc. | 2.0 | 2.4 | 1.6 |

| | | | |
|---|-----|-----|-----|
| 7) Arranging for trucking from your farm ^{Sig} | 2.4 | 2.7 | 2.1 |
| 8) Providing assurance of payment to you ^{Sig} | 2.6 | 2.7 | 2.5 |
| 9) Provides prompt payment after delivery | 2.7 | 3.0 | 2.5 |
| 10) Provide information on future prices and market potential for my crops | 2.2 | 2.2 | 2.1 |
| 11) Advising on market and price prospects ^{Sig} | 2.2 | 2.6 | 1.9 |
| 12) Providing “target pricing” opportunities | 1.4 | 1.7 | 1.2 |
| 13) Provides advice on “when to sell” to achieve highest price ^{Sig} | 1.8 | 2.0 | 1.7 |
| 14) Provides advice on “what to plant” in new crop year ^{Sig} | 2.0 | 2.3 | 1.8 |
| 15) Provides advice on “market prospects” based on the quality and quantity that I have grown | 2.1 | 2.5 | 1.7 |
| 16) Providing me with agronomic information | 1.1 | 1.3 | 0.9 |
| Average Importance | 2.1 | 2.4 | 1.9 |

Sig [denotes significant differences between the partial and complete adopters at 10% and lower.]

The average effectiveness rate for the marketing functions was calculated as 2.03 on average (Table 23), which is similar to the average importance rating in Table 3. Similarly, producers’ responses show that complete adopters found their marketer more effective than partial adopters. The average effectiveness rate for complete adopters (2.40) is significantly more effective than for partial adopters (1.67).

Table 23: Effectiveness of Marketer Functions

| Marketer Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|--|-----------------------|--------------------------|-------------------------|
| 1) Providing marketing opportunities for me throughout the year ^{Sig} | 2.3 | 2.7 | 2.0 |
| 2) Providing marketing opportunities shortly after harvest, when I need cash flow ^{Sig} | 2.1 | 2.6 | 1.8 |
| 3) Providing me the option to contract for sale | 2.4 | 2.5 | 2.3 |

| | | | |
|--|------------|------------|------------|
| 4) Provides high prices, given the realities of the market | 2.3 | 2.5 | 2.0 |
| 5) "Fair" marketer fees | 2.4 | 2.7 | 2.1 |
| 6) Provides information on marketing costs, cleaning, transportation, etc. ^{Sig} | 2.2 | 2.7 | 1.7 |
| 7) Arranging for trucking from your farm ^{Sig} | 2.6 | 3.0 | 2.3 |
| 8) Providing assurance of payment to you ^{Sig} | 2.7 | 3.0 | 2.3 |
| 9) Provides prompt payment after delivery ^{Sig} | 2.5 | 2.9 | 2.2 |
| 10) Provide information on future prices and market potential for my crops ^{Sig} | 2.1 | 2.4 | 1.8 |
| 11) Advising on market and price prospects ^{Sig} | 1.9 | 2.4 | 1.5 |
| 12) Providing "target pricing" opportunities | 1.3 | 1.6 | 1.1 |
| 13) Provides advice on "when to sell" to achieve highest price | 1.2 | 1.3 | 1.1 |
| 14) Provides advice on "what to plant" in new crop year ^{Sig} | 1.8 | 2.3 | 1.3 |
| 15) Provides advice on "market prospects" based on the quality and quantity that I have grown ^{Sig} | 1.8 | 2.3 | 1.4 |
| 16) Providing me with agronomic information ^{Sig} | 0.9 | 1.1 | 0.7 |
| Average Effectiveness ^{Sig} | 2.0 | 2.4 | 1.7 |

Sig [significant differences between the partial and complete adopters at 10% and lower]

The overall rating of producers' satisfaction with their respective marketers can be calculated into a single number. A satisfaction value for a single function can be made by multiplying the effectiveness and the importance value (Ferguson, Wesen and Storey, 2005). The maximum satisfaction rate for an organic farmer is 25. Table 24 reports the average ratings for all respondents and for different group of adopters (complete and partial adopters).

Table 24: Satisfaction with Marketer Functions

| Marketer Functions | Total Adopters (n=57) | Complete Adopters (n=27) | Partial Adopters (n=30) |
|--|------------------------------|---------------------------------|--------------------------------|
| 1) Providing marketing opportunities for me throughout the year | 9.1 | 10.1 | 8.2 |
| 2) Providing marketing opportunities shortly after harvest, when I need cash flow | 7.4 | 8.7 | 6.2 |
| 3) Providing me the option to contract for sale | 7.9 | 8.7 | 7.3 |
| 4) Provides high prices, given the realities of the market | 8.8 | 9.0 | 8.7 |
| 5) "Fair" marketer fees | 9.6 | 10.7 | 8.7 |
| 6) Provides information on marketing costs, cleaning, transportation, etc. | 7.8 | 9.5 | 6.3 |
| 7) Arranging for trucking from your farm | 10.4 | 11.5 | 9.4 |
| 8) Providing assurance of payment to you | 11.8 | 12.7 | 10.9 |
| 9) Provides prompt payment after delivery | 10.9 | 12.2 | 9.7 |
| 10) Provide information on future prices and market potential for my crops | 8.0 | 8.7 | 7.3 |
| 11) Advising on market and price prospects ^{Sig} | 7.6 | 9.7 | 5.6 |
| 12) Providing "target pricing" opportunities | 4.3 | 4.9 | 3.7 |
| 13) Provides advice on "when to sell" to achieve highest price | 4.9 | 5.1 | 4.7 |
| 14) Provides advice on "what to plant" in new crop year ^{Sig} | 6.3 | 8.0 | 4.8 |
| 15) Provides advice on "market prospects" based on the quality and quantity that I have grown ^{Sig} | 6.7 | 8.3 | 5.3 |
| 16) Providing me with agronomic information ^{Sig} | 2.9 | 4.1 | 1.9 |
| Average Satisfaction ^{Sig} | 7.8 | 8.9 | 6.8 |

Sig [significant differences between the partial and complete adopters at 10% and lower]

The average satisfaction rate for the marketer was calculated as 7.8 on average (Table 24). Table 24 indicates that complete adopters were more satisfied with their marketers than partial adopters. The average satisfaction rate for complete adopters (8.9) is

significantly higher than for partial adopters (6.8). That is, marketers, as important players in the market, can improve organic farming adoption by "advising on market and price prospect", "providing advice on what to plant in new crop year", "providing advice on market prospects based on the quality and quantity that farmers have grown" and "providing them with agronomic information".

5.4.3.3. Comparison of Marketer Functions Satisfaction of Organic and Conventional Farmers

In Table 25 effectiveness, importance and satisfaction of marketer functions are compared between conventional and organic producers of grain products. Next we compare the producers' responses, between positive and negative WTC, for conventional farmers and between complete and partial adopters for organic farmers. As shown in the table, effectiveness, importance and satisfaction of marketer functions for conventional farmers is higher than for organic farmers. MFs satisfaction for conventional farmers is 13.14, while MFs satisfaction for organic farmers is 7.8.

Table 25: Comparison of Marketer Functions Satisfaction of Organic and Conventional Farmers

| Opinion | Organic Farmers | | | Conventional Farmers | | |
|---|-----------------|-------------------|------------------|----------------------|--------------|--------------|
| | Total | Complete Adopters | Partial Adopters | Total | Positive WTC | Negative WTC |
| MFs effectiveness: 1=low performance 5=high performance | 2.0 | 2.4 | 1.7 | 3.43 | 3.05 | 3.72 |
| MFs Importance: 1=low importance 5=high importance | 2.1 | 2.4 | 1.9 | 3.83 | 3.44 | 4.14 |
| MFs satisfaction: 1=low importance 5=high importance | 7.8 | 8.9 | 6.8 | 13.14 | 10.49 | 15.40 |

On the other hand, conventional farmers with lower satisfaction with their marketer (10.49), have positive WTC. The average marketer satisfaction rate for the organic farmers was calculated as 7.8 on average. The results shows that complete adopters were more satisfied with their marketers than were partial adopters. That is, if the market and its agents work in a way that will increase organic farmers' satisfaction, this can encourage them to completely accept organic practices. In contrast, lower satisfaction with conventional products can create incentives for positive WTC.

In sum, marketers as market institutions can play an important role in switching farmers between conventional and organic agriculture. Increasing organic farmers' satisfaction with their marketers improves organic practices, while decreasing conventional farmers' satisfaction with their marketers encourages them to switch to organic practices.

5.4.4. Government and Organizations

Government is the most important institution in shaping the farmers' behaviour to choose an alternative form of farming. By well-established regulations and standards, along with organizations to facilitate implementation, the government can encourage organic production. Tables 26 and 27 report the viewpoints of a sample of conventional farmers on the roles government and organizations play and in organic farming.

As indicated in Tables 26 and 27, in Saskatchewan farmers' opinion (60%), private organizations are of importance for the development of the organic farming sector. As well, there is lower agreement (3.17 on average) on the importance of public organizations for the development of the organic farming sector. As indicated in Table 26, about 35% agree with the importance of public organizations for the development of the organic farming sector.

Table 26: Frequencies of Estimated Importance of Government and Organizations in Organic Sector

| Components | frequencies | | | | |
|--|-------------------|--------------------|---------|-----------------|----------------|
| | Strongly disagree | Some-what disagree | Neutral | Some-what agree | Strongly agree |
| There are private organizations in Saskatchewan that are of importance for the development of the organic farming sector | 0.0 | 8.7 | 30.4 | 52.2 | 8.7 |
| Governments have to support farmers who convert to organic agriculture | 8.7 | 4.3 | 39.1 | 30.4 | 17.4 |
| There are public organizations in Saskatchewan that are of importance for the development of the organic farming sector | 0.0 | 21.7 | 43.5 | 30.4 | 4.3 |
| There is support for organic farming in agricultural institutions in Saskatchewan | 4.3 | 21.7 | 43.5 | 26.1 | 4.3 |
| There have been changes in government policies regarding conversion to organic farming | 0.0 | 34.8 | 39.1 | 21.7 | 4.3 |
| Organic agriculture has enough public recognition, exposure, and support | 8.7 | 39.1 | 30.4 | 13.0 | 8.7 |

Table 26 shows a relatively high degree of agreement with the role government has to play in supporting conventional farmers to convert to organic practices. Approximately half (47%)of the farmers agree that governments have to support farmers who convert to organic agriculture (the rank is 3.45). Farmers are also approximately neutral in the opinion that there is support for organic farming in agricultural institutions in Saskatchewan (the rank is 3.04). Farmers' views seem to imply that organic agriculture hasn't a critical mass of public recognition, exposure, and support in the community.

Table 27: Comparison of Estimated Importance of Government and Organizations in Organic Sector

| Components | Rate* | | |
|--|-------|--------------|--------------|
| | Total | Positive WTC | Negative WTC |
| There are private organizations in Saskatchewan that are of importance for the development of the organic farming sector | 3.61 | 3.9 | 3.4 |
| Governments have to support farmers who convert to organic agriculture | 3.45 | 3.1 | 3.8 |
| There are public organizations in Saskatchewan that are of importance for the development of the organic farming sector | 3.17 | 3.3 | 3.1 |
| There is support for organic farming in agricultural institutions in Saskatchewan | 3.04 | 2.8 | 3.2 |
| There have been changes in government policies regarding conversion to organic farming | 2.95 | 2.77 | 3.1 |
| Organic agriculture has enough public recognition, exposure, and support | 2.73 | 2.3 | 3.1 |

*[1 = strongly disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = strongly agree]

5.4.5. Interrelationships between Organic and General Farming

Michelsen (2002) describes three types of interrelationships between organic farming and general agricultural institutions: pure cooperation, pure conflict, and creative conflict. Pure cooperation is so all-encompassing that the fundamental conflict inherent in organic farming’s criticism of mainstream farming is avoided and deliberately reduced such that there is little difference between the two. Pure cooperation is thus not likely to help encourage organic farming, except where organic farming is the common goal of the whole national agricultural sector.

Pure competition involves only occasional direct contact, if any, between organic farming institutions and those of the general agricultural sector – because they see each

other not as colleagues, but as competitors. Pure competition assumes existence of independent organic farming organizations. If these organizations are weaker, the general agricultural organizations may neglect them. Pure competition is likely to hamper the development of the weaker party, with a resulting negative impact on organic farming growth.

Creative conflict lies between competition and cooperation. Here, organic and general agricultural institutions cooperate on some issues and compete in others. Creative conflict may lead both parties to perceive they have some – though not all – common interests. Creative conflict assumes the existence of distinct organic farming organizations. It may be expected to help development of organic farming by keeping organic farming issues in front of farmers, the market, policy makers, and society at large.

As Michelsen (2002) suggests, real-world relationships tend to be less black-and-white.. Thus, in the analysis, we talk about cooperation and competition rather than pure cooperation and pure competition.

As shown in Table 28, perceptions of the relationships between organic and conventional farmers are distributed approximately equally among the three cases. On the other hand, more than 50% of respondents believe that there is a conflict between government policies for organic and for mainstream farming. More of the farmers (41%) believe that the relationships between organic and mainstream farm institutions are cooperative than either of the other two alternatives.. In summary, there appears to be a conflict relationship between government policies for organic and conventional sectors and, to a lesser extent, between organic and conventional farmers. As Michelsen (2002) mentions, this conflict can be creative for both sectors, for example by improving the ability of general agricultural institutions to develop environmentally friendly agriculture.

Table 28: Types of Interrelationships between Organic Farming and General Agriculture (Conventional Farmers' Views)

| Components | Frequencies (%) | | |
|--|-----------------|----------|-----------|
| | Compete | Conflict | Cooperate |
| relationship between organic farming and mainstream farming institutions | 36 | 23 | 41 |
| government policies for organic and mainstream farming | 27 | 55 | 18 |
| relationship between organic and mainstream farmers | 32 | 36 | 32 |

One may conclude that for developing organic farming it is necessary for institutions involved in organic and mainstream farming to move toward creative conflict relationships.

6. Summary and Conclusions

Using a sample of both organic and conventional farmers in Saskatchewan, the research focused on the factors affecting farmers' willingness to convert to organic farming, especially institutional problems in conversion to organic practices. After reviewing most of the research on the subject, we studied the behaviour and perceptions of conventional and organic farmers on converting to and engaging in organic farming.

The empirical results can be summarized as follows:

1. Conventional farmers have information poverty in many areas including managerial and technical practices, marketing and regulations.
2. The institutions related to organic farming are very useful in providing information about organic farming. Organic farmers were the most useful information source to conventional farmers. Meetings / seminars / conferences / workshops about organic farming, and organic farming associations, are rated in the second and third ranks by farmers.
3. About 50% of the conventional farmers surveyed have potential to convert to organic practices. Willingness to convert (WTC) is 2.43 for all conventional farmers and 3.10 for conventional farmers who are interested in converting to organic practices. (WTC rated from 1 to 5; where 1 is very low and 5 is very high.)
4. Lack of knowledge and skills needed to manage an organic farm and lack of market opportunities for organic products are the most important reasons for not using organic farming practices. In contrast to some research, our findings showed that non-profitability of organic farming does not have a vital role for not using organic farming practices.

5. The responses indicate that control of weeds, insects, disease; uncertainty about economic returns; and complication of the process of becoming an organic producer are the most important barriers for starting organic farming.
6. The economic factors (including higher prices for organic products, higher income for organic farmers and reduction of input costs) have the highest role for motivating conventional farmers to convert to organic practices.
7. The necessity of employing more labour after converting to organic farming is an important challenge after converting. Marketing organic products, control of weeds and pests, certification of organic production, greater level of financial investment, and managing the farm without the use of chemical fertilizers follow the labour limitations, respectively.
8. Compared profitability of the two alternative methods of farming shows that most of the farmers (more than 50%) don't know the profitability of organic compared to conventional methods if they move to organic practices.
9. On average, 50% of farmers believe that cost components for organic products are higher than for conventional products. More than half of the farmers believe that grain cleaning, record-keeping, and marketing of organic products impose higher costs per ton of organic production. Production cost is the only component that has a lower cost estimate for organic production.
10. More than 50% of farmers believe that all activities in marketing organic products have higher costs or take higher time.
11. Investigating the conventional farmers' values and their attitudes to organic issues shows that despite their respect for the environment, future generations, human health and consumer preferences, farmers on average disagree that organic farming is a way for them to achieve these responsibilities.
12. It seems that conventional farmers' beliefs and attitudes are important factors in affecting conventional farmers' willingness to accept organic practices.

There is a positive and significant relationship between beliefs that "my family will have a better quality of life in organic farming", "organic products are healthier than non-organic products" and "the quality of organic products is better than conventional products" and positive WTC. This means that public and private institutions must attempt to convince farmers that organic farming can create a better quality of life for them and the health and quality of organic products are better than conventional products. This could change conventional farmers' views toward converting to organic farming.

13. None of the conventional farmers sampled completely know about organic standards.
14. Farmers who have positive WTC show higher degree of agreement with the effectiveness and protection of organic regulations. That is, the effectiveness and protection of organic regulations (organic standards) can encourage conventional farmers to convert to organic practices. The results indicate that farmers who agree demand and supply of organic products is growing are more interested in converting to organic farming.
15. The certification bodies are important institutions that can improve organic farming by providing efficient and timely certification, providing objective certification, providing affordable certification, helping farmers and buyers connect with each other, providing production/agronomic information, performing research in agronomy and marketing, distributing research knowledge to members, and participating in the creation of a mandatory national standard.
16. Marketers, as important players in the market, have an important role for switching farmers between organic and conventional agriculture. Increasing organic farmers' satisfaction with their marketers improves organic practices, while decreasing conventional farmers' satisfaction with their marketers encourages them to switch to organic practices. Marketers, as market institutions, can improve organic farming adoption by advising on market and

price prospects, providing advice on what to plant in new crop year, providing advice on market prospects based on the quality and quantity that farmers have grown, and providing farmers with agronomic information.

17. Conventional farmers' opinions indicate that private organizations in Saskatchewan are of importance for the development of the organic farming sector. However, there is less agreement on the importance of public organizations for the development of the organic farming sector. Therefore, private organizations may be more effective than public organizations.
18. Conventional farmers' views on interrelationships between organic and conventional farmers' institutions reveal a perceived conflict relationship in government policies between organic and conventional sectors, and also to some extent between organic and mainstream farmers. For promotion of organic farming this conflict should be perceived as creative, not only for organic farming, but also for mainstream agriculture. Moreover, a larger proportion of the farmers believe that the relationship between organic farming and mainstream farming institutions is cooperative. For developing organic farming it is desirable that institutions involved in organic and mainstream farming move toward creative conflict relationships.

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