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# Assessing the Barriers to Conversion to Organic Farming in Canada

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**Abstract**

Despite high growth rates of organic production in Canada, it remains a very small sub-sector of Canadian agriculture. The focus of this paper is on identifying factors that encourage or discourage farmers when 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 those institutions related to organic farming are very useful in providing information about organic farming. 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. It appears that conventional farmers' beliefs and attitudes are important factors in affecting their willingness to accept organic practices. Moreover, the effectiveness and protection of organic regulations, certification bodies and marketers can encourage conventional farmers to convert to organic practices. Conventional farmers' opinions indicate that private organizations in Saskatchewan are important for the development of the organic farming sector.

*Keywords*: Organic farming, Barriers to conversion, Saskatchewan.

## ارزیابی موانع تبدیل به کشاورزی ارگانیک در کانادا

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**چکیده**

علیرغم نرخ رشد بالای تولیدات ارگانیک در کانادا، این بخش هنوز سهم بسیار کوچکی از کشاورزی را به خود اختصاص داده است. تمرکز این مقاله تعیین عوامل مشوق یا مانع پذیرش فعالیت‌های ارگانیک، به ویژه عوامل نهادی مؤثر بر تصمیم به ورود یا عدم ورود به کشاورزی ارگانیک، می‌باشد. داده‌های استفاده شده در این تحقیق از یک نمونه از کشاورزان متداول و ارگانیک در ساسکاچوان کانادا جمع‌آوری گردید. نتایج نشان داد که فقدان اطلاعات کشاورزان متداول در خصوص بسیاری از حوزه‌های فعالیت‌های ارگانیک وجود دارد و نهادهای مرتبط با کشاورزی ارگانیک در فراهم نمودن اطلاعات برای کشاورزان ارگانیک بسیار مفید است. فقدان دانش و مهارت برای مدیریت یک مزرعه ارگانیک و فقدان فرصت‌های بازاری برای محصولات ارگانیک مهم‌ترین دلیل برای عدم کاربرد فعالیت‌های کشاورزی ارگانیک بوده است. به نظر می‌رسد، اعتقادات و نگرش‌های کشاورزان متداول عامل مهمی در تأثیرگذاری بر تمایل به پذیرش فعالیت‌های ارگانیک هستند. علاوه بر این، اثربخشی و حمایت مقررات ارگانیک، مراکز گواهی و بازارها می‌تواند کشاورزان متداول را به تبدیل به کشاورزی ارگانیک تشویق نماید. دیدگاه‌های کشاورزان سنتی نشان داد که سازمان‌های خصوصی در ساسکاچوان برای توسعه بخش کشاورزی ارگانیک مهم هستند.

*کلمات کلیدی*: کشاورزی ارگانیک، موانع تبدیل، ساسکاچوان.

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## Introduction

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 organically managed worldwide. In 2004, most of this area was 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).

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. (Ferguson, 2004).

Consumer 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 decade.

In 1990, the Canadian government made a commitment to promote the development of sustainable agriculture. 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. 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 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.

Many studies have investigated different aspects of conversion to organic farming. 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. 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. 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%.

Lack of information has been identified frequently as a barrier to organic conversion (Padel, 2001). 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) have argued that expansion of organic farming would be associated with an acceleration of knowledge accumulation among organic farmers (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.

Economic aspects of organic farming have been the focus of some studies (Entz *et al.,* 1998; Sholubi *et al.,* 1997; Padel, 2001). Some researchers have used econometrics models to analyze the economic limitations of organic conversion (Diebel *et al.,* 1993; Acs, 2006). In a number of studies, 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; Schneeberger *et al.,* 2002). Recently, a survey by Khaledi *et al.* (2010) distinguished partial and complete adoption of organic farming in Canada.

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; 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). 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.

Concern about environmental and health issues associated with conventional farming have also played a central role in shaping the sustainable agriculture movement (Anderson, 1995; Ashmole, 1993; Maurer, 1997; 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). 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. Other studies mention specific aspects such as agro-climatic conditions, individual farm situations, and farmer characteristics (Klonsky and Smith, 2002).

## Materials and Method

We applied a descriptive analysis of the data to evaluate the factors affected farmers to convert to organic practices. The aim of this research paper was to identify the nature of farmer-perceived barriers 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. 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 sections, we discuss the results of the empirical analysis of the conventional and organic farmers in Saskatchewan.

## Results

### *Information about Organic Farming*

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 conventional 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 have 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.

***Conversion to Organic Farming***

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 2, about 50% of farmers surveyed have the 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 2-** Saskatchewan conventional farmers' intention to convert 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 the "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 WTC of conventional farmers is 2.43, on average. Though the WTC isn't high, there are still significant numbers with at least some interest in converting to organic practices.

As shown in Table 3, a lack of knowledge and the 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 other 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 3-** 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 | 52 |

Table 4 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 3), after they decide to adopt this new form of farming, accessing information isn't difficult.

***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 how difficult they would find different practices, if they started to farm organically. In Table 5 we summarize difficulties after converting to organic practices in different areas.

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.

**Table 4** - 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]

**Table 5** - 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]

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 6** - 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 7 shows the opinions of farmers regarding the estimated cost difference in producing and marketing organic and conventional grain products. On average, 50% of farmers state that the 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 7**- 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 8 we rank the importance of estimated cost components for producing organic products. As shown in the table, the cost of cleaning is the most important element. Following cleaning costs are marketing and record-keeping costs, respectively. Moreover, production cost is the least important element.

**Table 8**- 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 recognise the challenges within the process of marketing organic products. Table 9

indicates conventional farmers' views on the difference in cost per ton of different stages in marketing organic products as compared with conventional products.

As shown in Table 9, 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 9** - 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 buyers (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 sales (time) | 55 | 9 | 36 |
| Distribution of products (time) | 55 | 18 | 27 |
| Average | 67 | 7 | 26 |

***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 (Michelsen *et al*., 2001). The 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.

***Farmers' Beliefs and Attitudes***

Farmers determine their relationship with the environment on the basis of 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 10 and 11. As shown in Table 10, 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.

In Table 11, 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). 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.

**Table 10-** Frequencies of conventional 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 |

**Table 11-** Comparison of conventional 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 [s] | 2.55 | 2.00 |
| Organic products are healthier than non-organic products | 2.13 [s] | 2.60 | 1.77 |
| The quality of organic products is better than conventional products | 2.04 [s] | 2.80 | 1.46 |

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

[s] [Significant at level 10% and lower]

***Conventional Producer Perceptions of 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. As indicated in Table 12, 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.

Tables 13 and 14 show the level of agreement with organic regulations among conventional farmers surveyed. Table 13 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 13, 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 12-** 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 |

**Table 13-** 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 [s] | 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]

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

As shown in Table 14, 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.

***Conventional Farmers' Opinions about Marketing of Organic Products***

Analysing the farmers' attitude about the marketing process for organic food and products is an important aspect of institutional analysis. In the following sections we consider the conventional farmers' views about marketing of organic products.

Tables 15 and 16 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.

As shown in Table 15, 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 are also 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 14 -** 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 |

**Table 15** - Frequencies of conventional 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 |

**Table 16 -** Comparison of conventional 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]

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

As shown in Table 16, 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.

***Comparison of Marketer Function Satisfaction of Organic and Conventional Farmers***

In Table 17 the 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 17-** 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:<br>1=low performance<br>5=high performance | 2.0 | 2.4 | 1.7 | 3.43 | 3.05 | 3.72 |
| MFs Importance:<br>1=low importance<br>5=high importance | 2.1 | 2.4 | 1.9 | 3.83 | 3.44 | 4.14 |
| MFs satisfaction:<br>1=low importance<br>5=high importance | 7.8 | 8.9 | 6.8 | 13.14 | 10.49 | 15.40 |

Conventional farmers with lower satisfaction with their marketers (10.49) have a positive WTC. The average marketer satisfaction rate for the organic farmers was calculated as 7.8 on average. The results show 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.

***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 18 and 19 report the viewpoints of a sample of conventional farmers on the roles government and organizations play and in organic farming.

As indicated in Tables 18 and 19, in the opinion of Saskatchewan farmers (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 18, about 35% agree with the importance of public organizations for the development of the organic farming sector.

Table 19 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 does not enjoy a critical mass of public recognition, exposure, and support in the community.

**Table 18 -** Frequencies for the estimated importance of government and organizations in the organic sector for organic producers.

| 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 19 -** Comparison of estimated importance of government and organizations in the organic sector for conventional producers.

| 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]

## Discussion

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. 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.

Control of weeds, insects and disease, uncertainty about economic returns, and complications in the process of becoming an organic producer, appear to be 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 related to 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 to play 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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