FACTORS AFFECTING THE CONVERSION TO ORGANIC FARMING IN IRAN: A CASE STUDY OF MAZANDARAN RICE PRODUCERS.

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ABSTRACT**:** *The purpose of this research was to examine factors affecting the conversation to organic farming by rice producers in Mazandaran Province, north of Iran. This study used qualitative research methods. The research method was multiple-case study and purposive sampling method was used. The main instrument for data collection was an open-ended questionnaire (protocol). The sample size was 10 organic rice producers in Mazandaran province that received certification of healthy product from Standard Organization of Mazandaran Province. The data gathered until empirical saturation was reached. The results showed that factors affecting the conversation to organic farming consist of: Facilitating factors and barriers to conversion to organic farming. Facilitating factors include motivations and profits. Health and safety, environmental, Ideological and philosophical and economic motivations are the most important motivating factors mentioned by rice producers. Barriers to conversion to organic farming include challenges and costs. Lack of knowledge, lack of government supports, fear of the future and production are mentioned as the most important challenges of the conversion to organic farming.*

Keywords: *Facilitating factors, Barriers to conversion to organic farming, Rice Producers, Mazandaran.*

1. INTRODUCTION

One of the biggest challenges is the leading state in the third millennium, the food supply and the health of the country's population. The world population will reach 9 billion people by 2050 and food production must be doubled and the increased demand for basic food products and new food products can lead to excessive pressure on agricultural resources scarce. Modern agricultural practices associated with the indiscriminate use of chemical inputs over the past four decades, can lead to significant pollution of air, water and soils, putting at risk pristine terrestrial and marine ecosystems downstream, and human health [1].

Given that steady decline in agricultural prices and rising costs of agricultural inputs, the Production has suffered serious economic challenge and farmers have been looking for new ways to increase productivity. Organic farming is an important tool to achieve green productivity and reduce the negative effects of conventional farming that are based on the widespread use of synthetic chemical inputs. With eliminating these inputs in the production process, air pollution is reduced, reuse of waste production and biodiversity are improved and productivity of the soil enhances [2].

Conventional farmers are not aware of many organic farming operations and the information provided by the related institutions organic farming can be very helpful. On the other hand, economic factors have the greatest effect on farmers to convert to organic farming and also, control of pests, diseases and insects, uncertainty about the economic return, the complexity and difficulty of the process of conversion to organic farming were identified as the most important obstacles to the application of organic farming operations [3].

Opinion and attitude of farmers toward organic farming is very important. Comparing the opinions and attitudes towards organic farming systems by organic rice farmers and non-organic rice farmers in Surin province, north-eastern Thailand, showed that there was a correlation of attitudes of both OF and NOF interviewees in the four aspects: organic farming knowledge, environment, marketing, and costs and benefits. Additionally, educational level, farm holding and extension worker contact affected opinions and attitudes of OF interviewees. Among NOF interviewees, their farming experiences affected their attitude towards organic farming [4]. The perception of agricultural specialists in Kermanshah Province about factors affecting the adoption of organic farming showed that the extension/education and economic factors determined 31% of variance on the perception of respondents regarding the adoption of organic farming by farmers [5].

Gender comparison in Iranian organic agriculture indicated that attitudes among farmers to organic agriculture were slightly variable according to gender; while experts' attitudes to organic agriculture remained constant and were not influenced by gender. The practical model ranked motivating factors as husbandry, financial, health quality of life, general and personal; and challenging factors as financial, legal, educational, and technical [6].

The result of factor analysis showed that major barriers or obstacles to the adoption of organic farming between farmers in Babol County in Iran were: productive, natural,

attitude and knowledge, infrastructural, institutional and economical barriers. These factors explained about 68% of the total variance of barriers to conversion to organic farming [7].

Farmers' decisions to adopt a new agricultural technology depend on complex factors. One of the factors is farmers' perception. The results of [8] show that farmers had good perception about sustainable technologies such as diversification and rotation, application of manure but in general, they preferred modern technologies to local ones. They perceived agrochemicals as the best means to combat against pests and to increase rice production. Their perception of intangible impacts of modern technologies was weak. It was found that there should be a relationship between a numbers of socio-economic factors, such as human capital factors, information sources use, extension participation and landholding size and the perception towards selected sustainable agricultural technologies. Also, educational level, contact with agricultural experts and extension participation were best predictors of their perceptions [8].

Investigating effective factors on the attitude of rice producers towards organic farming in Babol County in Iran showed that participation in extension courses, access to extension communication channels and level of literacy and landholding were the effective factors on farmers' attitude toward organic farming that explained 42% of variance in the attitude index [9]. Conversion to organic farming, on the other hand, is a complex system change. Its principles challenge aspects of common agricultural practices and its values, and it may imply lower profitability and a high risk. In addition, structural and economic trends in the agricultural industry in general have a clear influence on the diffusion process. The conversion decision of the individual farmer cannot be explained on the basis of traditional personal characteristics of the adopters alone; other factors need to be considered, such as policy support and the development of the markets as well as the attitude towards organic farming in the agricultural community and the institutional development [10, 11]. For this reason and due to the complex behavior of farmers for conversion to organic farming, a deep and careful study was considered with the qualitative approach. In this process, the following objectives are considered:

- Investigation of motivation to conversion to organic farming.
- Identify the benefits of organic farming as perceived by rice producers.
- Identify barriers and challenges of conversion to organic farming.
- Evaluate the costs of conversion to organic farming.

2. MATERIAL AND METHODS

This study was qualitative research. Qualitative research methods appropriate for the study of complex processes. Research methods used in the study was multiple-case study. A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident [12].

The population was Mazandaran organic rice producers that received certification of healthy product from Standard Organization of Mazandaran. Purposive sampling and participatory research appraisal techniques were used [13]. By providing the list of subjects, a preliminary visit to the villages of farmers was done. Then, the initial investigation and questioning of residents, council members, rural municipality administrators and expert, the first subject for interview was selected. After each interview, the next subjects were selected from view of the interviewee. Selection criteria of subjects were certification, the amount of information about organic farming, the willingness to cooperate and power of expression. The data collection process was continued until new information was not obtained from the responses and so-called "theoretical saturation" was obtained. 10 subjects of organic rice producers in Mazandaran province were interviewed. The main instrument for data collection was open-ended questionnaire (protocol). Questionnaire, focused on four major areas including motivations, challenges, benefits and costs of adoption of organic farming. In depth interviews approach and direct observation were used. Several months were spent to study the subject in depth and each interview lasted several hours and sometimes, due to prolong of interview, it was postponed to next days.

Farmers' talks were recorded and all the interviews were filmed and recorded. Responses were listened several times and were classified in codes. Coding and developing category system and creating hierarchical category system were used for data analysis. In addition, the quantitative method was used.

3. RESULTS AND DISCUSSION

3.1. Personal characteristics

The results showed that average age and the average education of rice producers were 52 years and 11 years respectively. Also, the average of farm size was 5 hectare and the average yield per hectare was 5.5 tons. Eight of the respondents, their main occupation were agriculture and two of the respondents, agriculture were their second occupation. Mean score of attendance in training courses was 9 and the average of agricultural income was 500 million rials (Table 1).

3.2. Factors Affecting the conversion to Organic Farming

In this study, the factors affecting the conversion to organic farming are divided into two main categories which include facilitating factors and barriers as follow:

3.2.1. facilitating factors

3.2.1.1. Motivation: The results showed that the motivations are effective factor for the conversion to organic farming. Motivations identified by the interviewed farmers were categorized into five themes as follows:

- Health and safety motivations

One of the important factors expressed by the respondents for the transition to organic agriculture was health and safety motivations. Health and safety motivations given by farmers are divided into 3 different concepts include:"own and

family health"," human health" and "animal health " as seen in table 2. Farmers said: "Since rice is the staple food of the people, it is not good that we pollute it and transmit diseases to people." These sentences were mentioned 37 times by farmers. The results verify findings the sources of [14] and [15]. Some of the expressions farmers are given in Table 2.

- Environmental motivations

Environmental attitude is very important factor in motivation to preserve natural resources. The concepts such as: "environmental pollution concerns", "water pollution concerns" and " soil pollution concerns." were mentioned in this category. Farmers in this area stated that:"In terms of the environment when we see dead fish on the ground beside the stream of water, the worst case for us. I'm extremely upset. Because the environment is polluted, the fish died." "In this way, the environment, ground waters and soils are not polluted". The frequency of these statements by the farmers was 28. Findings of sources [4,7,6,10,14], are accordance with results of this study. Some farmer's statements are given in Table 2.

- Knowledge motivations

The "attending in farmers field school" (FFS) classes and the "self-study" were most important concepts that farmers mentioned in this category. Farmers said:"my interested in organic farming began with attending in FFS classes.", "I read in a magazine that pesticides are carcinogenic." These sentences mentioned 22 times in farmers' statements. (Table 2)

These results are accordance with the findings of the sources [4,5, 6, 8, 9,16,17].

- Ideological and philosophical motivations

The concepts of "love and interest" and "conscience" were mentioned in this category as most important factors affecting the motivation of farmers for the conversion to organic farming. Farmers in this area stated that:"I loved it. My interest led me to continue this work. Since I love it, I continue it. You can't continue until you don't love it. Without love it, you can't continue. Healthy production wants clear conscience and honesty. Morally, I would like to produce healthy food for the community." These sentences mentioned 19 times in farmers' statements (Table 2). The results of study in this category verify findings the source [10].

- Economic motivations

Another motivating factor for the conversion to organic farming is economic issues. One important concept in this category that mentioned by farmers was "earn more income". Farmers said: "I can sell my products the more expensive. I can change my car. Of course this is important, if the product can also sell at higher prices." These sentences mentioned 11times in farmers' statements (Table 2). These results are accordance with the findings of the sources [6] and [7].

3.2.1.2. Benefits

The most important concepts mentioned in this category include "economic benefits", "health and safety benefits" and "environmental benefits". Farmers in this area stated that:"The costs of pesticides and chemical fertilizers are high. Further profit can be achieved. Its flavor and taste even is better. It is better for the health of consumers. Water waste and soil can be reduced. The disease can be reduced." The frequency of these statements was 140 (Table 3). The results verify findings the sources of [3,5,[6,14].

3.2.2. Barriers to conversion to organic farming

3.2.2.1. Challenges

- Knowledge

The concepts "lack of farmers' knowledge", "lack of consumer awareness" and "lack of informing by government" mentioned in this category by farmers. They said: "Maybe many rice producers like go looking for this work but do not have enough information. They do not know organic farming at all. Organic farming does not use because they do not know it. They do not believe it. If we take rice producers training, it will be done. If consumers know the benefits of organic products, therefore they do not talk much about the price." The frequency of these statements was 47 (Table 4). These results are accordance with the findings of the sources [3,4, 5 ,7].

- Lack of government supports

Lack of government support was as a barrier mentioned for conversion. Farmers said: "In this regard, the government did not support. Not enough informing in this regard by the government. More extension agents should engage and teach. Despite all the problems, I expect to be supported. Organic fertilizers are not available." These sentences mentioned 44 times in farmers' statements (Table 4). These results are accordance with the findings of the sources [10].

- Fear of the future

Most important concepts mentioned in this category include: "loss of product"," misuse of certifications", "brokers" and "lack of sales". Rice producers said:"If government will ensure that whatever damage was to meet, we do not spray. Anybody does not support the farmer. I want have a truly certification, When we want to sell products more expensive, consumers should make sure to buy my product. People are broker who buy it us, at low prices and sell at high prices in the market. The market for these products is still a problem." The frequency of these statements was 28 (Table 4). These results are accordance with the findings of the sources [3,4].

- Production

The concepts of "continued presence on the farm" and "more physical work" were mentioned in this

category as most important production challenges. Farmers said:" you do not leave the farm for a week, should be there every day. I do it by hand weeding. Take out the weeds by hand. It's hard for us to control weeds and diseases." The frequency of these statements was 11 (Table 4). These results are accordance with the findings of the sources [3,4,7].

3.2.2.2. Costs

The most important concepts mentioned in this category include: "financial" and "spend more time and energy". Rice producers said: "Organic fertilizers are little or expensive. Agricultural inputs are expensive. For the ducks do not leave the ground, I've enclosed with fence. I do removing weeds by hand. I too spent to get organic certification. Weed control with hand did. I am in the field every day until

sunset". These sentences were mentioned 55times by farmers (Table 5). The results verify findings the sources of [3,4,6].

Table 1: Characteristics of farmers

Characteristics	mean
Age (years)	52
Education (year)	11
Farm Size (hectare)	5
Yield per hectare (Tons)	5.5
Agriculture as main occupation (persons)	8
Agriculture as second occupation (persons)	2
Attendance in training courses (numbers)	9
Total annual agricultural income (Million rials)	500

Table 2: Motivation factors for conversion to organic farming

Concepts	Frequency
Health and safety Motivations	
- Human health	16
- Own and family health	12
-Animal health	9
Environmental motivations	
- Environmental pollution concerns	15
- Water pollution concerns	8
- Soil pollution concerns.	5
Knowledge motivations	
- Farmers field school (FFS) classes	14
- Self-study	8
Ideological and philosophical motivations	13
- Love and interest	6
- Conscience	
Economic motivations	
- Earn more income	11

Table 3: Benefits organic farming as perceived by rice producers

Concepts	Frequency
Environmental benefits	
- Reduce disease	16
- Improve product safety	12
- Reduce water pollution	11
-The absence of chemical residues	10
- Improving biodiversity	6
Health and safety benefits	
- The consumer health	17
- Reduce exposure to chemicals	16
- Improve the taste and flavor	14
- More nutrients in foods	10
Economic benefits	
- Higher profit	9
- Lack of pesticides and chemical fertilizers costs	9

Table 4: Challenges of organic farming as perceived by rice producers

Concepts	Frequency
Knowledge	
- lack of farmers' knowledge	31
- lack of consumer awareness	10
- lack of informing by government	6
Lack of government supports	
- Legislation	26
- The agricultural extension agents	11
-Provision of agricultural inputs	5
- Agricultural industries	2
Fear of the future	
- loss of product	9
- lack of sales	7
- misuse of certifications	7
- brokers	5
Production	
- more physical work	6
- continued presence on the farm	5

Table 5: Costs of organic farming as perceived by rice producers

Concepts	Frequency
Financial	
- Machinery, Equipment, Buildings and infrastructure costs	12
- Labor costs	8
- Certification costs	6
- Agricultural inputs costs	4
Spend more time and energy	
- More physical work	10
- Continued presence on the farm	5

4. CONCLUSION

Modern agricultural practices, along with widespread use of chemical synthetic materials lead to negative impacts on air, soils and water, in turn, a negative impact on agricultural production and human well-being. Alternatively, organic farming is an important tool for achieving Green Productivity in agriculture and mitigates the negative impacts of conventional input-intensive agriculture by excluding the use of agrochemical inputs from the production system, minimizing environmental pollution, promoting reuse and recycling of organic farm waste and crop residues, improving biodiversity, and enhancing soil productivity. The decision to convert from conventional to organic production is a complex system change and stems from interest in organic farming. This interest may be sparked by personal motivations or other outside influences. If these motivations and influences are strong enough, then the farmer will decide to convert to organic production.

The results show that factors affecting the conversion to organic farming are two main categories: Facilitators and barriers. The facilitating factors include: Motivations and profits. Health and safety motivations, environmental motivations, knowledge motivations, Ideological and philosophical motivations and economic motivations were

important motivating factors mentioned by rice producers. The benefits identified by the interviewed farmers were categorized into three themes, namely: economic; environmental; health and safety. The second category is the barriers to conversion to organic farming that consists of: challenges and costs. The challenges include: knowledge, lack of government supports, Fear of the future and production and costs are included: financial and "spend more time and energy (Diagram 1).

It is recommended:

- Planning to increase the knowledge of farmers and consumers about the benefits of organic farming.
- To motivate the farmers for converting to organic farming by government supports such as: granting financial facilities and loans with low profits, supply of organic inputs and insurance of organic farming products.
- Provide continuous monitoring of organic certification provided and products using these certificates are presented to the consumer market.
- Planning for the marketing of organic products and the guaranteed purchase of organic products with affordable pricing.

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Diagram 1: Factors affecting the conversion to Organic Farming