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Supportive Policies of Greenhouse Organic Cucumber Production in Khorasan-Razavi Province

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Abstract: This study was carried out to study supportive policies of Greenhouse Organic Cucumber (GOC) production in Khorasan-Razavi Province by using a cross sectional data of 60 farmers in 2008. Results showed that farmers want to allocate 64.8% of greenhouse area to organic Cucumber production. 73.3% of farmers believed that Jihad-Agriculture Organization (JAO) has scientific and technical ability to promote of farmers towards organic agriculture while marketing ability was emphasized only by 33.3% of farmers. Also, 100% of farmers price, 100% insurance, 80% technical-agronomic, 86.7% educational, 86.7% credit, 86.7% market (purchasing of products), 93.3% biological and mechanical control, 86.7% organic fertilizer and 73.3% animal fertilizer as supportive policies presented that government must considered if farmers adopt cucumber organic and movement towards it. Price, insurance, technical-agronomic, educational, credit, market, biological and mechanical, organic fertilizer and animal fertilizer supportive policies have priority one to nine of supportive policies and programs of organic cucumber production in Khorasan-Razavi Province. So, in encouraging programs of farmers to producing of greenhouse organic cucumber must emphasize on this components especially price, insurance, technical-agronomic, educational, credit and market supports for succession the adoption and transition process.

Key words: Supportive policy, price, organic production, marketing, adoption, priority

INTRODUCTION

Emergence of green revolution and biotechnology have provided food security in many developed and developing countries. In recent years, these waves created world concerns about outcomes and effects of modern agricultural activities on environment and human's health, serious problems in agriculture and low productivity. These concerns have provided context for third wave i.e., demand for safety food. Organic farming is a good response to these concerns and has advantages that based on can take government support for providing organic agricultural profit because positive effect on environment, improvement of rural welfare, increasing of farmers income and community health, organic farming is economical activity for countries. Organic farming can supply sustainable food staffs for people (Clark *et al*., 1999; Delate, 2002; El-Hage Scialabba and Hattam, 2002; Scialabba, 2003; Dehghanian *et al*., 2004; Fuller *et al*., 2005; Bengtsson *et al*., 2005; Eyhorn *et al*., 2007; Gabriel and Tscharntke, 2007).

If payments to farmers be towards providing certain revenue, it will have positive effect on decreasing the risk. Direct payments are different between regions, producers and land. Without such payments, organic farms' revenue would be lower than conventional farms. Many Asian countries have promoted some efforts toward organic farming which are: financial supporting of organic sector, elimination of barriers, training elaborated labors for organic farming and developing some opportunities for investing on organic farming. Additionally, based on the countries' experiences, education and extension, standards, financial support (at least in the transition period of conventional farming to organic), organic seeds and certifications are some effective facilities which develop organic products. Table 1 shows the summary of incentives toward and restrictions against farmers for adoption organic farming.

The Iranian government has made different policies including knowledge improvement of farmers and the

Table 1: Incentives and restrictions against organic farming adoption

Incentives	Restrictions
Increasing awareness after green revolution	No knowledge about organic farming
No access to and or high cost of green revolution technologies	No economical and political defense
Creating of opportunities for development of local knowledge	Population pressure and encouraging of production
Environmental effects and development movements	High costs of certifications
Demand and market opportunities	Low literacy in rural regions
	No liberalization of trade and preventing the export of organic products

Source: Partap (2007)

specialists toward organic farming, decreasing pesticide and chemical fertilizers' subsidies, spreading useful insects in order to decreasing the use of pesticide, subsidy payments to bio-fertilizers, organic fertilizers, biological control and support of non-government organizations. But to develop this sector, there are several restrictions like lack of special organizations to support organic productions formally, lack of legal and regulations toward organic production, lack certifier organizations to certify organic products based on world and European standards, insufficient extension for consuming of organic products among different groups of producers and consumers, lack of administrative and research supports, insufficient facilities for decreasing the costs and modern labs for measuring the pesticides residue.

In recent years, greenhouse farming has been developed in Northeast Iran. Khorasan-Razavi Province is well-known for greenhouse products, especially cucumber-producers. Considering the greenhouse cucumber cares, producers frequently use chemical pesticides utilizing high dose to reach high yield of the product. Consumers feel residue of pesticide on consumption cucumber (for example taste).

Farmers attitude towards organic products production in transition period have several risks in different aspects specially in production (decreasing of yield), so that depends on crops, it causes yield loss equivalent 15-35% (Dobbs and Smolik, 1996; Broumfield *et al*., 2000; Delate *et al*., 2001; El-Hage Scialabba and Hattam, 2002; Gunnarsson and Hansson, 2003; Sartori *et al*., 2005). These losses affect farms profit. If government does not support of organic farming, farmers attitude to organic products production will decrease. Dabbert *et al*. (2004) believed that support payment to organic farming are intended to compensate for yield losses due to production restrictions in organic farming. The advantage of organic farming is that part of the losses due to lower yields is compensated for by the price premiums that consumers are willing to pay. So, support programs and policies have key role in adoption process, continuous and expansion of agricultural products cultivation, especially greenhouse products that risks have effect on it.

Organic farming provide benefits in terms of environmental protection, conservation of non-renewable resources, improved food quality, reduction in output of surplus products and the reorientation of agriculture towards areas of market demand (Lampkin, 1990). Government policies targeting organic farming tend to be controversial. Economists in particular tend to be special about government policy intervention in general as well as measures specially designed for organic farming. Sound reasons for policies supporting organic farming are therefore increasingly important. Two major lines of argument for reason to support organic farming exist: farming can either be supported because it produces public goods and helps to achieve policy objectives like animal welfare (Häring *et al*., 2001), or it can be seen as a market opportunity and organic market to conquer (Kalden, 2001). It is, of course, also possible to combine both views. The importance given to either view has major implications for policy development. Some governments have responded to them by encouraging farmers to adopt organic farming practices, either directly through financial incentives or indirectly through support of research, extension and marketing initiatives (Clark *et al*., 1999; Brumfield *et al*., 2000; Greene, 2000; Weersink *et al*., 2002; Acs *et al*., 2005). Cooper (1997) concluded that using traditional contingent valuation method analysis results to determine minimum incentive payments to attain a given level of adoption is likely to result in overpayment. Lohr and Salomonsson (2000) showed that farmers requiring higher subsidies managed larger and less-diversified farms. Access to more market outlets and information sources substituted for subsidy level in the farmers' utility function. Lohr and Salomonsson (2000) believed that services rather than subsidies may be used to encourage conversion to organic agriculture. Pietola and Oude Lansink (2001) indicated that decreasing output prices in conventional production and increasing direct subsidies trigger the switch to organic farming. The results of this study can help in designing policies that target farmers' choice of production technology. Wynn *et al*. (2001) showed several factors accelerating scheme entry: an interest in conservation, more adequate information and more extensive systems. Falconer and Hodge (2000) suggested that pesticide taxation should be part of a package of measures including, in particular, education and training to encourage and assist farming system change.

With this regard, development and extension of the GOC has considered by JAO. By evaluating the producers' needs and attitudes, government can response to pre-requirements shift of producers toward GOC as well as current concerns at the consumer's level about the side effects of pesticides' residue in the Cucumber culture. Due to the above discussions and considering the fact that organic farming does not have any organized structure yet, the farmers' attitude toward this issue, the tendency to develop such supportive programs and policies should be studied before extension of the GOC. This paper aimed to study the supportive programs and

policies of the GOC productions in Khorasan-Razavi province. Results of the study can be used as a basic model for programming and policy making for development and extension of the GOC's cultivation. Additionally, these results can apply for encourage farmers toward the adoption of the GOC and the compensation of farmers'revenue deficit due to the GOC yield losses in the transition period.

MATERIALS AND METHODS

Theory of support: while the introduction of payments (one shape of support) has ceteris paribus increased the profitability of organic farming, any resulting conversions will increase the supply, thus carrying the risk of eroding thee price premia for organic products. In a case of inelastic demand, supporting conversion and hence the entry of new enterprises to organic farming may harm not only existing producers; the induced price decreases can in fact nearly cancel out any supportive effect the subsidies might otherwise have (Fig. 1).

The payments will lead to a downward shift of the supply curve as indicated in the diagram (S to S'). The more inelastic the demand curve, the lower the new equilibrium price p_1 and the smaller the supply increase ($q_1 - q_0$) will be (Offermann and Nieberg, 2000).

Data: This study was conducted based on a sampling survey on the greenhouse cucumber producers. Considering the limitations of greenhouse cucumber producers, this study used censusing method and surveyed all producers as sample. The data were collected in Mashhad in 2008 using interview technique. Questions of this study included socio-economic profile, input-output data, organic farming information and its marketing, Cucumber insurance, credit, suggested price for organic Cucumber and finally supportive programs and policies. In this study, 60 questionnaires were returned in 3 months. Then, data of a sample consist of 60 greenhouse cucumber producers analysed by using of descriptive statistics.

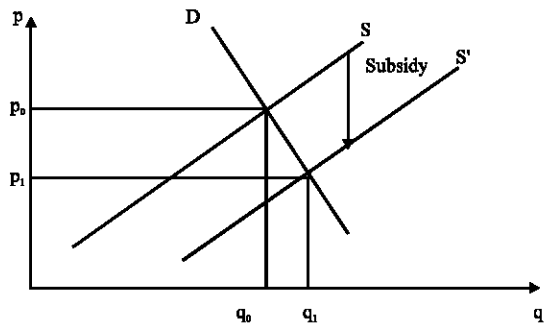

Fig. 1: Impact of supply subsidies when demand is inelastic

Priority of programs: Finally, for determining the priority of each components and supportive programs has used scoring method.

$$\text{Score of each programs} = \sum_{i=1}^{7} f_i x_i \quad (1)$$

where, f_i is percentage of each priority and x_i is score belong to each priority. Score change from 1 for seventh priority to 7 for first priority.

RESULTS AND DISCUSSION

Sample characteristics: Therefore, 60 greenhouse Cucumber producers were the cases of this study to analyze using descriptive statistics. Results show that 6.7% of farmers have secondary education, 6.7% have incomplete diploma, 26.7% have diploma, 20% are technicians, 20% have bachelor and 20% are high educated. The age of 20% of the producers is less than 30 years, 40% are between 30 to 45 years and yet 40% have 45 to 60 years. Most of the farmers (73.3%) doing agricultural activities as their main profession. The family size of the most the farmers is less than 5 persons. As for their professional experience, the majority of the farmers (60%) have less than 20 years, 20% between 20-30 years and 20% have 30-40 years. The ownership of all greenhouse Cucumber producers is private. Most of the farmers (63.7%) have less than 5 Cucumber production saloons. The 7.1% of farmers have less than 1500 m^2, while 78.5% have 1500-3000 m^2 and 14.3% have more than 5000 m^2. The majority of farmers (73.3%) received credit. But, 46.2% of the producers have received less than 250 million rials credit while 38.5% of farmers received credits with less than 10% interest 46.1% received with more than 10% interest rate. The majority of the farmers (60%) did not participate in extension classes. Also, 86.7% of them do not have any contract for selling their products. 73.3% of farmers have been supervised by engineering services. All of greenhouse owner have a precedent of facing risks in producing Cucumber. Only 33.3% of farmers have insured their products in 2008. Only 40% of farmers insured their products in recent years. The average yield of Cucumber is less than 15 kg m^{-2} in 20% and 73.4% is between 15 to 25 kg m^{-2} and in 6.7% have more than 25 kg m^{-2}. Farmers' forecasting shows that average yield of 16.6% of farmers should be less than 15 kg m^{-2}. 74.8% of farmers have between 15 to 25% and 8.3% have more than 25 kg m^{-2}. Also, 53.9% of the

Table 2: Farmers attitudes toward abilities (potentials) of JAO in organic farming

	Existence (%)		Level of ability (%)			
Abilities	Yes	No	Low	Medium	High	No response
Scientific	73.3	26.7	20.0	26.7	20.0	6.7
Technical	73.3	26.7	20.0	33.3	6.7	13.3
Marketing	33.3	66.7	26.7	-	-	6.7

farmers predicted the price less than 5000 rials kg^{-1} and 46.1% presume more than 5000 rials kg^{-1} for next year.

Farmers and organic cucumber: The Farmers' knowledge regarding organic products in two levels low and medium were the same and equal to 46.7% and only 6.7% have high level of the information. 66.7% of the farmers believed that the transition to organic Cucumber may cause lower yield, while 20% expect higher and 6.7% predict no change. Forty percent of farmers would allocate less than 1500 m^2, 40% between 1500 to 3000 m^2 and 20% more than 3000 m^2 to the GOC. As shown in Table 2, the farmers would allocate 64.8% of greenhouse area for producing organic Cucumber. Eighty percent of the farmers believed that the GOC price should be 10% higher than traditional cucumber and 13.3% believed of no change in the price and 6.7% did not answer to this question. Minimum offered price by 40% of the farmers was 5000 rials kg^{-1} while 60% offered more than 5000 rials kg^{-1}. 20% of the farmers stated that they have not yet participated in any extension classes regarding the GOC.

Jihad-Agricultural Organization capacity and ability regarding organic agriculture: 73.3% of the farmers believed that JAO have scientific and technical ability to guide and conduct farmers toward organic farming while marketing ability emphasized only by 33.3% of the farmers. Scientific ability level of the JAO's experts was estimated lower than 20%, average by 26.7 and high by 20% of farmers. 33.3% of the farmers presented that technical ability of there is medium. Also, majority of the farmers (66.7%) believed that there is not enough marketing potential for organic cucumber in JAO (Table 2). Marketing and consumer preferences about organic products specially greenhouse products are such as challenges against producers for achieving to new and diversification markets and also reducing marketing costs and therefore promote profit. According to this finding, JAO should promote its ability in marketing field and contemporary try to improve the technical knowledge of its staffs regarding organic farming.

Supportive programs of greenhouse organic cucumber: price and insurance supports are important supportive components which are emphasized by all the cucumber producers. In addition to the price and insurance policies, 80% of the farmers presented technical-agronomic, 86.7% training, 86.7% credit, 86.7% marketing (purchasing products), 93.3% purchase biological and mechanical control, 86.7% supply of organic fertilizers and 73.3% animal fertilizers as supportive policies which must be expected from the government if GOC production were adopted (Table 3) because governmental supportive programs and the earlier mentioned policies framework specially in transition period can help for continuing organic production activities, effort for supplying product to market in suitable price and moreover developing organic products cultivation (for achieving to minimum profit).

Table 3: Supportive programs needed for producing organic cucumber

Supports	Percent
Price	100.0
Insurance	100.0
Technical-agronomic	80.0
Training	86.7
Biological and mechanical control	93.3
Credits	86.7
Markets	86.7
Organic fertilizers supply	86.7
Animal fertilizers supply	73.3

Table 4: Priority of supportive programs in greenhouse organic cucumber production

	Degree of priority (%)							
Supports	1st	2nd	3rd	4th	5th	6th	7th	Score
Price	83.3	16.7	-	-	-	-	-	683.3
Insurance	76.7	22.3	-	-	-	-	-	670.7
Technical-agronomic	26.7	33.3	13.3	13.3	6.7	-	-	526.5
Training	26.7	26.7	26.7	-	-	-	-	480.6
Biological and mechanical control	-	-	6.7	20.0	13.3	-	-	153.4
Credits	20.0	13.3	26.7	13.3	13.3	6.7	-	459.8
Markets	6.7	13.3	20.0	13.3	-	6.7	13.3	306.6
Organic fertilizers supply	-	-	-	-	13.3	26.7	-	66.7
Animal fertilizers supply	-	-	-	-	-	6.7	33.3	46.7

Table 4 shows the priorities of the supportive programs in the GOC. Accordingly, for techno-agronomic supports 26.7% of the farmers have given the first, 33.3% second, 13.3% third priority and 6.7% the fourth priority. For training supports, farmers have selected all the 4 priorities the same as equal to 26.7%. Regarding the credits, first priority was given by 20%, second by 13.3%, third by 26.7%, fourth and fifth by 13.3% and sixth priority by 6.7 % of farmers. As for marketing supports, 6.7% have selected the first, 13.3% second, 20% third, 13.3% fourth, 6.7% sixth and 13.3% seventh priority. Due to purchasing of biological and mechanical control, third priority was selected by 6.7%, fourth by 20% and fifth by 13.3% of farmers. The supply of organic fertilizer supports was also one of the supportive programs which were selected by

13.3 % of the farmers as the fifth priority and 26.7% as the sixth. Finally, supplying the animal fertilizers was selected by 6.7% of the farmers as the fifth priority and 33.3% as the seventh. Price and insurance supportive policies have the first (score 683.3) and second (score 670.7) priorities emphasized by majority of the farmers as first and second priorities, respectively. As shown in Table 4, the third priority of the supportive programs and policies for organic cucumber in Khorasan-Razavi Province will allocate to techno-agronomic supports (score 526.5), fourth priority to training programs (score 480.6), fifth priority to credit (score 459.8), sixth priority to market programs and policies (score 306.6), seventh priority to biological and mechanical control programs(score 153.4), eighth priority to supplying organic fertilizer programs (score 66.73) and ninth priority to supplying animal fertilizer programs (score 46.7).

Although, this study has been conducted with a new structure for determining the supportive policies and programs in Khorasan-Razavi province, but the results can be confirmed by the findings of Lampkin (1990), Häring *et al.* (2001), Kalden (2001), Clark *et al.* (1999), Brumfield *et al.* (2000), Greene (2000), Weersink *et al.* (2002), Acs *et al.* (2005), Cooper (1997), Lohr and Salomonsson (2000) Pietola and Oude Lansink (2001), Wynn *et al.* (2001) and Falconer and Hodge (2000).

CONCLUSION

This study was carried out to study supportive policies of Greenhouse Organic Cucumber (GOC) production in Khorasan- Razavi province by using a cross sectional data of 60 farmers in 2008. Results showed that farmers want to allocate 64.8% of greenhouse area to organic Cucumber production. 73.3% of farmers believed that Jiha-Agriculture Organization (JAO) has scientific and technical ability to promote of farmers towards organic agriculture while marketing ability was emphasized only by 33.3% of farmers. Also, 100% of farmers price, 100% insurance, 80% technical-agronomic, 86.7% educational, 86.7% credit, 86.7% market (purchasing of products), 93.3% biological and mechanical control, 86.7% organic fertilizer and 73.3% animal fertilizer as supportive policies presented that government must considered if farmers adopt Cucumber organic and movement towards it. Price, insurance, technical-agronomic, educational, credit, market, biological and mechanical, organic fertilizer and animal fertilizer supportive policies have priority one to nine of supportive policies and programs of organic cucumber production in Khorasan-Razavi Province. So, in encouraging programs of farmers to producing of greenhouse organic cucumber must emphasize on this components especially price, insurance, technical-agronomic, educational, credit and market supports for succession the adoption and transition process.

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