J. Agr. Sci. Tech. (2016) Vol. 18: 55-65

Potato Growers' Risk Perception: A Case Study in Ardabil Province of Iran

A. Bagheri[1*], and H. Shabanali Fami[2]

ABSTRACT

The aim of this study was to examine potato growers' perceptions of risk sources and risk management strategies and their risk management behavior. A Survey research method was used in this study. The data originated from a sample of potato growers (n= 128) of Ardabil Province in the cropping year of 2013. The respondents were divided into two groups of Less Risk-Averse (LRA) and More Risk-Averse (MRA). Results show that more than half of the respondents were MRA. In general, potato price, marketing and yield were important sources of risk. The MRA farmers perceived price, yield, input costs and subsidy elimination as highly important sources of risk. Change in farming practices times, sharing farm machinery and hedging were important perceived strategies. LRA farmers marked more importance to management strategies than their counterparts. Except for a few strategies, there was consistency between the growers' perception and management behavior. The results also show that there were significant relationships between farmers' perception of strategies and their application. The results have implications for agricultural policy makers, extension and advisory services on the brink of subsidy targeting policy in Iran.

Keywords: Ardabil, Perception, Potato, Risk management.

INTRODUCTION

Risk is the uncertainty of future returns. Due to volatility of both climate and economic situations, farming is a risky industry. Risk threatens investment efficiency and security. Furthermore, the risk environment of farmers is changing (Boehlje and Lins, 1998). These changes lead to new risks, and consequently, new risk management instruments are being developed (Goodwin and Ker, 1998; Skees *et al.,* 1998; Meuwissen *et al*., 2001). According to Beal (1996) it is to be expected that risk management strategies adopted by farm managers, reflect their personal perceptions of risk. Therefore, it is important to consider how farmers perceive risks.

Extensive normative analysis can be found in the literature showing how farmers should behave under uncertainty but few studies have examined how farmers perceive risk and manage it in practice (Koesling *et al*., 2004). Hence, a better understanding of farmers' risk perceptions and how those perceptions influence behavior is integral to developing sustainable land and natural resources use (Krogmann *et al*., 2001; Ahsan and Roth, 2010).

Bogess *et al*. (1985) found that risks related to yield, climate changes, pests and diseases, and input costs were perceived as highly important risks. Wilson *et al*. (1988) showed highly perceived risks were input costs, milk price volatility, climate changes, and government policy. Ortmann *et al.*

[1] Department of Water Engineering and Agricultural Management, Faculty of Agricultural Technologies and Natural Resources, University of Mohaghegh Ardabili, Ardabil, Islamic Republic of Iran.
[*] Corresponding author; bagheri_a2001@yahoo.com
[2] Department of Agricultural Management and Development, Faculty of Agricultural Economics and Development, University of Tehran, Karaj, Islamic Republic of Iran.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

(1995) revealed that crop gross income, government policy, livestock gross income, credit access, government regulation and cost were perceived as important sources of risk. Marketing, insurance, production, finance, cost reduction and assurance also were seen as important managerial responses to risk. Patrick and Musser (1997) analyzed sources of and responses to risk among large-scale US corn-belt farmers. Costs and human aspects were perceived as the most important sources of risk. Liability insurance, financial and credit reserves, and debt management were identified as important risk responses. Harwood *et al.* (1999) found that American cash crop farmers were more concerned about price and production risks and change in government regulations. Meuwissen *et al.* (2001) found price and production risks were perceived as important sources of risk. Insurance schemes were relevant strategies to manage risks. Koesling *et al.* (2004) indicated that for both organic and conventional farmers, crop prices and yield variability were the two top rated sources of risk; their favored strategies were good liquidity and prevention of crop diseases and pests. Akcaoz and Ozkan (2005) Determined risk sources and strategies among farmers of Cukurova region of Turkey. In their study, risk sources were labeled as environmental, price, catastrophe, input costs, production and technological, political, finance, personal, marketing, health and social security. The dimensions of risk strategies were named as diversification, off-farm income, marketing, planning, financing and security. Ahsan and Roth (2010) revealed that future price, demand for mussels, and changes in public regulation were the highly-ranked perceived risks in mussel farming. Production at the lowest possible cost, cooperative marketing, liquidity, adaptation of new technology, and experience sharing were perceived as the most important risk management strategies.

Economic development was the main purpose of the policy of subsidy targeting in Iran. Results of a study (Salami *et al.*, 2012) supported the importance of the agricultural sector in stimulating the economic growth of Iran. However, Ansari *et al.* (2014) found that removing subsidy from food producing sectors has distributional consequences for the Iranian households. The rural low income group is the most adversely affected group while the urban high income group is the least affected among the Iranian households. Investigation of farmers' risk perception and risk management especially, on the brink of economic adjustment in the form of subsidy targeting policy in Iran can present empirical insights for agricultural policy makers. A few studies have been conducted that relate to farmers' risk perception in Iran. Turkamani (2000) and Ehsan *et al.* (2008) studied farmers' risk attitudes in southern regions of the country (Fars and Khuzestan Provinces). The results showed that risk averseness was the prevalent behavior of farmers. Tabatabaei *et al.* (2010) and Khatami (2012) studied dairy farmers perceived risk and risk management strategies in the central region (Tehran Province). They found that inputs and outputs of price volatility, subsidy elimination, and low liquidity were perceived as important sources of risk. Use of veterinary and farm consultants and insurance were perceived as important management strategies. Roosta *et al.* (2008) studied wheat farmers' perceptions of risks in the eastern region (Khorasan). Climate change and economic risks were important sources of risk. Also, insurance, technology and financial management were important strategies used by farmers. The aim of this study was to investigate potato growers' perception of risk and risk management as well as their risk management practices in Ardabil Province.

MATERIALS AND METHODS

Ardabil region as one of the main potato growing regions of the country was selected for the study. The study was conducted in the cropping year of 2013. A survey

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

research design was used in this study. A questionnaire consisting parts and scales related to farm and farmer socioeconomic characteristics, attitude towards risk, perception of risk sources and risk management strategies, and risk management practiced by farmers was used for data collection. Most of the items and questions were in the form of five point Likert-type scales ranging from one (very low) to five (very high). The questionnaire was validated by a panel of experts. Then, the questionnaire was pre-tested in a pilot study among 30 farmers and the average Cronbach Alpha of 0.813 showed high reliability of the instrument. The final version of the questionnaire was used for data collection. All potato growers (N= 3,500) consisted the statistical population of the study. The Cochran (1977) formula was used to determine the sample size and a sample consisting of 128 potato growers was selected using a two-stage random sampling method (20 villages and 6-7 farmers from each). The data were collected in a face to face interviewing method. SPSS (ver. 16) software was used for data analysis.

To study farmers' attitude towards risk, a scale including five statements applied in previous studies (Meuwissen *et al*., 2001; Patrick and Musser, 1997) was used. The scale measures attitude towards risks relative to other farmers. Risk sources and risk management strategy scales were other parts of the questionnaire. Risk sources were studied by 21 statements (α= 0.906), and risk management strategies were studied by 15 statements (α= 0.686).

Farmers' perceptions of risk and risk management were initially examined by descriptive analyses. Mean values obtained from the two groups (i.e. More Risk-Averse and Less Risk-Averse) were compared by *t*–test. Standard parametric statistical procedures were assumed appropriate for ordinal variables in the form of Likert-type scales (e.g. Patrick and Musser, 1997; Meuwissen *et al*., 2001; Koesling *et al*., 2004). Principal component factor analysis was used to summarize the variables in a few numbers of factors. The latent root criterion (Eigen value≥ 1) was used as a guideline to determine how many factors must be extracted. In order to have the most representatives of factors, factor solutions with different numbers of factors were also examined before the structures were defined (Hair *et al*., 1998). A Varimax rotation was used to obtain factor solutions that were easier to interpret. Finally, frequencies and percentages of farmers applying each strategy were computed and *Chi*-square tests were used to examine thre relationship between perception and application of strategies.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The results showed that the respondents were in the middle age category ($\bar{x}$= 44.15), with 23.31 years of farming experience. Regarding education, 66.2% of them had elementary/secondary level of education, 23.3% had high school degree and 10.5% were graduated from a higher education institution. About 54.7% of the respondents had participated in extension education programs. About 42.2% of them were members of rural cooperatives. Nearly 38.3% had off farm income. Their average farm size was 5.6 ha and their average number of family labor participating in potato growing was 3.5.

Attitude Towards Risk

The relative risk attitude scale was used for this purpose. Similar to previous studies (Patrick and Musser, 1997; Meuwissen *et al.,* 2001; Flaten *et al*., 2004; Koesling *et al*., 2004), farmers were asked to assess their willingness to take risks compared to other farmers on a Likert- scale ranging from 1 (do not agree) to 5 (fully agree). As depicted

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

in Table 1, the majority of the respondents perceived the extent to which they take risks as less or equal to that of other farmers.

After the respondent's answers on the five statements were summed up, a median split was used to divide the respondents into a More Risk-Averse (MRA) and a Less Risk-Averse (LRA) group (Meuwissen *et al.*, 2001). The result indicated that more farmers were placed in the MRA group. Based on this result, 54.7 and 45.3% of respondents were MRA and LRA, respectively. *T*-test was used to compare the two groups (Table 2). As Table 2 shows, there were significant differences between them in all statements of the risk attitude with LRA farmers having higher scores in all items.

Comparison of the socioeconomic characteristics of the two groupswas performed via *t*-tests (Table 3). Results show that there were no significant differences between groups regarding education, age, farming experience and farm income. However, LRA farmers had significantly more farm areas and higher participation in extension programs whereas MRA farmers had more off farm incomes and used more labor for farming practices.

Perceptions of Risk Sources

Farmers' perceptions towards sources of potato farming risks are depicted in Table 4. Respondents were asked to score each of the

Table 1. Percentage distribution of respondents regarding relative risk attitude.

Statements	Agreement					
	Don't	Low	Somewhat	High	Fully	Mean
I am willing to take more risks than other farmers with respect to:						
1. Farm management	28.1	28.1	12.5	21.9	9.4	2.56
2. Potato production	28.1	18.8	17.2	29.7	6.2	2.67
3. Potato marketing and inputs buying	25	14	17.2	42.2	1.6	2.81
4. Financial issues (loan, credit, debt)	7.8	34.4	17.2	39	1.6	2.92
5. Risk seeking is needed for success	1.5	26.6	29.7	26.6	15.6	3.28

Table 2. Comparison of risk attitudes of More and Less Risk-Averse farmers.

Statements	Split half				*t*	Sig
	More Risk Averse		Less Risk Averse			
Farm management risk	70	1.66	58	3.65	-12.3	.000
Production risk	70	1.71	58	3.83	-14.70	.000
Marketing risk	70	2.00	58	3.79	-11.25	.000
Financial and monetary risk	70	2.31	58	3.65	-9.24	.000
Risk for success	70	2.57	58	4.14	-12.01	.000

Table 3. Comparison of characteristics of More and Less Risk-Averse farmers.

Variables	More Risk Averse			Less Risk Averse			*t*	Sig
	n	Mean	SD	n	Mean	SD		
Age	70	43.37	10.65	54	45.15	10.73	-.918	.36
Experience	70	22.69	11.13	58	24.07	10.39	-.721	.472
Farm area (ha)	69	3.9	2.48	54	5.98	4.03	-3.52	.001***
Extension	40	2	.85	30	3.07	2.15	-2.86	.006**
Farm income	68	180.06	490.77	56	120.09	100.14	.89	.38
Off farm incomes	69	5.22	5.03	58	2.24	4.20	3.53	.000***
Labor	44	9	5.47	54	6.67	3.99	2.44	.017*

* $P< 0.05$; ** $P< 0.01$, *** $P< 0.001$.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

Table 4. Mean scores, standard deviation, and factor analysis for sources of risk.

Sources of risk	Mean				Varimax rotated component matrix					
	M[a]	SD	LRA[b]	MRA[c]	1	2	3	4	5	6
Potato price volatility	4.42	.68	4.00	4.77***	.764					
Marketing and sale	4.23	.70	4.10	4.34		.525			-.466	
Potato yield variability	4.11	.96	3.59	4.54***	.624					.424
Climate change	4.09	.93	3.97	4.20		.757				
Lack of water	4.01	.98	3.79	4.19*		.796				
Input costs	3.98	.86	3.45	4.41***	.615		.488			
Elimination of goverment subsidy	3.97	1.06	3.24	4.57***	.726					
Pests and diseases	3.95	.88	3.79	4.09						.822
Low precipitation	3.95	1.09	3.86	4.03		.721	.491			
Credit high interest rate	3.89	.85	3.52	4.20***	.482				-.409	
Income recovery of sold crop	3.88	1.06	3.76	3.97		.616				
Agrochemical use	3.86	1.08	3.41	4.23***	.488		.428			
Family health	3.78	.84	3.48	4.03***	.568				.459	
Economic situation	3.66	1.04	3.41	3.86		.475	.664			
Rule and customs of export	3.64	1.2	3.24	3.97***			.792			
Seed market problem	3.61	.90	3.59	3.63				.837		
Extension service	3.53	1.19	3.21	3.80**		.441	.681			
Labor shortage for harvesting	3.47	.95	3.14	3.74***	.638			.519		
Transport facilities	3.45	.85	3.38	3.51				.861		
Enmity and destruction	3.25	1.24	3.00	3.46*			.627			
Theft	3.05	4.87	2.86	3.20					.741	
Variance accounted for (Total: 71.23%)					17.06	15.606	14.456	9.41	7.55	7.165

[a] Mean scores (1= Very low important, 5= Very high important), [b, c] Mean scores of Less Risk Averse (LRA) and More Risk Averse (MRA): Result of independent samples *t*-tests. Mean numbers marked with asterisks show that the LRA and MRA farmers are significantly different at * $P< 0.05$; ** $P< 0.01$, and *** $P< 0.001$.

risk sources to find the potential impact of each source of risk on the performance of their farms. The second and the third columns of the Table show total mean scores and standard deviations, and the fourth and fifth columns compare average scores for LRA and MRA.

The total average scores of risk sources show that potato price volatility, marketing and sale, and potato yield variability stand out as three top-rated sources of risk followed by climate change and water shortage. This result is in line with previous studies (Boggess *et al*., 1985; Martin 1996; Patrick and Musser, 1997; Koesling *et al*., 2004) that found price and production risks as the most important sources of risk and implies that price and production risks are farmers' main perceived sources of risks. In current years, potato growers of the study area haveencountered market failures, one of their main concerns is marketing/sale. The high average ranking related to marketing and sale risk is probably linked to this situation. Other highly ranked risks in general were environmental risks such as

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

climate change and water shortage. This result should be considered by agricultural policy makers. Climate changes influence the propagation of diseases such as late blight, which often occur in the region. For example, the epidemic form of the disease in previous years resulted in heaviy damages to potato farms (Hasanpanah *et al*., 2003). Over the last two decades, water intensive nature of potato farming and short fallow period (potato-wheat) of farming systems led to a drop in the groundwater table of the region. These could be reasons for farmers' assigning high importance to these sources.

The high scores of two other sources of risk, i.e. input costs and elimination of government subsidy are linked to the policy of targeted subsidies in Iran. Implementation of the first step of this policy increased input prices. Significant differences were found in 11 sources of risk between the two groups; amongst them, the most important differences were price, yield, input costs and subsidy elimination scored as very highly important by the MRA farmers. Direct comparison of perceived risks and management strategies with previous studies are difficult due to differences in the questions asked (Flaten *et al*., 2004) However, regarding the very highly important sources of risk, i.e. price, yield, marketing and climate change, this result confirms previous studies in Iran (Khatami, 2012; Tabatabaei *et al*., 2010; Roosta *et al*., 2008).

To reduce the number of variables (sources of risk) to an interpretable set of factors, principal factor analysis with Varimax rotation was used. This resulted in six factors with an eigenvalue greater than 1. The Kaiser-Meyer-Olkin (KMO) measure (0.723) and Bartlett's Test of Sphericity (1,567.69), suggested that the matrix was suitable for factor analysis. The six-factor solution provided the most interpretable factors. Some 71.23 percent of the total variance was explained by these factors that is a satisfactory amount in social sciences (Hair *et al*., 1998). Table 4 shows the extracted factors and their respective factor loadings, excluding those for which the absolute value of the loadings was less than 0.45. In labeling of factors that were loaded from two factor loadings, only the higher factor scores were considered. The six extracted factors were labeled as input-output, environmental, rule and regulations, market, enterprise security, and pests and diseases risks, respectively. Factor 1, accounted for 17.056% of variance, had high loading from potato price volatility, potato yield variability, input costs, elimination of government subsidy, and labor shortage for harvesting. Factor 2, environmental, which accounted for 15.60% of variance, was highly loaded from lack of water, climate change, low precipitation, income recovery. Rule and customs, extension service, economic situation, enmity and destruction extremely loaded on Factor 3 (rule and regulations). This factor accounted for 14.45% of variance. Factors 4-6 accounted for the remaining explained variance.

Perceptions of Risk Management Strategies

The respondents were asked to indicate their perceived importance to 15 strategies of risk management. Results are depicted in the second to fourth columns of Table 5. As total mean scores in column 2 show, most strategies were perceived as of moderate to high importance by respondents with standard deviations more than one implying significant differences between the two groups. LRA farmers marked higher importance to management strategies instead of risk sources. Strategies perceived as highly important (Scores≥ 3.5) were change in planting and harvesting dates to manage risks such as climate change, pests and diseases, and agrochemical use, renting-sharing farm machinery for decreasing production costs. Hedging to manage new risk of elimination of government subsidy, change in irrigation systems to manage risks of low precipitation and lack of water. In other studies (Roosta *et al*., 2009; Ortmann

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

Table 5. Mean scores, standard deviation, and factor analysis for risk management strategies.

Risk management strategies	Mean scores				Component		
	M	SD	LRA	MRA	1	2	3
Change in cropping times	3.84	.84	3.83	3.86			.899
Renting/Sharing farm machinery	3.73	1.01	3.72	3.74		.597	
Hedging	3.68	1.09	4.02	3.40***		.789	
Change irrigation systems	3.52	1.24	3.59	3.46		.753	
Enterprise diversification	3.48	1.29	3.98	3.06***		.753	
High quality inputs use	3.48	1.24	4.17	2.91***	.643	.609	
Decrease in future debt	3.39	1.17	4.12	2.78***	.702		
Crop insurance	3.36	1.42	4.21	2.66***	.575	.670	
Production at lowest possible cost	3.36	1.52	4.38	2.51***	.856		
Contact with extension agents	3.31	1.29	3.96	2.77***	.557	.482	.463
Farm consultants	3.20	1.41	4.09	2.47***	.680	.507	
Forward contract	3.15	1.54	4.07	2.39***	.712		
Applying cropping advice	3.08	1.46	4.03	2.29***	.765		
Save money	2.94	1.48	3.91	2.13***	.874		
Off farm investment	2.80	1.26	3.52	2.20***	.879		
Variance accounted for (Total: 72.42)					37.123	25.604	9.697

et al., 1995; Meuwissen *et al*., 2001; Ahsan and Roth, 2010) the same strategies were also perceived as most important. While several studies (Ahsan and Roth, 2010; Akcaoz and Ozkan, 2005; Koesling *et al*., 2004; Meuwissen *et al*., 2001; Patrick and Musser, 1997) found saving money and off-farm investment as the most important strategies, the low importance of them in this study could be related to insufficient income of potato growers. The two groups, perceived change in cropping times, renting/sharing farm machinery, and change in irrigation systems as equal but other strategies were differently perceived. While the highest rank of LRA was given to production at lowest possible cost, it ranked as low important strategy by MRA farmers. This could be linked to their different farm management skills.

Principal factor analysis with orthogonal Varimax rotation applied to 15 presented risk management strategies resulted in three interpretable factors with eigenvalue more than 1. The KMO measure (0.833) and Bartlett's Test of Sphericity (1,734.647) suggested that the matrix was suitable for factor analysis. The factor loadings for the individual strategies, excluding those for which the absolute value of the loadings was less than 0.45, are shown in the fifth to the seventh columns of Table 5. Some 72.42 percent of total variation in 15 variables was explained by the three factors, which is a satisfactory amount in social sciences (Hair *et al*., 1998). The three factors were labeled as technology change, cost management and optimum resource use. The first factor, technology change, includes high quality inputs use, decrease in future debts, production at lowest possible cost, contact with extension agents, farm consultants, forward contract, applying cropping advice, saving money, and off farm investment. The second factor, cost management, has high loadings on renting/sharing farm machinery, hedging, change in irrigation systems, enterprise diversification and crop insurance. High loadings from the strategy change in cropping dates gave the name to last factor, optimum resource use.

T-test was used to compare the two groups regarding perception of risk sources and risk management strategies. As Table 6 shows, significant differences were found regarding mean scores of risk sources and risk management strategies, so that, the MRA group significantly marked higher scores to

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

Table 6. Comparison of perceptions of Less Risk Averse and More Risk Averse.

Perceptions	Mean	
	Less Risk Averse	More Risk Averse
Risk sources	3.44	3.96***
Risk management strategies	3.97	2.84***

sources of risk. In contrast, the LRA group marked higher scores to risk management strategies.

Risk Management Practices

Meuwissen *et al*. (2001) noted that if people working in the field of risk and risk management are going to use similar studies, they have to note that results reflecting farmers' perceptions of risk management strategies are not necessarily the same as the extent to which they would actually adopt such strategies. To examine the extent of application of risk management strategies, farmers were asked to express which strategies they were applying. Percentages of users and non-users are depicted in Table 7. Strategies are presented in the Table based on decreasing perceived importance of farmers. The four highly ranked strategies i.e. change in cropping dates, renting/sharing farm machinery, hedging and change in irrigation system were applied by 39.7-54.4 of the respondents. This is because most farmers have common farm pathways, water canals, etc.. They could not individually use these strategies and their decision was related to the other farmers' acceptance. Other strategies, i.e. saving money and off farm investment that ranked as low important, were applied by 50.4 and 41.7 percent of farmers, respectively. They saved money to buy inputs and most of their off farm investment was in rural small businesses as complementary for farm incomes. Among strategies ranked as moderately important, only 29.3 percent of farmers used the forward contract strategy due to lack of a stable potato market. Acceptance of decrease in future debt strategy by high a percentage (67.2) of farmers on the brink of subsidy targeting policy in the country implies that most farmers are really risk averse. As services of contact with extension and farm

Table 7. Application and non-application of risk management strategies and χ^2 tests.

Risk management strategies	Application		Non application		χ^2	df	Sig
	f	%	*f*	%			
Change in cropping times	62	53.4	54	46.6	16.77	3	.001***
Renting/Sharing farm machinery	62	54.4	52	45.6	22.02	4	.000***
Hedging	62	53	55	47	4.61	3	.202
Change in irrigation system	46	39.7	70	60.3	18.31	4	.001***
Enterprise diversification	68	58.1	49	41.9	27.81	4	.000***
High quality inputs use	78	65.5	41	34.5	3.71	4	.000***
Decrease in future debt	80	67.2	39	32.8	47.71	4	.103
Crop insurance	64	52.9	57	47.1	49.47	4	.000***
Production at lowest possible cost	80	67.2	39	32.8	6.67	4	.154
Contact with extension agents	66	57.9	48	42.1	11.89	4	.018*
Farm consultants	82	67.8	39	32.2	28.37	4	.000***
forward contract	24	29.3	80	70.7	12.12	4	.016*
Applying cropping advice	54	45.4	65	54.6	5.12	4	.286
Save money	58	50.4	57	49.6	29.72	4	.000***
Off farm investment	48	41.7	67	58.3	11.55	4	.021*

* $P< 0.05$; ** $P< 0.01$, *** $P< 0.001$.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

consultant are free of charge, these strategies were adopted by 57.9 and 67.8 percent of farmers. However, 45.4 percent of them used cropping advices in their farms.

Relationship between Perception and Application of Risk Management Strategies

Chi square test was used to examine the relationship between farmers' perception of individual strategies and their application. The results are presented in Table 7. Regarding four strategies, i.e. applying cropping advice, hedging, decrease in future debts, and production at lowest possible cost there were no significant effects. In other words, the application of the strategies was not influenced by farmers' perceptions. For other strategies, there were significant relationships between perception and application. This means that the application of strategies was in relation with their perception. It can be concluded that despite the fact that perception of risk management strategy implies the importance that farmers give to the strategy, it does not necessarily mean that they are applying it. According to Meuwissen *et al*. (2001) the application of a strategy requires situations that favorable perception is one of them.

CONCLUSIONS

In present study, perceptions of potato growers toward risks and risk management strategies as well as their risk management behavior were examined. Regarding willingness to take risk, the respondents were divided into Less Risk-Averse and More Risk-Averse groups with more than half of the respondents being risk-averse.

Generally, potato price volatility, marketing and sale, and potato yield variability were perceived as important sources of risk. More detailed analyses of the perceptions show that Less Risk-Averse farmers assigned less importance than their counterparts to all sources of risk. Among other things, price, yield, input costs and subsidy elimination were sources scored as very highly important by More Risk-Averse farmers. Change in planting and harvesting dates, renting/sharing farm machinery, hedging and change in irrigation systems were strategies perceived as highly important. Instead of risk sources, Less Risk-Averse farmers marked higher importance to management strategies than the other group. Results showed that regarding four strategies, i.e. applying cropping advice, hedging, decrease in future debts and production at lowest possible cost, there were no significant effects between perception and application. According to this result, application of a strategy requires situations that favorable perception is only one of them. The results of the research provide useful insights for farmers, agricultural extension and advisory services, agricultural insurance sector, insurance and risk researchers and especially, for agricultural policymakers on the brink of subsidy targeting policy.

REFERENCES

1. Ahsan, D. A. and Roth, E. 2010. Farmers' Perceived Risks and Risk Management Strategies in an Emerging Mussel Aquaculture Industry in Denmark. *Mar. Resour. Econ*., **25**: 309–323.
2. Akcaoz, H. and Ozkan, B. 2005. Determining Risk Sources and Strategies among Farmers of Contrasting Risk Awareness: A Case Study for Cukurova Region of Turkey. *J. Arid Environ*., **62**: 661–675.
3. Ansari, V., Salami, H. and Veeman, T. 2014. Distributional Consequences of Subsidy Removal from Agricultural and Food Industry Sectors in Iran: A Price-based SAM Analysis. *J. Agr. Sci. Tech*., **16**: 1-18
4. Beal, D. J. 1996. Emerging Issues in Risk Management in Farm Firms. *Rev. Marketing Agric. Econ*., **64**: 336–347.
5. Boehlje, M. D. and Lins, D. A. 1998. Risks and Risk Management in an Industrialized Agriculture. *Agric. Fin. Rev.,* **58**: 1–16.
6. Boggess, W. G., Anaman, K. A. and Hanson, G. D. 1985. Importance, Causes, and

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

Management Responses to Farm Risks: Evidence from Florida and Alabama. *Southern J. Agric. Econ.*, **17**: 105-116.
7. Cochran, W. G. 1977. *Sampling Techniques*. John Willey and Sons, New York.
8. Ehsan A., Tehrani, R. and Eslami-Bigdeli, G. R. 2008. Investigation of Risk Averseness Coefficient and Production Variance in Risk Management: A Case Study of Dezful Tomato Growers. *Eqtesad-E Keshavarzi Va Towse'e* **61**: 17-35. (in Persian)
9. Flaten, O., Lien, G., Koesling, M., Valle, P. S. and Ebbesvik, M. 2004. Comparing Risk Perceptions and Risk Management in Organic and Conventional Dairy Farming: Empirical Results from Norway. Working Paper 2004-21, Norwegian Agricultural Economics Research Institute, Oslo.
10. Goodwin, B. K. and Ker, A. P. 1998. Revenue insurance: a new dimension in risk management, *Choices*, **13**: 24-27.
11. Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. 1998. *Multivariate Data Analysis*. 5th Edition, Prentice Hall, Upper Saddle River, NJ.
12. Harwood, J., Heifner, R., Coble, K., Perry, J. and Somwaru, A. 1999. *Managing Risk in Farming: Concepts, Research, and Analysis*. Economic Research Service, US Department of Agriculture, Washington.
13. Hasanpanah, D., Nikshad, k., Hasani, M. and Aghazadeh, B. 2003. Potato in Ardabil Province, Ardabil Agriculture Jihad Organization. 64 PP. (in Persian)
14. Khatami, S. K. 2012. Risk and Risk Management Behaviors: A Case Study in Dairy Cattle Farms of Islamshahr Township of Tehran Province. MSc. Thesis, University of Mohaghegh Ardabili, Iran. (in Persian)
15. Koesling, M., Ebbesvik, M., Lien, G., Flaten, O., Valle, P. S. and Arntzen, H. 2004. Risk and Risk Management in Organic and Conventional Cash Crop Farming in Norway. *Acta Agric. Scand. Sect. C Food Econ.*, **1**: 195- 206.
16. Krogmann, U., Gibson, V. and Chess, C. 2001. Land Application of Sewage Sludge: Perceptions of New Jersey Vegetable Farmers. *Waste Manage. Res.*, **19**: 115–25.
17. Martin, S. 1996. Risk Management Strategies in New Zealand Agriculture and Horticulture. *Rev. Market. Agric. Econ.,* **64**: 31- 44.
18. Meuwissen, M. P. M., Huirne, R. B. M. and Hardaker, J. B. 2001. Risk and Risk Management: An Empirical Analysis of Dutch Livestock Farmers. *Livestock Prod. Sci.*, **69**: 43-53.
19. Ortmann, G. F, Woodburn, M. R. and Levin, J. B. 1995. Dimensions of Risk and Managerial Responses to Risk on Commercial Farms in Kwazulu-Natal, South Africa: Contributed Papers. *Proceedings of 10th Intl. Farm Management Cong.*, IFMA, The University of Reading, 10–15 July, 1995, UK.
20. Patrick, G. F. and Musser, W. N. 1997. Sources of and Responses to Risk: Factor Analyses of Large-scale US Corn-belt Farmers. In: "*Risk Management Strategies in Agriculture: State of the Art and Future Perspectives*", (Eds.): Huirne, R. B. M., Hardaker, J. B. and Dijkhuizen, A. A.. Mansholt Studies, Wageningen Agricultural University, Wageningen, **7:** 45-53.
21. Roosta, K., Faraj-Ollah Hosseini, S. J., Chizari, M. and Hosseini, S. M. 2008. A Study of Factors that Affect the Capability of Farmers in Risk Management (Case Study: Wheat Producers in Khorasan Razavi Province). *Quarterly Iranian Journal of Agricultural Economics and Development Research*, **40-2(3)**: 129-143. (in Persian)
22. Salami, H., Sadat Barikani1, H. and Noori Naeini, M. S. 2012. Can Agriculture Be Considered a Key Sector for Economic Development in an Oil Producing Country? The Case of Iran. *J. Agr. Sci. Tech.*, **14**: 1-10.
23. Skees, J. R., Harwood, J., Somwaru, A. and Perry, J. 1998. The Potential for Revenue Insurance in the South. *J. Agric. Appl. Econ.*, **30**: 47–61.
24. Tabatabaei, F., Pezeshki-Rad, G. and Feli, S. 2010. Factors Affecting Adoption of Risk Management by Dairy Cattle Farmers in Tehran Province. *Agricultural Extension and Education Researches*, **3(2):**51-63. (in Persian)
25. Turkamani, J. 2000. Comparison and Assessment of Major Methods of Farmers Risk Attitude Measuring, a Case Study in Dairy Farming. *Eqtesad-E Keshavarzi Va Towse'e*, **31**: 31-55. (in Persian)
26. Wilson, P. N., Luginsl, T. R. and Armstrong, D. V. 1988. Risk Perceptions and Management Responses of Arizona Dairy Producers. *J. Dairy Sci.*, **71**: 545–551.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]

ادراک ریسک سیب زمینی کاران: مطالعه موردی در استان اردبیل ایران

ا. باقری، ح. شعبانعلی فمی

چکیده

هدف از این تحقیق بررسی ادراک سیب زمینی‌کاران از منابع ریسک، راهبردهای مدیریت ریسک و رفتارهای مدیریت ریسک است. این تحقیق به روش پیمایشی انجام شد. داده‌های مورد نیاز با استفاده از نمونه‌ای متشکل از ۱۲۸ کشاورز استان اردبیل در سال زراعی ۱۳۹۲ به دست آمد. پاسخگویان به دو گروه کمتر ریسک گریز و بیشتر ریسک گریز تقسیم شدند. نتایج نشان داد که بیش از نیمی از پاسخگویان در گروه بیشتر ریسک گریز قرار داشتند. به طور کلی، ریسک‌های قیمت سیب زمینی، بازاریابی و عملکرد مهم‌ترین منابع ریسک از دیدگاه آنان بودند. از نظر کشاورزان بیشتر ریسک گریز قیمت محصول، عملکرد، هزینه نهاده‌ها و حذف یارانه‌ها مهم‌ترین منابع ریسک بودند. تغییر در زمان عملیات زراعی، استفاده مشترک از ماشین آلات و پیش‌خرید نهاده‌های تولید راهبردهای مهمی برای مدیریت ریسک تلقی شدند. کشاورزان کمتر ریسک گریز نسبت به همکاران خود برای راهبردهای مدیریتی اهمیت بیشتری قایل شده بودند. به استثنای بعضی از راهبردها، بین ادراک و رفتارهای مدیریت ریسک آنان همخوانی وجود داشت. نتایج همچنین نشان داد که اثرات معنی‌داری بین ادراک کشاورزان نسبت به راهبردها و کاربست آنها وجود داشت. با توجه به زمان اجرای سیاست هدف‌مندی یارانه‌ها در کشور، نتایج این تحقیق می‌تواند برای سیاست‌گذاران برنامه‌های ترویج و خدمات مشاوره‌ای کشاورزی قابل توجه باشد.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.21.9]