Factors Affecting Risk Management among Women Rice Farmers in Sari, Iran

Mehdi Charmchian Langerodi

The present study investigated factors affecting risk management by women rice farmers in the township of Sari in Iran. The statistical population comprised 1677 women who cultivate rice in Sari; 248 women were selected for the study using stratified random sampling. The data was analyzed using descriptive and inferential statistics with SPSSWin16 software. The Chronbach’s alpha was 0.84 and the ordinal theta was 0.89. It was found that the women rice farmers were more willing to consult with agricultural experts, were aware of appropriate planting and harvesting times and used collaborative rice farming, such as for planting, in their risk management. Risk management among women rice cultivators in Sari County was influenced by numerous factors. It was found that 29.3% of the variance in risk management by the women was determined by the extent of financial difficulty, their education levels and borrowing resources.

Abstract

Keywords: Risk management, Paddy farmers, Borrowing resources, Sari
INTRODUCTION
Agriculture relies on nature and farmers face environmental, social, financial and legal issues that makes farming to be consistently and strongly associated with risk (Fraise et al., 2006). Agriculture can be considered to be the most risky economic venture. Some risks, such as the risk of natural occurrences, cannot be controlled by farmers, but other types of risk, such as the risk of weeds, can be controlled or eliminated (Ghorbani and Jafari, 2009). Of the 40 recognized types of natural disaster, 31 have been known to occur in Iran (Amini et al., 2002). Given that the range of agricultural activities having critical risk are diverse and the climate can vary widely, more sophisticated services are needed to meet the demands, cope with hazards and decrease risk (Ertiaee and Chizari, 2006).

Risk is the assurance of future failure in relation to previous loss (Amini, 2011). Ahmadi (1999) listed several main sources of risk that farmers face. Economic risk includes price fluctuations for raw materials such as seed and fertilizer and for machinery at the pre-market delivery stage, difficulty obtaining bank credit and loans, price volatility for products in the post market delivery stage, inconsistent government policies for products and global fluctuations in the price of products. Social risk includes theft of crops, produce and agricultural machinery and war. Nature-related risk includes natural disasters, climate change, agricultural pests and disease. Market risk includes changes in the price of raw materials and products and increasing interest rates. The present study investigated factors affecting the risk management among women who cultivate rice in the township of Sari.

Women comprise more than half of the world population. Two-thirds of the global labor force is women, but only 10% of the global income and 1% of global assets are owned by women (Marofi and Hamidee, 2001). While bearing in mind the pivotal role that women play in care and maintenance of the family, they must be considered a key developmental element. The grim reality is that the position of women is undesirable on the international level (Sajadi, 2009). Women in rural Iran participate equally with men seeding, transplanting, and winnowing crops and maintaining livestock (Shahbazi, 2002). The current number of women in rice production in Sari and its services areas is 1677 (Jihad-e-Keshavarzi Management of Sari, 2012).

Understanding how women rice farmers deal with risk is essential for educators, agriculture-related industries such as insurance, and policy-makers. If the attitudes of these women toward risk are accurately recognized, risk management strategies, risk-related educational programs and risk strategies can be designed to meet their needs. The goal of the present study was to model risk management by women rice farmers in Sari.

Tabatabae et al. (2013) studied the adoption of risk management among livestock breeders in Tehran. They found that 49% of breeders showed an average level of risk management. Correlation analysis indicated that there was a significant positive correlation between risk management and distance from ranch to home, amount of investment, degree of debt, annual income, and number of livestock and use of information resources. Linear multiple regression analysis revealed that the amount of investment, annual income and the awareness of the risk-related factors prompted 50.90% of breeders to change their approaches to risk management.

Alibigi et al. (2012) used a structural model to identify social capital factors affecting risk-taking by rapeseed farmers in Kangavar and concluded that the level of the components and farmer risk management was average. They found there was a significant positive relationship between social capital and the practice of risk management by farmers. Garavandi and Alibige (2012) identified factors affecting the behavioral reaction of corn farmers in Garmser to risk and concluded that it was mainly devoted to risk aversion and was influenced by age, level of education, field ownership, and participation in extension classes. Age had the greatest effect on the behavioral response of farmers toward risk.

Alipour and Abdolahieefar (2011) maintain that at least 10 major types of risk threaten agricultural producers. Risk that can generally be controlled includes market risk, risk associated with production input, physical risk to the workforce, financial loss, risk associated with the information system and political risk. Risks such as natural disasters cannot be easily controlled and the human resources and capability needed to manage these risks is curtailed by the inad-
quacy and inefficiency of technological and scientific facilities.

Ghorbani and Jafari (2009) investigated factors influencing the degree of agricultural product risk for farmers in north Khorasan province and concluded that the age of the farmer, field ownership and working outside the farm had a significant negative effect on the degree of agricultural product risk. Participation in other agricultural activities, area under cultivation, extent of prior risk, and participation in a wheat supervision project had a significant positive effect on the adoption of risk management by farmers.

Zamani et al. (2009) considered agricultural insurance as an important mechanism for dealing with the inevitable risks to agriculture and the most appropriate strategy to decrease loss. Kohansal and Ghorbani (2008) argue that agriculture is inherently risky and insurance can be one way to decrease risk. Rostami (2007) asserts that factors such as high level of literacy, having a second non-agricultural job, increasing land ownership and full insurance coverage services increase the reliability and trust in farmers increases the farmer risk factor. Tiraee Yari (2002) showed that there was a significant positive relation between agricultural working record, area under cultivation, total agricultural land, communication with extension agents and experts and close contact with agricultural service centers and risk management.

Torkamani and Ezatabadi (2001) concluded that physical and financial assets, such as off-farm income, area under cultivation and education level had significant positive effects on farmer risk management. Ghorbani (2000) studied

Table 1: Expert perspective on risk management methods

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<th>Variables</th>
<th>Consult experts</th>
<th>Participate in training courses</th>
<th>Use new technologies</th>
<th>Adopt extension recommendations</th>
<th>Use proper drainage</th>
<th>Change economic policies</th>
<th>Insure crops</th>
<th>Diversify investment</th>
<th>Promote maintenance and savings</th>
<th>Membership in associations</th>
<th>Combatting weeds</th>
<th>Proper planting and harvest</th>
<th>Use new irrigation methods</th>
<th>Have adequate savings</th>
<th>Plant crops with lower risk</th>
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<th>Diversify production</th>
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ied the effect of insurance on wheat productivity of farmers in Mazandaran Province. He concluded that there was a positive effect for insurance on wheat production and productivity and that the level of insurance coverage by farmers participating in the wheat insurance project, optimal use of machinery and selection of high quality seed based on technical and agricultural advice were the major risk management practices.

Moghadasi (1997) studied risk-taking and concluded that most farmers practiced risk aversion. He recommended extension training about new technologies such as pesticides, fertilizers and improved seed to increase the level of production and as important factors in risk management.

Deshmukh and Khatri (2012) studied agricultural insurance in India and evaluated the development of agricultural insurance in India. They identified the types of risk that threaten crop yield in India and considered agricultural insurance to be a risk-reduction mechanism to decrease risk from natural disasters. Khuu and Weber (2012) concluded that western Australian farmers take risks for threats such as hail, fire and that paying insurance premiums increased when changes were made to insurance and risk management policies.

Liu et al. (2010) assessed the demand for weather index insurance among households in Anhou Province, China. They interviewed 660 households in 22 villages in the region about risks faced by households, mechanisms to deal with risk and the willingness to pay for weather index insurance. The results showed that the biggest weather-related risks were drought and floods. They found that farmers tend to pursue non-agricultural employment and borrow money from relatives and friends. Many farmers were willing to obtain weather index insurance. The farmers who were strongly affected by climatic conditions were more likely obtain insurance.

Lu et al., (2008) reported that the farmers show different risk behaviors depending on their financial potential, type of farming, amount of...
arable land and income. The Organization for Economic Co-operation and Development (2009) researched agricultural risk management and found that providing a competitive business environment with guidelines and rules encouraged individual responsibility among farmers for risk management and facilitated the flow of information about risks for effective and efficient risk management.

Velandia et al. (2009) examined factors affecting use of an agricultural risk management mechanism and stated that off-farm income, education and age had meaningful relationships with adoption by farmers of risk management mechanisms. Olarinde et al. (2007) concluded that natural, social, economic and technical risks existed among the corn farmers of Nigeria.

Steven et al. (2003) argued that the best approach to risk management was to obtain information, especially the private sector. Meuwissen (2000) showed that farmers felt that price and production risks are the most important risks. They introduced insurance as a risk management approach and believed that geography, type of farm and organizational infrastructure increased farmer risk management.

Shrapnel and Davie (2000) showed that personal and social features are tools to identifying how people perceive risk. The present study identifies risk factors among women rice farmers in Sari. Tables 1 and 2 show risk management methods and factors influencing risk management and risk from the expert prospective, respectively.

RESULTS AND CONCLUSIONS
Table 3 showed the frequency distribution for age and work experience of women rice farmers. The results indicated that the average age of women was 46.68 years and their average work experience was 26.17 years, which represents good work experience on paddy land. Table 3 reveals that 25.2% of women had high school diplomas and 23% had completed intermediate school.

The results showed that the average area of land owned by women was 2845.56 m². Because of inaccessibility of data, the mean was not a good indicator for making conclusions, thus, other central tendency measures were used. The mode and median for the area of rice land owned by women were 1,000 m², which suggests that the area of land owned by women was low. Table 3 indicated that the average financial difficulty for the women was high. Women rice farmers moderately adopted risk management methods. They were more willing to consult with agricultural experts, have awareness of appropriate planting and harvesting times and collaborate with other farmers for planting (Table 4). The most important sources of information were associations of women rice farmers, other woman rice farmers and participation in agricultural extension classes (Table 5).

The woman rice farmers showed an average level
for obtaining loans. They were most likely to obtain loans from friends and neighbors and also to obtain financing from winning the lottery (Table 6).

Table 7 showed there was a statistically significant relationship between information resources, borrowing resources, degree of financial difficulty in rice cultivating, rice cultivation experience and education levels with risk management methods.

The use of risk management by women rice farmers in Sari was influenced by numerous factors; 29.3% of the variance in risk management was determined by degree of financial difficulty, education level and borrowing resources (Table 8). The regression line equation is:

\[ Y = 0.843 + 0.395 \text{(financial problems)} + 0.209 \text{(education)} + 0.187 \text{(borrowing resources)} \]

**DISCUSSION AND SUGGESTIONS**

There was a significant positive relationship between information resources, borrowing resources, extent of financial difficulty, rice cultivation experience, and educational level with risk management methods. Tabatabaee et al. (2013) stated that the extent of borrowing affected risk management. Three main areas of government intervention for risk management and coping that have been studied broadly in developing countries are: insurance, saving/credit and safety nets. Credit provision may allow for better risk coping (Cervantes-Godoy et al., 2013). Tiraee Yari (2002) pointed to agricultural experience affecting risk management. Garavandi and Ali-bige (2012), Monfared (1995) and Torkamani and Ezatabadi (2001) believe that educational...
level affects risk management, which is consistent with the results of this study. The farm management techniques that sustainably increase productivity and reduce production risk must be delivered to farmers, especially smallholders, by both the private and the public sector (Diouf et al., 2012).

The following recommendations merit attention:

• Women should be encouraged to pursue off-farm income sources and occupations as risk management methods. Collaborative rice farming and consulting agricultural experts are other forms of risk management.

• There is a relationship between information resources and level of risk management. Recommended sources of information are women rice farmer associations, other women farmers, and participation in agricultural educational programs.

• Consulting with experts requires that these experts have technical and communicative skills and be accessible to the women farmers.

• There is a relationship between information resources and the application of risk management methods. Increasing the knowledge and awareness of women farmers about the sources of risk increases risk management. This should be regarded as a mission for agriculture extensions.
Borrowing sources, the extent of farmer financial difficulty, work experience and educational level should be considered when advocating risk management methods to women rice farmers.

**ACKNOWLEDGMENTS**

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**REFERENCES**


* Mean, ** Standard deviation, 3 Coefficient of variation, 4 Rank
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