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A study on the risk perceived by farmers of Punjab

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ABSTRACT

Risk perception encompasses the mental processing of risk information and coping mechanisms that people use in dealing with uncertain outcomes. The risk in Punjab agriculture cannot be defined in a traditional manner as almost entire cultivated area is under assured irrigation. Thus unconventional risk in Punjab agriculture and the farmers' perception regarding this risk needs to be studied. In the present study risk has been studied under the categories of production, price, financial and technology which is estimated by their prevalence of occurrence as perceived by the farmers. The respondents perceived highest production risk in paddy (mean score 11.31) and maize (mean score 15.70), financial and credit risk in wheat (mean score 11.20) and price or market risk in kinnow (mean score 8.52) and potato (mean score 16.36). Access and availability of agricultural insurance can change the attitude of the farmers and induce in them ability to take decisions which otherwise would not have been taken due to aversion to risk. Such decisions can lead a way to the crop diversification in the state.

Keywords: Risk; risk perception; risk mitigation; agricultural insurance

INTRODUCTION

Agricultural risk is associated with negative outcomes stemming from imperfectly predictable biological, climatic and price variables. These variables include natural adversities (pests and diseases) and climatic factors not within the control of the farmers. These also include adverse changes in both input and output prices. Different factors of risk that affect agriculture can be classified into five types viz production risk, price or market risk, financial and credit risk, technology risk and personal risk (Hardaker et al 1997). According to Sjoberg (1998) risk perception is all about the thoughts, beliefs and constructs of human beings. So risk perception encompasses the mental processing of risk information and coping mechanisms that people use in dealing with uncertain outcomes. Risk perceptions influence an individual's risk taking behaviour (Keil et al 2000).

Punjab agriculture has a dominance and specialization of rice-wheat production system which can be attributed to the large scale adoption of high yielding technologies, favourable policies and massive investment in the irrigation and power sectors. Agricultural production can vary widely from year to year due to unforeseen weather, disease/pest infestations and/or market conditions causing wide swings in yield and commodity prices. The risk in Punjab agriculture cannot be defined in a traditional manner as almost entire cultivated area is under assured irrigation. The impact of climatic extremes gets mitigated by increased dependence on ground water resources in the period of extreme events. As stated by Sidhu and Vatta (2012) the unconventional risks emerging in Punjab agriculture are rapid fall in ground water due to decline in rainfall, unfavourable changes in temperature during critical periods of growth of wheat and increasing incidences of insect-pest attacks on the cotton crop due to rise in humidity caused by continuous flooding of paddy fields. It has a significant impact on the cost of production of paddy and cotton due to increased expenditure on irrigation and insecticides. Temperature is also expected to negatively influence the wheat yields. Despite all this the variability in yield of paddy and wheat is very low and their production still seems to be risk free. Cotton is an important crop where the production risk appears to have increased during the recent period. On the other hand the production and marketing risk in almost all the vegetable crops as well as fruits grown in the Punjab seems to be very high and has discouraged the large scale adoption of these crops by the farmers resulting in a decline in the extent of crop diversification and now the diversification index is 0.58. Addressing the issue of risk in cotton, fruits such as kinnow and major vegetable crops may change the entire scenario of crop production in the state. This will not only diversify the cropping pattern and reduce the production and marketing risk but will also bring a substantial improvement in the farm income (Sidhu and Vatta 2012). During production and marketing period farmers have to use risk management strategies and techniques and agricultural insurance is the only mechanism available to safeguard against production risk (Raju and Chand 2008).

A better understanding of farmers' risk perceptions and how those perceptions influence behaviour is integral in developing of sustainable land and natural resource use and effective management policies and programs (Krogmann et al 2001). Thus unconventional risk in Punjab agriculture and the farmers' perception regarding this risk needs to be studied. The six important crops viz paddy, wheat, maize, kinnow, potato and cotton whose perceived risk requires to be studied were identified for the study.

METHODOLOGY

The variable in the study is 'risk' being perceived by the farmers regarding

the growing of various crops. It has been operationally defined as the possibility of loss, failure or danger threatening the farmer. It has been studied under the categories of production, price, financial and technology risk which is estimated by their prevalence of occurrence during the cropping season both in Kharif and Rabi as perceived by the farmers. Various items were enlisted for the above mentioned types of risk. A three point continuum of often, seldom, and never with scores of 3, 2, and 1 respectively was used to measure it. The different risk types were ranked for individual crop by deriving the mean score for each risk type as being perceived by the farmers.

A well structured interview schedule was prepared for interviewing the respondent farmers. A total of 224 insured farmers the list of whom was collected from both public and private sector insurance companies and 46 non-insured farmers were selected as respondents for the study. Out of these 224 farmers 22 farmers were the contract farmers who had insured the potato crop being grown in Sangrur district of the state, 102 farmers had insured paddy for the Kharif 2008 season and the rest 100 farmers had insured their cattle under livestock insurance scheme. Since all the 270 respondent farmers grew paddy and wheat they were interviewed for both the crops. Out of 102 farmers insuring paddy 17 farmers belonged to Kalanaur block of Hoshiarpur district of Punjab. Since kinnow and maize are prevalently grown in this area these respondents were interviewed for these two crops. The sample of 22 respondent contract farmers was interviewed for potato crop. Rest 46 respondent farmers were randomly selected from Bathinda district of Punjab (cotton belt) for studying the risk perceived for the cotton crop.

RESULTS and DISCUSSION

Risk prevalence as perceived by farmers (Table 1)

Paddy is the major food grain crop grown by the farmers of Punjab in Kharif for which the instability index is very low ranging below 0.10 (Sidhu and Vatta 2012). It can be seen that all the respondents including insured and non-insured farmers perceived production risk (mean score 11.31, rank I) to be maximum. Production risk accrued more due to the deficit of rainfall during the transplantation of paddy which clearly indicates that the respondents though met out this risk from assured access to the groundwater perceived the deficit of water as the major risk to the production of paddy. This is one of the concerns regarding the overexploitation of ground water resources during the drought years which are becoming more prevalent in the recent years. The perception of this risk as the most important one for the farmers influenced their risk coping behaviour by increased investment on deepening of tube wells and submersible pumps thus leading to overexploitation of ground water. The

financial and credit risk was second most prevalent risk perceived by the respondents (mean score 11.20, rank II). Since the respondents perceived the labour wage problem during the transplanting of the crop the price or market risk was ranked III with a mean score 7.49. The technological and personal risks were ranked IV and V respectively with mean scores of 4.10 and 4.00 respectively.

Wheat is the major Rabi crop grown in Punjab. The financial and credit risk was highest (mean score 11.20, rank I) followed by production risk (mean score 8.84, rank II). The variability in temperature during January to March which coincided with tillering stage and reduced the yield of the crop considerably accrued the production risk. The price/market, personal and technology risks were ranked as III, IV, and V respectively with mean scores of 7.49, 4.00 and 3.85.

Maize crop is an important crop for Punjab which at this juncture is direly looking forward for diversification. The production risk was highest (mean score 15.70, rank I) followed by financial and credit risk (mean score 12.20, rank II) and market/ price risk (mean score 8.20, rank III). The production risk could be due to non-diversification in growing of non-paddy crops. The climatic variability, high temperature during flowering, damage due to cold, inadequate water supply and high temperature during grain filling period were perceived by the farmers to pose great risk to the production of maize. The respondents were concerned about the fall in price of the harvested crop as detrimental for the production of it. The technology and the personal risk were ranked IV and V with mean scores of 4.00 and 1.00 respectively.

Kinnow is a high value crop having high risk in production. The respondents perceived the highest price or market risk (mean score of 8.52, rank I) in kinnow followed by production risk (mean score of 7.23, rank II). The findings are in line with the work of Sidhu and Vatta (2012) who indicated that the production and marketing risks of fruits grown in the state were very high and discouraged the large scale adoption of fruits by the farmers resulting into decline in the extent of crop diversification. The financial and credit risk was ranked III (mean score of 5.00) followed by technology (mean score of 4.00, rank IV) and personal risk (mean score of 1.00, rank V).

Potato cultivation in Punjab is concentrated in few districts viz Ludhiana, Kaparthula, Jalandhar, Fathegarh Sahib and Patiala region which is even recognised as agri-export zone where about 500 acres land is under contract farming. Farmers growing potato for Pepsico at Fathegarh Sahib have been insured under weather insurance sheme by ICICI, Lombard General Insurance Company Ltd. Of these

Table 1. Different types of risk perceived by the farmers

Category of farmer	Type of risk				
	Production	Price/market	Financial and credit	Technology	Personal
Paddy farmers (n= 270)					
Mean Score	11.31	7.49	11.20	4.10	4.00
Rank	I	III	II	IV	V
Wheat farmers (n= 270)					
Mean Score	8.84	7.49	11.20	3.85	4.00
Rank	II	III	I	V	IV
Maize farmers (n= 17)					
Mean Score	15.70	8.20	12.20	1.00	4.00
Rank	I	III	II	V	IV
Kinnow farmers (n= 17)					
Mean Score	7.23	8.52	5.00	1.00	4.00
Rank	II	I	III	V	IV
Potato farmers (n= 22)					
Mean Score	15.27	16.36	5.00	1.00	4.00
Rank	II	I	III	V	IV
Cotton farmers (n= 46)					
Mean Score	7.10	5.30	8.60	1.00	4.00
Rank	II	III	I	V	IV

22 farmers were selected as respondents and interviewed for their perceived risk in cultivation of potato. Here market risk was perceived as the most important (mean score of 15.27, rank I). The production risk was ranked II (mean score 15.27). The financial, technology and personal risks were ranked III, IV and V respectively. Since it is perishable with inadequate number of cold storages and glut in the market the price risk was perceived as the most important risk for this crop.

Cotton being one of the major crops of Punjab is grown in the south-western region of state ie in the districts of Firozepur, Faridkot, Muktsar, Bathinda, Mansa. The financial and credit risk was the most important risk (mean score of 8.60, rank I). The cultivation of this crop involved the use of high value insecticides and pesticides for control of bollworm which created a burden on the farming community. The production risk was ranked II (mean score 7.10). The findings are in line with

those of Sidhu and Vatta (2012) who stated that the production risk in case of cotton had been estimated to have increased in recent years accounting from continuous flooding of rice fields which has created favourable conditions for breeding and perpetuation of pest epidemic for sensitive crops like cotton. The price/market risk was ranked III (mean score 5.30), personal risk IV (mean score 4.00) and technological risk V (mean score 1.00).

Preference of farmers for risk management strategies (Table 2)

The respondents were interviewed regarding their preference for various risk managing strategies in practising agriculture. There were a total of 27 items for which the respondents were interviewed of which 6 strategies were preferred.

The data illustrate that all the respondents preferred agricultural insurance and the fixing up of minimum support price (MSP) of all crops as the best risk management strategies whereas 82.22 per cent of the respondents preferred timely weather forecasting. About 10.37 and 8.14 per cent respondents preferred contract farming and infrastructure development for storage respectively. Further the study findings revealed that as little as 0.74 per cent of the respondents preferred value addition as the risk management strategy.

CONCLUSION

The significant findings of the study clearly indicate that the respondents perceived the production, price/market, financial/credit risk as the most important in cultivation up of the five crops. This has an important impact on the ability of policy makers to communicate risk analysis decisions in cases where such mismatches occur.

Table 2. Distribution of respondents according to their preference for risk management strategies (n= 270)

Risk management strategy	Respondents	
	Frequency	%
Contract farming	28	10.37
Agricultural insurance	270	100.00
Value addition/processing of perishable crops	2	0.74
Timely weather forecasting	222	82.22
Fixing MSP of all crops, vegetables and fruits	270	100.00
Infrastructure development eg cold storages, chilling centres, processing centres etc	22	8.14

The respondents preferred agricultural insurance and the fixing up of MSP of all crops as the best risk management strategies. Access and availability of agricultural insurance can change the attitude of the farmer and enable him to take decisions which otherwise would not have been taken due to aversion towards the risk. Such a decision can lead a way to the crop diversification in the state. Policy implications are suggested for incorporating this risk mitigating tool provided the crop specific insurance products are developed which needs to be promoted in the state.

The devising of such products should consider the most important risk perceived by the farmers ie marketing risk means coverage of insurance for certain period after harvest. This shall orient the risk averting behaviour of the farming community which shall definitely orient them to cultivate high value crops.

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