Correlates of Farmers' Variables with Productivity in Dryland Crops

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ABSTRACT

Dryland farming is way of life for a majority of Indian farmers. It is characterized by the resource poor, small and marginal farmers, a poor infrastructure and low investments in technology and inputs. Dryland farming means cultivation of crops purely under rainfed conditions where soil moisture is limited for crop growth. It is not possible to have any practical control over the occurrence of rainfall and drought. The best way is to live with the situation and find out ways and means of sustainable dryland farming. Dryland farming involves the use of low-cost, on-farm resource, simple and manageable technologies that are ecologically compatible, environmentally friendly and economically profitable. For achieving sustainability under dryland farming production, each and every aspect of crop production (nutrient and water management, soil and water conservation, pest and disease management, etc.) has to be taken care of. It is inevitable that the second green-revolution has to come from the dryland farming and accordingly the application of technology, inputs and investments has to be tailored to converts these so-called "grey areas into green". The South-West zone of Haryana offers ample scope for the development of dryland areas for production of dry land crops. This study highlights that the utilization of inputs, adoption of recommended crop production technologies and adoption of recommended resource conserving technologies had significant positive relationship with productivity of rapeseed & mustard and bajra. The variables such as farming experience and mass media use had the significant positive relationship with productivity of rapeseed & mustard and bajra. The technological variables, viz; adoption of recommended resource conserving technologies and personal variable like farming experience in cultivation of gram had significant positive relationship with productivity of gram.

Key words: *Productivity of dryland crops; Rapeseed and mustard; Dryland farming; Variables of dryland farmers:*

Dryland farming plays an important role in agricultural production of the country. Dryland farming is way of life for a majority of Indian farmers. It is characterized by the resource poor, small and marginal farmers, a poor infrastructure and low investments in technology and inputs. It contributes nearly half of the produce to the food basket of the nation and supports the life of a substantial chunk of the population. Dryland farming means cultivation of crops purely under rainfed conditions where soil moisture is limited for crop growth. It is not possible to have any practical control over the occurrence of rainfall and drought. The best way is to live with the situation and find out ways and means of sustainable dryland farming. Dryland farming involves the use of low-cost, on-farm resource, simple and manageable technologies that are ecologically compatible, environmentally friendly and economically profitable. These low-input methods seek to optimize the use of internal production inputs in ways that provide acceptable levels of sustainable farm yields over long term. The scientists should endeavour to develop intermediate, low-cost, location specific and need-based, cost-effective package of practices in addition to the existing technology to improve crop productivity. For achieving sustainability in agricultural production, each and every aspect of crop production (nutrient and water management, soil and water conservation, pest and disease management etc.) has to be taken care of. The dryland farming not only make important contribution to national food output but also sustains the livestock a

subsidiary enterprise of dryland farmers of the state. As the population of country is increasing day by day it has become difficult to feed such a burgeoning population in the near future. It is inevitable that the second green-revolution has to come from the dryland farming and accordingly the application of technology, inputs and investments has to be tailored to converts these so-called *"grey areas into green"*. The South-West zone of Haryana offers ample scope for the development of dryland areas for production of dry land crops. The total geographical area of Haryana state is 44.21 lakh hectares out of which South West dryland zone constitute 4.94 lakh hectares of total dryland area falls under low rainfall (250-500mm). The slight increase in the productivity of dryland crops leads to considerable increase in the production of foodgrains. Rapeseed and mustard, gram; and bajra are the major crops of Rabi and Kharif season, respectively, in this zone. There are no suitable alternative crops other than rapeseed and mustard and gram (Rabi crops) and bajra (Kharif crop) for dryland farming in this zone. It cannot be denied that production and productivity of rapeseed and mustard, gram and bajra have increased considerably under dryland conditions. Still, the average productivity of rapeseed and mustard, gram and bajra is quite low and it does not match the yields what the scientists are obtaining at the research stations. However, there is a big challenge before the agricultural scientists to sustain the present yield levels of these crops. With this background, the study entitled **"***Sustainability of dryland farming in South-West Haryana*" has been planned with the specific objective to study the relationship between independent variables and productivity level of selected dryland crops.

METHODOLOGY

The study was conducted in dryland farming zone of South- West Haryana. The districts, viz., Gurgaon, Mahendergarh and Bhiwani were selected keeping in view the highest percentage of dry farming area in net cultivated area. One block each from the above districts were randomly selected. Thereafter, two villages from each block were selected randomly, i.e., a total of six villages were randomly selected for the present study. Further 25 farmers from each village were selected randomly practicing dryland farming, i.e., a total of 150 farmers were randomly selected for this study . The major dryland crops, namely, Gram, Rapeseed and Mustard (Rabi crops) and Bajra (Kharif crop) were taken for the study. The productivity of the crops was selected as dependent variable and the inputs and technologies were considered as intervening variables, which affect the productivity. Besides this, nine independent variables, viz., education, farming experience, innovation proneness, risk orientation, scientific orientation, management orientation, farm size, extension orientation and mass media use were taken for the study.

The measurement of the variables was performed with the help of a well developed schedule. However measurement of variables such as risk orientation and scientific orientation was performed with the help of scale developed by Supe (1969), measurement of innovative proneness by means of scale developed by Feaster (1968) and measurement of management orientation by means of scale developed by Samanta (1969). The collection of data was carried out through personal interview and correlation co-efficient test was used to determine the nature of relationship between independent variables and the productivity of selected dryland crops through Ex-post facto research design (cause and effect) method.

RESULTS AND DISCUSSION

Relationship between independent variables and the productivity of dryland crops (Rapeseed and mustard, Gram and Bajra).

Relationship between independent variables and productivity of rapeseed and mustard : Relationship between independent variables and productivity of rapeseed and mustard: The correlation co-efficient was worked out to know the relationship between the various technological, personal, motivational, situational and extension variables of rapeseed and mustard growers and productivity of rapeseed and mustard (Table 1). It could be inferred from the table that the technological variables, viz., utilization of inputs, adoption of recommended crop production technologies and adoption of recommended resource conserving technologies were found to have significant positive relationship at 5 per cent level with productivity of rapeseed and mustard. Among the four personal variables, only the farming experience was found to have significant positive relationship at 5 per cent level with productivity of rapeseed and mustard. Regarding extension variables, only mass media use was found to have significant positive relationship at 5 per cent level with productivity of rapeseed and mustard.

Table 1. Relationship between the independent variables and the productivity of Rapeseed and Mustard (N=32)

S. No.	Variables	'r' values
1.	*Technological variables*	
(a)	Utilization of inputs	0.425**
(b)	Adoption of recommended crop production technologies	0.538**
(c)	Adoption of recommended resource conserving technologies	0.631**
2.	*Personal variables*	
(a)	Education	0.205
(b)	Farming experience	0.471**
(c)	Innovation proneness	0.293
(d)	Risk orientation	0.362
3.	*Motivational variables*	
(a)	Scientific orientation	0.243
(b)	Management orientation	0.217
4.	*Situational variables*	
	Farm size	-0.018
5.	*Extension variables*	
(a)	Extension orientation	0.388
(b)	Mass media use	0.479**

* Significant at 1 per cent level
** Significant at 5 per cent level

Table 2. Relationship between the independent variables and the productivity of Gram (N = 118)

S. No.	Variables	'r' values
1.	*Technological variables*	
(a)	Utilization of inputs	0.131
(b)	Adoption of recommended crop production technologies	0.196
(c)	Adoption of recommended resource conserving technologies	0.237**
2.	*Personal variables*	
(a)	Education	0.055
(b)	Farming experience	0.321**
(c)	Innovation proneness	0.149
(d)	Risk orientation	0.152
3.	*Motivational variables*	(a)
	Scientific orientation	0.134
(b)	Management orientation	0.144
4.	*Situational variables*	
	Farm size	-0.093
5.	*Extension variables*	
(a)	Extension orientation	0.165
(b)	Mass media use	0.231**

* Significant at 1 per cent level
** Significant at 5 per cent level

Relationship between the independent variables and productivity of gram: The correlation co-efficient of all the selected independent variables with productivity of gram are presented in Table 2.

It could be observed from the table that among the technological variables, only adoption of recommended resource conserving technologies was found to possess significant positive relationship at 5 per cent level with productivity of gram. In personal variables, farming experience was found to have significant positive relationship at 5 per cent level with productivity of gram.

Regarding extension variables, mass media use was significantly correlated at 5 per cent with the productivity of gram.

Table 3. Relationship between the independent variables and the productivity of Bajra (N=150)

S. No.	Variables	'r' values
1.	*Technological variables*	
(a)	Utilization of inputs	2.11**
(b)	Adoption of recommended crop production technologies	2.34**
(c)	Adoption of recommended resource conserving technologies	0.262**
2.	*Personal variables*	
(a)	Education	0.165
(b)	Farming experience	0.247**
(c)	Innovation proneness	0.198
(d)	Risk orientation	0.173
3.	*Motivational variables*	(a)
	Scientific orientation	0.186
(b)	Management orientation	0.201
4.	*Situational variables*	
	Farm size	-0.124
5.	*Extension variables*	
(a)	Extension orientation	0.161
(b)	Mass media use	0.320**

* Significant at 1 per cent level
** Significant at 5 per cent level

Relationship between independent variables and productivity of bajra: The data presented in Table 3 indicate the relationship between all the selected independent variables and productivity of bajra. It is evident from the table that among the technological variables, utilization of inputs adoption of recommended crop production technologies and adoption of recommended resource conserving technologies were found to have significant positive relationship at 5 per cent level with productivity of bajra. Among the four

personal variables, the farming experience was found to have significant positive relationship at 5 per cent level with productivity of bajra. Regarding extension variables, only mass media use was found to possess significant positive relationship at 5 per cent level with productivity of bajra.

The utilization of inputs, adoption of recommended crop production technologies and adoption of recommended resource conserving technologies had significant positive relationship with productivity of rapeseed & mustard and bajra (Table 1 and 2). Mustard is an important oilseed crop grown in Rabi season whereas bajra is mainly grown as a grain and fodder crop in Kharif season in South-West Haryana. It is a well known fact that both the crops are low energy crops and respond well to each one of the critical inputs viz. high yielding variety seeds, application of fertilizers and other management practices. The use of high yielding seeds would contribute about 40-50 per cent higher yields. Small supplement of nutrition can also result in large increase in the crop productivity. The blend of organic and inorganic fertilizer can boost productivity by more than 40 per cent. In addition to utilization of inputs and adoption of recommended crop production technologies, water is the limiting scarce resource in dryland farming. The adoption of recommended resource conserving technologies helps to maintain soil fertility and to conserve water.

The variables such as farming experience and mass media use had the significant positive relationship with productivity of rapeseed and mustard and bajra (Table 1 & 2). This kind of relationship is due to close association with dryland farming and exposure to various mass media use in getting the information and knowledge about recommended technologies.

The farmers are growing gram as a main pulse crop in Rabi season under dryland farming. The technological variables, viz; adoption of recommended resource conserving technologies in cultivation of gram had significant positive relationship with productivity of gram (Table 3). It is well known fact that the inputs and crop production technologies play a very important role in enhancing the productivity of gram. But the majority of gram growers had not utilized the most of recommended inputs and also not adopted the recommended crop production technologies because high cost involved in gram cultivation. According to them, the gram crop will not be profitable if they use high cost recommended inputs and crop production technologies. Majority of the gram growers are adopting indigenous technologies in addition to adoption of low cost recommended gram production technologies in order to achieve the maximum economic returns from the crop.

Some of the results of this study are in line with the findings of studies undertaken by *Vankataswamyreddy (1987)* and *Krishan (1996)*.

CONCLUSION

The scientists should endeavour to develop intermediate, low-cost, location specific and need-based, cost-effective package of practices in addition to the existing technology to improve crop productivity. For achieving sustainability in agricultural production, each and every aspect of crop production (nutrient and water management, soil and water conservation, pest and disease management etc.) has to be taken care of.

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