CORRELATES OF LEVEL OF ADOPTION OF PULSE PRODUCTION TECHNOLOGY

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Pulses occupy an important place in the agricultural economy of India. Pulses are grown over an area of 23 million hectares, which constitute 18 per cent of area under total crops. Yield of pulses range from 500 to 600 kg per hectare. Total yield of pulses got stagnated around 13 to 14 million tones per annum. In India, majority of people are vegetarian deriving about 86 percent protein requirements from plants and pulses appear to be major contributors. They are grown in all seasons and constitute around 8-10 per cent of entire foodgrain production in the country. But the yields keep dwindling every year and adoption of improved pulse cultivation practices assumes great importance for augmenting pulse production in India.

A package of improved cultivation practices termed pulse crop production technology has been generated and made popular by extension personnel and subject matter specialists among the farmers. But the farmers' adoption level seems to be low. There appear a gap between what is recommended and what is adopted. So a study (Triveni, 1992) has been planned with the following objectives :

1. To study the level of adoption of pulse production technology.
2. To study the relationship of socio-economic, psychological characteristics of farmers with the level of adoption of pulse production technology.
3. To study the contribution of independent variable to the variance of level of adoption of pulse production technology.

METHODOLOGY :

The data for the study have been collected from about 200 farmers of ten randomly selected villages of Pahasu and Siyana C.D. blocks of district Bulandshahr of Uttar Pradesh. The sample of respondents included 95 marginal farmers, 60 small farmers and 45 big farmers.

Level of adoption of pulse production technology was computed from a three point (full adoption, partial adoption and non-adoption) scale consisting of items on seed, method of sowing, sowing time, seed rate, seed treatment, rhizobium culture treatment, chemical fertilizers, irrigation, inter-culture and plant protection. Independent variable included were age, caste, education, family size, social participation, socio-economic status and knowledge.

Information relevant to the study was collected from the three categories of farmers through well-structured, pre-tested interview schedule. Appropriate scales were used to collect data. The data so collected was analysed and discussed for their adoption behaviour of pulse production technology. Correlation analysis was done to determine the association between the socio-economic, psychological characteristics of respondent with the level of adoption of pulse production technology. Stepwise regression analysis was done to assess the contribution of independent variables in the prediction of level of adoption of pulse production technology.

RESULTS AND DISCUSSION :

1. Level of adoption of pulse production technology among farmers : Farmers were

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found to adopt the various components of pulse production technology in varying degrees. As can be seen from the Table 1 about 93 per cent of respondents were adopting inter-culture, which ranks first among the ten practices. The practices that come second and third in terms of percentage of farmers adopting them were the irrigation and seed rate.

Table 1. Level of adoption of recommended practices of pulse production among the farmers

N=200

	Recommended Practice	Farmer's frequency	Percentage	Adoption score	Adoption Rank
1.	High Yielding Varieties	187	93.50	551	V
2.	Method of sowing	187	93.50	501	VI
3.	Sowing Time	187	93.50	490	VII
4.	Seed rate	186	93.00	596	III
5.	Seed treatment	51	25.50	135	IX
6.	Rhizobium culture treatment	23	11.50	48	X
7.	Fertilizers	152	76.00	575	IV
8.	Irrigation	178	89.00	660	II
9.	Inter-culture	186	93.00	788	I
10.	Plant protection	80	40.00	341	VIII

The reasons behind the three practices being assigned top ranks was that the farmers in general were adopting these simple practices as a matter of tradition in the region, especially, inter-culture. As far as irrigation is concerned, it is commonly available in all farmers' either through tubewells or canals. Finally the adoption of seed rate was also high among the respondents for the reason that this is a simple cultural practice.

So far as practices like adoption of rhizobium culture treatment, seed treatment and plant protection, which were assigned lower ranks are concerned, these practices were comparatively more complex and difficult to follow. These three practices involve use of poisonous chemicals. Farmers need to have a thorough knowledge of diseases and insect pests and their control measures. Thus level of adoption of simple cultivation practices was found to be high but that of complex practices was very low. Necessary educational efforts need to be taken up to educate farmers on the appropriate plant protection measures.

2. Socio-economic, psychological correlates of level of adoption : An attempt has been made to determine the socio-economic, psychological correlates of level of adoption of pulse production technology and the data were presented in Table 2 As can be observed from the Table, the level of adoption of pulse production technology by the respondents was found to be positively and significantly correlated with caste, education, social participation, socio-economic status and knowledge. No such correlation was observed with family size. However, in the case of age the relation has been found to be significant, but negatively, which means that younger the farmer higher will be the level of adoption. Indeed young farmers' level of adoption was high. Similarly, Katarya (1980) and Veeraiah, *et al* (1997) also found significant and negative relationship between age and adoption.

Table 2. Correlation coefficients between farmers' socio-economic characteristics and the level of adoption of pulse production technology

	Variable	Coefficient of correlation
1.	Age	-0.5913**
2.	Caste	0.4186**
3.	Education	0.4164**
4.	Family size	-0.0516
5.	Social participation	0.3122**
6.	Socio-economic status	0.3823**
7.	Knowledge	0.6581**

* Significant at 0.05 level of probability
** Significant at 0.01 level of probability

The significant positive correlation between level of adoption and education, caste, social participation, socio-economic status and knowledge would reveal a better picture–that highly educated, upper caste, participating well in social organizations and enjoying higher socio-economic status were found to be adopting more of improved pulse production technology.

3. Contribution of independent variables to the prediction of level of adoption of pulse production technology among farmers : As evident from the calculated 't' values, only four variables i.e., age, caste, socio-economic status and knowledge have made significant contribution to the prediction of adoption behaviour of farmers. The data reveals that the selected variables explained about 60 per cent of variation in the level of adoption of pulse production technology by farmers.

Age : The beta value of age was found to be negative thereby meaning that younger the farmer, more the level of adoption and vice-versa. It is quite logical that the farmers of young age are generally more enthusiastic to do more new things as their age allows them to take more risk than older people.

Caste : Caste was found to contribute significantly and positively towards variability in adoption level of farmers. This means that the farmers of higher caste were adopting more than the farmers of lower caste.

Socio-economic status : This variable was also found to contribute significantly and positively towards the variability in adoption level of farmers. This means that the farmers having higher socio-economic status were adopting more of the pulse production technology.

Table 3. Regression coefficient of gain in adoption of all farmers with independent variables

Variable	Constant	Coefficient of partial regression (b value)	Standard Error of Regression coefficient	Calculated 't' value	Coefficient of determination R^2
Age (X_1)		-0.214	0.042	5.025**	
Caste (X_2)		1.92	0.543	3.540**	
Education (X_3)		0.221	0.257	0.860	
Family size (X_4)	8.94	0.008	0.459	0.018	60.33
Social participation (X_5)		0.179	0.317	0.564	
Socio-economic status (X_6)		0.325	0.140	2.328**	
Knowledge (X_7)		0.674	0.095	7.068**	

F value = 41.22** D.F. = 192 *Significant at 0.05 level of probability, ** Significant at 0.01 level of probability.

Education: The contribution of education to the variability in the level of adoption of pulse production technology was found to be non-significant, thereby meaning that the education of respondents has no relation to the variance in the level of adoption.

Social participation: Social participation was found to contributing non-significantly towards the variability in the level of adoption. Kher (1992) and Sharma and Singh (2001) found similar results.

Knowledge: Knowledge of pulse production technology among the farmers was found to be one of the most important variables contributing to the prediction of level of adoption of pulse production technology by farmers. This means that knowledge of farmers was actually helping them to adopt the improved pulse production technology. Many researchers including Pathak and Samal (1992) found significant positive relationship between knowledge and adoption.

Thus, four variables–age, caste, socio-economic status and knowledge of pulse production technology were found to be the most important variables contributing to the prediction of level of adoption of pulse production technology. Therefore it can be suggested here that these four factors need to be taken care of to promote adoption of pulse production technology among farmers.

CONCLUSION :

From the above results, it can be concluded that there is a wide scope for planners and extension personnel to put efforts in the direction of complete adoption of improved package of practices of pulse cultivation through increasing the knowledge of young farmers from all caste groups in the villages. Knowledge was found to be the only variable, which can be manipulated here. Here it is to be noted that three components of pulse production technology need to be emphasized: rhizobium culture treatment, seed treatment, and plant protection. So all educational efforts using mass media and interpersonal communication channels need to be taken up for enhancing knowledge of pulse production technology among farmers.

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