

Adoption of Production Technology of Chilli in Guntur District of Andhra Pradesh

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ABSTRACT

A study was conducted in Guntur district of Andhra Pradesh with the objective of studying the relationship between selected profile characteristics and adoption behaviour of Chilli farmers. For the purpose of study 120 farmers growing Chilli crop were selected. Ex post facto research design was followed. The collected data were processed through descriptive statistics, correlation analysis and multiple regression analysis. The correlation analysis revealed that age, education, family type, annual income, extension contact, mass media exposure, scientific orientation, risk orientation and market orientation had positive and significant relationship with the adoption of recommended package of practices. Further, Multiple Linear Regression analysis showed that all the independent variables of owner farmers put together explained 83.34 per cent variation embedded with the dependent variable, adoption of Chilli farmers; while the independent variables of tenant farmers all together explained 79.50% variation in adoption of Chilli farmers.

Key words: Chilli; Adoption; Correlation; Owner farmers; Tenant farmers;

Spices especially Chillies are in huge demand in international market. In India Chilli has become almost an essential article of diet of rich and poor. India is not only the largest producer but also the largest consumer of Chilli in the world. India is known as the “Land of spices or spice bowl of the world”. Andhra Pradesh is the largest producer of Chilli in India followed by Karnataka, Maharashtra, Orissa, West Bengal, etc. Guntur district is one of the largest producer of Chilli in Andhra Pradesh. The output and productivity of any land could be increased by following recommended package of practices, and Chilli is no exception. Chilli output could be increased if the farmers adopt the recommended package of practices. For increasing the level of adoption farmers need to be convinced about recent production technologies. Agricultural technology is never completely accepted by the farmers in all respects, as such there always appears to be a gap between the recommended technology by the scientists and its modified form at the farmer’s level. A need of the day is to reduce the technological gap between the

agricultural technology recommended by the scientists and its acceptance by the farmers on their field. Keeping in view, the study entitled ‘Adoption behavior of Chilli farmers in Guntur district of Andhra Pradesh’ was undertaken with a specific objective to ascertain the association between extent of adoption of package of practices of Chilli and selected independent variables of owner and tenant farmers.

METHODOLOGY

The present study was taken up with the main objective to find the correlation between the adoption of the recommended package of practices in Chilli by the farmers of Guntur district of Andhra Pradesh and their profile characteristics. For the purpose of study sixty owner farmers and sixty tenant farmers thus constituting one hundred and twenty (120) farmers growing Chilli were selected at random from Sattenapalli, Pedakurapadu and Veldurthy mandals of Guntur district of Andhra Pradesh. The data was collected during 2013 with the help of structured interview schedule through

personal interview method. The collected data were processed through descriptive statistics, correlation analysis and multiple regression analysis.

The profile characteristics included both independent and dependent variables. The independent variables studied included age, education, land holding, farming experience, family type, family size, annual income, training exposure, source of credit, extension contact, mass media exposure, social participation, scientific orientation, risk orientation and market orientation for cultivation of Chilli crop. While the dependent variable studied included 'adoption of package of practices in Chilli crop as recommended by the Scientists of ANGRAU'.

The adoption in Chilli was studied with eleven items related to package of practices in Chilli crop and was measured on a three-point continuum namely, fully adopted, partially adopted and not adopted. Correlation analysis was done to know the relationship between independent and dependent variables. The Multiple Linear Regression equation is as follows:

$$Y = 19.27 - 0.043X_1 - 0.601X_2 + 0.386X_3 + 0.063X_4 + 1.860X_5 + 0.599X_6 + 0.170X_7 + 1.179X_8 - 2.587X_9 + 0.180X_{10} + 0.530X_{11} - 0.319X_{12} + 0.210X_{13} + 0.123X_{14} + 0.254X_{15}$$

RESULTS AND DISCUSSION

The results of the study are presented in Table 1 and Table 2. Correlation analysis (r-values) between the independent variables and the extent of adoption of package of practices in Chilli crop is depicted in Table 1. The variable wise results are discussed below.

Age vs Adoption : It is evident from Table 1 that the computed r-value for age and adoption of recommended package of practices for owner farmers (0.435*) and tenant farmers (0.266*). Both owner and tenant farmers age showed positive significant relationship with adoption of recommended package of practices. The probable reason might be that Chilli being commercial crop and high farming experience this trend might have been observed in the study area.

Education vs adoption : The computed r-values for education and adoption of recommended package of practices for owner farmers (0.283*) and tenant farmers (0.288*). Both owner and tenant farmers education showed positive significant relationship with adoption of recommended package of practices. This inferred that, the respondents with higher level of education adopted

package of practices to a greater extent. This finding is in conformity in the findings of *Singh et al. (2010)*.

Land holding vs adoption : The computed r-values for land holding and adoption of recommended package of practices for owner farmers (0.015NS) and tenant farmers (0.334*). Owner farmers land holding showed non-significant relationship with adoption of recommended package of practices. This indicates that land holding did not significantly influence adoption of recommended package of practices.

In case of tenant farmers, the computed r-value (0.334*) showed positive significant relationship with adoption of recommended package of practices. The probable reason for this kind of result may be that the farmers with higher land holding were found to adopt different improved practices for getting more yield and income. The small and marginal land holders were found subsistence and could practice less complex practices and hence, the difference existed between small and big land holder with their extent of adoption. This finding is in agreement with the findings of *Singh et al. (2010)*.

Farming Experience vs adoption : The computed r-values for farming experience and adoption of recommended package of practices for owner farmers (-0.168NS) and tenant farmers (-0.288*). Owner farmers showed non-significant relationship. This indicates that land holding did not significantly influence adoption of recommended package of practices. Tenant farmers showed negative and significant relationship. The recommended package of practices are formulated taking the average land properties of a particular region, so they are not specific to a particular land. So, the tenant farmers based on their experience in cultivation make changes in package of practices and accordingly practice farming. Farmers having more experience would know the difficulties, problems in production and marketing better than less experienced and could also come up with good management strategies out of their past experiences.

Family type Vs adoption : The computed r-values for family type and adoption of recommended package of practices for owner farmers (0.406*) and tenant farmers (-0.270*) showed positive significant relationship. This indicated that as the respondents shifted from nuclear family type to joint family type, the extent of adoption of recommended package of practices increased.

Table 1. Correlation analysis (r values) between the independent variables and the extent of adoption of package of practices in Chilli

Independent Variable	Owner Farmers	Tenant Farmers
Age	0.435*	0.266*
Education	0.283*	0.288*
Land holding	0.015 ^{NS}	0.334*
Farming Experience	-0.168 ^{NS}	-0.288*
Family type	0.406*	-0.270*
Family size	0.218 ^{NS}	-0.027 ^{NS}
Annual income	0.263*	0.293*
Training exposure	0.232 ^{NS}	0.295*
Source of credit	-0.007 ^{NS}	0.299*
Extension contact	0.291*	0.568*
Mass media exposure	0.271*	0.277*
Social participation	-0.029 ^{NS}	0.068 ^{NS}
Scientific orientation	0.316*	0.791*
Risk orientation	0.346*	0.562*
Market Orientation	0.336*	0.346*

Table 2. Multiple Linear Regression analysis of profile characteristics of owner farmers and their adoption of package of practices

Independent variables	bi's	SE	't' value
Age	-0.043	0.029	-1.488 ^{NS}
Education	-0.601	0.151	-3.961*
Land holding	0.386	0.194	1.991*
Farming experience	0.063	0.031	-2.057*
Family type	1.860	0.415	4.473*
Family size	0.599	0.415	-1.444 ^{NS}
Annual income	0.170	0.219	0.777 ^{NS}
Training exposure	1.179	0.430	2.737*
Source of credit	-2.587	0.333	-7.760*
Extension contact	0.180	0.045	3.949*
Mass media exposure	0.530	0.141	3.752*
Social participation	-0.319	0.054	-5.880*
Scientific orientation	0.210	0.065	3.223*
Risk orientation	0.123	0.074	1.661 ^{NS}
Market Orientation	0.254	0.103	2.453*

R² = 0.8334, F= 14.67* , a (Constant or Intercept) = 19.27

* Significant at 0.05 level of probability, NS - Non-significant, bi's=Regressioncoefficient, SE=StandardError,

Tenant farmers showed negative significant relationship with adoption of recommended package of practices. This indicated that as the respondents shifted from nuclear family type to joint family type the extent of adoption of recommended package of practices decreased.

Family size vs adoption : The computed r-value for family size and adoption of recommended package of

practices for owner farmers (0.218^{NS}) and tenant farmers (-0.027^{NS}). Family size of owner and tenant farmers showed non-significant relationship with adoption of recommended package of practices. This indicated that family size did not significantly influence adoption of recommended package of practices increased. The finding was in confirmity with *Singh et al. (2010)*.

Annual income vs adoption : The computed r-value for annual income and adoption of recommended package of practices for owner farmers (0.263*) and tenant farmers (0.293*). Both owner and tenant farmers annual income showed positive significant relationship with adoption of recommended package of practices. This inferred that, the respondents with high annual income adopted package of practices to a greater extent.

Training exposure Vs adoption : The computed r-value for training exposure and adoption of recommended package of practices for owner farmers (0.232^{NS}) and tenant farmers (0.295*). Owner farmers training exposure showed non-significant relationship with adoption of recommended package of practices. This indicates that training exposure did not significantly influence adoption of recommended package of practices.

In case of tenant farmers, training exposure showed positive significant relationship with adoption of recommended package of practices. This might be due to the fact that the training imparted knowledge and skill to the farmers on latest management practices. An individual who receives training become more knowledgeable, skilful and develop rationale and adopt improved farming practices which helped in reaping higher harvests. Similar findings were reported by *Singh et al. (2011)*

Source of credit vs adoption : The computed r-value for source of credit and adoption of recommended package of practices for owner farmers (-0.007^{NS}) and tenant farmers (0.299*). Owner farmers source of credit showed non-significant relationship with adoption of recommended package of practices. This indicates that source of credit did not significantly influence adoption of recommended package of practices.

In case of tenant farmers, source of credit showed positive significant relationship with adoption of recommended package of practices. It could be justified as the capital is one of the important inputs to practice any new technology.

Extension contact vs adoption : The computed r-value for extension contact and adoption of recommended package of practices for owner farmers (0.291*) and tenant farmers (0.568*). Both owner and tenant farmers extension contact showed positive significant relationship with adoption of recommended package of practices. Through regular contact with the extension personnel of developmental departments, NGOs and other organizations, farmers come closer with change agents and tried to confirm the results of new technologies. This finding is in line with findings of Gopiram (2005).

Mass media exposure vs adoption : The computed r-value for mass media exposure and adoption of recommended package of practices for owner farmers (0.271*) and tenant farmers (0.277*). Both owner and tenant farmers mass media exposure showed positive significant relationship with adoption of recommended package of practices. Higher level of exposure to mass media would facilitate the individual to develop a habit of gathering more information about innovative technologies through television, newspapers and literature related to agriculture. Such individuals would be ready to accept the practices, when compared to others who do not have mass media exposure. This finding was in accordance with the finding of Gopiram (2005).

Social participation vs adoption : The computed r-value for social participation and adoption of recommended package of practices for owner farmers (-0.029NS) and tenant farmers (0.068NS). Social participation of owner and tenant farmers showed non-significant with adoption of recommended package of practices. This indicated that social participation did not significantly influence adoption of recommended package of practices increased. This finding was occurrence with Raghavendra (2010).

Scientific orientation vs adoption : The computed r-value for scientific orientation and adoption of recommended package of practices for owner farmers (0.316*) and tenant farmers (0.791*). Both owner and tenant farmers scientific orientation showed positive significant relationship with adoption of recommended package of practices. This inferred that, the respondents with higher level of scientific orientation adopted package of practices to a greater extent. Farmers having scientific orientation would be motivated to know more information about the improved technologies. Due to this, farmers might have developed favourable attitude

which in turn led them to adopt improved agricultural technologies.

Risk orientation vs adoption : The computed r-value for risk orientation and adoption of recommended package of practices for owner farmers (0.346*) and tenant farmers (0.562*). Both owner and tenant farmers risk orientation showed positive significant relationship with adoption of recommended package of practices.

It could be explained that, the farmers with higher levels of risk orientation would be much ahead of others in exploiting the potentialities of production technology. These individuals will be very much critical and cautious in understanding different aspects of the technology which directly or indirectly might have helped them to acquire different components essential for better adoption. The other reason might be due to Chilli being a crop requiring high investment certainly adoption demands risk bearing ability. Hence, it is reasonable to expect positive and significant relationship of risk orientation with adoption behaviour.

Market Orientation Vs adoption : The computed r-value for market orientation and adoption of recommended package of practices for owner farmers (0.336*) and tenant farmers (0.346*). Both owner and tenant farmers market orientation showed positive significant relationship with adoption of recommended package of practices. This might be due to the fact that farmers having more market orientation kept themselves updated with the market information regarding price fluctuations, varieties of market demand and might have sold when prices were at peak which ultimately earned more profits.

Multiple Linear Regression analysis of profile characteristics of owner farmers and their adoption of package of practices : An attempt has been made to find out the amount of contribution made by the profile characteristics in explaining the variation in the dependent variable namely; adoption of package of practices for owner farmers. The results are presented in Table 2.

It is evident from the Table 2 that all the independent variables contributed to the total variation. In particular education, land holding, farming experience, family type, training exposure, source of credit, extension contact, mass media exposure, social participation, scientific orientation, market orientation significantly contributed towards adoption.

Table 3. Multiple Linear Regression analysis of profile characteristics of tenant farmers and adoption of Chilli growers

Independent variables	bi's	SE	't' value
Age	0.107	0.050	2.106*
Education	-0.106	0.317	-0.335 ^{NS}
Land holding	0.960	0.548	1.751 ^{NS}
Farming experience	-0.155	0.058	-2.648*
Family type	-0.788	0.360	-2.189*
Family size	0.981	0.569	1.725 ^{NS}
Annual income	-0.589	0.478	-1.231 ^{NS}
Training exposure	0.327	0.376	0.870 ^{NS}
Source of credit	-0.636	0.683	-0.930 ^{NS}
Extension contact	-0.023	0.110	-0.211 ^{NS}
Mass media exposure	0.035	0.179	0.197 ^{NS}
Social participation	0.125	0.080	1.552 ^{NS}
Scientific orientation	0.785	0.118	6.611*
Risk orientation	0.182	0.156	1.166 ^{NS}
Market orientation	0.186	0.138	1.351 ^{NS}

R² = 0.7950 F = 11.37 a = 4.10

a – Constant (or) Intercept

bi's = Regression coefficient

It could be inferred that the multiple regression equation with fifteen selected independent variables put together contributed 83.34 per cent to the total variance in the adoption; remaining 16.66 per cent was due to the extraneous effect of the variables.

Multiple Linear Regression analysis of profile characteristics of tenant farmers and their adoption of package of practices : An attempt has been made to find out the amount of contribution made by the profile characteristics in explaining the variation in the dependent variable namely; adoption of package of practices for tenant farmers. The results are presented in Table 3.

It is evident from the Table 3 that all the independent variables contributed to the total variation. In particular education, land holding, farming experience, family type, training exposure, source of credit, extension contact, mass media exposure, social participation, scientific orientation, market orientation significantly contributed towards adoption.

It could be inferred that the multiple regression equation with fifteen selected independent variables put together contributed 79.50 per cent to the total variance in the Attitude; remaining 20.50 per cent was due to the extraneous effects of the variables.

CONCLUSION

From the findings, it can be concluded that the variables like age, education, annual income, extension contact, mass media exposure, scientific orientation, risk orientation and market orientation of owner and tenant farmers had positive and significant relationship while family size and social participation had non-significant correlation with adoption of Chilli production technology.

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