

## EXTENT OF TECHNOLOGY ADOPTION IN COWPEA CULTIVATION

Technology and knowledge will become meaningful only when maximum number of farmers adopt them with maximum benefits. Pulses are important cheap source of protein and also endowed with unique property of maintaining and restoring soil fertility and physical properties. However, the productivity and production of pulses in Kerala are low. So in this study an attempt is made to analyse the extent of adoption of improved agricultural practices of cowpea.

The study was confined to the Onattukara region of Kerala covering portions of Alleppey and Quilon districts. A two stage random sampling technique was used for the selection of 75 cowpea farmers. From the three taluks, five panchayats each were selected by simple random sampling.

The extent of adoption of improved farm technology of cowpea was considered as the dependent variable which was measured using the adoption quotient suggested by Singh & Singh (1974). The independent variables selected were age, education, annual income, social participation, occupational status, farm size, scientific orientation, economic motivation, innovativeness, information source utilisation, infrastructure facilities, perception about the practices, knowledge and attitude towards improved practices. Occupational status was measured as the time spent for farming by the farmers, with scores four (4) to one (1) or full time to spare. Innovativeness was measured using the scale used by Prasad (1983) and structured questions with scores ranging from zero to 28 was used to quantify information source utilisation. An infrastructure index was developed for this study with scores zero to 24 for measuring infrastructure facilities. For quantifying perception, knowledge and attitude towards improved practices appropriate tests and scales were developed. Statistical tools

such as zero order correlation, path analysis and percentage / averages have been used in appropriate situations.

Table 1. Correlation between adoption of improved practices of cowpea and the selected independent variables

Independent variables		Extent of adoption
X1	Age	-0.1998
X2	Education	0.2698*
X3	Annual income	0.1913
X4	Occupation	-0.0537
X5	Farm size	0.2241
X6	Social participation	0.1388
X7	Scientific orientation	0.3089**
X8	Economic motivation	0.0165
X9	Risk orientation	0.3426*
X10	Innovativeness	0.0246
X11	Information source utilization	0.6517**
X12	Infrastructure facilities	0.5281**
X13	Knowledge	0.5966**
X14	Perception about practices	0.6015**
X15	Attitude towards practices	0.6799**

\* Significant at 5 per cent level

\*\* Significant at 1 per cent level

The mean adoption score for cowpea growers (n=75) was 30.88 and majority of the farmers had adoption scores ranging from 20 to 50. In the case of adoption of different practices, correct seed rate was adopted by 80 per cent of the farmers whereas the adoption of rhizobium culture treatment and lime application was the minimum of 1.33 per cent only.

Table 2. The results of path analysis showing the effect of variables on the extent of adoption by cowpea farmers

Independent variables	X7	X9	X11	X12	X13	X14	X15	Total Cr values
X7 i Scientific orientation	-0.063	0.012	0.103	0.005	0.088	0.072	0.090	0.309
X9 i Risk orientation	-0.022	0.034	0.142	0.004	0.058	0.038	0.088	0.343
X11 i Information source utilisation	-0.023	0.017	0.287	0.012	0.120	0.086	0.152	0.657
X12 i Infrastructure facilities	-0.015	0.007	0.170	0.020	0.104	0.085	0.157	0.528
X13 i Knowledge	-0.024	0.008	0.147	0.009	0.236	0.075	0.144	0.597
X14 i Perception about the practice	-0.026	0.007	0.139	0.009	0.101	0.177	0.193	0.601
X15 i Attitude towards practice	-0.020	0.010	0.154	0.011	0.119	0.121	0.284	0.679

Farmers adopting high yielding variety seeds, chemical fertilizers and plant protection measures were 52, 42.67 and 33.33 percentage respectively.

The most frequently used source of farm information was fertilizers / pesticide dealers and "other farmers". Regarding infrastructure facilities, the perception of farmers regarding existing facilities differed considerably. Timely availability of fertilisers / pesticides was reported by 65-80 per cent of farmers and timely availability of credit was perceived by 22-24 per cent of the farmers whereas a high fraction of them perceived high labour charge and inefficiency of labourers.

The results of the correlation analysis between adoption of improved practices and the selected independent variables are presented in Table 1. Out of the 15 independent variables selected, eight variables viz. education, scientific orientation, risk orientation, information source utilisation, infrastructure facilities, knowledge, perception and attitude of the farmers towards the improved practices were found to be significantly correlated with extent of adoption.

Age of the farmers was found to be negatively related to adoption in this study, since most of the sample respondents were old farmers (above 65 years) who were resistant to accept new farming practices of cowpea. This was in conformity with the findings of *Dudhani et al.* (1987). Economic motivation showed nonsignificant relationship with extent of adoption. It is natural that economic motivation had a secondary role in adoption, since this crop is being cultivated as a third crop in this area.

This study indicates a positive significant relationship of infrastructure facilities and perception of farmers with adoption. Path analysis carried out to study the direct and indirect effects of the variables which were significant to the extent of adoption. The details are presented in Table 2. It reveals that the highest direct effect among the independent variables selected for path analysis on extent of adoption of practices in cowpea was for information source utilisation (X11) and the indirect effect was the highest for the variable infrastructure facilities (X12). It was revealed that knowledge about improved practices and information source utilisation had direct as well as indirect effects on determining the extent of

adoption, whereas infrastructure facilities, scientific orientation, perception, attitude towards improved practices and risk orientation had high indirect effects through other variables in determining the extent of adoption.

The direct effect of scientific orientation on extent of adoption was very low and negative, but the indirect effect was much higher through information source utilisation (X11). It is evident that the variables information source utilisation, knowledge and attitude about improved practices are most important since substantial indirect effects of many variables

are channelled through these three variables. Since more than 90 per cent of the sampled farmers expressed lack of knowledge and lack of conviction about the recommended practices, it is evident that organising training programmes, utilising media and extension workers to impart knowledge to farmers and providing adequate quality inputs and facilities in time at reasonable cost will be of much use in enhancing the adoption by cowpea farmers.

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