International Journal of Botany Studies
www.botanyjournals.com
ISSN: 2455-541X
Received: 08-09-2021, Accepted: 25-09-2021, Published: 09-10-2021
Volume 6, Issue 5, 2021, Page No. 1129-1132

A study on extent of adoption of recommended technologies by cashew growers in Ariyalur district of Tamil Nadu

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Abstract
Cashew is often referred as "Gold mine of waste land". The primitive reason to cultivate cashew is to prevent soil erosion as it binds the soil particles firmly.The present investigation was designed to study the extent of adoption possessed by the cashew growers on recommended cashew cultivation practices. This study also aimed to find out the relationship between the extent of adoption and profile characteristics of cashew growers. A sample size of 300 respondents was selected by using proportionate random sampling technique. The collected data were tabulated and analyzed using appropriate statistical tools. The result of this study revealed that majority of the cashew growers had medium level of extent of adoption of cashew cultivation practices. Regarding extent of adoption, seven variables *viz*., experience in cashew cultivation, extension agency contact, mass media exposure, scientific orientation, risk orientation, economic motivation and market perception were found to have positive and significant relationship with the extent of adoption. The result of multiple regression showed that 67.42 per cent of variation in the adoption level was explained by the fourteen independent variables selected for the study and the results fit in the regression equation.

Keywords: cashew growers, recommended technologies, extent of adoption, relationship, profile characteristics

Introduction
The cashew (Anacardium Occidentale), a Brazilian native tree, was brought to India's Goa area by the Portuguese in the sixteenth century. It belongs to the family Anacardiaceae composed of 74 genera and 600 species. By the year of 1960, the commercial cultivation of cashew has increased due to its high value and it gained the status of an export oriented commodity as it earns a huge foreign exchange for our country (Bezerra *et al*, 2007) [8]. Cashew cultivation has the potential to be a significant source of income for small farmers in developing economies, as well as a massive opportunity for cashew by-product extraction, which may contribute positively to cashew farming. (Anusuya, 2015) [1]. Cashew cultivation provides a higher return on investment for smallholder farmers in underdeveloped nations. Despite the cashew industry's significance on worldwide markets and the possibility for rural growth and poverty reduction (Dendena *et al*, 2014) [4]. India produces 45 percent of the total cashew nut output in the globe. Cashew is grown over 10.27 lakh hectares in India, with a total production of 7.25 lakhs metric tonnes of raw nuts. India is the world's biggest cashew grower, processor, consumer, and exporter (Elakkiya *et al*, 2017) [5]. In Tamil Nadu, cashew was introduced into the Cuddalore district from Konkan coast of Kerala in the early 19th century during British period to meet the demand of raw cashew nuts then gradually grown on neglected land and soils prone for high degree of erosion (Bhat and Nagaraja, 2010) [3]. Ariyalur district occupies a primitive position in terms of cashew production area. Cashew cultivation has been identified as a key source of revenue for the district. Information on technology transfer in different elements of cashew cultivation was shown to be critical for the district's cashew producer's socio-economic upliftment.

Research Methodology
The study was carried out in selected twenty five selected villages of Andimadam, Jayankondam, Sendurai and T. Palur blocks of Ariyalur district of Tamil Nadu. The sample size consisted of 300 cashew growers. The respondents were interviewed personally through a well Structured and pre-tested interview schedule. Arithmetic mean, percentage analysis, cumulative frequency, zero order correlation and multiple regression were used to analyze the collected data. The salient findings of the study are detailed below.

Findings and Discussion
Overall adoption of Cashew cultivation practices.
The results obtained on overall adoption of Cashew cultivation practices are showcased in Table-1.

Table 1: Distribution of respondents according to their overall adoption level on Cashew cultivation practices (n=300)

S. No	Category	Number of respondents	Per cent
1.	Low	51	17.00
2.	Medium	167	55.67
3.	High	82	27.33
	Total	300	100

According to Table 1, more than partial per cent of the respondents (55.67 percent) were observed to have a

medium level of adoption of recommended technologies in cashew cultivation, followed by 27.33 percent of respondents with a high degree of adoption, and only 17.00 percent of those who responded were noticed to have a low level of adoption of recommended technologies in cashew cultivation. This may be owing to the fact that the respondents were found to have sufficient knowledge about cashew farming methods, which could explain their results. In addition to this they were often guided by the extension agents about the cashew cultivation technologies. This result is in accordance with the conclusion of Selvam (2018).

Relationship of characteristics of cashew growers with their extent of adoption of cashew cultivation practices.

Table 2, shows the findings of a multiple regression analysis and correlation of respondent's characteristics and their adoption of cashew cultivation methods.

Table 2: Relationship of characteristics of cashew growers with their extent of adoption of cashew cultivation practices. (n=300)

S. No.	Variables	'r' value	Regression Co-efficient	Standard error	't' value
X1	Age	0.073NS	1.319	0.743	1.321NS
X2	Educational status	0.137NS	1.429	0.384	1.936NS
X3	Occupational status	0.101NS	0.361	0.217	1.229NS
X4	Annual income	0.065NS	0.257	0.321	1.351NS
X5	Area under cashew cultivation	0.109NS	1.253	0.742	1.205NS
X6	Experience in cashew cultivation	0.201**	1.216	0.512	2.375**
X7	Social participation	0.072NS	2.122	1.391	1.473NS
X8	Extension agency contact	0.116*	0.845	0.509	1.660*
X9	Mass media exposure	0.131*	1.969	1.268	1.685*
X10	Risk orientation	0.138*	0.667	0.321	2.677*
X11	Scientific orientation	0.142*	1.261	0.675	1.868*
X12	Credit orientation	0.102NS	0.625	0.563	1.110NS
X13	Economic motivation	0.156**	0.761	0.536	2.051**
X14	Innovativeness	0.058NS	0.428	0.378	1.132NS
X15	Market perception	0.136*	1.476	0.765	1.929*

R^2=0.542 =14.466 F=6.742** *- Significant at 5% level **- Significant at 1% level NS- Non-significant

Association of characteristics of respondents with their extent of adoption of cashew cultivation practices.

As shown in Table 2, out of fifteen variables studied, mass media exposure, risk orientation, extension agency contact, scientific orientation and market perception had a positive as well as the significant relationship at the five per cent level of probability, while two variables, experience in cashew cultivation and economic motivation, had a significant and positive relationship at the one per cent level of probability. The remaining factors were determined to be non-significant. This result is in accordance with the findings of Sivapriyan (2018).

Experience in cashew cultivation had shown a positive as well as the significant relationship with the extent of adoption. Experience with cashew cultivation would have aided responders in gaining skills in the suggested technologies, enabling them to implement them. This is the most likely explanation for the observed significant relationship between this characteristic and the extent of adoption. This result is in accordance with the findings of Janusia (2017).

Extension agency contact had shown a positive as well as the significant relationship with adoption. Farmers that have a high level of extension agency interaction will have more chances to learn about new technology. This may have facilitated their adoption of the recommended technology. This result is in accordance with the findings of Anusuya (2015) [1].

Scientific orientation depicts a positive as well as the significant relationship with adoption. The farmers who have aspiration and oriented towards scientific methods of cultivation practices would have higher adoption of practices. This result is in accordance with the findings of Nisha (2018) [9].

Risk orientation maintains a positive as well as the significant relationship with the adoption among the respondents. Adoption of certain techniques involves some risk and hence respondents with high risk orientation would have adopted the recommended cashew cultivation practices. This result is in accordance with the findings of Selvam (2018) [11].

Mass media exposure and extent of adoption had a positive as well as the significant relationship among themselves. Majority of cashew growers were reading newspaper for accessing market information, watching television to know the latest technology whereas, few progressive cashew growers were utilizing internet for accessing cashew cultivation methods and using advanced technologies in farm operations. The respondents who have higher exposure towards mass media would have higher adoption of practices. This result is in accordance with the findings of Rajakala (2020) [10].

Innovativeness was observed to have positive as well as the significant relationship with the extent of adoption. The reason behind this could be due to the fact that creative thinking enhances the respondents to think beyond the boundaries. An innovative person will always be ready to adopt the latest innovations. This result is in accordance with the findings of Balarubini (2015) [2].

Market perception was observed to have positive as well as the significant relationship with the extent of adoption. The reason behind is due to the fact that market facilities such as nearness to market, easy transportation and easy returns stimulate more number of farmers to adopt cashew cultivation. This result is in accordance with the findings of Mahalakshmi (2019) [7].

Contribution of characteristics of respondents towards their extent of adoption of cashew cultivation practices.

Multiple regression analysis was used to determine which independent factors best described the variance in adoption level and also to determine the degree to which these variables contributed. The findings are shown in Table 2.

As shown in Table 28, the fifteen variables explained 67.42 percent of the variance in adoption level. The value of 'F' was determined to be significant. As a result, it is possible to construct a linear functional connection between the dependent and independent variables.

The variables experience in cashew cultivation and economic motivation related significantly and positively to the fifteen factors at the one per cent level of probability. Extension agency contact, scientific orientation, risk orientation, mass media exposure and market perception contributed substantially and positively to the likelihood of adoption at the five per cent level.

The residual variables were determined to be non-significant.

Thus, a unit increase in extension agency contact, mass media exposure, risk orientation, experience in cashew cultivation, scientific orientation, economic motivation and market perception will result in a rise in adoption of 2.375, 1.660, 1.685, 2.677, 1.868, 2.051, and 1.929 units, respectively.

Thus, it could be concluded that cashew grower's adoption level is positively influenced by their experience with cashew cultivation, risk orientation, extension agency contact, mass media exposure, economic motivation, scientific orientation and their market perception.

The positive as well as significant relationship of independent variables with extent of adoption of cashew growers may discussed on the same line as already given under simple correlation of these variables with adoption level.

Table 3: Direct, indirect and largest indirect effects of independent variables on extent of adoption of respondents

Var. No	Variable	Direct effect	Indirect effect	Three largest indirect effects channeled through		
				1	2	3
X1	Age	0.1251	-0.0761	0.0212X5	-0.0113X13	0.0065X6
X2	Educational status	-0.0632	0.1786	0.1407X13	-0.0863X4	-0.0721X14
X3	Occupational status	-0.0571	-0.1016	0.0092X13	0.0067X8	-0.0054X5
X4	Annual income	-0.0097	-0.0323	-0.0778X2	0.0059X13	0.0032X9
X5	Area under cashew cultivation	0.0662	-0.0552	-0.2428X13	-0.0271X11	0.0175X10
X6	Experience in cashew cultivation	0.1762	-0.0607	-0.0357X2	0.0092X3	0.0034X1
X7	Social participation	0.0831	0.2731	0.1252X9	0.0180X14	0.0092X3
X8	Extension agency contact	-0.1032	-0.0521	0.0588X10	-0.0255X13	-0.0210X2
X9	Mass media exposure	-0.0506	-0.0422	0.0571X10	0.0430X13	-0.0201X2
X10	Risk orientation	0.1262	0.0663	0.2081X9	0.0367X3	0.0196X6
X11	Scientific orientation	0.0142	0.3121	0.0576X9	-0.0221X13	0.0113X14
X12	Credit orientation	0.0431	0.0678	0.1087X13	-0.0356X4	0.0189X3
X13	Economic motivation	-0.0514	0.1786	0.0891X3	-0.0264X9	0.0176X10
X14	Innovativeness	0.1848	0.2743	-0.0787X13	0.0634X10	-0.0421X9
X15	Market perception	0.1972	0.1461	0.0869X13	-0.0662X12	0.0125X9

Residuel = 0.7180

Direct, indirect and largest indirect effects of independent variables on extent of adoption of respondents

Findings of path analysis comprising of direct effect, total direct effect and third largest indirect effects channeled through either independent variables on the level of extent of adoption of respondents are presented in Table-3.

Among the indirect effects, the variables *viz*., mass media exposure (X9) and economic motivation (X13) had majority positive and indirect effect on the extent of adoption.

From the 45 substantial indirect effects, eleven passed through economic motivation (X13), seven passed through mass media exposure (X9), five passed through occupational status (X3), risk orientation (X10), four passed through educational status (X2), three passed through innovativeness (X14), two passed through annual income (X4), area under cashew cultivation (X5), Experience in cashew cultivation (X6) and one passed through age (X1), extension agency contact (X8), scientific orientation (X11) and credit orientation (X12).

Thus, it could be inferred from above table that the variables economic motivation (X13) and mass media exposure (X9) acted as significant variables in understanding variation in extent of adoption of the cashew growers.

Conclusion

Over half of respondents (55.67 per cent) had a medium degree of adoption, ensued by 27.33 per cent who had a high degree of adoption, and just 17.00 per cent who had a low degree of adoption of recommended technology in cashew cultivation. Among the fifteen independent variables, seven independent variables *viz*., mass media exposure, scientific orientation, risk orientation, market orientation, extension agency contact, economic orientation and experience in cashew cultivation were found to have the significant and positive relation with the adoption level of recommended cultivation practices among the cashew growers. In path analysis, the variables *viz*., economic motivation and mass media exposure acted as significant variables in understanding variation in extent of adoption of the respondents.

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