FACTORS INFLUENCING THE GRAPE GROWERS WITH THEIR ADOPTION LEVEL OF CULTIVATION PRACTICES IN TAMIL NADU

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Abstract

Grapes occupy a predominant position in terms of world fruit production, accounting for about 16 per cent of the global fruit production. The total world production of grapes is estimated to be about 68.9 million tonnes, next only to citrus and bananas and is followed by apples. It was introduced to India by the Persian invaders in 1300 A. D. Grapes is a non-climacteric fruit that grows on the perennial and deciduous woody climbing vine. India ranks first in productivity with 25.69 t/ha against the world productivity of 9.32 t/ha and also in terms of highest recorded yield of 100 t/ha. Cultivation of grapes in the country is very much localized, being confined primarily to four states, viz., Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu, which together account for more than 90 percent of the area and production. Tamil Nadu is considered to be the prominent state in production of commercial crops mainly grapes in the country standing next to the state of Maharashtra and Karnataka. The two districts named Theni and Coimbatore focuses mainly on the cultivation of grapes.

From the selection of the variety to the harvest, the grape growers who follow the techniques correctly are highly rewarded. In doing so the technologies follow correctly, and their socioeconomic factors play a major role. To find them out in Tamil Nadu, Dindigul district was surveyed with 120 respondents. The zero-order correlation co-efficient and linear multiple

regression analysis were employed to study the relationship and contribution of characteristics with adoption level in cultivation technologies.

The findings revealed that out of sixteen independent variables, eight variables viz., educational status, experience in grape cultivation, mass media exposure, training undergone, decision making pattern, economic motivation, innovativeness and subsidy were found to have positive and significant relationship with the extent of adoption of cultivation technologies. The result of multiple regression showed that 51.20 per cent of variation in the adoption level was explained by the sixteen independent variables selected for the study

Key words: *Grape growers, cultivation technologies, characteristics, adoption level*

Introduction

The grape is the most important crop grown in the world. Mostly it is cultivated for making wines and grapes and serving at tables. While in India, it is mainly grown for table use. Grape cultivation is believed to have originated near Caspian Sea; however, Indians know grapes since Roman times. Total area under grapes in India is about 40,000 ha, distributed mainly in Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu. Maharashtra ranks first in terms of production accounting for more than 81.22 per cent of total production and highest productivity in the country. Grape is one of the important fruit covering an area of 123 thousand hectares occupying 2.01 per cent of the total area. The country is also a major exporter of fresh Grapes to the world. The country has exported 246133.79 MT of Grapes to the world for the worth of Rs.2335.24 crores/ 334.79 USD Millions during the year 2018-19 (APEDA, 2020).

Grapes are among the top foreign exchange earners among fruit crops. Cultivation of grapes creates employment opportunities for farmers, farm labourers, exporters, traders and indirect employment to several others. In India, grapes are being cultivated on a wide range of soils right from sandy loam to saline and alkali soils. Grapes are grown across a range of agro climatic zones. Though more than 20 varieties are under cultivation in the country, only about a dozen are commercially grown. Currently, Thompson Seedless is the ruling grape variety raised on about 55 per cent of the total area under cultivation. Bangalore Blue occupies approximately 15 per cent of the total area while Anab-e-Shahi and Dilkhush (15 per cent), Sharad Seedless (5 per cent), Perlette (5 per cent) and Gulabi and Bhokri together (5 per cent) are the other varieties grown. Nowadays, grape growers are following good agricultural practices (GAP) to attain international standards and explore better opportunities for export. Adopting GAP in pruning, vineyard management, irrigation, fertilization, crop protection, appropriate stage and method of harvesting, packaging, storing and transporting are important (Prakash, 2020).

The socioeconomic status plays a major role in farmer's adoption to these unique cultivation technologies. Therefore, the association between technology adoption and

respondents socioeconomic status is examined here and the results found. It can be used to create plans for policy makers and Extension functionaries.

Methodology

The study was conducted in five selected villages of Attur block of Dindigul district in Tamil Nadu based on the major grape cultivating area with the sample size consisted of 120 grape growers. The respondents were interviewed personally through a well structured and pre-tested interview schedule.

Totally sixteen variables were selected for this study. They were Age, Educational status, Occupational status, Farm size, Experience in grape cultivation, Annual income, Extension agency contact, Mass media exposure, Attitude towards horticultural schemes, Training undergone, Decision making pattern, Risk orientation, Economic motivation, Scientific orientation, Innovativeness and Subsidy orientation. The statistical tools used in the study were percentage analysis, zero order correlation and multiple regression analysis.

Results and discussion

Association between the socio-economic status of respondents towards their extent of adoption level in grape cultivation practices

A. Relationship

The characteristics of respondents play a role in determining their adoption level of recommended grape cultivation practices. The zero-order correlation co-efficient were employed to study the relationship and contribution of characteristics with adoption level in grape cultivation practices and the results are presented in the Table 1.

Table-1. Relationship between personal, socio-economic and psychological characteristics of the respondents and their adoption level of cultivation practices in grapes

(n=120)

Variable No.	Independent Variables	Correlation– coefficient 'r' value
X1	Age	-0.119NS
X2	Educational status	0.279**
X3	Occupational status	-0.042NS
X4	Farm size	-0.051NS
X5	Experience in grape cultivation	0.219**
X6	Annual income	0.008NS
X7	Extension agency contact	0.517NS
X8	Mass media exposure	0.202*
X9	Attitude towards horticultural scheme	0.024NS
X10	Training undergone	0.199*
X11	Decision making pattern	0.215*
X12	Risk orientation	0.076NS
X13	Scientific orientation	0.030NS
X14	Economic motivation	0.219*
X15	Innovativeness	0.214*
X16	Subsidy orientation	0.192*

** - Significant at 1% level
* - Significant at 5 % level
NS - Non-significant

The results in Table-1, exhibited that out sixteen independent variables viz., educational status, experience in grape cultivation, mass media exposure, training undergone, decision making pattern, economic motivation, innovativeness and subsidy orientation had shown positive and significant relationship with adoption level of the respondent in grape cultivation practices. Among the significant variables, educational status and experience in grape cultivation were found to be significant association at one per cent level of probability, whereas the remaining variables namely mass media exposure, training undergone, decision making pattern, economic motivation, innovativeness and subsidy orientation had significant at five per cent level of probability. The correlation values for the remaining eight variables showed non-significant association with adoption level of respondents.

Educational status was positively and highly significantly related to adoption level. Education provides the proper vision and gives knowledge to analyze any new practices and to adopt it. This is the reasons for the positive relationship between educational status and adoption level. This finding derives support from the findings of Govind Parihar (2017).

Experience in grape cultivation had shown highly positive and significant relationship at one per cent level of probability. This may be due that the respondents with more experience in grapes cultivation had more maturity, problem solving behavior and enhances the decision making behavior so it naturally increased the adoption level. This finding derives support from the Dinesh kumar (2018).

Mass media exposure is found to have positive and significant relationship with the adoption level of grape cultivation practices. Mass media influences the opinions regarding many important decisions. So, farmers with more mass media exposure had greater adoption level due to the wide range of information utilizing options like TV, news paper etc., This findings is in accordance with that findings of Sivapriyan (2018).

There was positive and significant relationship between training undergone and adoption level of the respondents. Training gives the motivation and satisfaction level about the any new practices. It increased capacity to adopt new technologies when compared with untrained farmers. Hence, a positive relationship obtained. This observation is in agreement with the earlier findings of Sivapriyan (2018).

Decision making pattern exhibited a positive and significant association at five per cent level of probability. The respondents who had higher decision making behavior can able to evaluate the ideas before adopting it. So naturally it increases the adoption level. This is in conformity with the finding of Niruban Chakkaravarthy (2018).

There was a positive and significant relationship between economic motivation and adoption level of the respondents. This is due to higher economic motivation gives the strength to execute the new practice and provides moral support to the farmer. This finding delivers it support from the findings of Sushma sahu (2013).

There was positive and significant relationship between innovativeness and adoption level of the respondents. Respondents who had more innovativeness can able to execute new processes which in turns may increase productivity. So innovativeness got positively significant with the adoption level. The finding delivers it support from the findings of Sivapriyan (2018).

There was found that the subsidy orientation had positive significant relationship with the adoption level of the respondents. Hence, subsidy removes the economic burden of the farmers. It makes farmer happy and encourage farmers to adopt new practices. This finding delivers it support from the findings of Latha (2015).

B. Contribution

In order to find out which of the independent variables explained the variation in the dependent variables and also to know the extent of contribution made by these variables, multiple regression analysis was carried out and the results are presented in this section.

The results of multiple regression analysis of the characteristics with adoption behavior are presented in the Table 2.

Table-2. Contribution of personal, social-economic and psychological characteristics of respondents towards their adoption level of cultivation practices in grapes

(n=120)

Variable No.	Impendent Variables	Regression co-efficient	Standard error	't' value
X1	Age	- 0.238	0.508	-1.675NS
X2	Educational status	2.498	1.110	2.498**
X3	Occupational status	-0.007	1.159	-0.068NS
X4	Farm size	-0.013	0.430	-0.133 NS
X5	Experience in grape cultivation	0.948	0.512	1.815**
X6	Annual income	0.032	0.008	0.313NS
X7	Extension agency contact	0.512	0.275	1.861*
X8	Mass media exposure	-0.010	0.011	-0.101NS
X9	Attitude towards horticultural scheme	0.478	0.219	2.182*
X10	Training undergone	1.746	0.901	1.937*
X11	Decision making pattern	0.109	0.653	1.080NS
X12	Risk orientation	0.996	0.519	1.919*
X13	Scientific orientation	3.478	2.012	1.728**
X14	Economic motivation	0.010	0.152	0.099NS
X15	Innovativeness	0.203	0.413	1.963*
X16	Subsidy orientation	-0.029	0.131	-0.298NS

$R^2 = 0.512$ F = 6.112** a = 10.713

** - Significant at 1 % level

* - Significant at 5% level

NS- Non-significant

It could be observed from the Table-2, exhibited that the R^2 value was 0.512 which implied that 51.20 per cent variations in the independent variables included in the study. Since the 'F' value 6.112 was found to be significant at 0.01 per cent of probability. There existed a

linear functional contribution between the independent variables and adoption levels. The prediction equation was fitted for adoption level of the respondents as given below.

$Y= 10.713 - 0.238(X_1) + 2.498 (X_2) - 0.007(X_3) – 0.013(X_4) + 0.948 (X_5) + 0.032(X_6) + 0.512(X_7) -0.010(X_8) + 0.478(X_9) +1.746 (X_{10}) + 0.109 (X_{11}) + 0.996 (X_{12}) + 3.478(X_{13}) +0.010 (X1_4) + 0.203(X_{15}) - 0.029(X_{16})$

It could be seen from the above equation that the regression co-efficient of the variables viz., educational status (X_2),experience in grape cultivation (X_5), extension agency contact (X_7), attitude towards horticultural scheme (X_9), training undergone (X_{10}), risk orientation (X_{12}) ,scientific orientation(X_{13}) and innovativeness (X15) were found to be positive significant contributing towards the adoption level of the respondents. Among the significant variables, educational status and experience in grape cultivation were found to be significant at one per cent level of probability whereas the remaining variables viz., extension agency contact, attitude towards horticultural scheme, training undergone, risk orientation, scientific orientation and innovativeness were significant at five per cent level of probability.

The analysis revealed as ceteris paribus as one unit increase in educational status (X_2), experience in grape cultivation (X_5), extension agency contact (X_7), attitude towards horticultural scheme (X_9), training undergone (X_{10}), risk orientation (X_{12}), scientific orientation (X_{13}) and innovation (X_{15}) would increase the adoption level by 2.498, 1.851, 1.861, 2.182, 1.937, 1.919 ,1.728 and 1.963 respectively. The results of multiple regressions in the case of remaining nine variables were not found to be significant.

Conclusion

Based on the findings of this study, The calculated ‘r’ value of the respondent showed that out sixteen independent variables viz., educational status, experience in grape cultivation, mass media exposure, training undergone, decision making pattern, economic motivation, innovativeness and subsidy orientation had shown positive and significant relationship with knowledge level of the respondent in grape cultivation practices. Whereas age, occupational status, farm size had negative relationship and annual income, extension agency contact, attitude towards horticultural scheme, risk orientation, scientific orientation had non-significant relationship with the adoption level in grape cultivation.

The calculated ’t’ value showed that educational status, experience in grape cultivation, extension agency contact, attitude towards horticultural scheme, training undergone, risk orientation, scientific orientation and innovativeness were found to be positive significant contributing towards the adoption level of the respondents. Whereas age, occupational status, farm size, mass media exposure, subsidy orientation had negative relationship and annual income, decision making pattern, economic motivation had non-significant relationship with the adoption level of the respondents towards grape cultivation practices.

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