A STUDY ON EXTENT OF ADOPTION AND ELEMENTS CONTROLLING THE ADOPTION LEVEL OF FARMERS TOWARDS COLEUS CULTIVATION IN TAMIL NADU

Muthukumar R., R.Jayasankar and T.Balakrishnan
Department of Agricultural Extension, Faculty of Agriculture,
Annamalai University, Annamalai Nagar, Tamil Nadu, India- 608002.

Abstract

Dindigul district in Tamil Nadu have suitable agro-climatic conditions for cultivation of medicinal plants. There is a need to take up a systematic approach towards cultivation of medicinal plants to provide a consistent supply of medicinal plant produce of international quality. The farmer in his day to day business uses a wide range of resourced. Within this view, the present paper has been taken up with the adoption of coleus cultivation practices. In doing so the practices follow correctly, and their socioeconomic factors play a major role. To find them out in Tamil Nadu, Dindigul district was surveyed with 60 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 practices.

Key words: Coleus, respondents, adoption level, socio-economic characteristics.

Introduction

Medicinal plant sector has acquired increasing significance globally in the recent years not only in providing safe and sustainable health-care, but also in the vital conservation of biodiversity. According to the WHO, 80 per cent of the world's population is dependent on health-care provided by medicinal plants; and since there is a growing perception that natural products are safe as being non-narcotic, and free from side effects, the demand for medicinal plants is increasing worldwide. In India also, medicinal plants sector has traditionally occupied an important position in the indigenous health care system and the Indian systems of medicines like

Ayurveda, Sidha and Unani are reputed worldwide. Moreover, India has a clear advantage with respect to medicinal plants cultivation, as it is one of the world's top 12 mega diversity nations with regard to genetic resources of medicinal plants. And also, varied climatic and soil conditions existing in one or other part of the country make it possible to grow almost any type of medicinal plant.

While this has created new opportunities for the countries, their largely impoverished populace and traditional herbal industry, it also poses unprecedented threats to the very resources on which the industry is dependent besides creating socioeconomic imbalances and erosion of spiritual and cultural heritage and knowledge systems. Medicinal and aromatic plants (MAPs), including trees, shrubs, grasses and vines, are a central resource for these traditional health systems, as well as for pharmaceutical (or allopathic) medicines. There are more than 8,000 plant species in South Asia with known medicinal uses.

The World Health Organization (WHO) estimates that 4 billion people, 80% of the world population, presently use herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all indigenous peoples' traditional medicine and a common element in Ayurvedic, homeopathic, naturopathic, traditional oriental, and Native American Indian medicine. WHO notes that of 119 plant-derived pharmaceutical medicines, about 74 per cent are used in modern medicine in ways that correlated directly with their traditional uses as plant medicines by native cultures (Singh, 2009).

Some of the practical applications integrating medicinal plants into traditional farming systems have taken an obligate relationship in backstopping upland agriculture or mixed farming. South Asian states have a rich and diverse traditions of practicing complex and rotational farming systems that includes herbal plants cultivation (Maikhuri, 2005) and therefore, conservation and ex-situ cultivation of medicinal plants especially applying organic farming protocols has a great scope especially to access international markets.

Tamil Nadu, situated at the southern tip of India is blessed with diverse ecological habitats, which harbour and sustain immense plant diversity with a total area under medicinal and aromatic plants of about 7000 ha. Dindigul district is one of the suitable agro-climatic conditions for cultivation of medicinal plants. There is a need to take up a systematic approach towards cultivation of medicinal plants to provide a consistent supply of medicinal plant produce of

international quality. Coleus is one of the important medicinal plants widely cultivated by the farmers in the district. Within this view, the present paper has been taken up with the adoption of coleus cultivation practices. In doing so the practices follow correctly, and their socioeconomic factors play a major role. To find them in Tamil Nadu, a survey was conducted in Dindigul district, the results of which may be useful to policy makers.

Methodology

Dindigul district was selected purposively for conducting the survey with respect to coleus it is mainly cultivated in Dindigul district of Tamil Nadu. The Dindigul district has larger area under commercial cultivation of coleus and is expanding the area in the recent years. Because of this process, the buyers from all over India have established their purchasing counters in this area. In view of this, Dindigul district was selected purposively for the analysis.

The purposive sampling technique was used to select one block in the Dindigul district. The extent of adoption of coleus cultivation practices by the respondents nine major coleus cultivation practices were selected in consultation with the extension officials, researchers and based on the available literature. A sample size of 60 was considered for the study. The each respondent was asked about his adoption or non-adoption against each item. The respondents were also asked to mention the reasons for non-adoption. A score of two was given for adoption and non-adoption was given one score. The scores for all these items were added-up for each respondent and his adoption score was arrived at. The adoption index was followed in this study.

$$\text{Adoption index} = \frac{\text{Respondent's total}}{\text{Total possible score}} \text{ X } 100$$

Percentage analysis was also worked out to study the practice wise adoption of coleus growers.

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 practices.

Results and discussion

A. Overall adoption of recommended technologies by the coleus growers

The results on distribution of respondents according to their overall adoption of recommended coleus cultivation technologies are presented in Table 1.

Table-1. Distribution of respondents according to their overall adoption of coleus cultivation technologies

(n = 60)

S. No	Category	Number	Per cent
1.	Low	10	16.66
2.	Medium	35	58.34
3.	High	15	25.00
	Total	60	100.00

It could be seen from Table 1, that more than fifty per cent of the respondents had (58.34 per cent) medium level of adoption followed by exactly one fourth of the respondents who had high level of adoption and 16.66 per cent of the respondents who had low level of adoption. This might be due to the fact that most of the coleus cultivating farmers were having adequate knowledge and high level of risk taking capacity would have resulted in better adoption. This finding is in line with the findings of Jeyaseelan (2005).

B. Practice wise adoption of recommended technologies by the coleus growers

The results obtained on adoption of recommended technologies in coleus cultivation are presented in Table 2.

Table-2. Practice wise adoption of recommended technologies by the coleus cultivation

(n=60)

S. No	Technologies	Number	Per cent
I	Land preparation	60	100.00
II	Cuttings and planting	53	88.33
III	Manures and fertilizers	47	78.33
IV	Weed management	31	51.66
V	Plant protection	44	73.33
VI	Harvest	60	100.00
		Mean Percentage	**81.94**

It could be observed from Table 2, that cent per cent of the respondents adopted the recommended harvesting techniques and land preparation followed by cuttings and planting (88.33 per cent), manures and fertilizer (78.33 per cent) plant protection (73.33 per cent) and weed management (51.66 per cent). The mean percentage score was also found to be more than eighty per cent (81.94 per cent).

C. Association and contribution of characteristics of coleus growers and their extent of adoption of recommended cultivation technologies

The association and contribution of characteristics of coleus growers and their extent of adoption of recommended cultivation technologies were worked out and the results presented in the subsequent tables.

Table-3. Association and contribution of characteristics of coleus growers and their extent of adoption of recommended cultivation technologies

(n = 60)

Var. No	Variables	'r' value	Standardized regression co-efficient	Standard error	't' value
X1	Age	0.173NS	0.371	0.161	1.439 NS
X2	Educational status	0.191*	2.159	1.122	1.947*

X3	Occupational status	0.102 NS	-0.978	0.762	-1.364 NS
X4	Farm Size	0.089 NS	1.511	1.021	1.501 NS
X5	Area under medicinal plants	0.139 NS	2.739	0.510	-1.424 NS
X6	Social Participation	0.203*	2.055	1.210	1.767*
X7	Extension agency contact	0.219*	0.641	0.309	2.141*
X8	Mass media exposure	0.159 NS	-1.003	1.403	1.463 NS
X9	Risk orientation	0.259**	0.988	0.410	2.454**
X10	Scientific orientation	0.239*	1.624	0.813	2.011*
X11	Cosmopoliteness	0.061 NS	-1.461	1.959	1.064 NS
X12	Export potentiality	0.159 NS	0.439	0.303	1.113 NS

a - 9.085 $R^2 = 0.539$ F = 7.024**
** - Significant at 0.01 per cent level of Probability
* - Significant at 0.05 per cent level of Probability
NS - Non – Significant

(i) Association of characteristics of coleus growers and their extent of adoption of recommended cultivation practices

The results in Table 3, exhibited that out of 12 variables considered for the study, the variables risk orientation (X_9) had shown positive and significant association with extent of adoption of coleus cultivation practices at one per cent level of probability. The variables educational status (X_2), social participation (X_6), extension agency contact (X_7) and scientific orientation (X_{10}) also had significant association at five per cent level of probability. The correlation values for the rest of seven variables showed non-significant association with the extent of adoption of coleus cultivation practices.

Educational status had shown positive and significant association at 0.05 per cent level of probability. It may be stated that more than 70.00 per cent literate would have enhanced the adoption of new and existing technologies in coleus cultivation. This finding is in line with the findings of Muthukumar (2013).

The Positive and significant association towards social participation at 0.05 per cent level of probability is understandable. It is quite natural that the respondents with medium level of social

participation would have more opportunities to acquire information and credit from various social institutions. This might have enabled them to identified their result is agreement with the results of Muthukumar (2013).

Extension agencies contact had also shown a positive and significant relationship at 0.05 per cent level of probability. Thus, it is quite obvious for the respondents with high extension agencies contact tendency to have increased adoption of medicinal plants technologies for better utilization of technologies. This results of is in agreement with the findings of Jeyaseelan (2005).

Risk orientation had shown a positive and significant association with extent of adoption of coleus is the characteristics feature of medicinal plant growers. Hence, the respondents with more risk orientation would have high level of adoption in coleus. This is how the positive and significant association between risk orientation and extent of adoption of recommended cultivation practices of coleus.

Scientific orientation had exhibited a positive and significant association at 0.05 per cent level of probability. This might be due to the fact that most of the coleus growers had high level of favour their attitude towards higher adoption in coleus cultivation. This result is in agreement with the results of Sudhakar (2007).

(ii) Contribution of Characteristics of coleus growers and their extent of adoption of recommended cultivation practices

The multiple regression analysis was performed in find out the extent of contribution of each characteristic towards the extent of adoption of recommended practices of coleus cultivation.

The data in Table 3 indicated that the R^2 value was 0.539 which revealed that 53.90 per cent of variation in the extent of adoption of coleus was explained by twelve variables selected for the study.

Since the ‘f’ value was significant at one per cent level of probability, the predication equation was found for the extent of adoption of recommended practices of coleus cultivation of the respondents as given below.

$$Y = 9.649 + 0.371x_1 + 2.159\ x_2 - 0.978\ x_3 + 1.511\ x_4 + 2.739\ x_5 + 2.055\ x_6 + 0.641\ x_7 - 1.003\ x_8 + 0.988\ x_9 + 1.624\ x_{10} - 1.461\ x_{11} + 0.439\ x_{12}$$

It could be seen from the above equation that the regression co-efficient of one variables namely risk orientation (X_9) were found to be positive and significant contribution towards the extent of adoption of coleus cultivation at one per cent level of probability. Educational status (X_2), social participation (X_6), extension agency contact (X_7) and scientific orientation (X_{10}) had positive and significant contribution at 0.05 per cent level of probability with extent of coleus cultivation practices.

The strength of contribution of these variables can be explained as an unit increased *ceteris paribus* in educational status (X_2), social participation (X_5), extension agency contact (X_7), risk orientation (X_9) and scientific orientation (X_{10}) would increased the extent of adoption of the respondents by 2.159, 2.739, 0.641, 0.988 and 1.624 units respectively.

Educational status, social participation, extension agency contact, risk orientation and scientific orientation showed positive and significant association with extent of adoption of coleus growers. Due to their rich knowledge in education coupled with scientific orientation they had more chance to search for new technologies in coleus. From the study, it could be conclude that educational status, social participation, extension agency contact, risk orientation and scientific orientation were the five variables that significantly contributed towards the adoption of respondents in coleus cultivation.

Conclusion

The results of this research give the following results. This may help policy makers and extension functionaries to devise strategies to increase the production of medicinal plants such as coleus.

The overall adoption level of recommended practices of coleus was medium level followed by high level. Out of twelve independent variables, five variables viz., education status, social participation, extension agency contact, risk orientation and scientific orientation were found to have positive and significant association with adoption level of coleus cultivation technologies. In regression analysis similar variables contributed positively and significantly towards adoption of coleus cultivation technologies. The ‘f’ value was found to be statistically significant at 0.01 per cent level of probability.

References

Jeyaseelan, P. 2005. Strategy for Widespread Commercial Cultivation of Medicinal Plants by Farmers - An Inquiry, Unpublished Ph.D. Thesis, Tamil Nadu Agricultural University, Coimbatore.

Maikhuri RK, Rao KS, and LS Kandari, 2005. Does the outreach programme makes an impact-A case study of medicinal and aromatic plant cultivation in Uttaranchal. Current Science 88: 1480–1486.

Muthukumar, R. 2013. A Study on Knowledge, Adoption and Marketing Behaviour of Medicinal Plant Growers, Unpublished Ph.D Thesis, Annamalai University, Annamalai Nagar.

Singh and M.Krishna, 2009, Scope of Medicinal and Aromatic Plants Farming in Eastern India SSRN: https://ssrn.com/abstract=2019789

Sudhakar, G. 2007. Awareness, Knowledge and Adoption of Recommended Cultivation Practices of Medicinal Plant Growers in Thiruvannamali District, Unpublished M.Sc (Ag.) Thesis, Annamalai University, Annamalai Nagar.