Decision-making Behaviour of Medicinal Plant Growers in Salem and Dindigul Districts

N. Suganthi[1*] and P. Balasubramaniam[2]

[1]*Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University (TNAU), Coimbatore- 641003, India.*
[2]*Department of Social Sciences, Anbil Dharmalingam Agricultural College and Research Institute (ADAC & RI), Trichy-620 009, India.*

Authors' contributions

This work was carried out in collaboration between both authors. Author NS designed the study, performed the statistical analysis, wrote the protocol, wrote the first draft of the manuscript and managed the analyses of the study. Authors NS and PB managed the literature searches. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Farm household today is constrained by shrinking net income, increased the cost of cultivation and uncertainty in prices. Hence this forced the farmers to switch over to Horticulture, Agroforestry and Sericulture. Consequently, in this backdrop, cultivation of medicinal plants is a new venture and has advantages when comparing between other crops. At this juncture, the decision-making behaviour of the farmers were studied in order to highlight their preference in decision making viz., making self-decision or by consulting with family members, relatives, progressive farmers, extension workers, traders in the field of crop shift, selection of variety, adoption of new practices, buy/sell land, post-harvest measures change in cropping pattern., to buy/sell land, for borrowing credit, marketing, to purchase equipment, for hiring labour and to start new enterprises.

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*Corresponding author: E-mail: suganthiextn@gmail.com;

1. INTRODUCTION

A wide range of medicinal plants is found in India due to agro-climatic variability which is responsible for increased demand for Indian medicinal plants in the International market in the recent years. The World Health Organization has estimated that the world herbal market is growing at the rate of 7-10% every year and is likely to increase more than 5 trillion US dollars [1]. Regarding the export of medicinal plants India's contribution to the international market is expanding rapidly [2]. Utilizing our biodiversity with proper planning, Indian herbal products can very well enter the overseas markets. This can be achieved through the increased cultivation of medicinal plants. Due to erratic rainfall, decreased water table, increased labour problem the farmers prefer to shift their cropping pattern. At this point, the cultivation of medicinal plants is found to be a new venture for the farmers. Keeping this in mind, the decision making behaviour of the respondents towards cultivation of medicinal plants wer studied in various aspects *viz.,* take independent/ self decision or by consulting with family members/relatives, progressive farmers, extension workers, traders in the field of crop shift, selection of variety, adoption of new practices, buy/sell land, post-harvest measures change in cropping pattern., to buy/sell land, for borrowing credit, marketing, to buy equipment, for hiring labour and to start new enterprises.

Emotional aversion to loss, our tendency to prioritise short-term gain over long-term needs, humans' propensity to 'blend-in' with what others are doing, and our collective preference for supporting the status quo over change is decision making [3].

2. METHODOLOGY

In Tamil Nadu, four medicinal plants namely *Coleus forskholii* (Coleus), *Gloriosa superba* (Glory lily), *Cassia Angustifolia* (Senna), *Catharanthus roseus (*Periwinkle*)* are widely cultivated. For the study, it has been decided to select the medicinal plants that occupy the maximum area under cultivation. Consequently, the medicinal plants *viz*., Coleus and Glory lily are cultivated in more than 1000 acres in Salem and Dindigul, hence these districts were purposely selected for the study.

The study was conducted during the year 2012 in Salem and Dindigul districts of Tamil Nadu. Out of the 31 districts in Tamil Nadu, Salem and Dindigul regions of has been selected purposively for the study due to its area under medicinal plants cultivation is more while comparing other districts of Tamil Nadu.

There twenty blocks in Salem district and fourteen blocks in Dindigul district, one block from each district namely Attur, Thoppampatti were selected purposely, the reason that these blocks had the maximum area under Coleus and Glory lily cultivation.

There are fourteen and ten villages under Attur and Thoppampatti blocks of Salem and Dindigul districts respectively. For this study, out of 24 revenue villages four villages from each of the two blocks were selected. The villages namely, Manjini, Valaiyamadevi, Pungavadi and Paithor (South) from Attur block of Salem district and Kallimathayam, Kariyampatti, Kuthampundi and Pusaripatti villages from Thoppampatti block of Dindigul district**,** were selected regarding area under cultivation in each town.

Farmers cultivating medicinal plants namely Coleus and Glory lily were the respondents for the study. A sample size of 150 medicinal plant growers was fixed for the study. A list of farmers cultivating these two medicinal plants for the respective eight selected villages was prepared with the help of the data given by the Departments of Horticulture of the respective blocks. There were 196 and 312 Coleus and Glory lily growers in the selected four villages of Salem and Dindigul district respectively. A sample size of 75 respondents from each district were selected for the study. The number of respondents from each of the selected village was fixed based on proportionate random sampling method by using the formula,

$$ni = \frac{Ni}{N} *n$$

Where,

ni= Number of respondents to be selected from the ith village

Ni = Number respondents in the ith village

N= Number of respondents in the four villages

n= Total number of respondents to be selected from the four villages

To get the data regarding the area under medicinal plant cultivation in the districts of Tamil Nadu and description of study area had been discussed through secondary data through different sources. Considering the objectives and the variables under the study, a comprehensive structured interview schedule covering all aspects was prepared. The items included in the interview schedule were objective type questions, the most relevant, unambiguous and practical questions were included in the schedule.

Initially, a group of independent variables relevant to the objectives of the study were selected based on the review of literature and discussion with experts. A list of 33 independent variables that might possibly influence the dependent variables has been identified. The experienced and senior behavioural scientists were requested to evaluate the degree of relevancy of each variable in the list on a three – point continuum.

The scores of 3, 2 and 1 were assigned for the "most relevant", "relevant" and "not relevant" responses respectively.

Based on the rating by judges, the mean and coefficient of variations were worked out for all the independent variables. The overall mean and coefficient of variations were also worked out. The criteria used for the selection of variables are as follows:

- The individual variables mean should be greater than the overall mean.

  Individual mean > Overall mean

- The individual variables co-efficient of variation (CV) should be less than the overall coefficient of variation.

  Individual CV < Overall CV

Through this process, 33 variables were selected based on the judges' ratings.

The interview schedule was designed into eight parts, and this particular objective belonged to the first part. A pilot study was conducted in the non sample area to pretest the schedule in order to test and verify the applicability of the schedule. Based on the experiences gained in pre-testing, necessary modifications were made in the schedule. The questions from the schedule were asked in the local language (in Tamil), hence there was no language bias. Percentage analysis

was used for making simple comparison for calculating percentages for different items in their Decision making behaviour. Percentage analysis was used in descriptive analysis for making simple comparison. For calculating percentages the frequency of particular cell was multiplied by hundred and divided by the total number of respondents pertaining to particular cell. The percentage was corrected to two decimal places.

3. FINDINGS AND DISCUSSION

Adoption usually starts with the recognition that a need exists and moves to searching for solutions, then to the initial decision to attempt the adoption of a solution and finally to the actual decision to attempt to proceed with the implementation of the solution [4]. In this study, decision making behaviour was operationalized as the pattern of decision taken by the Coleus and Glory lily respondents with respect to their farming conditions. Decision making as the process in which the individual engages himself in activities which leads a choice to adopt or reject an innovation [5]. The respondents may take independent decision or by consulting with family members/relatives, progressive farmers, extension workers, traders. In this study, responses regarding decision making pattern of several farm operations were obtained. Table 1 and Fig. 1 explains the distribution of the respondents according to their decision making behavior.

From the analysis of the results in Table 1 it could be observed that, little less than half (49.00%) of the medicinal plant growers took self decision regarding their farming practices, 21.00 per cent consulted their friends and progressive farmers and the remaining 6.00 per cent and 3.00% per cent of the growers consulted the extension workers and traders for taking decision respectively. Majority (63.00%) of the Coleus growers took self decision followed by 16.00% per cent who consulted with their friends/relatives, 12.00 per cent consulted with progressive farmers/contract farmers. The remaining 5.00 per cent and 4.00 per cent of the growers consulted extension workers and traders for taking decision respectively.

And 35.00 per cent of the Glory lily growers took self decision, 30.00 per cent took decision in consultation with progressive farmers, 25.00 per cent consulted friends/relatives, and 7.00 per cent and 3.00 per cent of the Glory lily growers consulted extension workers and traders for taking decision respectively. While comparing the

Table 1. Distribution of respondents according to their decision making behaviour (n=150)

S. no	Category	Coleus growers (n=75)		Glory lily growers (n=75)		Total (n=150)	
		No.	%	No.	%	No.	%
1.	Self decision without consulting others	47	63.00	26	35.00	73	49.00
2.	Consulting Parents/ friends/ relatives	12	16.00	19	25.00	31	21.00
3.	Consulting with Progressive / contract farmers	9	12.00	23	30.00	32	21.00
4.	Consulting with extension workers	4	5.00	5	7.00	9	6.00
5.	Consulting with traders	3	4.00	2	3.00	5	3.00
	Total	**75**	**100.00**	**75**	**100.00**	**150**	**100.00**

Coleus and Glory lily growers we can analyse that more than half of the Coleus growers (63.00 %) took self decision whereas only 35.00 per cent of the Glory lily growers took self decision. While comparing the age category of the growers, little less than half (47.00%) of the Coleus growers belonged to the old age category whereas among Glory lily growers nearly half (49.00%) of the growers were found to be middle aged, two-fifth (35.00%) were found to be young hence this might be the reason behind their decision making behaviour.

Similarly to support the study, Deepa Bharathi found that more than three fourth (75.83%) of Senna growers were taking self- decisions before marketing the produce [6].

The probable reasons for self decision among both the growers might be due to their experience, reliability, trustworthiness and self confidence they placed upon themselves and the age of the Coleus respondents might have been an added advantage for the above result. These findings are in line with the findings of Sujatha [7].

From the perusal of the results in Table 2 it could be noticed that, self decision making was widely prevalent among the Coleus growers, the Glory lily growers took self decision with the support from relative/friends and progressive farmers. But for marketing purpose both Coleus and Glory respondents had to depend on traders/brokers for taking decision. In the rest of the twelve aspects, more than three-fourth of the Coleus growers took self decision *viz.,* crops to be grown, selection of variety, about cultivation practices, adoption of new practice, change in cropping pattern, buying land, credit borrowing, buying equipment, for land improvement, post harvest measures, for starting enterprise and for hiring labour. The reason for self decision among Coleus respondents might be their age, experience and confidence level.

The Glory lily growers especially relied on progressive farmers for taking decision in the aspects like crops to be grown, selection of variety, about cultivation practices and to change cropping pattern. The farm related activities are highly interwoven with each other and involves many risk factors. However the farmer to farmer communication could have enabled the farmer to triangulate on every factor before taking up decision. Hence Glory lily growers might have relied on the progressive farmers for taking decision. More than three-fourth of the Glory lily growers took self decision in the other aspects like, post harvest measures, credit borrowing, for land improvement and for hiring labour.

More than half of the Glory lily growers took self decision in buying equipment, adoption of new practice, for starting enterprise and for buying land. Regarding the Glory lily growers nearly half (49.00%) of the growers were found to be middle aged, two-fifth (35.00%) were found to be young and 16.00 per cent of the Glory lily growers were old aged, so along with their decision they also relied upon the progressive farmer's decision too. Physical proximity and less contact with extension officials and scientists might be the reasons for less dependence of these sources for decision making. This finding is in line with the findings of Sujatha and contradictory with the findings of Ramasubramanian [8,9].

Table 2. Category wise decision making behavior of the respondents

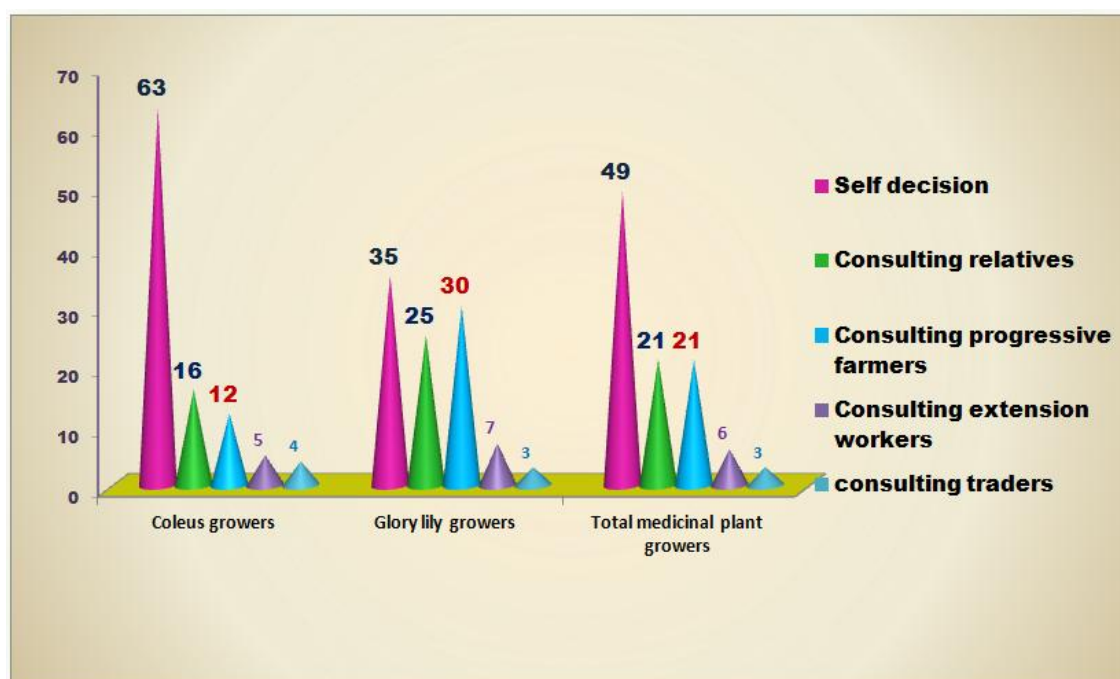| S. no	Decision making behaviour	Self decision				Consulting with parents/ friends/ relatives				Consulting with progressive / contract farmers				Consulting with extension workers				Consulting with traders			
		Coleus respondents		Glory lily respondents		Coleus respondents		Glory lily respondents		Coleus respondents		Glory lily respondents		Coleus respondents		Glory lily respondents		Coleus respondents		Glory lily respondents	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1.	Crops to be grown	64	85.00	17	23.00	9	12.00	10	13.00	2	3.00	46	61.00	-	-	2	3.00	-	-	-	-
2.	Selection of variety	69	92.00	15	20.00	3	4.00	10	13.00	-	-	48	64.00	3	4.00	2	3.00	-	-	-	-
3.	About cultivation practices	66	88.00	27	36.00	2	3.00	14	19.00	-	-	31	41.00	-	-	3	4.00	7	9.00	-	-
4.	To adopt new practices	71	95.00	41	55.00	4	5.00	5	7.00	-	-	29	38.00	-	-	-	-	-	-	-	-
5.	Post harvest measures	70	90.00	57	76.00	5	7.00	18	24.00	-	-	-	-	-	-	-	-	-	-	-	-
6.	To change cropping pattern	66	88.00	17	23.00	4	5.00	17	23.00	-	-	41	54.00	5	7.00	-	-	-	-	-	-
7.	To buy/sell land	70	93.00	45	60.00	5	7.00	30	40.00	-	-	-	-	-	-	-	-	-	-	-	-
8.	For credit borrowing	64	85.00	53	71.00	-	-	9	12.00	-	-	-	-	11	15.00	13	17.00				
9.	Marketing	25	33.00	13	17.00	6	8.00	3	4.00	-	-	5	7.00	-	-	-	-	44	59.00	54	72.00
10.	To buy equipment	62	83.00	40	53.00	6	8.00	11	15.00	-	-	14	19.00	7	9.00	10	13.00	-	-	-	-
11.	Land improvement	70	93.00	52	70.00	-	-	7	9.00	-	-	4	5.00	5	7.00	12	16.00	-	-	-	-
12.	Hiring labour	71	95.00	72	96.00	4	5.00	3	4.00	-	-	-	-	-	-	-	-	-	-	-	-
13.	To start new enterprises	53	71.00	40	53.00	12	16.00	14	19.00	6	8.00	9	12.00	4	5.00	12	16.00	-	-	-	-

Multiple responses

Fig. 1. Distribution of respondents according to their decision making behavior

4. CONCLUSION

While the rational perspective has been shown to describe decision making adequately in certain contexts, applying it to operational decision-making in agriculture is problematic and even impractical [10]. Hence decision making in agriculture especially marketing is very crucial and important. Here self decision, consulting progressive farmers and traders played a major role in decision making. Particularly when the marketing aspect is considered majority (72.00 per cent) and little more than half (59.00 per cent) of the Glory lily and Coleus growers had to depend on the traders. The attributed reasons might be due to existence of contract farming in Coleus Cultivation which might have helped the growers to sell their produce but the non existence of contract farming might have made the Glory lily growers to fully depend upon the brokers to sell their produce.

The extension professionals played a meager role in consulting with the farmers in the decision making process. Hence the Extension personnel and agricultural officers may be involved in creating awareness towards medicinal plant cultivation for quick dissemination of timely information to the growers. Enough field trials/ demonstration may be conducted on medicinal plants by the SAU's and State Department of Horticulture. As marketing plays a major role, standardization of prices by the Government for each medicinal plant might be a good initiative and if the price information is passed on to the farmers from the extension functionaries the decision making pattern will entirely change. The farmers need not depend upon the traders or intermediaries to take up decision.

It is a qualitative study, which largely relied on the responses received from the farmers about what they knew and felt about. Therefore, the validity of responses and generalizations made out of them may be applicable only to similar situations. This study also suffered from paucity of literature since only limited studies are available on the said dimensions. The suggestive areas for future research may include *viz.,* A study on potentials, scope of integrated farming system and their influence on cultivation of medicinal plants may be analysed and Identification of indigenous knowledge in medicinal plant cultivation, its usage, documentation and validation may be an effective study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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