

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 12; December 2024; Page No. 99-103

Received: 18-09-2024
Accepted: 27-10-2024

Indexed Journal
Peer Reviewed Journal

Demographic Profile of medicinal plant growers in the Nilgiris

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DOI: <https://doi.org/10.33545/26180723.2024.v7.i12b.1387>

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Abstract

This study investigates the demographic profile and behavioral traits of medicinal plant growers in the Nilgiris district of Tamil Nadu, India. Given the challenges in tea cultivation, such as labor shortages, increased costs, and declining profits, many small and marginal farmers are transitioning to medicinal crops. This research uses primary data from 120 respondents through structured interviews and PRA methods and secondary data from government departments. Statistical tools, including percentage analysis, ranking, correlation, and regression, were employed. The findings indicate that most farmers are older, possess small landholdings, and have moderate education levels. They demonstrate medium levels of scientific orientation, risk-taking, innovativeness, and favorable attitudes toward medicinal crop cultivation. Rosemary and thyme are identified as profitable alternatives to tea due to their lower input costs and higher market potential. The study highlights the economic feasibility and environmental benefits of medicinal crop cultivation, recommending its promotion among smallholders to enhance income and sustainability.

Keywords: Medicinal plant growers, demographic profile

Introduction

Nilgiris is part of the Western Ghats forming an important area of tropical rain forests in India. Nilgiris district of Tamil Nadu is considered a Horticulture district and around 93% of the land holdings are small and marginal. Out of the net sown area, 99% falls under rainfed. The number of small farmers in the district is about 75000 with the individual land holding area of less than one acre. Several threats in Tea cultivation has forced the farmers to look for alternate crops. Severe labour shortage, increased cost of cultivation, frequent drought and flood situations, decreasing green leaf price for Tea and threat from increasing real estate prices are few of them. Among the horticultural crop, Medicinal crop cultivation is suited to all elevations of Nilgiris district. Rosemary, Thyme, citronella and lemon grass are more suitable aromatic plants. Horticultural Research Station, Tamil Nadu Agricultural University, Udumalpet has released two promising varieties in Rosemary and Thyme and offers technical knowhow on cultivation and post harvest handling of medicinal crops. Considering all the realities, finding alternate cropping pattern through crop diversification is one of the prime requirements of farming community in the Nilgiris District. Medicinal crops are well suited in all elevations of Nilgiris district. Medicinal crops are used as culinary herbs, in the preparation of oils and in cosmetic and perfumery industries.

Methodology

Selection of the study area

Nilgiris District is selected for the study.

Sampling Design

Representative Villages were identified from the selected areas. The key informant method was followed. A well-structured interview schedule was developed for primary data collection. A total of 120 informants were selected and the information was collected through the Interview schedule and through PRA method

Data collection Tools

The tools and techniques to be deployed for the study are:

- Transit walk
- Social mapping
- Resource mapping
- Focus Group Discussion
- Visits and discussion with NGOs
- Observation visits
- Interview with the Key informants

Sources of secondary data

The secondary data to be collected from the following Departments and also discussions with the list of officials given below;

- Department of Horticulture
- Department of Forests
- Census Department
- RTI data
- NHM

Statistical Methods

The following statistical methods would be applied for analysis of data

- Percentage analysis
- Ranking
- Correlation
- Regression

Results and Discussion

Mapping the profile, land use pattern and crop diversification scenario of medicinal plant growers in Nilgiris

Profile characteristics of farmers

a. Age

Table 1: Distribution of the respondents based on their age (n=120)

S. No.	Category	Frequency	Per cent
1.	Young (Up to 35 years)	5	4.17
2.	Middle (From 36-45 years)	32	26.70
3.	Old (Above 45 years)	83	69.20
Total		120	100.00

The respondents comprising more than two-thirds (69.20%) fell into the old age category. Additionally, 26.70 per cent of the respondents belonged to the Middle age category, while 4.10 per cent were classified in the old age category. Less young respondents may have been the outcome of young people moving to cities and towns for their education and alternative employment. The results of this study are consistent with those of Deepika (2018) [6].

b. Educational status

Table 2: Distribution of the respondents based on their educational status (n=120)

S. No.	Category	Frequency	Per cent
1.	Illiterate	1	0.83
2.	Functionally Literate	2	1.66
3.	Primary School Education	11	9.16
4.	Middle School Education	10	8.33
5.	Secondary School Education	41	34.16
6.	Higher Secondary education	15	12.50
7.	Collegiate education	40	33.33
Total		120	100.00

The largest group, comprising more than one-third (34.16%) of the respondents had secondary school education, while 33.33 per cent had completed collegiate education, and 12.50 per cent had higher secondary education. A smaller percentage of respondents had primary school education (9.16%), and an even smaller number had a Middle school education (8.33%). Surprisingly, only 1.66 per cent and 0.86 per cent of the respondents were functionally literates and illiterates respectively.

This suggests that the study's participants were a reasonably

educated population. In addition, compared to farmers in other districts, Nilgiris farmers have a quite higher level of education. The results of this investigation corroborate Promodh (2019) [16] conclusions.

c. Farm size

Table 3: Distribution of respondents based on their farm size (n=120)

S. No.	Category	Frequency	Per cent
1.	Marginal Farmer (Up to 2.5 acres)	70	58.33
2.	Small Farmer (2.5-5.00 acres)	27	22.50
3.	Medium Farmer (5.00-10.00 acres)	19	15.84
4.	Big Farmer (>10 acres)	4	3.33
Total		120	100.00

More than half (58.33%) of the respondents belong to the marginal farmer category, owning and with an acreage of less than 2.5 acres. Following that, 22.50 percent fall under the small farmer category, 15.84 per cent under the medium farmer category and 3.33 per cent under the big farmer category. The gradual fragmentation of joint households and subsequent land fragmentation could be one explanation for the predominance of smaller landholdings. The study area has a higher proportion of small and marginal landowners due to the tendency of individual landholdings to diminish as the land is shared among family members. The results of this study support those of Channamallikarjuna (2019) [13] findings.

d. Landownership

Table 4: Distribution of respondents based on their land ownership (n=120)

S. No.	Category	Frequency	Per cent
1.	Owned	101	84.17
2.	Leased	19	15.83
Total		120	100.00

Approximately 84.17 percent of the respondents had their own land, according to the information in Table. Following this, 15.83% of the participants had rented land for farming. This may be related to the respondent's repeated taking over land from their ancestors. Additionally, they view owning tea estates as a legacy for their family. The results of this study support those of Deepika (2018) [6] study.

e. Annual Income

The gross annual income of a particular farmer at the time of the investigation was considered in this study. Table reveal the findings of the respondent's yearly income.

Table 5: Distribution of respondents based on their annual income (n=120)

S. No.	Category	Frequency	Per cent
1.	Low (<1,00,000/-)	49	40.83
2.	Medium (1,00,001 – 4,00,000/-)	65	54.17
3.	High (>4,00,000/-)	6	5.00
Total		120	100.00

Based on the information in Table, it can be estimated that about 54.1% of the respondents had an annual income that

was in the range of Rs. 1,00,001 to Rs. 4,00,000. The following categories included those with low annually earned incomes (below Rs. 1,00,000), which accounted for 40.83 percent of respondents, and those with high annual incomes (above Rs. 4,00,000), which made up 5% of respondents. The high input costs, smaller farm sizes, and an insufficient price for tea leaves may also have contributed to the findings, which may explain why the majority of respondents fell into the low and medium annual income categories.

f. Information seeking behaviour

The frequency with which a person engages with diverse information sources is referred to as information seeking behaviour. The Table revealed the findings about the respondent's information-seeking behaviour.

Table 6: Distribution of respondents based on their information seeking behavior (n=120)

S. No.	Category	Frequency	Per cent
1.	Low (<34)	17	14.20
2.	Medium (34-44)	96	80.00
3.	High (>44)	7	5.80
Total		120	100.00

Approximately 80.00% of the respondents exhibited a medium level of information seeking behaviour, according to the information in Table. The next highest categories were those with low level of information seeking behaviour (14.20%) and those with high level of information seeking behaviour accounted for 5.80% of the respondents.

Because most farmers were educated and aware of the value of information sources, it is possible that the respondent's medium level of information seeking behaviour is due to their use of all information sources, including personal, local, and impersonal cosmopolites, to some extent. The horticultural department's regular meetings, the use of television, and the utilization of mobile phones to access all kinds of information were additional factors in the medium level of information seeking behaviour. The results of this investigation corroborate those of Promodh (2019) [16].

g. Social participation

Social participation is the degree to which respondents participate in official organizations, either as members or office holders. Table revealed the data about the respondent's social participation.

Table 7: Distribution of respondents based on their social participation (n=120)

S. No.	Category	Frequency	Per cent
1.	Low (<4)	15	12.50
2.	Medium (4-7)	89	74.17
3.	High (>7)	16	13.33
Total		120	100.00

Approximately 74.17 percent of the respondents had a medium degree of social participation, according to the statistics in the table. The next two categories were those with a high degree of social participation (13.33%) and those with a low level of social participation (12.50%).

It was noted from the Table that most farmers have a

tendency to join social organizations like NGOs, FIGs, FPOs, and specific tea associations in order to take advantage of the benefits offered by the government and NGOs for sustainable tea cultivation. The results of this investigation support those of Deepika (2018) [6].

h. Scientific orientation

Supre defined scientific orientation as a farmer's readiness to use scientific techniques in farming. Table revealed the findings on the respondent's scientific orientation.

Table 8: Distribution of respondents based on their scientific orientation (n=120)

S. No.	Category	Frequency	Per cent
1.	Low (<27)	19	15.80
2.	Medium (27-37)	84	70.00
3.	High (>37)	17	14.20
Total		120	100.00

A significant majority of the respondents (70.00%) had a medium level of scientific orientation, according to the results shown in the Table. The next two categories were those with a low level of scientific orientation (15.80%) and those with a high level of scientific orientation (14.20%).

The farmers were found to have a medium level of information seeking behaviour, and the majority of them were literate with education above secondary school, which paved the way for better understanding of the scientific concepts in farming. This led to the conclusion that the majority of the respondents had a medium level of scientific orientation. The results of this investigation complement those of Naveen kumar (2016) [15].

i. Innovativeness

The degree to which a farmer embraces unique ideas at an early stage within the larger social system is referred to as innovativeness. The information about the respondent's inventiveness is shown in Table 9.

Table 9: Distribution of respondents based on their innovativeness (n=120)

S. No.	Category	Frequency	Per cent
1.	Low	3	2.50
2.	Medium	80	66.70
3.	High	37	30.80
Total		120	100.00

The data shown in the Table clearly shows that the majority of respondents, about 66.70%, displayed a medium level of innovativeness. Additionally, 2.05 percent of the respondents showed low levels of innovativeness, compared to 30.80 percent of the respondents who showed high levels of it.

It was clear that the majority of respondents had a medium level of innovativeness and had accepted new technology after seeing it. Farmers may be cautious in embracing new technologies because they fear losing money if the technology fails because the majority of them are small and marginal farmers with middling annual incomes. The outcomes concur with study support those of Kumar (2016) [15] research.

j. Deferred gratification

Delaying present satisfaction in favour of prospective future advantages is known as deferred gratification. Table 10 revealed the findings on the respondents' ability to postpone gratification.

Table 10: Distribution of respondents based on their deferred gratification (n=120)

S. No.	Category	Frequency	Percent
1.	Low (<18)	15	12.50
2.	Medium (18-27)	99	82.50
3.	High (>27)	6	5.00
Total		120	100.00

According to the results shown in Table, a substantial proportion of the respondents (82.50%) showed a medium level of deferred gratification. Additionally, 12.50% demonstrated a low level of deferred gratification while 5.00% demonstrated a high amount.

This may be due to the fact that most farmers had medium annual incomes and were not as cautious with their expenditures while keeping in mind with their resources and goals. The results of this study concur with those of Devagowda 2021^[14].

k. Risk Orientation

The respondent's level of propensity to take risks is referred to as their risk orientation. The information in Table relate to the respondent's risk orientation, which indicates how ready or eager they are to adopt medicinal plants cultivation.

Table 11: Distribution of respondents based on their risk orientation (n=120)

S. No.	Category	Frequency	Percent
1.	Low (<25)	16	13.33
2.	Medium (25-34)	92	76.67
3.	High (>34)	12	10.00
Total		120	100.00

According to the information in the Table, a sizeable majority of the respondents (76.67%) displayed a medium level of risk orientation. Additionally, ten percent demonstrated a high level of risk orientation, compared to 13.33 percent who showed a low level.

These results imply that farmers were generally willing to take calculated risks when implementing new technologies, even when other fellow farmers were not doing so. Their higher level of education, moderate level of innovativeness, and scientific attitude may have an impact on their readiness to take risks. The results of this investigation are consistent with those of Singh (2022)^[12].

l. Attitude of farmers towards Medicinal plant cultivation

In this study, attitude is defined as a factor that directs and influences how a farmer responds to medicinal plant cultivation. The Table reveal the findings about the respondent's attitudes towards Medicinal Plants cultivation.

Table 12: Distribution of respondents based on their attitude of farmers towards Medicinal Plant cultivation (n=120)

S. No.	Category	Frequency	Percent
1.	Unfavourable (<37)	14	11.67
2.	Favourable (37-44)	76	63.33
3.	Highly favourable (>44)	30	25.00
Total		120	100.00

The results shown in Table indicated that a significant proportion of the respondents (63.33%) had a favourable attitude towards medicinal plants cultivation. Additionally, about 25.00 percent of the respondents had attitude that were highly favourable, whereas 11.67 percent had attitude that were unfavourable.

Most farmers have a favourable view towards medicinal plants cultivation. The majority of the farmers had at least their secondary education. These level of education assist farmers in developing a positive attitude towards medicinal plants cultivation. It could be also explained by a moderate to high level of information seeking behaviour, risk orientation, and a moderate scientific orientation. The majority of the suggested practices were straightforward and simple to implement, which helped the respondents to develop positive attitude towards medicinal plants cultivation. This result is consistent with Singh (2022)^[12] findings.

Promising features of Cultivation and value addition of medicinal plants through Garrett ranking

1. Minimal input cost
2. Minimal management practices
3. Drought tolerant
4. Not affected by wild animals
5. Stable market price
6. Able to market as fresh and dry
7. Can be marketed with value addition (aromatic oil can be distilled)
8. Less labour intensive
9. Can be cultivated as perennial crop thorough out the year
10. Suitable for slope area
11. Suitable for small land holding pattern
12. High income potential per unit area
13. Suitable for promotion through FPOs and SHGs
14. Can prevent soil erosion and maintain soil fertility
15. Suitable for organic farming
16. Suitable as intercrop in tree orchards

Cost economics of Rosemary Vs Tea cultivation in one acre

Details	Rosemary	Tea
Population density/acre	20000	4300
Average Green leaf yield per acre	5 tonnes	5 tonnes
Estimated cost of cultivation per acre per year (Rs.)	110000/-	50000/-
Estimated market price per kg (Rs.)	65/-	20/-
Estimated Income per acre (Rs.)	3,25,000/-	1,00,000/-
BCR	1:3	1:2

The estimated cost of cultivation from the above table clearly indicates the advantages of rosemary cultivation *in lieu* of tea cultivation. The BCR in terms of rosemary is 1: 3 while in tea it is 1:2. Besides the tea price is also a high fluctuating one.

Further, it also has an added advantage of essential oil extraction of the medicinal plants which increases the BC ratio and the IRR of the crop cultivation compared to several other horticulture crops of the district.

Conclusion

Considering the advantages of growing medicinal plants viz., income, preparation of value added products, low maintenance practices compared to tea plantation, the farmers are came forward for medicinal plant cultivation which has more market potential in Nilgiris itself because of tourist place.

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