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Extent of farmers' participation in medicinal plants cultivation in Tamil Nadu

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Abstract

A farmer level survey was conducted during 2019 to study the extent of satisfactory level of medicinal plants cultivation (2013-14 & 2014-15) in Tamil Nadu. The survey was conducted with 16,843 sample farmers (100 per cent) covering 31 districts through questionnaire method. Details on status of approved species, cultivated area, loan receipt, storage subsidy, planting materials, technical support and grant utilization was collected. The results revealed that majority of the farmers partially converted their land holding and have raised the crop in 100 per cent approved area and subsidy through banks. Farmers produced their own planting materials and received technical support from horticulture department and the research organizations. The survey imprints that the project implemented through cluster approach have given the positive impact on medicinal plants cultivation in Tamil Nadu.

Keywords: Medicinal plants, level of satisfaction, planting materials, storage, demonstration, grant utilization.

1. Introduction

The vast range of agro climatic conditions in India, varying from alpine/mild temperate to tropical regions with abundant rainfall and sunshine make it ideal condition for growing of medicinal plants. Tamil Nadu state have endowed with incredible natural resources and wide range plant species with pharmaceutical value. More than 1000 species of medicinal plants are cultivated in Tamil Nadu. This state is one of the largest producer of alkaloid bearing plants in the country. About 13,700 hectares are under cultivation of medicinal and aromatic plants in Tamil Nadu state (Horticultural Statistics at a Glance, 2018) [1].

The medicinal plants like Gloriosa (*Gloriosa superba*), Medicinal coleus (*Coleus forskohlii*), Periwinkle (*Catharanthus roseus*), Thulasi (*Ocimum sanctum*) and Senna (*Cassia angustifolia*) are commercially cultivated. These plants mostly grown in Tirunelveli, Tuticorin, Kanyakumari, Madurai, Theni, Dindigul, The Nilgiris, Tiruppur, Coimbatore, Erode, Salem, Tiruvannamalai and Perambalur districts. There has been a tremendous upsurge in the demand of phytopharmaceutical raw medicinal herbs and vegetable drugs of Indian origin from the Western Ghats (Rajamani *et al.*, 2017) [3].

To harness the demand of medicinal plants, the above species can be include in the cropping system as a sole crop to increase the productivity and profitability. The waste lands and problematic soils could also be made cultivable lands with selection of suitable high yielding and remunerative medicinal plants (Kalaichelvi and Arul Swaminathan, 2009) [3].

Considering the vast importance of medicinal plants and to promote cultivation in Tamil Nadu, a medicinal plants project was implemented in Tamil Nadu during 2013-14 and 2014-15. Therefore, the survey on the level of farmers participation in medicinal plants cultivation was conducted.

2. Materials and methods

The present investigation was undertaken in the form of survey at Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore covering 31 districts. Since the survey, aims at assessing the participation of the farmers in the project the entire population of the project beneficiaries are covered by personal contact and collected the needed information with the prescribed survey schedule. The survey instrument consists of two schedules one to collect information from the beneficiary farmers and another one schedule is the assessment report to be given by the interviewer based on the information collected from the beneficiary farmers. The survey was conducted with 16,843 farmers for the period 2013-14 and 2014-15 as presented below.

All the beneficiaries of the projects were the population and were contacted for conducting the study. The sampling was done with complete enumeration of the famers. The collected data were pooled, mean and percentage analysis was done. Satisfactory level was assessed based on the score card provided by the NPC, New Delhi and results are interpreted in this paper.

3. Results and discussion

Table 1: Species wise area under cultivation approved species

S. No.	Medicinal plant species	Farmer registered for cultivation of approved species (Nos)	Farmer under cultivation of approved species (Nos)	Approved Area (ha)	Area cultivated (ha)			Percentage
					2013-14	2014-15	Total area	
1	<i>Coleus forskohlii</i>	2973	5479	5092	2917.53	1804.3	4721.83	57.40
2	<i>Gloriosa superba</i>	6686	2659	711	559.47	836.97	1396.44	16.98
3	<i>Solanum nigrum</i>	41	18	25	10.18	24.32	34.5	0.42
4	<i>Ocimum sanctum</i>	28	23	24	13.49	18.28	31.77	0.39
5	<i>Cassia angustifolia</i>	1578	1406	1355	1067.66	252.59	1320.25	16.05
6	<i>Catharanthus roseus</i>	0	0	0	0	267.07	267.07	3.25
7	<i>Acorus calamus</i>	450	1	30	7.5	16.12	23.62	0.29
8	<i>Piper longum</i>	34	55	50	49	0	49	0.60
9	<i>Embllica officinalis</i>	206	168	173	189.56	180	369.56	4.49
10	<i>Aloe vera</i>	50	1	5	0	1	1	0.01
11	<i>Azadirachta indica</i>	120	11	15	11	0	11	0.13
	Total	12166	9827	7480	4825.39	3400.65	8226.04	100.00

3.2 Satisfactory level of farmers for medicinal plants cultivation in Tamil Nadu

The satisfactory level of farmers is presented in the Tables 2 – 4. The results revealed that majority of the farmers partially converted their land holding for medicinal plants cultivation and also it is noted that, farmers turned out to medicinal plants cultivation from traditional cash crops like paddy, maize, cotton, jowar, groundnut, banana, coconut, bajra, urd bean, moong bean, vegetables and flowers. Very few farmers have totally turned for medicinal plants cultivation. Farmers have raised the crop in the 100 per cent approved area.

All the sample farmers did not availed loan for medicinal plants cultivation and not any storage subsidy for the produce (Table 3). The respondents have received the subsidy grant through the banks and found 100 per cent satisfactory level on the mode of grant receipt. The yield of any plant species is depend on the quality of planting material used. The respondents have indicated that, most of the farmers produced

3.1 Cultivation status of approved species

The cultivation status of medicinal plants is presented in the Table 1. During 2013-14 and 2014-15, a total area of 4825.39 ha and 3400.65 ha was cultivated with the approved medicinal species. The actual area under approved plant species (8226.04 ha) during the project period was more than the approved area (7480 ha). Among the species, the larger group of farmers have cultivated coleus (5479 numbers) and gloriosa (2659 numbers).

their own planting material and for crops like *Embllica officinalis* (Amla) and *Azadirachta indica* (Neem), the seedlings were obtained at the department nursery established through the NMMP and NMPB medicinal plants project. With respect to quality, all the farmers have planted good quality healthy seedlings.

The satisfaction level on technical support, grant utilization and overall observations are presented in the Table 4. The overall score revealed that, all the sample farmers have received technical support on crop cultivation, plant protection measures and harvesting and processing either from horticulture department or the research organizations located at their localities. However, the farmers have not given training or demonstration during the project period. The grants received by the farmers and by the government were fully utilized (100 per cent) for the medicinal plants cultivation.

Table 2: Satisfactory level of respondents on crop diversion and cultivation based on scoring method

S. No.	Species cultivated in study area	Crop diversion	Area cultivated	Crop cultivation
1	<i>Gloriosa superba</i> (Gloriosa)	Paddy, Maize, Groundnut, Jowar, Moong dhal, Tapioca, Cashew nut	Partial / Total	Raised as per approval
2	<i>Coleus forskohlii</i> (Coleus)	Paddy, Maize, Cotton, Jowar, Bajra, Groundnut, Urd bean, Tapioca, Chrysanthemum, Marigold	Partial / Total	Raised as per approval
3	<i>Solanum nigrum</i> (Black night shade)	Groundnut	Partial	Raised as per approval
4	<i>Ocimum sanctum</i> (Thulsi)	Groundnut, Banana Coconut, Rubber, Jasmine	Partial	Raised as per approval
5	<i>Catharanthus roseus</i> (Periwinkle)	Paddy, Cotton, Maize, Bajra, Groundnut, Moong bean, Urd bean, Jowar	Partial	Raised as per approval
6	<i>Acorus calamus</i> (Vasambu)	Paddy	Partial	Raised as per approval
7	<i>Piper longum</i> (Thippli)	Banana, Coconut, Rubber, Jasmine	Partial	Raised as per approval
8	<i>Embllica officinalis</i> (Amla)	Paddy, Maize, Tapioca, Jowar, Bajra, Vegetables	Partial/Total	Raised as per approval
9	<i>Aloe vera</i> (Aloe)	Vegetables	Total	Raised as per approval
10	<i>Azadirachta indica</i> (Neem)	Tapioca, Jowar	Partial	Raised as per approval
11	<i>Cassia angustifolia</i> (Senna)	Paddy, Maize, Cotton, Groundnut, Bajra, Jowar, Urd bean, Moong bean, Vegetables	Partial/Total	Raised as per approval

Table 3: Satisfactory level of respondents on grant receipt, storage subsidy and planting material supply

S. No	Species cultivated in study area	Loan receipt	Grant receipt	Storage subsidy	Planting material	Condition of planting material
1	<i>Gloriosa superba</i> (Gloriosa)	No	Through banks	Not received	Produced by own	Used good quality planting material
2	<i>Coleus forskohlii</i> (Coleus)	No	Through banks	Not received	Produced by own/ Cluster head	Used good quality planting material
3	<i>Solanum nigrum</i> (Black night shade)	No	Through banks	Not received	Produced by own	Used good quality planting material
4	<i>Ocimum sanctum</i> (Thulasi)	No	Through banks	Not received	Produced by own/ Other source	Used good quality planting material
5	<i>Catharanthus roseus</i> (Periwinkle)	No	Through banks	Not received	Other sources/ Produced by own	Used good quality planting material
6	<i>Acorus calamus</i> (Vasambu)	No	Through banks	Not received	Produced by own	Used good quality planting material
7	<i>Piper longum</i> (Thippli)	No	Through banks	Not received	Produced by own	Used good quality planting material
8	<i>Emblica officinalis</i> (Amla)	No	Through banks	Not received	NMMP nursery/ Produced by own/ Other sources	Used good quality planting material
9	<i>Aloe vera</i> (Aloe)	No	Through banks	Not received	Other sources	Used good quality planting material
10	<i>Azadirachta indica</i> (Neem)	No	Through banks	Not received	NMMP nursery	Used good quality planting material
11	<i>Cassia angustifolia</i> (Senna)	No	Through banks	Not received	Other sources / Produced by own	Used good quality planting material

Table 4: Satisfactory level of respondents on technical support and grant utilization

S. No	Species cultivated in study area	Technical support	Demonstration	Grant Utilization	Remarks
1	<i>Gloriosa superba</i> (Gloriosa)	Research institutions / Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Low price, prone to disease attack, increased subsidy, no cluster formation, Poor pollination, Price fluctuation
2	<i>Coleus forskohlii</i> (Coleus)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Subsidy to be raised
3	<i>Solanum nigrum</i> (Black night shade)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation
4	<i>Ocimum sanctum</i> (Thulasi)	Research institutions / Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Can be suggested to other areas
5	<i>Catharanthus roseus</i> (Periwinkle)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation
6	<i>Acorus calamus</i> (Vasambu)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation
7	<i>Piper longum</i> (Thippli)	Research institutions / Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation
8	<i>Emblica officinalis</i> (Amla)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation, Drought
9	<i>Aloe vera</i> (Aloe)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation
10	<i>Azadirachta indica</i> (Neem)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	Price fluctuation, Drought
11	<i>Cassia angustifolia</i> (Senna)	Horticulture department	Farmer not attended training or any demonstration	Fully Utilized	No rainfall

Interviewed farmers have indicated that the following bottle necks in medicinal plants cultivation.

- Price fluctuation. Assured price was not realized in the market (Eg. *Gloriosa superba*, *solanum nigrum*, *Catharanthus roseus*, *Piper longum*, *Aloe vera* and *Azadirachta indica*).
- High pest and disease incidence (Eg. *Gloriosa superba*)
- Subsidy sanctioned was not adequate (Eg. *Gloriosa superba*, *Coleus forskohlii*)
- Less number of cluster formation (Eg. *Gloriosa superba*)

4. Outcomes and recommendations

The survey result envisages the level of satisfaction and considerable improvement in their livelihood through the medicinal plants project implemented by the State Department of Horticulture & Plantation Crops, Government of Tamil Nadu. The results clearly indicates that, majority of the farmers partially converted their land holding for medicinal plants cultivation. Farmers have raised the crop in the 100 per cent approved area. The subsidy were released to the farmers through online bank transfer. Most of the farmers produced their own planting material and for crops like *Emblica officinalis* (Amla) and *Azadirachta indica* (Neem),

the seedlings were obtained at the department nursery established through the NMMP and NMPB medicinal plants project. With respect to quality, all the farmers have planted good quality healthy seedlings. Interviewed farmers have received technical support on crop cultivation, plant protection measures and harvesting and processing either from horticulture department or the research organizations located at their localities. However, the following suggestions are received from the respondents during the survey to improve the production and marketing efficiency of medicinal plants by the farmers in the state of Tamil Nadu.

- More live demonstrations may be conducted by the State Department and partly by the Research Institutions to the farmers.
- More extension programmes like training may be offered to the farmers on production systems especially pollination mechanisms / strategies and plant protections measures which is being one of the important problems to the farmers.
- Establishment of processing facilities like threshing floor, processing centres, tarpaulin and storage structures like godowns etc.

- Marketing channels have to be assessed and Minimum Support Price to their produce to be ensured.
- Promotion of clusters through formation of new clusters may be encouraged.

On the whole, the survey imprints that the project implemented through cluster approach have given positive impact on the medicinal crop cultivation and found satisfactory.

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