Original Research Article

Level of Awareness, Adoption and Constraints of Jasmine Growers

ABSTRACT

The Tiruchirappalli (Trichy) and Dindigul districts of Tamil Nadu state were purposivelytaken for studying objectives viz., profile , awareness, adoption and constraints faced by the jasmine growers.The sampling technique was multi-stage purposive samplingand the research design adopted wasdescriptive method. A total sample size of 160 (jasmine growers). The secondary data was collected through structured interview schedule. The frequency and percentage were worked-out to quantify the secondary data.PRA preference ranking/problem ranking matrix methodology was used to rank the production and marketing led constraints based on the perceived level of severity by the jasmine growers.Likewise to study the determinants of awareness and adoption with that of the profile, the correction and regression co-efficient was used.It was evident that, there was cent percent awareness and adoption of variety, planting season. Though there was cent percent awareness on pruning technique, only 88.13 % adopted the practice. Very least awareness level (7.50 % & 14.38 %)was observed with respect to post harvest management practice like enhancing shelf-life and off-season flowering technology respectively. The proportion of non-adopter were high with respect to bio-fertilizer application (78.13 %), use of bio-stimulant (81.88 %), off-season flowering spraying (90.63 %) and enhancement of shelf-life through boric acid (100 %).Majority (71.88 %) of farmers were having only medium level of awareness, similarly little more than half (58.75%) of the farmers had only medium level of adoption.The score obtained through problem matrix ranking revealed that, labour shortage during peak flowering season with highest mean score of 35.50 was ranked as foremost constraint in production and Price fluctuation /market risk with highest mean score of 37.50 was perceived as the foremost constraint in marketing of jasmine.

Key words: Jasmine, Awareness, Adoption, Constraints and determinants

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INTRODUCTION

In India floriculture covers an area of 2.55 lakh hectare with a production of 17,54,000 MT of loose flowers. Tamil Nadu ranks first in area among seven states in the country that covers 25% of area under floriculture crops of 77 per cent total flower area in the country[7].Jasmine (*Jasminum* spp.) belongs to the family *Oleaceae* and is one of the oldest fragrant flowers cultivated by manand jasmine is alsocalled as "Queen of fragrances"[2]. The quality and quantity of jasmine production, is governed by many factors starting from environment to given set of soil and climatic conditions. The jasmine growers felt high temperature as one of the key factorsfor reduction in flower quality and quantity (scorching and tip drying) which also resulted for yield gap. Similarly, the unexpected climatic aberration like continuous drought resulting to inadequate irrigation supply was ranked as first production level constraint among jasmine growers[6].Similarly, the environmental related challenges like monsoon, disease and pest besides, floods and storms and other natural calamities have hampered the cultivation of Jasmine[15].On other side, several market led factors viz., intrusion of commission agents, middlemen and lack of systematic market planning and lack of suitable market survey and related information, poor extension services are the constraints in flower production [4].Thus, the jasmine cultivation is hampered by several factors. In order to have a holistic understanding of constraints, determinants and level of adoption, the present study was formulated. Hence, based on the government statistical datavide Table-1, Out of the first 10 jasmine growing intensive districts in Tamil Nadu, the two adjacent districts viz., Tiruchirappalli (Trichy) and Dindigulwere opted purposefully for the present study.

Table 1 Major districts and area under jasmine cultivation in Tamil Nadu

S.No.	District	Area (Ha)	Production (Tonnes)	Productivity (Tonnes/Ha)
1	Madurai	1480	15658.18	10.58
2	Erode	1351	5321.60	3.94
3	Tiruvallur	1019	10840.01	10.64
4	Tirunelveli	968	8341.43	8.62
5	Dindigul	806	6245.30	7.75
6	Krishnagiri	610	6588.00	10.8
7	Salem	574	6382.85	11.12
8	Vellore	550	5989.19	10.89
9	Trichy	546	5301.13	9.71
10	Dharmapuri	525	5784.53	11.02

(Source : Open govt data-OGD platform India, https://www.data.gov.in)

1.1.Objectives of the study

The first objective of the study is to study the profile of jasmine growers and to assess the determinants of awareness and adoption of recommended technologies among jasmine growers. The second objective was to find the level of awareness and adoption among jasmine growers. The third objective was to identify the production and marketing constraints faced by the jasmine growers

2. MATERIALS AND METHODS

The study was confined to Trichy and Dindigul districts. From each district, two intensive blocks and from those blocks two villages from each block were purposefully selected. From each village,20 jasmine growers were identified using the snowball technique, thus a total of 160 respondents (jasmine growers) were taken as sample for the study. The multi-stage purposive sampling and thedescriptive method of research design was adopted for the present study. A well-structured interview schedule was framed keeping in view the objectives of the study used for collecting primary data.For the present study, with regard to level of awareness, 17 recommended technologies and practices for jasmine were taken as statements and a two-point continuum with the score of 1 for "aware" and nil score for "not-aware" was assigned. Similarly, with regard to level of adoption, with the same set of 17 statements, a three-point continuum with the score 3 for "full adoption", 2 for "partial adoption" and a score 1 for "non-Adoption" were assigned. The frequency and percentage for each were worked.To know the overall level of awareness and adoption, the jasmine growers were grouped into three categories viz., Low, medium and high on the basis of Mean + S.D.followingNagendra Babu et.al., (2022) [8]. The Participatory Rural Appraisal (PRA)tool viz., Preference /Problem Matrix Ranking Method was use to assess the production led and marketing led constraints faced by the jasmine growers. The procedure followed by Abhijit Khadatkar et. al., (2020)[1] andJanaki Rani (2020) [6] was used with slight modification suiting the present study.The other statistic tool like correlation and regression was applied to draw the relationshipbetween profile characteristics (determinants) and level of awareness and adoption.

3. RESULTS AND DISCUSSION

3.1.Level of Awareness and Adoption among jasmine growers

From the results obtained, vide Table 3, it can be understood that, cent percent awareness was observed for very few recommended practices viz., variety, planting season and pruning whereas very least level of awareness (7.50 % & 14.38 %) on enhancement of shelf-life and

off-season flowering technology respectively. The possible reason least awareness among the jasmine growers may be due to weak technology dissemination process or transfer of technology. Likewise, we can understand from the Table 2 that, majority (71.88 %) of the jasmine growers were having only medium level of awareness on recommended technology and practices. The findings are in line with the finding of Shubhadeep Roy et. al., (2007) [12].

Table 2:Overall Awareness&Adoption among Jasmine Growers(n=160)

S. No.	Overall Awareness	Frequency	Per cent
1.	Low (< 25.47)	13	8.12
2.	Medium (25.47-33.00)	115	71.88
3.	High (> 33.00)	32	20.00
Total		160	100.00
Mean: 29.23, Standard deviation: 3.76			
S. No.	**Overall Adoption**	**Frequency**	**Per cent**
1.	Low (< 27.20)	35	21.88
2.	Medium (27.20-44.30)	94	58.75
3.	High (> 44.30)	31	19.37
Total		160	100.00
Mean: 35.75, Standard deviation: 8.54			

From Table-3, it can be observed that, with respect to level of adoption, cent percent adoption was noticed in variety and planting season. On contrary, cent percent non-adoption was noticed in enhancement of shelf-life technology and great majority (90.63 % & 81.88 %) of non-adoption was for off-season flowering and use of bio-stimulants technologies respectively.As in overall awareness level, more than half (58.75 %) of the jasmine growers were under medium category in terms of overall adoption of recommended technology and practices. The results are in conformity with the findings obtained by Bagya Janani et. al., (2016) [3].

3.2.Profile of Jasmine Growers

From the Table 4, it could be observed that, great majority (75.62 %) of the jasmine growers were having school education level followed by collegiate education (13.13 %). This shows the level of inclination towards acquiring formal education. The results also revealed that, almost little more than half (55 %) of the sampled respondents had more than 11 years of experience exclusively in jasmine cultivation. Majority of the jasmine growers (63.12 %) were falling under small farmer category followed by 29.38 per cent under marginal farmer

category. The average land allocation for jasmine cultivation was 32 cents (0.32 acres) and almost great majority of the jasmine growers put together (76.87 %) allocated less than one acre for cultivating jasmine. The 55.62 per cent of the jasmine growers had medium level of economic motivation. Almost half of the jasmine growers (53.75 %) in the study area depended on local market for the sale of jasmine as loose flowers. The results obtained during the study are tabulated in the for better understanding the socio-economic profile of the jasmine growers. Jasmine growers and cultivators are merely belonging to the small and marginal farmers and also, they are highly relying on the market middlemen to sell their produce and since the maximum farmers are less educated and illiterate, they are devoid of the market information in short the lack of market intelligence. This may be the possible reason for depending on the middlemen. The findingsare similar to the findings obtained by Rajamohan[10].

Table 4: Profile of Jasmine Growers (n=160)

S.No.	Profile Variables	Frequency	Percentage
I. Educational Level			
a.	Illiterate	18	11.25
b.	School Education	121	75.62
c.	Collegiate	21	13.13
II. Family Type			
a.	Nuclear Family	124	77.50
b.	Joint Family	36	22.50
III.Farming Experience			
a.	Low (Upto 10 years)	39	24.38
b.	Medium (11 to 15 years)	53	33.12
c.	High (above 15 years)	68	42.50
IV.Experience in Jasmine Cultivation			
a.	Less than 3 years	0	0.00
b.	3-5 years	2	1.26
c.	6-8 years	23	14.37
d.	9-11 years	47	29.37
e.	More than 11 years	88	55
V.Farm Land Holding			
a.	Marginal (<2.5 acres)	47	29.38
b.	Small (2.5 – 5 acres)	101	63.12
c.	Big (> 5 acres)	12	7.50

VI.Area under Jasmine Cultivation			
a.	< 0.50 acres	69	43.12
b.	0.51 to 1.0 acres	54	33.75
c.	1.0 to 1.5 acres	21	13.12
d.	>1.5 acres	16	10.01
VII. Source of Finance			
a.	Self / Own arrangement	131	81.88
b.	Borrowing / Bank Loan	29	18.12
VIII. Economic Motivation			
a.	Low	29	18.12
b.	Medium	89	55.62
c.	High	42	26.26
IX.Extension Agency Contact			
a.	Low	92	57.50
b.	Medium	51	31.90
c.	High	17	10.60
X.Scientific Orientation			
a.	Low	101	63.12
b.	Medium	35	21.90
c.	High	24	14.98
XI.Marketing Behaviour			
a.	Own	8	5.00
b.	Local Shop	12	7.50
c.	Local Market	86	53.75
d.	Traders	33	20.62
e.	Commission Agents	21	13.13

Table 3 : Level of Awareness and Adoption of Recommended Technologies and Practices by the Jasmine Growers (n=160)

Recommended Technology & Practices	Awareness *		Adoption *					
	Freq.	%	Partial Adoption	%	Full Adoption	%	Non Adoption	%
Variety - Ramanathapuram local &Gundumalli	160	100.00	0	0.00	160	100	0	0.00
Planting season - June to Sept.	160	100.00	0	0.00	160	100	0	0.00
Spacing - 1.25 X 1.25 m	143	89.38	18	11.25	110	68.75	32	20.00
Plant population - 2,560 seedlings/acre	139	86.88	18	11.25	110	68.75	32	20.00
Biofertilizer application - @ 2kg azosprillium and 2kg poshpobacteria at the time of planting per hectare	76	47.50	12	7.50	23	14.38	125	78.13
Fertilizer Application : Basal NPK - 30:60:60 gm/plant/year during November + 10 kg FYM per pit and Top dressing NPK - 30:60:60 gm/plant/year during June-july + 10 kg FYM per pit	121	75.63	67	41.88	51	31.88	42	26.25
Weeding - Pre emergence pendemethalin @ 2 ml/lit	110	68.75	17	10.63	143	89.38	0	0.00
Micronutrient foliar Ferrous Sulphate @ 0.50 % plus zinc sulphate @ 0.50 % at monthly intervals	94	58.75	29	18.13	62	38.75	69	43.13
Bio Stimulants - Foliar spray of panchagavya @ 3 % + humic acid 0.40 % at monthly intervals	71	44.38	8	5.00	21	13.13	131	81.88
Pruning - 50 cm height during last week of Nov.	160	100.00	19	11.88	141	88.13	0	0.00
Off Season flowering - Spraying of Nitrobenzene 20 per cent @ 2.5ml/l along with Tricontanol 0.2 per cent once in 15 days during Nov-April followed by pruning during July	23	14.38	4	2.50	11	6.88	145	90.63
Bud Worm - Thiacloprid 250 SC @ 1ml/lit	148	92.50	12	7.50	136	85.00	12	7.50
Blossom midge - Chlorantraniliprole 18.5 SC @ 0.5 ml/lit	124	77.50	4	2.50	99	61.88	57	35.63
Red Spider Mite - Fenazaquin 10 % EC @ 2ml/lit	110	68.75	16	10.00	73	45.63	71	44.38
Nematode - Carbofuran 3 G @ 33 kg /ha	74	46.25	5	3.13	61	38.13	94	58.75
Root rot - Soil drenching withTrifeloxystrobin + Tebuconazole @ 0.75 gm/lit	71	44.38	7	4.38	53	33.13	100	62.50
Enhancement of shelf life - with boric acid @ 4 %	12	7.50	0	0.00	0	0.00	160	100.00
***Multiple response**								

3.3.Determinants of awareness and adoption & relationship with profile characteristics

From the correction and regression 'r' values obtained vide Table 5, we can notice that, with respect to level of awareness, thefactors like educational level, extension agency contact and scientific orientation were positively correlated at five per cent level and the economic motivation was significantly correlated at one per cent level. These factors were the determinants of level of awareness level. It is a known fact that formal education widens the horizons of an individual. In addition, the possible reasons for significant association might be that literate people are more receptive and always in search for new information and technologies which help them to improve their socio-economic conditions. Whereas, with more experience of flower growing,knowledge level increases and more the sources of information, more will be the knowledge of the respondents. The findings are similar to the findings of Rajeshwaran et. al., (2022) [11]

Similarly, with respect to level of adoption, the factors viz., educational level, size of farm holding, extension agency contact, economic motivation and scientific orientation were positively correlated at five per cent level and source of finance was significant at one per cent level with respect to the level of adoption of recommended technologies among the jasmine growers. Obviously educational, size of farm holding, extension agency contact, economic motivation and scientific orientation have helped the jasmine growers to acquire knowledge for better adoption and exposed to new technologies and their urge to know the new things in floriculture which have significantly contributed in adoption. The result is in agreement with the studies conducted byNoor ul Islam Wani et. al., (2017) [9] and Suprehatin [13].

Table 5 : Correlation and Multiple Regression of profile variables with the Level of Awareness and Adoption of Jasmine Growers

Variables No.	Profile Variable	'r' value	
		Awareness	Adoption
X_1	Educational level	0.719**	0.771**
X_2	Family Type	0.031^{NS}	-0.011^{NS}
X_3	Farming experience	-0.324**	-0.467**
X_4	Experience in jasmine cultivation	-0.544**	-0.552**
X_5	Farm land holding	0.098^{NS}	0.299**

X_6	Area under jasmine cultivation	-0.016^{NS}	0.146^{NS}
X_7	Source of finance	-0.125^{NS}	0.193*
X_8	Economic motivation	0.181*	0.422**
X_9	Extension agency contact	0.801**	0.853**
X_{10}	Scientific orientation	0.801**	0.709**
X_{11}	Marketing behaviour	-0.035^{NS}	0.008^{NS}
Awareness :R^2 = 0.818 & F=60.62 , **Significant at 1 % , *Significant at 5 % and NS-Non Significant			
Adoption :R^2 = 0.855 & F=79.51 , **Significant at 1 % , *Significant at 5 % and NS-Non Significant			

3.4.Production and Marketing constraints faced by the Jasmine Growers

The total respondents (160) were grouped into four clusters each with 40 farmers to study the constraints faced by the jasmine growers. The PRA problem matrix was framed to assess the production led constraints and marketing led constraintsseparately.Each problem matrix consisted of 10 set of constraints listed during Focus Groug Discussion (FGD). While conducting the secondary data collection, the individual farmer in the cluster group was asked to assign a score based on his/her perceived level of severity of that problem as 3, 2 and 1 for most constraint, moderate constraint and least constraint respectively. The frequency of most constraint (counts of "3") was calculated for each statement in the matrix for each cluster. Thus, the scores may range from minimum 1 to maximum 40. Later the mean score of all the cluster scores for each statement were taken to rank the constraint.

3.4.1. Production led constraints faced by Jasmine Growers

From the Table 6 (Problem Matrix), based on mean score obtained, it could be understood that, the jasmine growers felt labour shortage during peak flowering season as their first constraint in jasmine cultivation followed by this lack of mechanization for plucking flowers and flower buds was ranked second.Jasmine harvest is mostly labour intense process. The flowers are plucked during early morning hours and the entire harvest hardly extends upto 3 to 4 hours. The practice of engaging family labour is a common practice among jasmine growers, but the declining trend in joint family system to nuclear family has led to the shortage of manpower during harvest of jasmine. In such situation, the jasmine growers obviously depend on outside labour for the harvest, since the work time is less than half-day the wage paid for flower plucking is less when compare to the wages from other farm

operations like weeding, planting, intercultural operations. Moreover, the farm labour expect full day work with full wage, hence they feel reluctant to go for flower plucking. This hinders the regular supply of workforce for jasmine harvest. This may be the possible reason for expecting mechanized flower plucking among the jasmine growers. The findings are in line with Vetrivel et. al., (2020)[15].The climate aberrations and fluctuations were ranked third major problem in cultivation of jasmine by the growers. The high temperature leads to scorching and tip drying in the flowers and similarly, continuous drought resulted in inadequate irrigation during critical stages, both the conditions has led to yield reduction and quality of the flowers. The results are similar to the findings of Janaki Rani [6].Financial constraint for purchase of critical inputs, Improper insurance coverage during crop failure, Paucity of credit support, Lack of post-harvest facility (cold storage, pack house)etc. were the other constraints ranked subsequently by the jasmine farmers.

Table6 : Production led Problem Matrix Ranking

S.No.	Production Constraints	Trichy		Dindigul		Mean Score	Problem Ranking
		Cluster I	Cluster II	Cluster III	Cluster IV		
1	Lack of Govt. subsidy for cropping jasmine	27	30	29	26	28.00	**VIII**
2	Labour shortage during peak flowering season	35	36	37	34	35.50	**I**
3	Paucity of credit support	31	29	30	27	29.25	**VI**
4	Financial constraint for purchase of critical inputs	34	32	30	31	31.75	**IV**
5	Lack of mechanization for plucking flowers and flower buds	33	30	35	36	33.50	**II**
6	Non availability of improved variety planting material	27	24	26	29	26.50	**X**
7	Lack of post harvest facility (cold storage, pack house)	29	27	29	31	29.00	**VII**
8	Improper insurance coverage during crop failure	30	31	32	30	30.75	**V**

9	Lack awareness on off-season flower blooming technology	26	29	25	29	27.25	**IX**
10	Climatic aberrations & fluctuations	33	34	34	30	32.75	**III**

3.4.2. Marketing led constraints faced by Jasmine Growers

From the Table 7 (Problem Matrix), based on mean score obtained, it could be understood that, the price fluctuation and market risk was perceived as the first major marketing led constraint among the jasmine growers of Trichy and Dindigul district.This may be because of lack of flower grower association at the production centre. Establishment of flower producers cooperative may reduce the frequent fluctuation of the prices to the certain extent. Vanitha [14] and Ganapathi[5].Likewise, lack of transportation support, Lack of organized market and regulations, Distance from market, Perishable nature & lack of extending shelf life, Lack of link and support for storage and grading etc. were the other constraints ranked subsequently by the jasmine farmers. Lack of storage facility and the credit facility availed from the commission agent and other intermediaries (unorganised lending) may be the possible reason for the forced sale of jasmine to the same commission agent at lower market price as disguised sale. Such unethical and mal practices by the commission agents can curtailed through arranging crop loan by the organised financial institutions. The results are similar to findings obtained by Rajamohan[10] and chawala et. al., (2016) [4].

Table 7: Market led constraints faced by the Jasmine Growers

S.No.	Marketing Constraints	Trichy		Dindigul		Mean Score	Problem Ranking
		Cluster I	Cluster II	Cluster III	Cluster IV		
1	Distance from market	34	36	34	33	34.25	**VI**
2	Lack of organized market and regulations	33	36	34	36	34.75	**V**
3	Price fluctuation & market risk	38	37	38	37	37.50	**I**
4	Lack of link and support for storage and grading	33	32	30	31	31.50	**VIII**
5	Mal practice by commission agent	36	35	36	37	36.00	**III**

6	Lack of value addition support	31	32	29	33	31.25	**IX**
7	Perishable nature & lack of extending shelf life	32	30	33	31	31.50	**VII**
8	Lack of information on market intelligence	28	30	29	30	29.25	**X**
9	Lack of transparency in price fixation	36	37	35	38	36.50	**II**
10	Lack of transportation support	37	35	34	36	35.50	**IV**

4.CONCLUSION

The jasmine growers had only medium level of awareness (71.88 %) and only medium level of adoption (58.75 %) of recommended technologies among the jasmine growers. Most of the marginal and small farmers are devoid of improved production viz., off-season flowering and post-harvest technologies like packing and enhanced shelf life. This was due to lack of awareness on improved production technologies and lack of information on market intelligence.The major production led constraint was inadequacy of labour for harvest during peak season and the marketing led constraint was fluctuation in price and mal practice by the commission agent. To overcome this, it is suggested to sensitize the jasmine growers on the improved production technologies and provide the market information in time by the ground level institution. To eliminate the mal practice of commission agents, the credit facility with nominal rate of interest may be extended by the financial institutions like bank and cooperative societies.

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