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# Adoption Behavior of Recommended Practices by Jasmine Growers of Madurai District in Tamil Nadu

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**ABSTRACT: Jasmine is an attractive important commercial crop. It has got importance in all religious, social and cultural formalities and other functions performed by all people. The study was conducted in six villages of Thirupurangundram taluk of Madurai district with 120 jasmine cultivating farmers with proportionate random sampling method. Majority (62.50%) of the respondents having medium level of adoption. Regarding practice wise adoption, majority of the respondents adopted jasmine variety, suitable months for planting, propagation methods, weeding, pruning, management of budworm and ideal stage for flowering methods. Only 25.83 percentage of the respondents adopting recommended nematode control measures. It is observed that above half (53.33%) of the respondents adopting recommended Iron deficiency control measures. The technology adoption of jasmine cultivation by the jasmine growers has not received the attention of both the extension functionaries of State Department of Horticulture and Agriculture to the required level.**

**Keywords:** Adoption, Recommended Practices, Jasmine growers.

## INTRODUCTION

India is bestowed with diverse agro-climatic and ecological conditions which are favourable to grow all types of commercially important flowers generally found in different parts of the world. It also enjoys the best climate in selected pockets for floriculture during winter months. India is an enviable position to become a leader in the world floricultural trade because of the prevailing congenial location, overall favorable climate of liberalization and globalization and also specific incentives by the government and floricultural development. Flower production, consumption and trade have grown manifolds. Jasmine (*Jasminum sambac*) is one of the oldest fragrant flowers cultivated by man. The plants are grown both as shrubs as well as climbers. Jasmines are distributed both in the tropical and sub-tropical areas. Jasmine flowers are used for making garlands, bouquets, adorning hairs of women, in religious and ceremonial functions perfumed hair oils, attars, soaps, wines and drinks (Thakur *et al*., 2014). The high value export flower has also increased awareness for production of flowers among growers. Tamil Nadu holds number one position in producing of jasmine in India. The flowers produced in Tamil Nadu exported to the other countries like Sri Lanka, Malaysia, Singapore and Middle East countries. Tamil Nadu occupied more than two fifths of the total flower area in the state. The area and production of total flowers in India were increasing impressively over the years. More than 50 per cent of the floriculture units are based in South India mainly in Tamil Nadu Karnataka, and Andhra Pradesh. The main importing countries of Indian floricultural products in order are Netherlands, USA, Japan, Germany, Italy, Denmark, Egypt, Singapore, Switzerland and France. (State of Indian Agriculture 2013-14).The study results would help to reduce the information asymmetry that occurs between the producers and consumers.

## MATERIALS AND METHODS

The study was conducted in Thiruparankundram block in Madurai district of Tamil Nadu because of higher area of Jasmine cultivation. Nearly 120 Jasmine growers randomly selected and constituted for this study. Ex post facto research design was employed. Well-structured interview schedule was and prepared used for the study to collect data with the farmers.

## RESULTS AND DISCUSSION

**Overall adoption level.** The categorization of respondents according to their overall adoption level on the recommended practices of jasmine cultivation is presented in Table 1.

**Table 1: Distribution of respondents according to their overall adoption on recommended jasmine technologies (n=120).**

| Sr. No. | Category | Frequency | Percent |
|---|---|---|---|
| 1. | Low | 21 | 17.50 |
| 2. | Medium | 75 | 62.50 |
| 3. | High | 24 | 20.00 |
| | **Total** | 120 | 100.00 |

Majority (62.50%) of the respondents having medium level of adoption and 20.00 per cent of the respondents having high level of adoption and 17.50 per cent of them had low level of adoption on recommended jasmine cultivation technologies.

Overall, the table revealed that majority of the respondents having medium to high adoption. The study area is a traditional area for jasmine having maximum area under the only one ruling variety Gundumalli or Madurai Malli. Hence the farmers have long years of experience in Jasmine cultivation leads to have medium to high adoption of recommended practices. Further, they had medium to high information source utilization and medium level of innovativeness which motivated the farmers to have this level of adoption behaviour. The rest of the respondents (17.50%) expressed that while introducing any new innovation / technology, they were internally accepted. But when coming to the real stage of adoption, they are facing lot of constraints. This finding is in accordance with the finding of Alagar Raja (1982).

**Practice wise adoption level**. The categorization of respondents according to their practice wise adoption level on the recommended practices of jasmine cultivation is presented in Table 2.

**Table 2: Distribution of respondents according to their practice - wise adoption on recommended jasmine technologies (n=120).**

| Sr. No | Technologies | Adoption | |
|---|---|---|---|
| **A.** | **Variety** | **Frequency** | **Percentage** |
| 1. | Recommended jasmine variety (Gundumalli / Ramanathapuram local / Madurai Malli) | 120 | 100.00 |
| **B.** | **Planting** | | |
| 2 | Methods of propagation (Seedlings) | 119 | 99.17 |
| 3. | Suitable months for planting jasmine (June to November) | 104 | 86.67 |
| 4. | Recommended pit size (45 cm ×45 cm× 45 cm) | 88 | 73.33 |
| 5. | FYM application (Quantity of FYM: fresh soil: coarse sand, 2:1:1) | 69 | 57.50 |
| 6. | Recommended spacing for jasmine (1.25m × 1.25m) | 81 | 67.50 |
| 7. | Recommended number of plants per hectare (6400 plants per ha) | 66 | 55.00 |
| **C.** | **Irrigation** | | |
| 8. | Recommended irrigation schedule (Immediately after planting) | 70 | 58.33 |
| **D.** | **Manures and fertilizer** | | |
| 9. | Recommended quantity of N,P,K per plant (60:120:120g per plant) | 65 | 54.17 |
| 10. | Recommended splits dose of N, P& K (Split dose N,P,K- 30: 60:60 g per plant) | 38 | 31.67 |
| **E.** | **Foliar Spray** | | |
| 11. | Recommended spray for flower inducing (Spraying of zinc 0.25% and magnesium 0.5%) | 77 | 64.17 |
| 12. | Right time for spray (Before flowering) | 74 | 61.67 |
| **F.** | **Weeding** | | |
| 13. | Recommended weeding schedule (Monthly once weeding) | 76 | 63.33 |
| 14. | Recommended chemical weedicide (Applications of Oryzalin - 2 applications/ month) | 44 | 36.67 |
| **G.** | **Pruning** | | |
| 15. | Right season for pruning (Last week of November) | 90 | 75.83 |
| **H.** | **Crop Protection** | | |
| 16. | Control measures for bud worm Spray Neem Seed Kernel Extract (**NSKE)** 5% | 74 | 61.67 |
| 17. | Control measures for root rot (Applying Copper oxychloride at 2.5 g/lit) | 50 | 41.67 |
| 18. | Control measures for nematode (Applying neem cake 1 ton/ ha) | 31 | 25.83 |
| 19. | Control measures for wilt (Drenching the soil with 1% Bordeaux mixture) | 48 | 40.00 |
| **I.** | **Physiological disorder** | | |
| 20. | Control measures for iron deficiency (Ferrous sulphate @ 0.1mg/litre) | 64 | 53.33 |
| **J.** | **Harvest** | | |
| 21. | Ideal stage of flower for harvesting (Fully developed un opened buds) | 114 | 95.00 |

(*-multiple responses)

**Variety.** Cent per cent of the respondents are adopting recommended jasmine variety called by many names like Ramanathapuram local (*Jasminum sambac*) or Gundumalli or Madurai Malliis the predominant and recommended variety in the study area. Thus, it could be stated that all the respondents were well versed with the selection of recommended variety.

There is only one variety available for farmers and there is no alternate for the farmers to select. The fragrance of the jasmine grown in this geographical area is somewhat superior to that of others because of the heavy accumulation of the smell causing alkaloids 'Jamone' and 'Alpha Terpineol'. The laterite and red soils of this geographical area are rich in Sulphur which is the precursor of these alkaloids. More over presence of higher amounts of Potassium and the supplementary foliar spraying of Borax (Boric acid contains elements Boron) help the plant to deposit the produced alkaloids in flowers. The growers had a cultural and emotional attachment towards this variety which is known all over the state of Tamil Nadu. There were no need for growers to find some alternative variety, because of the long thick petals and long keeping quality. The research findings of Janakirani (1999) indicated that the jasmine growers did not favour varietal research as one of the prioritized research area since they were satisfied with the local variety. This might be the reasons for cent per cent adoption.

**Planting.** With regard to planting nearly cent percentage of the respondents are adopting recommended methods of propagation followed by suitable months for planting jasmine (86.67%), recommended pit size (73.33%), recommended spacing for jasmine (67.50%), ratio of FYM (57.50%) and recommended number of plants per hectare (55.50%).

The method of propagation is seedling. Hence, majority of the jasmine growers had adopted the cutting way of seedling method of propagation. June to November month was ideal for planting jasmine seedlings. As jasmine is being cultivated in the study area for a long period, majority of the jasmine growers would have the knowledge of planting months and selected the right season.

The practices like recommended number of plants per hectare (55.50%) and ratio of FYM (57.50%) were not adopted by much of them. Regarding the recommended number of plants majority of the jasmine growers based on their experience came to know that three to four plants per pit is giving quick establishment and hence they did not favour recommended density of planting. The unavailability of FYM in required quantity in proper time might be the reasons for less adoption on FYM. Hence, awareness has to be created for the farmers through extension functionaries on planting and alternate organic sources will improve the yield and which increase the soil fertility.

**Irrigation.** With regard to irrigation, 58.33 percentage of the respondents are adopting recommended irrigation schedule. Irrigation schedule which directly or indirectly increase the quality of jasmine flower. The harvest of good quality flower depends on the amount of irrigation provided. Life irrigation is the practice which existed from time immemorial and known to the farmers through their ancestors. Similarly lack of irrigation due to drought situations would have prevented them from the adoption of recommended irrigation schedule.

**Manures and fertilizer**. In case of application of manures and fertilizer, 54.17 percentage of the respondent adopting recommended quantity of N,P,K per plant followed by 31.67 per cent of the respondents adopting recommended split dose of NPK.

Even though the University scientist and State Department of Horticulture have been recommending straight fertilizer application, the respondents were seeking advice from local private fertilizer and pesticide shop and applying different complex fertilizers. Further, farmers were not showing interest in knowing the correct quantity of fertilizers recommended or soil test based recommendations. This might be the reasons for not adopting recommended fertilizer application.

**Foliar Spray.** With regard to foliar spray nearly two third (64.17%) of the respondents adopting recommended spray for flower inducing and 61.67 percentage of the respondents adopting right time for spray.

Off season flowering in jasmine in open field condition was induced by pruning the plant and foliar spray during last week of November. This facilitates early flowering, extended the duration of flowering, higher yield and good fragrance. Though, this practice possess abundant scope for prolific flowering, 64.17 percentage of the respondents adopting this technique but not in proper time. The officials of Department of Horticulture could find a training gap as for as this technology is concerned and some of the respondents were of the opinion that if the irrigation is maintained as per the recommendations, there is no need for using the foliar spray.

**Weeding.** On weeding aspect 63.33 percentage of the respondents adopting recommended hand weeding schedule and 36.67 per cent of the respondents adopting recommended chemical weedicide.

Two-third (63.33%) of the jasmine growers adopted the recommended weeding schedule as they inherited from their ancestors about the weeding operation. 36.67 per cent of the jasmine growers were reported to use chemical weedicides when they felt the enormous weed growth.

**Pruning.** Pruning is an important for inducing side shoots and to increase flowering, which was adopted at right season by three fourth (75.83%) of the respondents. Only removal of top leaves and top pruning are practiced in the study area. Still there were some growers did not want to do pruning in order to get continuous harvest of flowers. The rest of the respondent were ignorant about the importance of pruning and should be sensitized by the extension agency through trainings.

**Crop Protection.** In case of crop protection aspects 61.67 per cent of the respondents adopting recommended bud worm control measures followed by recommended root rot control measures (41.67%) and

recommended wilt control measures (40%). Only 25.83 percentage of the respondents adopting recommended nematode control measures.

As for as crop protection measures for jasmine is concerned two important problems namely bud worm and root rot were found to be serious. The findings indicated that the growers were adopting the recommended control measures ranging from 25-62 per cent. The economic importance of the pest, it is high time that plant protection scientist of KVK & Extension workers of State Department of Horticulture should join hands to impart knowledge and motivate the jasmine growers to adopt the management practices. This affects the quality of flower in the International markets.

Management of the problem, which needs to be filled by the extension agency. But the respondents reported that they used to spray whatever plant protection chemical offered by local input dealers and they reposed lot of faith on them rather than extension personnel of Department of Horticulture. This has resulted in most of the farmer's ignorance about plant protection measures.

**Physiological disorder.** It is observed that above half (53.33%) of the respondents adopting recommended Iron deficiency control measures.

The non-adopted respondents were in the view that the iron deficiency was not that big problem which could affect flower production. Further, they reported that they used to spend huge amount on plant protection, which obviously discourage them to spend more on correcting iron deficiency.

**Harvest.** The stage of harvest depends on the purpose of flowers to be harvested. For fresh flowers, fully developed unopened flower buds are picked in the early morning and evening. Picking of flowers after 11 a.m. will considerably reduce the yield and quality of the flower.

In case of harvesting 95.00 percentage of the respondents harvesting flowers on ideal stage. This might be due to the fact that all the respondents were aware of the importance of timely harvesting which would yield quality flowers and higher income. The practice had been inherited from their forefathers through several generations. This might be the possible reason for high adoption.

## CONCLUSION

The study has clearly brought out that the majority of the respondents had medium level of extent of adoption 62.50 per cent regarding recommended jasmine practices. The results of the study had indicated that low adoption was noticed in management of nematode infestation and root rot disease due to lack of awareness and poor knowledge on these technologies. The extension officials and scientists may provide adequate awareness and knowledge through capacity building. Educational activities need to be intensified to make the farmers to adopt these practices. Irrigation is very necessary for the improvement of jasmine crop, Hence, the programmes relating to providing loans and subsidies to the farmers, specially to develop the source of irrigation need to be strengthened.

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**Conflict of Interest**. None

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