# AN ECONOMIC ANALYSIS OF PRODUCTION OF TAMARIND IN DHARMAPURI DISTRICT OF TAMIL NADU

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***ABSTRACT:*** *Tamarind has been described as one of the common and most important trees of India. India is the world's top producer but the production of tamarind is confronted with different location specific problems, which necessitates for undertaking a systematic in- depth study on the production of tamarind. In this scenario, this study was undertaken with overall objective of analyzing production of tamarind in Dharmapuri district in Tamil Nadu with the specific objectives of (i) to assess the production costs, returns and profitability of tamarind growers and (ii)to evaluate resource use efficiency in tamarind production in study area. Totally 60 farmers were selected from six villages for the study. The results showed that most of the tamarind farmers were small and they need external credit support and this study also suggesting that adoption of high yielding varieties with drought tolerance and drip irrigation system could be very useful in this region.*

***Key Words:*** *Drought tolerance, Resource use efficiency, Tamarind growers*

## Introduction

Tamarind has been described as one of the common and most important trees of India. India is the world's top producer, exporting several thousands of tonnes of seed, seed powder and fruit pulp each year. Tamarind trees are often grown in gardens and along roadsides and are cultivated commercially in plantations. India is the only producer of tamarind on a commercial scale. Tamarind in India is mainly produced in the States of Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Kerala and Uttar Pradesh. Sour types of tamarind comprise about 95% of total world production. India is the major sour tamarind producer in Asia. Its annual production is about 300,000 tonnes. Production of tamarind have unique problems as observed in the case of perishables like fruits and vegetables.Lack of market information, lack of awareness by relevant government institutions about the potential of the tamarind, and lack of recommended silvicultural practices are common problems in tamarind production. A lack of proper processing skills to meet the required standards was found to be the biggest problem facing the industry. The production of tamarind is confronted with different location specific problems and the tamarind producers are often facing imperfect market which necessitates for undertaking a systematic integrated and in- depth study on the production of tamarind. In this scenario, this study was undertaken with overall objective of analyzing production of tamarind in Dharmapuri district in Tamil Nadu.

## Specific Objectives of the Study

1. To assess the production costs, returns and profitability of tamarind growers and
2. To evaluate resource use efficiency in tamarind production in the study area.

## Materials and Methods

Tamarind trees are grown in all the districts of Tamil Nadu. Among the 31 districts of Tamil Nadu, Dharmapuri district was purposively selected. Dharmapuri district is one of the major producer of tamarind; the famous variety of Urigam tamarind is mostly cultivated in Dharmapuri district.All the blocks of Dharmapuri district were arranged in descending order based on area under tamarind cultivation. Among those blocks, Palacode block were selected hence, it was first in area under tamarind. Moreover, the tamarind market for entire Dharmapuri district is located at Palacode, which would also justify the choice of Palacode block as the study area. From the Palacode block, six villages were randomly selected and from each villages ten farmers were selected at random (totally 60 farmers) .The farmers were contacted individually for collection of details on production of tamarind with the help of well structured and pre-tested interview schedule. The details of sample villages and numbers of tamarind growing farmers selected in the study area are given in Table.1.

**Table.1.Distributions of sample farmers in selected villages**

| S.No | Name of the village | Number of samples |
|---|---|---|
| 1 | Pulikarai | 10 |
| 2 | Pappinaikannalli | 10 |
| 3 | Kucharahalli | 10 |
| 4 | Marandahalli | 10 |
| 5 | Panchapalli | 10 |
| 6 | Thandukaranahalli | 10 |

**Tools of Analysis**

Simple averages and percentages were employed to study the socio economic variables, size of operational holding, inputs used, yield of different tamarind trees, cost of cultivation, gross income, etc.

Cobb Douglas production function was employed to evaluate the resource use efficiency in tamarind production. Cobb-Douglas production function was specified after examining the scatter diagrams for the output and inputs used in the production.

The Cobb Douglas regression function specified for different tamarind production is given below:

$$Y = a X_1^{b1} X_2^{b2} X_3^{b3} X_4^{b4} U_t$$

Where,

Y = Yield of tamarind (in kgs /hectare)
X1 = Seedling rate (No. /hectare)
X2 = Manures and fertilizers (Rs./ha)
X3 =After Cultivation Practices (Man days/ ha)
X4 = Irrigation (Rs. /hectare)
$U_t$ = Error term
a = Intercept / Regression constant
b1 ……b4 = Regression co-efficient

**Results and Discussion**

**Area under Tamarind of the Sample Respondents**

The respondents were categorized into three groups based on the area under tamarind crop and the results are presented in table.2.

**Table.2. Area under Tamarind in the Sample Respondents**

| S.No | Area under Tamarind (acres) | Number of Respondents | Percentage to total |
|---|---|---|---|
| 1. | < 4 | 36 | 60.00 |
| 2. | 4-7 | 16 | 26.67 |
| 3. | > 7 | 8 | 13.33 |
| | **Total** | **60** | **100.00** |

It could be seen from the above table.2 that 60 per cent of the respondents were cultivating tamarind in less than 4 acres of land and 26.67 per cent of the sample respondents were cultivating tamarind in 4-7 acres. The respondents who were cultivating tamarind in more than 7 acres accounted to 13.33 per cent respectively.

**Cost and Returns of Tamarind in the Sample Respondents**

Simple percentage analysis was used to analyse the cost of cultivation of Tamarind crop and it was presented in table.3

**Table.3.Cost and Returns of Tamarind in the Sample Farms(Rs. per acre)**

| S.No | Particulars | Cost (Rs.) | | |
|---|---|---|---|---|
| | | 1-5 years | 5-10 years | Upto 10 years |
| 1. | Land Preparation | 8500 | - | 8500(5.81) |
| 2. | Seedling | 2100 | - | 2100(1.43) |
| 3. | Pit Digging | 2300 | - | 2300(1.57) |
| 4. | Transplanting | 1800 | - | 180(1.23) |

| | | | | |
|---|---|---|---|---|
| 5. | Manures | 21000 | 24550 | 45550(31.18) |
| 6. | Irrigation | 12500 | 8500 | 21000(14.37) |
| 7. | Training and pruning | 8500 | 9480 | 17980(12.30) |
| 8. | Plant Protection Chemicals and Growth Regulators | 6500 | 7420 | 13920(9.54) |
| 9. | After cultivation practices | 7200 | 8180 | 15380(10.53) |
| 10. | Land Revenue | 4100 | 5200 | 9300(6.37) |
| 11. | Interest on Working Capital | 4470 | 3800 | 8270(5.66) |
| 12. | **Cost A** | **78970** | **67130** | **146100** |
| 13. | Interest on Fixed Capital | 6720 | 6660 | 13380 |
| 14. | Rental value of Own Land | 48000 | 47600 | 95600 |
| 15. | **Cost B** | **133690** | **121300** | **254990** |
| 16. | Imputed value of Family Labour | 6800 | 8500 | 15300 |
| 17. | **Cost C** | **140490** | **129800** | **270290** |
| 18. | Yield (tonne per acre) | - | 28.2 | 28.2 |
| 19. | **Gross Income/acre** | **-** | **564000** | **564000** |
| 20. | **Net Income/acre** | **-** | **4,34,200** | **293710** |
| 21. | **Net Income per tonnes** | | **15397.16** | **10415.24** |
| 22. | **BCR** | **-** | **4.36** | **2.09** |

**Note:** Figures in the parentheses indicate percentage to total

It could be seen from the Table.3 that the total cost of cultivation per acre was Rs.1,40,490 for 1 to 5 years, Rs.1,29,800 for 5 to 10 years and Rs.2,70,290 for upto 10 years. Among the components of the total cost, manure and irrigation occupied the highest per cent, i.e., nearly 45.56 per cent, which is followed by the cost incurred on the training and pruning (12.30 per cent). The lowest share of cost was contributed by transplanting and seedling.

Further, it could be seen that the net income was comparatively high in 5 to 10 years which constituted Rs.4,34,220 as against net income of other two categories . This was mainly due to the season of the crop. The yield of all the two categories are almost equal, i.e., around 28.2 tonnes/acre. The difference in the income is reflected mainly due to the variation in the market price of different varieties.Thus, it could be concluded that 5 to 10 years is more profitable for the farmers. Because of the high yield for 5 to 10 years is comparatively high in the season.

**Resource Use Efficiency**

For the estimation of resource use efficiency yield per acre as dependent variable. The independent variables were seedling rate, manures, irrigation and after cultivation practices and results are presented in the Table.4..

**Table.4.Resource use Efficiency in Tamarind Production**

| S.No | Particulars | Estimated Coefficient | Standard error |
|---|---|---|---|
| 1. | Yield(constant) | 38.7563 | 12.67009 |
| 2. | Seedling rate | 1.2365** | 0.0872 |
| 3. | After cultivation practices | 0.0138 | 0.1000 |
| 4. | Manures | 1.7648* | 0.2587 |
| 5. | irrigation | 0.3893 | 0.1943 |

** Indicates significance at 1 % level. * Indicates significance at 5 % level.

$R^2$= 0.8952

F = 2.3717

From the table it could be inferred that the coefficient of multiple determination ($R^2$) was 0.8952 which indicated that 89.52 per cent of the variation in the dependent variable was explained by the independent variables included in the model. The variable seedling rate was significant at one per cent level. The results indicated that one per cent increase in the seedling rate would increase the yield by 1.23 per cent. The variable manures were significant at five per cent level. The result shows that one number increase in the manure would result in increasing the yield by 1.76 per cent. The other variables considered

in the model, i.e. after cultivation practices and irrigation required for cultivation of tamarind had a considerable influence on the dependent of variable (though not significant).

## Conclusion

Most of the tamarind farmers were small and they need external credit support for adopting new technologies and investment. This study suggesting that adoption of high yield varieties with the shorter duration is necessary for this region .Adoption of drip irrigation system could be very useful for managing the drought season which is very common in this region.

## References

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