CHAPTER - VIII
FINDINGS AND SUGGESTIONS

FINDINGS

After a detailed study of the methods of cultivation, obtaining finance and marketing of Oil Palm Bunches by the selected Oil Palm cultivators in Krishna District of Andhra Pradesh, the findings and suggestions are presented hereunder.

PRODUCTION RELATED FINDINGS

1. At the outset, Oil palm is totally a new crop to the Indian conditions and also to the farmers. It is not an easy task to persuade the farmers to shift from the traditional crops. A new crop with a long gestation period with an investment of Rs. 21,750 per ha would take quite some time for the farmers to be convinced.

2. Triangular method of planting is followed with 9 meter spacing to accommodate 57 plants per acre and 143 plants per hectare.

3. In oil palm, male and female flowers are present on different inflorescences. For fruit development, the pollen from male flowers should reach the female flowers. Weevils are found to be the best agents to transfer pollen from male to female flowers. In the absence of weevils bunch failure occurs and the yield becomes reduced to drastical levels.

4. Oil palm requires adequate irrigation for getting maximum yield. Problems arising out of power shortage can be solved by giving electrical connections on priority exclusively for Oil palm growers. In addition Generator sets are to be provided to growers on subsidy.

5. There are no major pests and diseases for the oil palm crop which becomes beneficial to oil palm cultivators. Unlike other crops pests are seen rarely in oil
palm crop. So loss incurred due to the attack of pests and diseases is low for oil palm crop which indirectly contributes for increasing returns.

6. If continuous supply of irrigation and timely application of fertilizers are provided oil palm crop gives very good yields. As regard application of fertilizers the schedule given by National Research Centre for Oil Palm, Pedavegi or the direct instructions by the executives of Oil Palm Processing Units are followed by the farmers. Oil Palm cultivators have to depend on bore well or drip irrigation to provide plenty of water to the plants. In fact, farmers get the eligibility to enter into oil palm cultivation only when they have bore or drip facility.

7. Oil palm can be cultivated in most of the well drained soils with good irrigation facility and hence the cultivation is suitable in 11 districts of Andhra Pradesh namely Krishna, Srikakulam, Vizayanagaram, Visakhapatnam, East Godavari, West Godavari, Guntur, Prakasham, Nellore, Chittore and Khammam. Out of 50 mandals in Krishna District, 24 mandals are identified as potential for the cultivation of oil palm and so it is done under the supervision of Horticulture Department. There are around 6000 farmers cultivating 18835 Acres of land with an average land holding of 3 Acres per farmer in Krishna District.

8. Fifty percent of the nutrient requirement of Oil Palm can be met from the organic sources viz. manure, compost, vermicompost and green manure. If these are used profusely the cost of fertilizers decreases and yield increases.

9. Oil Palm comes to harvest in three years and gives returns to the farmer for every 10-15 days for a period of 25 years. Oil palm cultivation is not associated with the expenses like ploughing the field, planting seedlings every year like other oil seeds like Groundnut, Sunflower, Safflower etc. which makes this crop beneficial compared to other oil seeds.

10. Basically farmers are reluctant to take up Oil Palm crop due to gestation period of 3-4 years, very high initial investment and compulsory irrigation all through
the year for entire life of oil palm. It takes 3 years for oil palm cultivators to get the first yield.

11. Power shortage is the major obstacle in oil palm cultivation. New electric connections in rural areas are delayed where oil palm is cultivated. Lack of sufficient power supply results in scarcity of water supply which is the most important one in getting high yield for oil palm.

12. At present the Government through Department of Horticulture extends financial assistance for drip irrigation upto 50% of the total cost exclusively for Small, Marginal, SC, ST and Women farmers and 35% of the total cost for other category of farmers. But the assistance is provided for a maximum of 4 ha per beneficiary.

13. More remunerative crops like Banana, Mango, Sapota, Papaya, Sugarcane and Vegetables are being grown in the Oil palm potential area. Recently farmers got good remuneration from sugar cane due to high rate. If the returns in Oil Palm cultivation are not attractive, the area of Oil Palm cultivation may not increase.

14. In some of the areas for instance, Unguturu and Mylavaram, Magnesium and Boron deficiency is found. This is not a major problem in Oil Palm cultivation. It can be solved by providing Magnesium and Boron supplements.

15. The Directorate of Horticulture Department facilitates the Oil Palm cultivators and processors and creates an enabling environment for the development of Oil palm in Krishna District of Andhra Pradesh. In addition to its regular activities, the Directorate of Horticulture concentrates on the following:

- Providing plant material subsidy to developers and nurseries and cultivation subsidy to farmers.
Providing subsidy for micro-irrigation systems in Oil palm and extending the same benefits to weaker sections of the society to encourage them to get involved in the programme.

Assisting, guiding and facilitating the Oil Palm growers to obtain loans from Nationalized and Cooperative Banks.

Establishing seed gardens, maintenance of nurseries for supply of quality seed and planting material to the farmers in time at reasonable cost.

Guiding and facilitating oil extraction entrepreneurs.

Encouraging private sector investment in Oil palm promotion.

Monitoring and Evaluation of the program.

Acting as Nodal agency for Oil palm program in Andhra Pradesh.

Supporting Oil palm Grower’s Associations in marketing Arrangements.

16. Additional support is provided by Horticulture Department to motivate the farmers and the Extension Activities include:

Target Groups of farmers who satisfy required criteria are identified and selected.

After considering the basic knowledge possessed by the cultivators, Training is conducted for the benefit of the Cultivators.

Broad publicity campaign is carried out for awareness generation.

Irrigation Infrastructure is developed to facilitate oil palm cultivators.

Appropriate analysis of bio-mass, soil and water is done to identify suitability of bio-mass, soil and water.

Area specific requirements fertilizers are determined.

Area-specific and suitable inter-cropping models are developed.
Credit support and financial arrangement are made available to data sources.

Regular consultation through established agencies and scientists.

Oil palm cultivation and processing has not yet reached the desired level of performance. The main constraints in raising a plantation of the oil palm and increasing the palm oil production are lack of availability of suitable land, shortage of quality seed of tenera variety (which at present is imported), and lack of modern milling facilities.

17. The crops like tobacco, sugarcane, banana, coconut cotton and chilies are the major competitive crops for Oil palm. In Andhra Pradesh, the farmers have small holdings and cannot afford to grow Oil palm as it is a long gestation period crop. The farmers are encouraged to cultivate Oil Palm by giving subsidies for the first 3 years to raise intercrops.

18. High Mortality Rates between the number of plants originally planted and those surviving at the end of 4-5 years affect the yield. In such case, Oil palm cultivator replaces the lost plants with new seedlings. Consequently, plants with varying ages give differential yield.

19. In 2004 because of low returns in several fields the Oil Palm plants were totally uprooted and the factors related are mentioned hereunder:

a. Cheap imports from Malaysia and Indonesia caused the prices of Fresh Fruit Bunches less than the cost of cultivation.

b. Delay in allotment of Factory Zones to new entrepreneurs and inability of existing entrepreneurs to meet the requirements of oil palm farmers in wide area made the farmers lose interest in Oil Palm cultivation.

c. Another reason is withdrawal of some of the entrepreneurs from the program and so existing entrepreneurs failed to meet the demands of Oil palm farmers.
d. Depletion of ground water and also inability to provide irrigation caused large scale uprooting as continuous water supply or good irrigation is essential for getting good yield.

e. Another factor is inability to recover from the damage caused to the Oil Plam crop due to natural disasters like drought and cyclones.

f. Competitive crops viz mango, sugarcane and paddy became more and more profitable and productive.

20. The private entrepreneurs who were allotted factory zones under this project made huge initial investment for the initial period of 6-7 years for raising of Oil palm nurseries, area expansion and establishment of processing units. Some of the companies which were allotted factory zones dropped from the project in the middle due to financial constraints and hence the farmers who took up Oil palm in that area were also affected. Ultimately the area expansion could not progress.

21. Of late, under a specific programme of Technology Mission on Oilseeds and Pulses, Govt. of India accorded permission for provision of Micro jet sprinklers for Oil palm within the ceiling limit of Rs.25, 000/-per ha. At present the subsidies are being calculated based on the rates approved by the Government of India during 1994. As the prices of the components have gone up now, the beneficiaries are demanding subsidies on the prevailing actual cost of components.

22. Oil palm is cultivated mostly in unirrigated, semi-arid areas and hence remain vulnerable to vagaries of nature. Causes for low productivity compared to countries like Malaysia and Indonesia are:

i. Lack of high yielding varieties of Oil Palm seeds

ii. The small and marginal farmers who cultivate the oil palm crop are not well adapted to new farm technologies.
iii. The progress in respect of Oil Palm has not been substantial for the valid reason that food grains are given first priority in research and development.

iv. There is no effective marketing support and processing support for oil and oilseeds in non-traditional areas.

v. Lack of technical guidance to farmers for oil Palm production.

vi. Low credit flow for Oil Palm production. In fact, more than 85% of the rural banks do not actively lend financial support to Oil Palm farmers.

23. Out of 210 oil palm cultivators surveyed, 96 farmers (46%) opine that the yield of oil palm is low compared to other crops. But the rest 114 farmers accounting for 54% are of the opinion that oil palm yield is not low compared to other oil crops. So majority of the sample population have positive opinion towards the yield of oil palm.

24. According to 183 farmers out of 210 cultivators i.e. 87% opine that the price of oil palm is non remunerative compared to other crops. They are not satisfied with the price fixed by the govt. of India.

25. Out of 210 oil palm cultivators, 111 farmers i.e 53% are of the opinion that oil palm cultivation is not much advantageous compared to other oil seed crops. So more than half of the sample population is not satisfied with the benefits accrued by oil palm cultivation.

26. All the 210 farmers i.e. 100% feel that their soil is suitable for oil palm cultivation. In fact, the oil palm cultivation is allowed only after testing the suitability of soil. The soil test is conducted by the scientists in National Research Centre in association with the executives of oil palm processing units before giving seedlings for the cultivation.
27. Out of 210 respondents, 189 respondents representing 90% are of the opinion that labour cost for oil palm cultivation is high compared to other oil seed crops. Also oil palm cultivators have opined that the cost of labour in the initial years is low and this cost increases with the increase in the age and height of oil palm trees.

28. Out of 210 respondents, 108 respondents representing 51% are of the opinion that risk associated with oil palm cultivation is less compared to other oil seed crops.

29. Out of 210 oil palm cultivators, 180 farmers i.e. 86% have opined that input data for the cultivation of oil palm is available and this information is provided by the executives of processing units and National Research Centre located in Pedavegi. So majority of the sample population are satisfied by the availability of input data for oil palm cultivation.

30. Out of 210 farmers, 135 farmers representing 64% hold the view that technical information is not available when needed. So the technical information should be made available to the oil palm cultivators whenever they need that information.

31. Out of 210 respondents, 156 farmers representing 74% are against oil palm insurance because the insurance can be obtained only when oil palm crop in the entire region is damaged. Damage of oil palm crops of a few farmers in a region cannot be considered for insurance coverage.

32. Through the Z-Test conducted to identify whether there is any significant difference between the incomes obtained through the usage of Borewell and drip Irrigation, it has been identified that there is no significant difference between the incomes obtained through the usage of Borewell and Drip method of irrigation.
33. Through the Z-Test conducted to identify whether there is any significant difference between the incomes obtained through the Oil Palm cultivation with or without pesticides, it has been identified that there is no significant difference between the incomes obtained through the cultivation with or without pesticides.

34. To assess whether there exists any relationship between Education and Income of the farmers, education and income are divided into different levels. To know whether education and income are significantly related or not chi-square test has been used. Null hypothesis is proved and the result indicates that if the farmer is educated his ability to know the best methods of cultivation would be high and so income earned would be high.

35. To know whether farming experience and income are significantly related or not correlation is used to find whether these two variables are positively correlated or negatively correlated. There is low positive correlation between farming experience and income. It can be interpreted that farming experience has very low influence on the yield of oil palm.

36. To know whether age of oil palm and income are significantly related or not, correlation is used to find whether these two variables are positively correlated or negatively correlated. There is positive correlation between the age of oil palm and income and both of them are moderately correlated.

37. Correlation is used to find out whether the age of farmer and income are positively or negatively correlated. It indicates negative correlation between the age of farmer and income. It can be interpreted that with the increase in age of farmer, due to his inability to put efforts and lack of knowledge about developments in oil palm cultivation techniques, less income is obtained compared to young farmers.
38. ANOVA Test is used to test for significance of differences among the three sample means and to find out whether the samples are drawn from population having same mean or not. It has been identified that there is no difference in the yield obtained through the usage of different types of fertilizers.

39. Taking income as independent variable and Number of acres as dependent variable Linear Regression is carried out and it is obtained as \( Y = 186.62x + 36169 \). So with this the income for a given area can be estimated.

40. From the study it has been identified that Yield is predicted based on age of oil palm, fertilizers, pruning and harvesting using Multiple Regression. The output generated is analysed.

41. In certain fields caterpillar, Bagworm attack Oil Palm but this can easily be solved by the use of Karate, the specific synthetic pythroid.

**FINANCE RELATED FINDINGS**

42. Costs in the cultivation of Oil Palm vary depending upon the age of the plant. Nature of costs varies during 1-3 years, 4-8 years and 9-30 years of Oil Palm Plant.

43. The Net Present Value of the crop at 9% discount rate is Rs. 44,935/-

44. Internal Rate of Return of the crop is 11.25 which are above the rate applied for determining Net Present value.

45. Benefit Cost ratio of the crop is 1.17. As BCR > 1 and so cultivation is cost effective.

46. Sensitivity of risk factors over the cultivation of Oil Palm shows that in pessimistic direction when the market revenue reduced by 10 percent, the net
benefit of the farmer (NPV) is reduced from Rs. 44935/- to Rs.15238/-.
The Benefit Cost Ratio correspondingly reduced from 1.17 to 1.06 and IRR falls from 11.25 to 9.6 just nearer to the minimum required rate of return.

47. If all costs are increased by 10%, NPV, BCR and IRR fell to 19092, 1.06 and 9.09 from 44935, 1.17 and 11.25 respectively.

48. Whereas increase of specific costs (fertilizer, harvesting and labour costs) by 10 percent, NPV has reduced from Rs.44935 to Rs.32485. BCR and IRR are 1.12 and 10.62 respectively.

49. The financial indicators are more sensitive to a 10% reduction in the market price of Fresh Fruit Bunches than to the same proportionate increase in costs.

50. Oil Palm cultivation is done either by using borrowed capital or own capital. Under the current study, 60% of Oil Palm farmers have availed of institutional finance and the rest 40% have cultivated their Oil Palm crop using their own capital. Out of the farmers using institutional finance 76% have availed of short term loan and the rest 24% long term loan.

51. Majority of oil palm farmers borrowed money for the maintenance of crop.

52. Oil palm finance is extended by financial institutions through Tri Party Agreement viz. the Financial Institution (Bank), Processing Unit and the Farmer. Finance is extended to the farmer based on the guarantee of Oil Palm processing unit.

53. Funds are released to farmers under Refinance Scheme by NABARD to State Co-operative Banks (For Andhra Pradesh-AP Co-Operative Central Bank). From Co-Operative Central Bank the funds flow to various District Central Co-Operative Banks. From District Central Co-Operative Banks they are disbursed
to the farmers through Village Co-Operative Society. But NABARD’s refinance scheme failed to provide timely loans to farmers.

54. Since the involvement of private entrepreneurs in this project of Oil extraction has been a new experiment, the formulation, finalization of modalities and procedures of their involvement are the salient factors for the inordinate delay.

MARKETING RELATED FINDINGS

55. Market support is extended by the Government through the establishment of oil palm processing units.

56. Purchase of Fresh Fruit Bunches by the respective processor of the zone has been streamlined.

57. As stated earlier, variety of intercrops are cultivated by oil palm farmers to get returns during the initial years of Oil Palm cultivation. Some of the most commonly used varieties are Groundnut, Chilies, Maize, Cotton, Vanilla, Cocoa and Black gram.

58. Payment is through cheque by the processing unit to the oil farmers within 14 days from the date of receiving Oil Palm Bunches.

59. The prices of Fresh Fruit Bunches (FFB) often fluctuate though they are fixed continuously which are fixed by the price fixation committee comprising the members from Agricultural Department, Farmer representatives and oil palm company representatives under the control of Director of National Research Centre. In fact the price is fixed as per the formula, 33% of the amount obtained from the sale of Kernel oil and Cake in addition to 12% of the crude oil price.

60. Majority of oil palm cultivators want the Minimum Support Price to be Rs.8000/T. They are of the opinion that when cost of cultivation increases, the price does not increase in proportion to the cost. As the Minimum Support
Price is not up to their reasonable level, the farmers are demotivated to continue Oil Palm Cultivation.

61. As a matter of fact, the demand for edible oils is highly income and price elastic. The increase in population coupled with rise in income levels has led to increase in demand at the rate of six percent per annum during the last couple of years.

62. Break-even performances are obtained when the plantation is twelve years old, though returns start accruing from 4th year after gestation period. One has to wait for eight more years to get good returns.

63. Reduction in import duty on edible oil from 65% to 25% has created some doubts among the farmers regarding the profitability of Oil palm crop and its marketing. To get better realization by the farmers on their produce and also to resist cheap imports the existing duty of 25% has to be enhanced suitably.

64. Oil palm has been recognized as one of the highest edible oil yielding crops which can yield 4-6 tons of oil from 3-30 years of life span. It produces 2 distinct oils – Palm oil from the flesh of the fruit and Palm Kernel Oil from the seed or kernel. For every 10 tons of Palm oil about 1 ton of Palm kernel oil is also obtained.

65. Malaysia and Indonesia are the global leaders in the production of oil palm.

66. In India, Horticulture Department has identified Andhra Pradesh, Karnataka, Tamilnadu, Gujarat, Orissa, Goa, Tripura, Assam, West Bengal, Kerala, Maharashtra, and Andaman and Nicobar Islands as potential areas for oil palm cultivation. Out of these states the area covered under the cultivation of oil palm is the highest in Andhra Pradesh.

67. In Andhra Pradesh there are 12 processing units. There are two processing units operating under Krishna District. Major portion of Krishna District is
covered by Ruchi Soya Industries Limited, Ampapuram and a minor part is covered by Godrej Agrovit (Only Musunur Mandal).

68. Allocation of crude Palm Oil bunches to processing units is done through Zonal system. Under this system Palm cultivating areas are divided into zones and each zone is allocated to the processing unit in that area.

69. To prevent Oil palm farmers from uprooting their crop due to sudden fall in the Oil Palm bunch prices; Government has introduced Market Intervention Scheme under which Minimum Support Price is given to the farmers irrespective of price (if price falls below MSP). Now it is Rs. 5000/T.

70. VAT is imposed on the FFB of Oil palm bunches. Usually VAT is imposed on manufactured goods but for oil palm price is fixed after deducting VAT. Oil palm farmers strictly oppose this decision taken by the Government.

71. Oil Palm farmers find it difficult to cope up with the continuous changes in the price of oil palm FFB.

72. Major importers of oil Palm are Indonesia, Malaysia, Thailand, Singapore and Srilanka. Major exporters of Oil Palm and its products are Indonesia, Malaysia, Bhutan, Banglasdesh and Singapore.