

Economic Aspects of Oil Palm Processing in Nellore District of Andhra Pradesh

Ch.Srilatha

Ch.Srilatha, Department of Agricultural Economics/College of Agricultural Engineering/Professor Jayashankar Telangana State Agricultural University, Kandi,Sangareddy, Medak(Dist),Telangana State, India. chslatha@gmail.com

ABSTRACT

The total costs incurred by the processing unit to produce one tonne of palm oil was Rs.18,854.29 . The gross and net returns obtained in producing one tonne palm oil were Rs. 38,940 and Rs. 20, 086.01 respectively. The problems faced by the processing unit included non-availability of raw material throughout the year and scarcity of labour during peak periods of work.

Keywords: Oil Palm, Processing, Economic Aspects

1. INTRODUCTION

India is the third largest edible oil economy in the World after U.S and China. India is the largest importer of edible oils 50% of it being palm oil. Oil palm is a potential source of edible oil expected to contribute significantly towards meeting the growing edible oil demand. Of all the known oil yielding crops, oil palm ranks first with the production of about 6 tonnes of oil/ha/year.

Among states, Andhra Pradesh and Karnataka were found to possess the maximum potential for oil palm cultivation with identified areas of 4.5 Lakh.ha and 2.5 Lakh.ha respectively. The year-wise achievement for the period 2005-06 and 2006-07 in respect of area coverage under oil palm through implementation of the Oil- palm Development Programme is 12665 ha and 13818 ha. In Andhra Pradesh Nellore is one of the important districts in oil palm cultivation. Even though oil palm is being cultivated in Nellore district since 1991, so far no research work has been done. So it is felt necessary to probe into the economic aspects of oil palm processing.

2. MATERIALS AND METHODS

Nellore district was purposively chosen for the study as it has considerable area (2,766 ha) under oil palm and ranks fourth in the cultivation of oil palm in Andhra Pradesh. Survey method was employed to collect the data from the oil palm growers. The primary data pertaining to the processing aspects of oil palm were collected directly from the lone processing unit located at Manubolu, Nellore district with the help of a specially designed schedule by personal interview. The data Collected were subjected to conventional tabular analysis to workout costs and returns of oil palm Processing.

3. PROCESSING ASPECTS OF OIL PALM

The common method of oil palm processing is known as dry process where in the oil is extracted mechanically by the hydraulic process or continuous screw process. The fruits should be processed within 24 hours of harvesting to obtain good quality oil. Delay in processing, over ripening of fruits, damaged fruits, storage of fruits etc. results in deterioration of oil content. The minimum size of oil processing mills available is 3 tonnes of Fresh Fruit Bunches (FFB) per hour. A minimum of 200ha plantations are required to make such a unit economically viable. Simhapuri Agro Products Pvt. Ltd Processing unit in Nellore district was established with a capacity of 5 tonnes per hour. The processing consists of the following steps.

Sterilization:

It is done by heating with steam pressure of 3 KG/cm² for duration of 40 to 60 Minutes. The purpose of this operation is to deactivate the enzyme lipase which would rise the free fatty acid content.

Stripping:

After sterilization the bunches must be stripped. This process involves the separation of the fruits from the bunches by passing through a rotated rotary drum stripper. The empty bunches are thrown outside through conveyer belt.

Digestion:

The purpose digestion is to disrupt the mesocarp and to break up the maximum number of oil bearing cells to facilitate oil release. This process also frees the nuts from the fibre. Digester is a vertical steam jacketed cylinder provided with beater arms and situated directly over the screwed press. The digester comprises of cylindrical vessel in which rotating knives pulverize the fleshy part of the fruit into pulp and at the same time gets heated with injected steam. This releases the oil from the pulp and rise the temperature upto 95⁰ C to increase the fluidity of the oil.

Pressing or oil extraction:

The digested pulp material automatically passes through the screw press where the liquid content is separated from the solid. The continuous screw press consist one or more screws turning with a perforated cage through which the oil water mixture is extracted.

Clarification:

The crude oil from the screw press contains a mixture of oil, water, cell debris and particles of fibre and shell. Hot water is then added and oil is allowed to separate. In clarification tanks due to the difference in specific gravity.

Oil purification and drying:

The oil from clarification tank still contains 0.4 to 0.6% of water, 01 to 0.2 % of sludge and other impurities are removed by a high speed centrifuge with 800rpm which can bring down the moisture level. Further reduction of moisture to the optimum level 01 to 0.15 is achieved by vacuum drying. Finally the vacuum dried oil is pumped to storage tanks. This oil is called as crude palm oil (CPO) rich in vitamin A and E.

Separation of nuts from fibre:

The pressed cake is passed through a steam jacketed screw conveyer, the nuts are separated by blowing off the lighter fibre in air stream with in a vertical cylinder. The nuts are cleaned and polished and fibre is conveyed to the boiler station.

4. RESULTS & DISCUSSION

4.1 Costs and return from oil palm processing

4.1.1. Processing costs of one tonne of palm oil

The processing costs including variable costs and fixed costs incurred in production of one tonne of palm oil by the oil mills where worked out and they are the presented in the following table 1.1

It is evident from the table that the total costs incurred to produce one tonne of oil was Rs. 18854.29. Of this the variable costs and fixed costs were Rs. 16846.74 and Rs. 2007.55 accounting for 89.35 and 10.65 percent of the total costs respectively. Among the variable costs, cost of raw material was the major item amounting to Rs. 16176.47 and accounted for 85.80 percent of the total costs per tonne of oil produced by the oil mills. Next to raw material wages for casual labour formed the major item of variable costs which worked out to Rs. 380.88 (2.02%) followed by incidental charges (0.81%), fuel charges (0.31%), power charges (0.21%), miscellaneous charges (0.16%), interest on working capital (0.03%) and lubricant charges (0.01%). The operations such as loading and unloading of raw material, separation of pulp from mesh, separation of oil from water, waste bunches disposal, fire wood shifting to boiler required to more number of casual labour and hence more expenditure. Incidental charges were also led to more expenditure, because of more

usage of telephones and records. Fuel charges were higher than the power charges because of utilization of generators

Interest on fixed capital was the major item of fixed costs amounting to Rs.1092.37 per tonne. of oil accounting for 5.79% of the total costs. Next to interest on fixed capital, depreciation formed major item of expenditure in fixed which worked out to Rs. 620.9 (3.3%). Similarly for permanent staff worked out to be Rs.94.07 (0.50%) per tonne of produced followed by taxes (0.40%), repairs and maintenance (0.30%), insurance charges (0.20%) and opportunity cost of land (0.16%).

4.1.2. Returns for one tonne of palm oil

Returns obtained by the oil mill through the sale of one tonne of palm oil were worked out and presented in the following table. It is observed from the table that, on an average palm oil mill crushed 5.88 tonnes Fresh Fruit Bunches of oil palm to obtain one tonne of oil which is valued at Rs. 36000/- and 0.588 tonnes of kernels as by product valued at Rs. 2940/-. Thus the gross and net returns were worked out to be Rs. 38940/- and Rs. 20086.01 per tonne of palm oil respectively.

4.1.3. Processing problems

Non availability of raw material (FFB) throughout the year was the major problem faced by the processing unit which keeps the unit idle for most part of the year which is highly uneconomical. The second major problem expressed by the processing unit was the paucity of labour during peak periods.

PALM OIL EXTRACTION

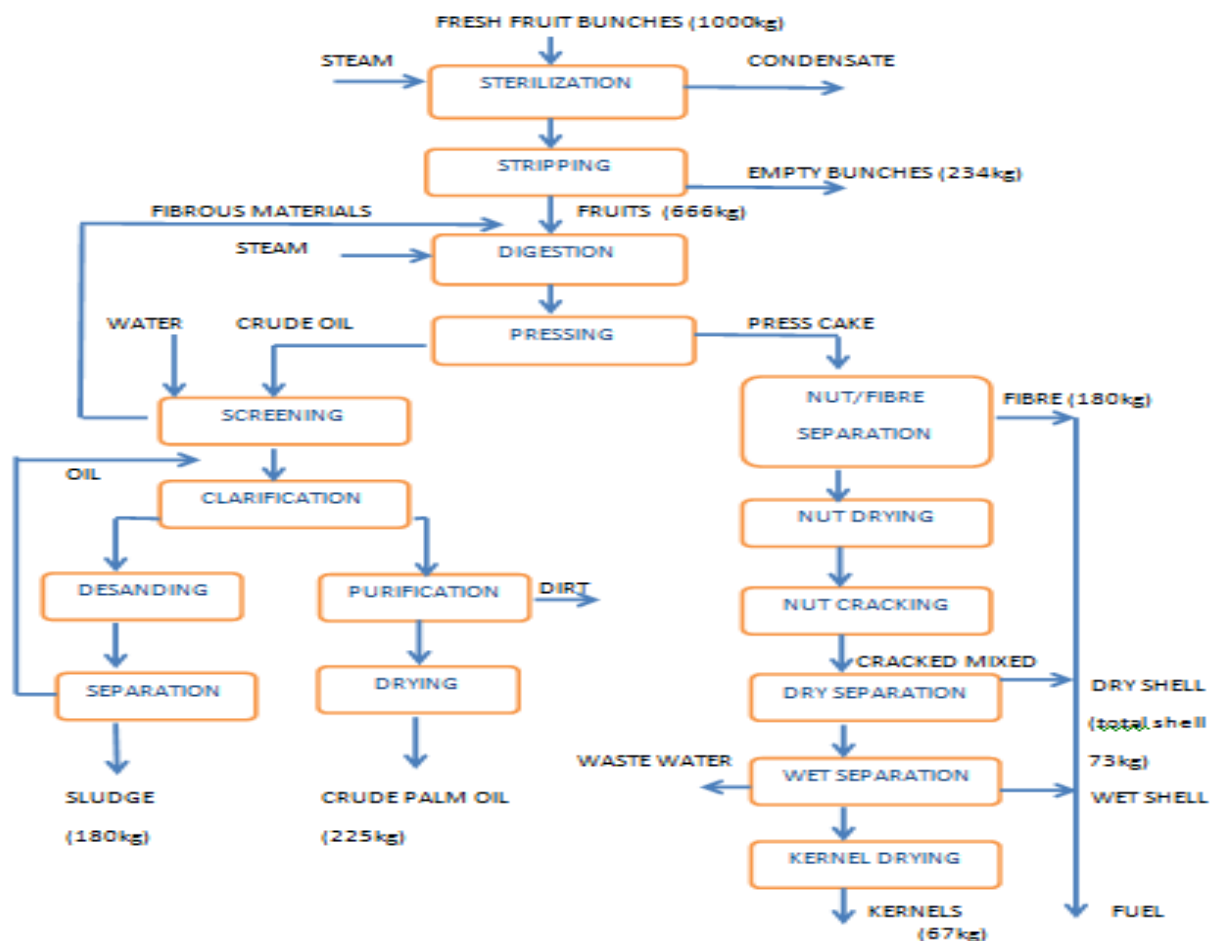


Table 1: Costs And Returns From Oil Palm Processing**(Rs./tonnes)**

Sl.No	Particulars	Amount	Percentages
I. Costs			
Variable Cost			
1.	Cost of raw material	16176.47	85.80
2.	Incidental charges	153.66	0.81
3.	Wages for casual labour	380.88	2.02
4.	Power charges	38.60	0.21
5.	Lubricant charges	2.60	0.01
6.	Fuel charges	57.90	0.81
7.	Miscellaneous charges	30.94	0.16
8.	Interest on working capital	5.69	0.08
	Total Variable costs	16846.74	89.35
Fixed costs			
1.	Depreciation on buildings		
	i. Factory building	174.67	0.93
	ii. Administrative building	30.19	0.16
	iii. workshops	1.48	0.01
2.	Depreciation on Machinery	327.95	1.74
	Effluent treatment plant	45.63	0.24
	Tractors and accessories	30.64	0.16
	Drums (205lit)	5.11	0.03
	Fire extinguishers & Fixures	1.04	0.01
	Generators	4.19	0.02
3.	Opportunity cost of land	29.14	0.16
4.	Repairs and maintenance	57.44	0.30
5.	Insurance charges	38.65	0.20
6.	Taxes	74.71	0.40
7.	Salaries for permanent staff	94.07	0.50
8.	Interest on fixed capital	1092.37	5.79
	Total Fixed costs	2007.55	10.65
	Total costs	18854.29	100.00
II. Returns			
	Returns from one tonne of oil	36,000	92.45
	Returns from kernels	2940	7.55
	Gross Returns	38940	100.00
III.	Net Returns from one tonne of oil	20086.01	

Table 2: Production problems of oil palm cultivation (Percentage)

S.No	Particulars	Farmers
1.	Shortage of power supply	60 (100%)
2.	Lack of improved farm implements	30 (50%)
3.	Non availability of high yielding varieties of oil palm	40 (66.67%)
4.	High input cost	50 (83.33%)
5.	Lack of adequate credit facilities	30 (50%)
6.	Price fluctuation	60 (100%)

REFERENCES

- [1] K. S. Holla and N S Rajan, "Vegetable oil scenario prospects of palm oil in India". Indian Oil Palm Journal, vol. 2, pp. 4-12, 1992
- [2] G. K. V. Kumar, "Economics of oil palm cultivation and its profitability in Bhadra area of Shimoga, Karnataka". Indian Oil Palm Journal, vol. 2, pp. 13-21, 1992.
- [3] V. S. Motilal, "Oil palm-Sunshine for bleak edible oil scenario", National Bank News Review, vol. 12, pp. 42-44, 1996.
- [4] Okorie and S U Daniel, "Costs and returns of oil palm projects in Nigeria. A case study of Alloma oil palm project. Benue state, Nigeria", Journal of Plantation Crops, vol. 20, pp. 32-41, 1992.
- [5] K. Radhika, "Economics of oil palm in India with particular reference to Andhra Pradesh", Agricultural Banker , vol-19, pp. 16-20,1995.
- [6] PUBP Rangachary, "An economic analysis of oil palm cultivation in West Godavari District of Andhra Pradesh. M.Sc. (Ag.) Thesis, Submitted to Acharya N.G.Ranga Agricultural University, Hyderabad", 1995.
- [7] P Thomas Varghese and K. V. K. Nampoothiri, "Investment and expected returns from oil palm cultivation in India". Financing Agriculture, vol.20, pp. 26-31, 1998.
- [8] Hyman E L "An economic analysis of small scale technologies for palm oil extraction in Central and West Africa World Development, Oxford, Vol 18(3), 455-466 1990.