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Management of tamarind dried processing unit in Karnataka

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Abstract

Tamarind dried is utilized main product of the tamarind pulp industry. It is used in culinary purpose and also Ayurveda medicine. In this perspective an analysis has been made to know the cost and returns of tamarind seed processing units. The analytical tools such as NPV, IRR, Payback period and BC ratio were used to analyze the data. The study was based on the primary source and it was used to analyze the financial feasibility of tamarind processing units in study area. Results showed that processing of one metric ton tamarind fresh will give 550 kg (55 %) of tamarind dried, 0.34 kg (34 %) of tamarind seed, 6 kg (6 %) tamarind shell and 5 kg (5 %) tamarind fiber. Here main product was tamarind dried and by-product is seed, shell and fiber respectively. The net present worth of four processing units It was observed that the tamarind dried processing unit was found to be financially sound and economically feasibility in terms of net present value has been shown the end of the economic life of the project viz., 15 years was found to be ₹ 29, 51,000, IRR 35.00 per cent, BC ratio of ₹1.40, and payback period was 3.00 year. The total variable cost was ₹53,662.32 (95.41 %), total fixed cost was ₹2,580.57 (4.59 %) and total processing cost was ₹56,242.89 (100 %). The derived gross return was ₹63,341.60 and net return was ₹ 7,098.71.

Keywords: Tamarind, tamarind dried, tamarind fresh, tamarind seed, financial feasibility, processing unit, value addition and capacity utilization

Introduction

Tamarind crop is a minor crop and it is notable product. Major markets available for tamarind are Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra. Tamarind is largely available in unorganized markets and branded segment in the market constitutes about 15 per cent. Nutritional values are more in tamarind; it is excellent with vitamin Potassium, Magnesium, Iron, Thiamine, Phosphorus, Riboflavin and fiber. In one cup of tamarind pulp contains 140 calories, 0.4 grams fat, 38 grams carbohydrates, sugar 34 grams, fiber 3 grams and protein 2 grams. The by-product that is tamarind kernel powder (TKP) it is used as a main source of carbohydrates, it acts as a binding agent in paper making and textile sizing. The fibers is used for making of sofa, bed and seats *etc.*, (Kumar *et al.* 2008). The tamarind dried or pulp has good export potential and also having good scope for tamarind based products in the market. The tamarind dried is a cheapest multi-vitamin and multi-mineral diets for the poor people. During the months of March to May the ripened tamarind fruit is harvested, since harvesting of tamarind fruit is labour intensive, poor people can earn by involving in harvesting activity. They also earn money at the time of lean season during plucking fruit from trees as well as de-seeding of tamarind fruit. Processing of 1kg of tamarind fresh will give 55 per cent pulp, 34 per cent seed, 6 per cent shell and 5 per cent fiber. The seed is major by-product of tamarind and it contains about (70 %) kernel and (30 %) of hard brown testa.

Tamarind dried can be processed in to different products namely Tamarind concentration, Tamarind paste, Tamarind juice, Tamarind rasam paste, Tamarind sauce, Tamarind pickles and Tamarind chocolates *etc.* By-product of tamarind processing is tamarind seed kernel and it has good commercial value. Tamarind seed oil can extracted from tamarind seed. Seed kernel powder is used in medicine preparation, cosmetics and major portion of tamarind kernel seed powder is using in textile industry all around the world. It is also widely used in textile industries, jute industries, gum industries for colour stabilization and aroma for the products. Tamarind paste has many culinary uses including a flavoring for chutney, curries and the traditional sharbat syrup drink. Tamarind sweet chutney is popular in India as a dressing for many snacks. In the Philippines, the whole fruit is used as an ingredient in the traditional dish called sinigang to add a unique sour taste, unlike that of dishes are use vinegar instead. Indonesia also has a similarly sour, tamarind-based soup dish called sayur asem.

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Tamarind production on a micro level is a bit of an oddity in India, few in the villages gather tamarind because they are likely the low-priced, low-demand sour variety. Furthermore, the disorganized nature of the market makes it difficult to effectively price and distribute tamarind outside of the villages. In India tamarind is consuming nearly 90 per cent and remaining was exporting to other countries. 85 per cent of tamarind was produced in the country it is locally marketed the tamarind within the area and 15 per cent is going for sell in urban markets across the country. Tamarind seed kernel is composed of 7.6 per cent of oil, 7.6 per cent of protein, 51.0 per cent Polysaccharide, 1.2 per cent crude fiber, 3.9 per cent total ash, 0.4 of per cent acid insoluble ash and 7.1 per cent moisture.

The tamarind production is relatively greater size in India. As stated by the spice board of India, the tamarind area was 74.20 (000' ha), production was 309.44 (000' MT) and the productivity was 4.0 (MT/ha) in 2017-18. From India tamarind dried exported quantity 11,922.89 metric ton and worth of value of Rs. 14,842.38 lakhs in the year 2017-18. In Andhra Pradesh and Karnataka there are several tamarind crop growers available, because these states having more dry land area and the land is more suitable for tamarind tree, but soil type is different in Andhra Pradesh but in case of Karnataka states soil fertility more suitable and the quality of fruits are good from Kolar, Tumkur, Bengaluru, Chikkaballapura and Mysore are the major producing districts in Karnataka. The basic objective of investigation is to study the management of tamarind dried processing unit in Karnataka.

Material and Methods

To fulfill the specific objectives of Karnataka was selected for the study. The state is having dry land area and having highest production of tamarind. In Karnataka, four districts namely Bangalore, Kolar, Tumkur and Chikkaballapura were selected. From each district one processing unit was selected. For collection of primary data, the respondents were selected by random sampling method. In Karnataka four processing units were selected and 25 farmers, 10 traders, 10 wholesalers, 10 retailers were selected in each district. Thus the total sample size is 224. For this particular objective, total cost and returns were computed for a year of 2018-19 based on primary data that was collected from processing units. For evaluating the present objective management of tamarind dried processing unit in Karnataka was selected from chikkaballapura district in Karnataka. However, for understanding the financial feasibility of management of tamarind dried processing unit in Karnataka, the statistical tools like NPV, IRR, BC ratio and payback period were used to analysis the data and to arrive at valid conclusion.

Results and Discussion

1. Procurement management of tamarind fresh in Srinivasa tamarind processing unit

Over the years from the Table 1, it shows that procurement management of tamarind fresh from 2003-04 to 2017-18. Over the years from the year 2003-04 to 2017-18, the quantity of raw material has been increasing growth of 172 metric ton to 695 metric ton with the compound annual growth rate of 11.34 per cent and purchasing value of raw material was also has been more growth of 4.85 per cent. Performance of tamarind dried processing unit was good. This processing units product spreading by exporting and transporting to other processed products and this tamarind variety called as

Karapuli, it has good demand in consumers due to processing in hygienic conditions and attracting by making different types of shapes. So, the tamarind dried processing has been showing good performance over the years. (Nichit *et al.* 2010) [7].

Table 1: Procurement management of tamarind fresh in Srinivasa tamarind processing unit

SL. No.	Years	Quantity of raw material (MT)	Value of raw material cost (₹/MT)
1	2003-04	172	20,000
2	2004-05	180	21,350
3	2005-06	200	21,850
4	2006-07	221	22,100
5	2007-08	250	22,700
6	2008-09	288	23,200
7	2009-10	330	23,400
8	2010-11	368	25,500
9	2011-12	390	29,600
10	2012-13	485	30,000
11	2013-14	402	31,000
12	2014-15	547	32,450
13	2015-16	650	34,630
14	2016-17	672	36,800
15	2017-18	695	37,940
	CAGR (%)	11.34	4.85

2. Capacity utilization in Srinivasa tamarind dried processing unit

Table 2 cleared that about procurement management of srinivasa tamarind processing unit. The Initial installed capacity was 3.3 MT/day, having the number of working days was 240 days/annum, number of shifts were 2 per day, duration of shift was 8 hours, total annual installed capacity was 820 MT, quantity processed per day 2.8 MT. But actual annual capacity was 695 MT and the capacity utilization was 84.76 percentages and remaining 15.24 per cent was not utilized because of processing plant having higher capacity utilization and processing plant was located at road side near production belt and raw material is easily available for processing (Kidaha, 2017) [6].

Table 2: Capacity utilization in Srinivasa tamarind dried processing unit

SL. No.	Particulars	Units	Utilization
1	Installed capacity	MT/ days	3.3
2	Quantity processed	Per day (MT)	2.8
3	Number of working days	Days/annum	240
4	Number of shifts	Per day	2
5	Duration of shift	Hours	8
6	Annual installed capacity	MT	820
7	Annual quantity processed	MT	695
8	Capacity utilization	%	84.76

3. Capital investment in Srinivasa tamarind processing unit.

Table 3 computed that the tamarind dried processing unit having the civil works cost was ₹ 0.64 lakhs. The tamarind fresh was a raw material and it dried under sun. Almost all steps of tamarind dried processing were under sun only. So, civil work cost was ₹ 0.64 Lakhs and building occupying 2,592 square feet's with ₹ 13.47 lakhs, Plant and machinery was required with the cost of ₹ 14.47 lakhs, land with 0.8 acre cost it was ₹ 17.11 lakhs, land development with the cost ₹ 0.12 lakhs and plant and machinery like light weight Iron materials for beating, sieving, Flat form, Package materials,

Electrification, Vehicles like tractor, Electric weighing machine, Mixers and Small steel, plastic vessels ₹ 14.17 lakhs and working capital with the worth of ₹ 13.42 Lakhs. The total capital investment was ₹ 58.59 Lakhs. So, maximum requirement towards working capital to establish the tamarind dried processing unit. The capital investment was more important for day to day expenses and to run the company efficiently and effectively. In starting the business the company should maintain these investments and maintaining of working capital has more important to run the company successfully. (Rai *et al.* 2016)^[8]

Table 3: Capital investment in Srinivasa tamarind processing unit

SL. No.	Investment particulars	Units	Total cost (₹ Lakhs)
1	Land (0.8 acre)	₹	17.11
2	Land development	₹	0.12
3	Civil work (₹ 520*2,592 sqft)	₹	13.47
4	Plant and Machinery	₹	14.47
5	Working capital	₹	13.42
	Total capital		58.59

4. Economics of tamarind dried in srinivasa tamarind processing unit (2018-19)

Table 4 evaluated that among processing cost, raw material cost was a major contributing factor with ₹ 48,120 (85.56 %) and labour charges for sun-drying of tamarind pods with the wage rate of ₹ 24 for drying 4-5 hour under the sun in dry method, four man-days used for beating of tamarind with the wage rate ₹ 500 for removal of tamarind seed, fiber and over all labour charges are ₹ 900 (1.60 %). The total variable cost

share was ₹ 53,662.32 (95.41 %) and total fixed cost shared with ₹ 2,580.57 (4.59 %) and fixed cost was ₹ 2,580.57 (4.59 %). Total returns obtained from the sales of 550 kg at the rate of ₹ 114 per kg, the sale of cost of tamarind dried of ₹ 62,700 and the total value of by-products of ₹ 641.60. The total gross return was ₹ 63,341.60 and total net returns of tamarind dried processing unit was ₹ 7,098.71. The important facts have been explained that the total cost of processing for one ton of tamarind dried was ₹ 56,242.89. The tamarind processing unit shows bit higher cost; it was mainly due to the larger portion of interest on working capital. After observation the raw material has major share which influences the total cost which leads the profitability of the unit. Tamarind is an indigenous crop and it was available only in season because the crop has been kept in cold storages. So, that tamarind fresh (raw material) incurred more cost compare to other shared particulars. Hence, the availability of raw material has to be providing a formal assurance by means of covenant, pre-frame and enough storage. The similar findings were recognized from Kamble *et al.* (2007)^[5] and Karthick *et al.* (2013). Marketing costs also had a considerable influence on the total cost. Hence, well organized way of marketing but the commission charges were bit more. Procurement from a group of farmers can be considered one option, to reduce commission charges. The interest paid on working capital contributed to certain extent to the total cost. Hence, the promoters could look into owned sources of funds, which can reduce the cost of borrowing and so reduce the total cost to some extent. A similar evaluation has been observed in Buyinza *et al.*, 2010^[3], described cost and returns of fruits and vegetables processing unit in Pune district of Western Maharashtra.

Table 4: Economics of tamarind dried in Srinivasa tamarind processing unit (₹/MT)

S. No.	Particulars	Units	Quantity	Price (₹)	Total cost	% Total
1	Variable cost					
a	Tamarind fresh(Raw material)	MT	1.00	48,120	48,120.00	85.56
b	Repairs and maintenance	₹		60.00	60.00	0.11
c	Labour charges	No's	2.00	450.00	900.00	1.60
d	Telephone charges	₹		47.00	47.00	0.08
e	Electric power charge	units	3.00	6.50	19.50	0.03
f	Miscellaneous cost	₹	-	-	55.20	0.10
I	Total cost	₹	-	-	49,201.70	87.48
2	Marketing cost					
a	Packing Material cost (Plastic cover)	₹			50.00	0.09
c	Loading and unloading charges	₹	1.00	100.00	100.00	0.18
d	Transportation cost	₹			300.00	0.53
e	Cold storage charges for 1 month	kg	1,000	0.50	500.00	0.89
II	Total Marketing cost	₹	-	-	950.00	1.69
A	Total working capital (I+II)	₹	-	-	50,151.70	89.17
B	Interest on working capital @ 7 % pa	₹	-	-	3,510.62	6.24
III	Total variable cost (A+B)	₹	-	-	53,662.32	95.41
3	Fixed cost					
a	Depreciation on machinery	₹	-	-	0.41	0.00
b	Rental value on land and building	₹	-	-	11.84	0.02
c	Salaries to permanent employees	No's	3.00	400.00	1,200.00	2.13
d	Insurance premium	₹	-	-	1.75	0.00
e	License fee	₹	-	-	3.25	0.01
f	Interest on fixed capital @ 12% pa	₹	-	-	146.07	0.26
	Total cost	₹	-	-	1,217.25	2.16
IV	Total fixed cost	₹	-	-	2,580.57	4.59
	Total processing Cost (III+IV)	₹	-	-	56,242.89	100.00
	Value of main product (pulp)	kg			550.00	-
	Sale price	₹/kg	550	114.00	62,700.00	-
	Value of by-products					
a.	Seed	₹	34	16.00	544.00	-

	b. Shell	₹	6	9.60	57.60	-
	c. Fiber	₹	5	8.00	40.00	-
	Total Value of by-product	₹	-	-	641.60	-
	Gross returns	₹	-	-	63,341.60	-
	Net returns	₹	-	-	7,098.71	-

5. Constraints faced by tamarind growers the study area

An informal discussion with the sample respondents revealed that as such there were problems in famers of tamarind. The random sampling method was conducted for the sample respondents who produce tamarind, to ascertain the problems faced. The results of the random sampling method presented in Table 5.

Table 5: Constraints faced by tamarind growers the study area

Sl. No.	Particulars	Average	Garrett ranking
1	Price fluctuations/low price	82.00	I
2	Inadequate storage facilities	65.80	II
3	High commission charges by middlemen	63.04	III
4	High transport cost	59.40	IV
5	Non-availability of market information	53.24	V
6	Inadequate value addition	42.96	VI
7	Non-availability of specified market	36.80	VII
8	Faulty weighment	36.20	VIII
9	Lack of tamarind producer units	36.16	IX
10	Less awareness of online trading	22.68	X

The results revealed that the major tamarind grower's problems faced by the sample farmers in the study area were price fluctuations/low price (82.00 %), because tamarind is an indigenous crop and yielding period is from February to May and problems depend on monsoon in the point of famers. Farmers felt that prices of tamarind was very less and not even covering their direct investment. The prices ruling the market were found to be unremunerated according to farmers. Hence, there is need of a mechanism to make sure the prices do not fall drastically and the farmers get a decent price. Due to sudden rainfall at the time of yielding, the farmers expressed the problem of severe incidence of pests and diseases which needs to be addressed effectively. So, government should conducted awareness programmes and supplies the hybrid high yielding varieties which are having resistant against sudden rainfall at the time of yielding. The similar discussion has been finding by Bhoopathy (2016)^[2]. About 65.80 per cent in the study area, farmers in each districts in the study area, identified as a second problem of inadequate storage facilities. In the study area there were no cold storages to keep the tamarind by avoiding pests, diseases and colour change. The farmers expressed the problem high commission charges by middlemen. Already famers were not getting reasonable prices in that again they has to pay commission also means for them it was so much burden. Because, commission charges were more, farmers they can't bear. So, if reduce commission charges farmers will get good returns. Farmers facing high transportation cost with the average of 59.40 per cent, because distance was more from tamarind tree farm. The market information and less awareness of online trading regarding tamarind were very less because of minor product. The similar findings were shown in constraints faced by the commercial mango growers in efficient management of mango orchard. The similar observations were given by Dhara *et al*, 2016^[4]

6. Constraints faced by intermediaries in tamarind marketing

The results of the random sample presented in Table 6. An informal discussion with the sample farmers revealed that with the marketing of tamarind had problems. The random sampling method was conducted on constraints of marketing was lack of labour, market price fluctuations and low quality/grade/size of produce having major problem. Intermediaries facing mainly lack of labour it is because wages were less and work was more so, labour are shifting to other works. Tamarind was low quality /grade/size because it depends on soil fertility. Lack of transportation facilities was the last problem because already intermediaries were located in semi urban and general they has been maintain own vehicles. These were sample farmers who sold their produce to the wholesaler or retailer to know the problems in marketing of tamarind. The similar findings were declared in Marketing problems encountered by coconut growers in Thanjavur district of Tamil Nadu, The similar findings were observed by Anavrat (2017)^[1].

Table 6: Constraints faced by intermediaries in tamarind marketing

Sl. No.	Particulars	Average	Garrett ranking
1	Lack of labour	70.33	I
2	Low quality/grade/size of produce	68.98	II
3	Market price fluctuations	53.05	III
4	Low margin and high operational cost	49.38	IV
5	Non-availability of specified markets	49.13	V
6	Lack of cold storage facilities	42.63	VI
7	Lack of market information	38.40	VII
8	Delay in payment	36.53	IX
9	Lack of transportation facilities	37.15	VIII

References

1. Anavrat V. Production and marketing constraints of Nagpur Mandarin growers in Madhya Pradesh. *Agric. Update*. 2017; 12(3):443-447.
2. Bhoopathy G. A study on marketing problems of coconut with special reference to Coimbatore district. *Intl. J Engg. Res and Modern Educ*. 2016; 1(1):59-69.
3. Buyinza M, Senjong M, Lusiba B. Economic valuation of a tamarind (*Tamarindus indica* L.) production system: green money from dry lands of Eastern Uganda. *Small-scale Forestry*. 2010; 9(1):317-329.
4. Dhara R, Umamaheswari M, Porchezhiyan S. Marketing problems encountered by coconut growers in Thanjavur district of Tamil Nadu. *Adv. Res. J Soc. Sci*. 2016; 7(1):51-54.
5. Kamble BH, Jadhav MS, Yadav DB. Constraints in production and marketing of grapes sangli district of Maharashtra. *Agril. Eco*. 2007; 4(3):1-10.
6. Kidaha ML, Rimberia FK, Wekesa RK, Kariuki W. Evaluation of tamarind (*Tamarindus indica* L) utilization and production in eastern parts of Kenya. *Asian Res. J. Agri*. 2017; 6(2):1-7.
7. Nichit MB, Jagtap MD, Benke SR, Borse GR. Economics of fruits and vegetables processing unit in pune district of western Maharashtra. *Intl. J Com. Bus. Manage*. 2010; 2(1):143-148.

8. Rai J, Singh SP, Singh AK. Economics of marketing and processing of aonla in district Pratapgarh, Uttar Pradesh. *Intl. J Com. and Bus. Mgt.* 2016; 9(2):209-213.
9. Singh D, Wangcher L, Mood SK. Processed products of tamarind natural product radiance. 2007; 6(4):315-321.
10. Singh H, Sahoo M, Aman Kumar, Singh H. Participatory enterprise management for procurement, processing and marketing of fruits and vegetables - a case study of himalayan state, Uttarakhand (India). *J Env. Sci. Toxic. Food Tech.* 2015; 9(5):30-34.