International Journal of Commerce and Business Management
e ISSN–0976–7940 Volume **9** | Issue 2 | October, 2016 | 134-140
DOI: 10.15740/HAS/IJCBM/9.2/134-140
Visit us : ***www.researchjournal.co.in***

RESEARCH PAPER

An economic analysis of fig in Pune district of Maharashtra

K. S. DAUNDKAR, U.S. BONDAR, SUPRIYA D. KASHID AND H.P. THAKARE

Received : *19.07.2016;* **Revised :** *16.08.2016;* **Accepted :** *03.09.2016*

ABSTRACT

An attempt has been made to estimate resource use, cost, returns, profitability and to identify the problems faced by sample fig grower in production of fig in Pune district. Keeping in view the highest acerages under fig, Purandar and Bhor tahsils from Pune district were purposefully selected. Eight villages *viz.*, Zendewadi, Dive, Rajewadi, Kalewadi, Soneri, Pimple, Velu and Shindewadi were selected. Five cultivars each from small, medium and large size groups from these eight villages selected randomly. Thus, the total samples of 120 fig grower were selected for study. The primary data collected for the agriculture year 2012-13 were analyzed by using simple tabular method in fig cultivation. The per hectare cost of establishment was Rs. 70,9,38.21. The major items of cost were cost on account of manures and manuring, interculturing, fertilizer, interest on fixed capital and cutting. The annual per hectare cost of cultivation of fig was Rs. 1,48,096.70 of which cost 'A' and cost 'B' constituting 54.93 per cent and 77.46 per cent, respectively. The major problems faced by grower in production of fig were non- availability of labour, high charges of digging pits.

KEY WORDS : Economics of production, Cost of cultivation, Problems

How to cite this paper : Daundkar, K.S., Bondar, U.S., Kashid, Supriya D. and Thakare, H.P.(2016). An economic analysis of fig in Pune district of Maharashtra. *Internat. J. Com. & Bus. Manage*, **9**(2) : 134-140, **DOI: 10.15740/HAS/IJCBM/9.2/134-140.**

In India, farmers can produce all varieties of tropical and sub-tropical fruits. It is noted that fruits which comprise about 7 per cent of the cultivated area in India constitute over 20 per cent of crop wealth. Therefore, increasing the production of fruits is essential for India is the second largest producer of fruit after China. Its share in the world output of fruits is 11 per cent. Total area under horticulture is 18 Million hectares with total production of 164.9 MT among which 3.78 M hectares area was covered by fruit crops alone yielding 45.2 MT (Indian Horticulture, Database, 2010)

Maharashtra occupies 7th position in acreage under fruit crops in India which comes to about 75,000 ha accounting for 6.10 per cent of the total area under fruit crops in India. Most of area in India under fruit crops is occupied by mango constituting over 50 per cent of total area under fruits. Next important fruit is banana, followed by citrus, grapes and pomegranate. However, in Maharashtra, Mango, grape, pomegranate and fig are grown on commercial scale. Fig (*Ficus carrica* L.) is native of southern Arabia and is grown in all tropical and sub-tropical countries around the Mediterranean region, especially in Italy, Spain, Turkey, Greece, Portugal and Algeria. California ranks first in the fig producing nations, accounting for nearly 98 per cent of all figs produced. The California fig industry, consisting of both

MEMBERS OF THE RESEARCH FORUM

Correspondence to:
K.S. DAUNDKAR, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

Authors' affiliations:
U. S. BONDAR, SUPRIYA D. KASHID AND H.P. THAKARE, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

fresh and processed fruits, produced 40,000 tons of figs in 2008, out of which 36,000 tons (90%) were processed.

In India, fig cultivation is mostly confined to western part of Maharashtra, Gujarat, Uttar Pradesh (Lucknow and Saharanpur), Karnataka (Bellory, Chitradurga and Shrirangopatnam) and Tamil Nadu. Recently, in 2013, the area under fig cultivation in Maharashtra is 1332.24 hectare, which includes 847.89 hectare in Pune, 142 hectare in Latur, 60 hectare in Jalna, 38 hectare in Osmanabad and remaining area is scattered in other districts. Fig is delicious, wholesome and nutritious fruit consumed fresh or in processed form. It is one of the first fruit to be preserved by drying. A part of drying and canning figs is processed into paste and jelly also. To study the trends in area, production and productivity of fig in Pune district.

Objectives :

–To study resource use structure of fig crop

–To study the costs, returns and profitability in fig production.

–To study the problems in production of fig.

METHODOLOGY

Selection of the study area :

Pune district in Maharashtra is one of the major fig growing areas. The cultivation of this crop is concentrated in Purandar tahsil and Bhor tahsil of the district. Therefore, these tahsils were purposively selected for the present study.

Selection of villages :

The villages were first identified having fig orchards from the tahsil. Then, the eight villages having maximum area under the fig orchards were selected.

Selection of fig cultivators :

The list of cultivators having fig orchards from these villages were arranged in ascending or descending order. The cultivators were categorized into three groups on the basis of the actual area under fig orchard.

Group I: Cultivators having area under fig from 0.01 to 0.20 ha.

Group II: Cultivators having area under fig from 0.20 to 0.40 ha and

Group III: Cultivators having area under fig more than 0.40 s ha and above.

Thus, in all 120 sample cultivators will be selected randomly from all the categories.

Method of collection of data :

The primary data relating to production aspects were collected by survey method for the year 2013-14 with the help of questionnaire specially designed for the purpose. The data were collected by conducting personal interviews with the sample growers.

The standard cost concept *viz.*, cost A, cost B and cost C ware used. The simple statistical tools *viz.*, percentages, averages ware used.

Amortization cost :

Annual amortized establishment cost can be calculated by using capital recovery factor in following formula :

$$A = P\left[\frac{i}{1-(1+i)^{-n}}\right]$$

where,

A= Annual amortized cost (Rs.)

P= Present establishment cost (Rs.)

Table A : Villages having maximum area

	Villages	Number of sample fig growers			Total
		Small	Medium	Large	
Purander	Zendewadi	5	5	5	15
	Rajewadi	5	5	5	15
	Dive	5	5	5	15
	Sonori	5	5	5	15
	Pimpale	5	5	5	15
	Kalewadi	5	5	5	15
Bhor	Velu	5	5	5	15
	Shindewadi	5	5	5	15
		40	40	40	120

n= Economic life of garden (years)
i= Discount rate at 12 per cent.

Net income :

The profit on cost-C is the net profit from particular fig crop.

Output-input ratio :

It is ratio of output (gross income) to input cost-C.

ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under the following heads :

Resource use structure in fig cultivation :

The information on per hectare utilization of different resources in cultivation of fig by sample farms in presented in Table 1.

Human labour :

It is revealed that, at the overall level the per hectare use of human labour was 594 man days, comprising of 339.50 male labour and 254.50 female labour days. It observed that the utilization of family labour was maximum as compared to hired labour.

Bullock labour :

Utilization of bullock labour was the maximum in small farmer category (15.70 pair day) and minimum in large farmer (10.20 pair day) in medium farmer category it was 13.70 pair days. At overall level it was 13.20 pair days. Utilization of bullock labour in different farmer category decreases with increase in size holding.

Manures :

On average utilization of manures per hectare was founded to highest (203 qtls) in case large farmer categories followed by 160.50 qtls, in medium farmer category, 150qtls in small farmer category and 171 qtls in overall level.

Fertilizer :

Average use of of nitrogen, potassium and phosphorus was 205.23 kg, 128.06 kg and 128.97 kg hectare at overall level.

Irrigation charges :

The average per hectare irrigation charges in small, medium and large category farmers were Rs. 8500, Rs. 9500 and Rs. 10500. Overall it was Rs. 9500. Irrigation charges was the maximum in large farmer size and minimum in small farmers category.

Plant protection charges :

The average per hectare plant protection charges in small, medium and large farmer were Rs. 22212, Rs. 25400 and 27445, respectively. Overall it was Rs. 25170.66, Plant protection charges in different farmer categories increased with increases in size of holding.

Cost of establishment :

Fig is a perennial crop and tree starts bearing after two years from planting. The productive life of fig has

Table 1 : Per hectare resource use for fig on sample farms

Sr. No.	Particulars	Size group of holding			
		Small	Medium	Large	Overall
1.	Total human labour (hired +family) (mandays)	594.00	555.10	568.20	572.43
	Male	339.50	373.90	455.00	389.53
	Female	254.50	178.30	182.20	205.00
2.	Bullock labour (pair days)	15.70	13.70	10.20	13.20
3.	machine labour (hrs)	8	6	9	7.6
4.	Manures (qtls)	150.00	160.50	203.00	171.00
5.	Nitrogen (kg)	170.20	180.50	265.00	205.23
	Phosphorus (kg)	105.30	125.30	153.60	128.06
	Potassium (kg)	109.10	114.80	160.97	128.97
	Total (kg)	384.60	400.30	597.57	454.76
6.	Irrigation (Rs.)	8500	9500	10500	9500
7.	Plant protection (Rs.)	22712	25400	27400	25170.66

been observed to be 15 tears. During this period it continues to produce fruits and yields sizable income to the growers. The tree has to be nurtured from the planting time till it starts bearing fruits. It requires however, a relatively high investment of capital in the initial stage that is during the first two years of the establishment of a fig orchard. The net cost of establishment of fig orchard is to be spread over the economic life span of the orchard. The information in respect of yearly costs involve in the establishment costs of a fig orchard were worked out in order to allocate the non-recurring cost of production. During the first year of plantation farmers have to incurred expenditure on preparation of land, planting material *i.e.* cuttings, manures and fertilizers, irrigation, after care etc. The items of expenditure during second year are manures and manuring, irrigation, earthing up, plant protection etc. The operation wise per hectare cost for the initial period of two years is presented in Table 2. It can be observed from the Table 2 that, amongst the various items of establishment cost the most expensive items were manure and manuring, digging, filling pits, planting, cuttings, interculturing and interest on working capital. The total area under fig was 34.68 hectares. In first year, the total establishment cost was higher than the second year. The first year establishment cost was Rs. 53,346.80 and the second year establishment cost was Rs. 32,676.82.

In first year, the highest expenditure was on manuring *i.e.* Rs. 11,789.10 followed by digging, filling pits and planting *i.e.* Rs. 10,541.23 cuttings *i.e.* Rs. 10,000, interest on working capital *i.e.* Rs. 5404.61, fencing*i.e.* Rs. 5000.00, fertilizers *i.e.* Rs. 3887.42, preparation of land *i.e.* Rs. 2500.00, plant protection *i.e.* Rs. 1759.66, interculturing *i.e.* Rs. 1400.52, interest on fixed capital *i.e.* Rs. 1302.03, irrigation *i.e.* Rs. 1250.00 cost of supporting *i.e.* Rs. 1004.90, depreciation *i.e.* Rs. 410.52, land revenue *i.e.* Rs. 96.81. In second year, the higher expenditure was on manuring *i.e.* Rs. 11803.11 (36.12), followed by, interculturing *i.e.* Rs. 7993.08, interest on working capital *i.e.* Rs. 3058.94, fertilizers *i.e.* Rs. 4310.12, plant protection *i.e.* Rs. 1502.10 irrigation, *i.e.* Rs. 1500.00, interest on fixed capital *i.e.* Rs.1302.03, training and pruning *i.e.* Rs. 700.11, depreciation *i.e.* Rs. 410.52, land revenue *i.e.* Rs. 96.81. The overall per hectare establishment cost was Rs. 89,023.62. Among all the items share of manure and manuring was highest *i.e.* Rs. 23,592.21 (26.50 %). The other important items of cost were digging, filling pits, planting *i.e.* Rs. 10,541.23 (11.84%), cuttings *i.e.* Rs. 10,000 (11.23%), interculturing *i.e.* Rs. 9393.60 (10.55%) and interest on working capital *i.e.* Rs. 8463.55 (9.51%) followed by fertilizer *i.e.* Rs. 8197.54 (9.21%), fencing *i.e.* Rs. 5000.00 (5.62%), plant protection *i.e.* Rs. 3261.76 (3.66 %), irrigation *i.e.* Rs. 2750.00 (3.09%), interest on fixed capital *i.e.* Rs. 2604.06 (2.93%), preparation of land *i.e.* Rs. 2500.00 (2.81%), depreciation *i.e.* Rs. 821.04

Table 2 : Establishment cost of fig orchard **(Rs./ha)**

Sr. No.	Item	First year	Second year	Total
1.	Preparation of land	2500.00(4.44)	0.00 (0.00)	2500 (2.81)
2.	Digging, and filling pits	10,541.23 (18.71)	0.00 (0.00)	10,541.23 (11.84)
3.	Cutting	10,000.00 (17.75)	0.00 (0.00)	10,000.00 (11.23)
4.	Manure and manuring	11,789.10 (20.92)	11803.11 (36.12)	23,592.21 (26.50)
5.	Fertilizer	3887.42 (6.90)	4310.12 (13.19)	8197.54 (9.21)
6.	Irrigation	1250.00 (2.22)	1500.00 (4.59)	2750.00 (3.09)
7.	Interculturing	1400.52 (2.49)	7993.08 (24.46)	9393.6 (10.55)
8.	Plant protection	1759.66 (3.12)	1502.10 (4.60)	3261.76 (3.66)
9.	Cost of supporting	1004.90 (1.78)	0.00 (0.00)	1004.90 (1.13)
10.	Training and pruning	0.00 (0.00)	700.11 (2.14)	700.11 (0.79)
11.	Fencing	5000.00 (8.87)	0.00 (0.00)	5000.00 (5.62)
12.	Land revenue	96.81 (0.17)	96.8 1(0.30)	193.62 (0.22)
13.	Depreciation	410.52 (0.73)	410.52 (1.26)	821.04 (0.92)
14.	Intr. on working capital	5404.61 (9.59)	3058.94 (9.36)	8463.55 (9.51)
15.	Interest on fixed capital	1302.03 (2.31)	1302.03 (3.98)	2604.06 (2.93)
16 .	Total cost	56346.8 (100.00)	32,676.82 (100.00)	89023.62 (100.00)

(0.92%), training and pruning *i.e.* Rs. 700.11 (0.79%) and land revenue. 193.62 (0.22%). The overall per hectare net returns from the first year were 9,465.41 and from second year were 7,981.23. The per hectare net returns from two years intercrops were calculated to Rs. 17,446.64.

Costs, returns and profitability of fig :

An attempt has been made to compare the per hectare yield, cost of production, gross returns and net profit in fig cultivation in different size groups of holdings. The details in this respect are given in Table 3. It is noted from the table that, the per hectare total yield obtained from fig at the overall level was 115qtls. Among the different size group of holdings, the yield was 95.00 qtls. 120.00 qtls and 130.00 qtls. In small, medium and large size group of holdings, respectively. The gross income received from fig was Rs. 575000 at the overall While in small, medium and large size group of holdings; it was Rs. 475000, Rs. 600000 and Rs. 650000,

Table 3 : Cost, returns and net returns of fig **(Rs./ha)**

Sr. No.	Particulars	Size group			
		Small	Medium	Large	Overall
1.	Yield(qtls)	95	120	130	115
2.	Total cost				
	Cost A	82208.16	88779.48	110209.61	93732.41
	Cost B	174181.82	200684.48	231342.94	202069.74
	Cost C	213394.82	235040.18	257928.94	235454.94
3.	Profit at				
	Cost A	392791.84	511220.52	539790.39	481267.59
	Cost B	300818.18	399315.52	418657.06	372930.26
	Cost C	261605.18	364959.82	392071.06	339545.06
4.	Marketing cost (Rs.)	63365	80040	86710	76704.00
5.	Total production cost (Rs.)	276759.82	315080.18	344638.94	312158.94
6.	Gross returns (Rs.)	475000	600000	650000.00	575000.00
7.	Net returns (Rs.)	198240.18	287195.20	305361.06	262841.06
8.	Per quintal cost of production	2913.26	2606.70	2651.06	2714.42
	B:C ratio	2.22	2.55	2.52	2.43

Table 4 : Problems in production and marketing of fig

Sr.No.	Problems	Size samples			
		Small	Medium	Large	Overall
Production problems					
1.	Digging of pits high charges of labour	38(95)	36(90)	37(92.5)	111(92.5)
2.	Non-availability of good quality FYM in time	30(75)	36(90)	22(55)	88(73.33)
3.	Occurrence of leaf rust disease	33(82.5)	38(95)	37(92.5)	108(90)
4.	Difficult to control fruit cracking	37(92.5)	36(90)	38(95)	111(92.5)
5.	Difficult to control fruit rot	32(80)	30(75)	29(72.5)	91(75.83)
6.	Non-availability of labour	36(90)	38(95)	38(95)	112(93.33)
7.	Lack of knowledge of bahar treatment	23(57.5)	22(55)	22(55)	79(65.83)
8.	Extensive bird damage to the fruits at the time of ripening	33(82.5)	34(85)	32(80)	99(82.5)
9.	Availability of water during March to June	33(82.5)	33(82.5)	34(85)	100(83.33)
10.	Availability of seedlings of new variety	15(37.5)	29(72.5)	27(67.5)	71(59.16)
11.	Organic package of practices have not yet been standardized and thus, limiting its organic cultivation	18(45)	21(52.5)	16(40)	55((45.83)
12.	No supply of voltage during day time	40(100)	40(100)	40(100)	120(100)

respectively. The per hectare total cost *i.e.* cost C was the highest in large size group of holdings, followed by medium and small size group of holdings while the same was Rs. 236319.66 at the overall level. The large size group of fig growers received the highest per hectare gross income as compared to small and medium size group of holdings. Therefore, the per hectare net profit was also highest (Rs. 300405.00) in large size group of holding. At the overall level, it was Rs.261977.00. In case of small size group of fig growers, the net return at cost C were the lowest on account of higher per hectare cost of cultivation than the other two size group of holdings. The B: C ratio which indicates the profitability of investment was observed to be 2.43 at the overall level. At the cost C the output – input ratio was greater than unity indicating that the cultivation of fig was profitable when both direct and indirect costs were taken into account. Among the size group of holding, the output- input ratio at cost C was the highest in small size group (2.22) compared to medium (2.57) and large (2.47) size group of holdings. This indicates that the cultivation of fig was more profitable in small size group of holdings than of that medium and large size group of holdings.

Production problems :

No supply of voltage during day time is the major problem which was accounted to 100.00 per cent at the overall level. Non- availability was another major problem which is accounted 93.33 per cent at the overall level while for small medium and large groups 90, 95 and 95 per cent, respectively. High charges of labour for digging the pits and fruit cracking where the major problems which is accounted to 92.5per cent and 92.5, respectively, at the overall level. Occurrence of the leaf rust is another problem which is accounted 82.5, 95 and 92.5 per cent in small, medium and large groups, respectively. Non-availability of good quality in F.Y.M (73.33%) occurrence of fruit rot (75.83%). Availability of water during March to Jun (83.33%).were the major production problems face by the fig cultivators.

Conclusion :

The per hectare net establishment cost was higher in first year as compared to second year because for first year initial requirements like preparation of land planting material *i.e.* cuttings, digging out and filling up of pits, fencing, cost of supporting were necessary.

Research should undertake on development of varieties which are resistant of leaf rust with high productivity and suitable for fresh market.

The fig grower are advised to take only 'Mettha bahar" *i.e.* from January to May so that they can produce the quality fruit with minimum risk.

REFERENCES

Adolar, V.S. (1995). Economic analysis of orange production in Amravati district of Maharashtra State, 94p. M.Sc. (Ag.) Thesis, Marathwada Krishi Vidyapeeth, Parbhani, M.S. (INDIA).

Bansole, S.D. (2001). Economics of production of fig in Aurangabad district, 78p., M.Sc. (Ag.) Thesis, Marathwada Krishi Vidyapeeth, Parbhani, M.S. (INDIA).

Handiganur, S. (1995). Economics of production and processing of grapes in Bijapur district, Karnataka. M.Sc. (Ag.) Thesis, University of Agricultural Sciences, Dharwad, KARNATAKA (INDIA).

Kareemulla, K., Tewari, R.K., Singh, B. and Kumar, Kuldeep (2007). Production and marketing of Indian Gooseberry – Aonla (*Emblica officinalis* Gaertn) in Pratapgarh district of U.P. *Indian J. Agric. Mktg.*, **21** (3) : 41-45.

Khunt, K.A., Gajipara, H.M., Gadhvi, B.K. and Vekariya, S.B. (2003). Economics of production and marketing of pomegranate. *Indian J. Agric. Mktg*., **17**(1): 100-107.

Koujalgi, C.B., Poddar, R.S. and Kiresur, V.R.(1999). Profitability of production and marketing of pomegranate in North dry Zone Karnataka. *Indian J. Agril. Econ.*, **58** (4) : 811.

More, R.G. (2007). Economics of production and marketing of fig in Pune district, pp 85-101. Thesis, Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar, M.S. (INDIA).

More, S.S. (1999). Economics of production and marketing of banana in Maharashtra state. M.Sc. (Ag.) Thesis, University of Agricultural Sciences, Dharwad, KARNATAKA (INDIA).

Naikwadi, D.J., Sabale, R.N. and Khaire, V.A. (2004). Economics of production and marketing of fig in Pune district. AGRESCO. Report, 199-213pp. Department of Agricultural Economics. Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar, M.S. (INDIA).

Naphade, S.A. and Tingre, A.S. (2008). Economics of

production and marketing of guava in Buldhana district of Maharashtra. *Indian J. Agric. Mktg.*, **22** (2) : 32-41.

Rai, Rahul Kumar, Rai, J., Singh, A.K. and Gupta, B.K. (2006). A study of production and marketing of papaya in Chiraigaon block of district Varanasi (U.P.). *Indian J. Agric. Mktg*., **20** (3) : 68.

Shinde, R.B. (2007). Economics of production and marketing of fig (*Ficus carrica* Linn.) in Maharashtra M.Sc. (Ag.) Thesis, Marathwada Krishi Vidyapeeth, Parbhani, M.S. (INDIA).

Yarcan, M. and Engindeniz (2002). Determination of the cost and profitability of dried fig production. A case study for Turkey. *J. Appl. Hort. Lucknow,* **4** (1) : 7-9.