Economics of Grape Production in Dindigul Division of Madurai District

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An attempt has been made to estimate the cost of grape production and resources use efficiency. It was revealed that the average cost of establishment of vineyard was Rs. 8082.06 per acre and the average cost of production of one kilogram of grape of Panneer Drakshai was Rs. 0.52. The level of irrigation, manures and fertilizers had more influence on the production of grapes.

Horticultural crops find favour for cultivation wherever feasible by virtue of easy culture and high returns. However large scale production faces several problems like long gestation period, heavy initial investment, problem of marketing and high perishability of products. Once established, the production decision is not reversible. Therefore production of grapes goes with careful cost benefit analysis-formal or informal.

MATERIAL AND METHODS

In 1974-75 the study was undertaken in three blocks by Dindigul division of Madurai district, by random sampling. A list of grape growing villages in each of the three selected blocks were prepared and a total of ten villages was selected based on proportionate probability sampling. Accordingly four villages in Dindigul Block, five in Athoor Block and one in Reddiarchatram were selected. A linear production function was fitted to examine resource use effioiency.

RESULTS AND DISCUSSION

Grape takes nearly 18 months to attain commercial bearing. Any investment upto the bearing is considered as initial establishment cost. There-after, the annual expenses are maintenance and recurring nature. The average establishment cost in the different sample villages ranged between Rs. 6462.76 to Rs. 9225.27 with an average of Rs. 8082.06 per acre (Table I).

The average per acre annual maintenance cost in the third year between villages has varied between Rs. 1985-41 or Rs. 2894-91 with an average of Rs. 2493-96.

Unit of production:

All the cost incurred during the entire period of the crop upto the

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TABLE I. Average cost of establishment per acre upto bearing stage

Village Number	Preparatory cost Rs	Manures & manuring Rs	Seeds and sowing Rs	Irrigation Rs	Plant protection Rs	After cultivation Rs	Over head cost Rs	Total Rs	Gross income Rs	Net income Rs
1	3308.03	1704.14	96.30	291.36	988.33	1302.47	629.40	8320.03	10580.25	2260.22
2	4267.84	1924.00	118.89	311.11	1011.33	1136.00	912.78	9681.95	10933.33	1251.38
3	4066.71	1564.79	113.70	308.22	1042.00	1113.70	757.55	8966.67	9219.18	252.51
4	4106.76	1303.32	100.29	275.00	1075.15	1012.50	440.02	8313.04	8529.41	216.37
5	3612.58	1403.39	128.06	286.77	1067.48	1092.26	470.06	8060.60	8935.48	1293.80
6	3918.73	1707.14	136.89	230.00	2016.97	1571.06	644.48	9225.27	9492.06	266.79
7	3285.10	1647.08	129.20	207.00	779.82	992.42	324.94	7365.56	7964.60	599.40
8	3250.57	1545.52	123.68	239.06	909.82	1083.10	418.04	7569.79	7954.02	384.23
9	2586.09	1385.44	88.35	199.03	641.55	856.21	706.09	6562.76	8349.51	1886.76
10	2802.15	1505.08	122.88	245.45	926.79	1000.26	252.36	6854.97	10492.42	3637.45
Total	35204.56	15689.90	1158.24	2593.00	9459.24	11159.98	5555.72	80820.64	91450.26	12048.50
Average	3520.45	1568.99	115.82	250.30	945.92	1105.90	555.57	8082.06	9145.02	1204.89
Percentage	(43.57)	(19.44)	(1.45)	(3.11)	(11.72)	(13.82)	(6.89)	(100.00)		

(Figures in parenthesis are percentage to the total cost)

TABLE II. Average cost per acre to maintain the vineyard

Village Number	Manures and manuring Rs	Irrigation Rs	Plant protection Rs	After cultivation Rs	Harvesting and other charges Rs	Overhead cost Rs	Total Rs	Gross income Rs	Net income Rs
1	550.77	123.08	381.92	643.31	178.46	219.80	2087.34	10451.33	8354.19
2	630.89	147.06	461.76	722.06	279.41	260.89	2552.06	10058.82	7606.76
3	655.51	193.88	526.53	661.22	269.33	403.84	2710.31	8979.59	6269.28
4	555.56	174.60	571.43	380.95	176.60	200.25	2059.39	12698.41	10639.01
5	600.00	147.50	450.00	805.00	372.50	97.80	2672.80	12000.00	9327.20
6	791.49	125.53	490.21	1038.30	206.38	243.00	2394.91	14042.55	11147.64
7	935.62	145.21	509.59	771.51	219.16	201.17	2682.26	12044.79	9372.53
8	781.25	168.75	456.25	651.88	325.10	191.11	2574.34	14062.50	11488.16
9	754.12	176.47	495.76	667.06	234.12	380.28	2707.81	10813.52	8115.71
10	625.00	118.75	441.67	460.42	181.25	161.32	1988.41	9375.00	7386.59
Total	7030.20	1520.83	4785.12	6801.71	2442.31	2359.46	24939.73	114546.71	89607.07
Average	703.02	152.08	478.51	680.17	244.23	235.94	2493.96	11454.67	8960.70
Percentage	(28.19)	(6.10)	(19.19)	(27.27)	(9.79)	(9.46)	(100.00)		

(Figures in parentheses are percentage to the total cost)

time of the study for the actual area under study was added on and this was divided by the total yield obtained during the period. It was revealed that the unit cost of production of a kilogram of grapes varied from Rs. 0.32 to Rs. 0.69 with an average of Rs. 0.52.

Cost and return:

The average total cost per acre upto the bearing stage was worked out as Rs. 8082.06 and the gross return upto two years was Rs. 9145.02 with a net return of Rs. 1204.89 per acre. It was observed that the total establishment cost incurred was recouped before the second year and in some cases, it almost covered the establishment expenditure. In the third year, it was observed that the average per acre maintenance cost was Rs. 2493.96 with gross income of Rs. 11454.67. Thus, on an average, the farmer was able to get a net profit of Rs. 8960.70 per acre. The net profit between villages ranged from Rs. 7386.59 to Rs. 11488.66.

Resource productivity:

The productivity of resource was estimated through a linear production function. The function was fitted as a whole for all the 32 grape farms which have come to the stage of commercial bearing, using the factors that have a bearing on grape production. The results are as follows:-

$$Y = 0.672271 + 0.002561 \times 1^{**} + 0.013268 \times 2^{*}$$
$$(0.00068) \quad (0.005003)$$
$$+ 0.00715 \times 3$$
$$(0.001337)$$
$$R^2 = 0.792$$

where

Y = Yield in tonnes; $X1$ = Cost of manures and fertilizers in rupees; $X2$ = Cost of irrigation in rupees; $X3$ = Cost of plant protection measures in rupees. The functional analysis revealed that manures and fertilizers were significant at five per cent level and the cost of irrigation at one per cent level. The co-efficient of multiple determination (R^2) indicated that 79.2 per cent of the variation in the output was accounted for by the inputs included in the study. The regression co-efficient for the factor irrigation charge was found to be 0.002561 indicating that Rs. 1000 invested on irrigation will result in an increase of 2.5 grapes per farm. Similarly an expenditure on manures and fertilizers result in an increase of 3.22 tonnes of grapes. Hence the farmers incurring an expenditure on manures and fertilizers under the prevailing condition in the study area will get increasing rate of return from grapes. The input-output ratio for the third year vineyard was estimated at 1:4 indicating high return.