Analysis of Production and Profitability of Watermelon in Thiruvallur District of Tamil Nadu in India

Abstract

The present research entitled "Economic Analysis of Cost of Production and Profitability of Watermelon in Thiruvallur District of Tamil Nadu in India" was carried out during the year 2022-23. For the study, 100 farmers were selected randomly from the study area. The main objectives of the study were to analyze the costs, returns and profitability and marketing of watermelon and production in the study area. All the farmers (100%) had sown seeds during rabi season and adopted drip irrigation for cultivating watermelon. Majority of the farmers in the study area used the inputs above the recommendation as per the package of practices for watermelon cultivation. The data was gathered in the form of pre-structured interview schedule. The study revealed that average cost of cultivation of Watermelon per hectare was incurred Rs 151230.2 which was found to be Rs 155691.8, Rs 154302.5, Rs 149897 and Rs 148131.5 per hectare on Marginal, Small and Semi-medium and medium farmers respectively. Input- Output ratio related to cost C was (1:1.36), (1:1.39), (1:1.41) and (1:1.44) on marginal, small and semi medium and medium farmers respectively. As per the size of farm increases the production cost decreases.

Key words: Cost, Return, Production, Profitability, Watermelon, Thiruvallur.

Introduction

Watermelon (Citrullus lanatus var. lanatus, family Cucurbitaceae) is a scrambling and trailing vine originally from southern Africa. It is a large, sprawling annual plant with coarse, hairy pinnately-lobed leaves and white to yellow flowers. It is grown for its large edible fruit, also known as a watermelon, which is a special kind of berry with a hard rind and no internal division, botanically called a pepo. The fruit has a smooth hard rind usually green with dark green stripes or yellow spots and a sweet, juicy interior flesh usually deep red to pink, but sometimes orange, yellow, or white with many seeds, which can be soft and white or hard and black. Considerable breeding effort has been put into disease-resistant varieties and into developing a "seedless" strain with only digestible white seeds. Many cultivars are available that produce mature fruit within 100 days of planting the crop. The fruit can be eaten raw or pickled and the rind can be cooked. Watermelons have 92% water by weight. It is a thirst quencher in hot summer days. It is a nature's gift to beat the scorching summer heat. It is an excellent fruit, which can work wonders for human skin. It acts as a natural moisturizer as well as a toner and keeps the skin cool, glowing, and fresh. It has a good source of potassium; which helps in controlling blood pressure thereby ensuring the health of one's heart. **(Adeoye *et al*. 2011).** Traditionally, watermelon cultivation in India was confined to the riverbeds of the Yamuna, Ganges and Narmada in the north India, and the Kaveri, Krishna, and Godavari in the south India. At present, it is grown in almost all parts of the

country. It is a fast-growing cash crop for poor and marginal farmers with little acreage of their own. In India Watermelon is grown largely in major states like Uttar Pradesh having area 11.65 thousand hectare, production 544.57 thousand tonnes, Karnataka having area 11.11 thousand hectare, production 357.03 thousand tonnes, Tamil Nadu having area 6.77 thousand hectare, production 248.63 thousand tonnes, and Odisha having area 12.69 thousand hectare, production 245.04 thousand tonnes, and Andhra Pradesh having area 7.95 thousand hectare, production 225.62 thousand tonnes **(Ahmad *et al*. 2017).**

Research methodology

The study was conducted in Thiruvallur district of Tamil Nadu which is one of the 38 district of Tamil Nadu. Thiruvallur district comprises of 14 blocks among that Sholavaram block were selected for this study. From that block 7 villages viz., Chinnaamullaivoyal, Periyamullaivoyal, Mabuskhanpettai, Thachur, Thirunilai and Valudigaimedu were selected. A list of all watermelon farmers/ respondents is prepared with the help of head of the village head of each selected villages in the block, there after farmers/respondents is categorized in 4 size groups on the basis of their land holding and then from each village 10% farmers were selected randomly from all the different size of farm groups. Data for the study was collected from 100 farmers randomly.

Results and Discussion

The study was conducted in Thiruvallur district of Tamil Nadu. The necessary data were collected from the sample farmers spread over the blocks in above mentioned district. The present chapter is going to tell about the results and discussion for various objectives. The chapter is arranged in different sub-sections according to objectives of the study.

• To study cost and return per hectare and input output ratio of different size of farm groups. Resource use and cost of cultivation of watermelon crop per hectare in different size of farm groups: The economic aspects of watermelon such as cost of cultivation, returns per hectare, input and output ratio of marginal, small, Semi-medium and medium size farm groups are given below

Table 1. Resource use and cost of cultivation of watermelon crop per hectare in different size of farms group

S. NO	PARTICULAR	SIZE OF FARM GROUPS				AVERAGE
		MARGINAL	SMALL	SEMI-MEDIUM	MEDIUM	
1	Land preparation	20349 (13.07)	17723 (11.48)	14256 (9.51)	12287 (8.29)	15830 (10.46)
2	Cost of mulching sheet	14824 (9.52)	14824 (9.60)	14825 (9.89)	14825 (10.01)	14825 (9.80)
3	Cost of seed	6293 (4.04)	6266 (4.06)	6266 (4.18)	6266 (4.23)	6273 (4.14)

4	Manures & fertilizers	19643 (12.61)	19700 (12.76)	19771 (13.18)	19770 (13.34)	19721 (13.04)
5	Cost of ppc	13912 (8.93)	13912 (9.01)	13912 (9.28)	13912 (9.39)	13912 (9.19)
6	Cost of irrigation	4500 (2.89)	4000 (2.59)	3500 (2.33)	3000 (2.02)	3413 (2.25)
7	Hired human labour	31629 (20.31)	31629 (20.49)	31629 (21.10)	31629 (21.35)	31629 (20.91)
8	Interest on working capital	7780 (4.99)	7563 (4.90)	7291 (4.86)	7118 (4.80)	7392 (4.88)
9	Depreciation	2403 (1.54)	2689 (1.74)	2700 (1.80)	3359 (2.26)	2788 (1.84)
10	Land revenue	86 (0.05)	86 (0.05)	86 (0.05)	86 (0.05)	86 (0.05)
11	Rental value of land	11000 (7.06)	12500 (8.10)	12500 (8.33)	12500 (8.43)	12125 (8.01)
12	Interest on fixed capital	1619 (1.03)	1833 (1.18)	1834 (1.22)	1913 (1.29)	1800 (1.19)
13	Owned labour	7500 (4.81)	7550 (4.89)	7700 (5.13)	8000 (5.40)	7688 (5.08)
14	10 per cent of cost c1. As managerial charges	14153.8 (9.09)	14027.5 (9.09)	13627 (9.09)	13466.5 (9.09)	13748.2 (9.09)
Total input cost (cost c)		**155691.8**	**154302.5**	**149897**	**148131.5**	**151230.2**

(Figures in parenthesis indicate percentage to total)

Table 1 reveals that overall cost of cultivation of watermelon crop was Rs/ha 151230.2 and share of materials input cost was found to be Rs. 105603, which shared to 69.82 percent to the totalcost. The large contribution has been observed in human labour use with Rs 31629 and shared of 20.91 percent to the total cost. The power use in the form of tractor hour was contributed the minimum share to the total cost of cultivation of watermelon, which shared 10.46 percent and followed by plant protection chemical with percentage of 9.19 among the materials input cost manure and fertilizer shared the maximum (13.04%) followed by seeds (4.14%), irrigation (2.25%). The input value of family labour use was noticed to be Rs. /Ha 7688. The cost of cultivation of watermelon per hectare in marginal, small, semi-medium and medium farm groups is Rs. 155691.8, Rs. 154302.5, Rs.149897 and Rs.148131.5 respectively and the average cost of cultivation per hectare is 151230.2. The table clearly indicates that, the cost of cultivation of watermelon per hectare in marginal size group is higher than small and semi-medium farm groups followed by medium size group. Major cost on labour use involved in watermelon in marginal, small, semi-medium and medium groups is found to be Rs. 31629 per hectare respectively **(Ropan et al.2015).**

Cost of cultivation in watermelon crop per hectare in different size of farm groups: Below table explains about cost of cultivation in watermelon crop per hectare in different size of farm groups with cost A and cost B and cost C1 and cost C2.

Table 2: Cost Concepts in watermelon crop per hectare in different Size of Farms Group

SI.No	Cost Concepts	Size of Farms Group				Sample Average
		Marginal	Small	Semi-medium	Medium	
1.	Cost A	121419	118392	114236	112252	115869
2.	Cost B	134038	132725	128570	126665	129794
3.	Cost C1	141538	140275	136270	134665	137482
4.	Cost C2	155691.8	154302.5	149897	148131.5	151230.2

Table 2 reveals that Cost Concepts on different size of farms group per hectare. Cost A in marginal, small, semi-medium and medium size of farms groups was Rs.121419/ha, Rs.118392/ha, Rs.114236/ha and Rs.112252/ha respectively. Cost B was slightly increased as Cost A in marginal, small, semi-medium and medium size of farms groups was Rs.134038/ha, Rs.132725/ha, Rs.128570/ha and Rs.126665/ha respectively. Cost C1 in marginal, small, semi-medium and medium size of farms groups was Rs.141538/ha, Rs. 140275/ha, Rs.136270/ha and Rs.134665/ha respectively. Cost C2 was highest in marginal size farms (Rs.155691.8/ha) and lowest in medium size farms (Rs.148131.5/ha). Sample average for Cost A, Cost B, Cost C1 and Cost C2 was Rs.115869/ha, Rs.129794/ha, Rs.137482/ha and Rs.151230.2/ha in different size of farms group. **(Dhuri et al. 2017).**

Cost and returns in watermelon crop per hectare in different size of farm groups:

Below table explains about watermelon production in quintal, cost of production, gross return, net return and benefit-cost ratio

Table 3: Costs and Returns in watermelon crop per hectare in different Size of Farms Group

SI.No	**Particular**	**Size of Farm groups**				**Average**
		Marginal	**Small**	**Semi-medium**	**Medium**	
1.	Watermelon production in quintal	311	315	318	317	315
2.	Total cost	155691.8	154302.5	149897	148131.5	151230.2
3.	Gross income	211838	215916	212493	213706	213487
4.	Net income	56146.2	61613.5	62596	65574.5	62256.8
5.	B:C ratio	1:1.36	1:1.39	1:1.41	1:1.44	1:1.41

The above Table 3 reveals that estimated gross return of watermelon was Rs/ha 213487 and obtained net return was Rs/ha 62256.8. The benefit received on per rupee

investment was 1.41. Across the farm size of holdings, the gross return of watermelon was varied from Rs/ha 211838 to Rs/ha 213706 of marginal to medium farms. The obtained net return was ranging from Rs/ha 69550 of small to Rs/ha 78241 of large farms. The benefit cost ratio of marginal, small, semi-medium, and medium farm size is 1:1.36, 1:1.39, 1:1.41 and 1:1.44 respectively. However, the production of watermelon per quintal in marginal, small, semi-medium and medium farm size is 311, 315, 318 and 317 respectively with average of 315 quintal per hectare. The average of net return is found to be Rs. 65574.5 per hectare which implies that watermelon production in the study area is highly profitable. It is conforming from the findings that medium farms were more efficient than that of semi-medium, marginal, and small farms because of good management and supervision in cultivation of watermelon **(Akhilomen *et al*. 2012).**

Conclusion

The study shows that the production of Watermelon in Thiruvallur district. The main objective of the study is to analyze, economics of Watermelon production cost and retuns of production of Watermelon. Economics of Watermelon production is more profitable in semi-medium farms as compared to marginal size farms, small size farms and medium size farms. This will be the way for making watermelon cultivation more lucrative. Major constraints in production were found that high cost of labour.

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