



Research Article

ECONOMICS OF DIFFERENT MANGO CULTIVARS IN NORTH-EAST HARYANA (ECONOMICS OF MANGO CULTIVARS)

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Abstract: The field studies for evaluation of economics of different cultivars of mango started at Regional Research Station Buria, Yamunanagar during 1991 and evaluated till 2012. The experiment was laid in randomized block design with triplicate run containing one tree per replication. The ten cultivars of mango were Langra, Dushehari, Chausa, Alphonso, Mallika, Shorab, Gourab, Arun, Amarpali, and Varun. Among all the cultivars, Langra cultivar was found most suitable cultivar for growing in North west regions of Haryana in terms of yield per plant (99 kg), net returns (Rs. 41854) per acre and highest benefit: cost ratio (1.63).

Keywords: B:C ratio, improved mango varieties, net returns, total cost

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Introduction

Mango (*Mangifera indica* L.) is an important tropical fruit and belongs to the family Anacardiaceae and grown more than 100 countries of the world. This fruit is universally accepted and is one of the finest tropical fruit of the world and therefore is called as "King of fruits". It is the 'National Fruit of India', due to its nutritional value, unique taste and other benefits [1]. The productivity of mango is decreased over years in the country and the national productivity of mango as less than as 10 tonnes per hectare [2]. Mango production in Asia covers an area of 1.002 million ha and the total production is 12.42 million tonnes. India accounts for about 60.5 percent of the world's mango production [3]. India is at first place in terms of mango production in the world but is due to certain limitations the productivity per unit area is declining in the country. The total area under fruit in the world was estimated as 57492555 hectares with a total production of 639452741 tonnes with the productivity of 11.1 tonnes per hectare. India produced 81.285 million metric tonnes of fruits from 6.98 million hectares during 2012-13. The total mango production during 2014-15 was 18526.98 thousand tonnes which is expected to increase by 6 percent during 2015-16 i.e., 19694.41 thousand tonnes as per the second estimate [4]. The important mango producing states are Andhra Pradesh, Uttar Pradesh, Karnataka, Bihar, Gujarat, Maharashtra, Tamil Nadu, West Bengal, Kerala, and Orissa. The productivity of mango unfortunately is declining over the years. The national average productivity is as low as 5.5 t/ha while Uttar Pradesh, which tops in the productivity produces more than 10 t/ha. The area under mango fruit in Haryana was 47 thousand hectare during 2011-12 which increased to 49.5 thousand hectares nearly 5.32 percent. The production in terms of thousand metric tonnes was 476.60 during 2011-12 which increased to 516.10 during 2012-13 nearly 8.29 percent. The productivity of mango was estimated 10.1 metric tonnes per hectare during 2011-12 which increase to 10.4 metric tonnes per hectare nearly to 2.97 percent. The main area under mango cultivation is the region in the Shiwalik mountain hills which has half humid conditions and heavy rain falls. This comprises of Kalka, Naraingarh, Jagadhri, Karnal, Panipat, Ladwa and some parts of Indri. In this region, the key factors of low productivity are poor plant population, growing of traditional low yielding varieties, poor nutrient and water management.

Out of these key factors of low productivity, one factor of low yielding varieties was considered while laying out the technical programme during 1991 at Regional Research Station (Horticulture), Buria in Yamunanagar. Ten mango cultivars were evaluated in terms of yield per acre with economics of different factors in which the different costs were compared to reach a conclusive inference in terms of feasibility of a cultivar for the North Eastern Districts of Haryana.

Materials and Methods

The experiment was layout in randomized block design with triplicate run containing one tree per replications. Treatments comprised of different cultivars of mango i.e., Langra, Dushehari, Chausa, Alphonso, Mallika, Shorab, Gourab, Arun, Amarpali, and Varun. The yield parameters of mango cultivars included yield per plant and total yield/acre. The planting distance was 9m x 9m and 49 plants were considered per acre. Although, few cultivars have less trees per acre, but their yield were estimated on the available data related to yield per plant and multiplying it with 49 plants per acre. The rates of the fruits were taken year wise. Likewise the inputs used in the study were calculated from the Consumable Register maintained at RRS Buria. The rates of these inputs were taken from the register and some rates which were not mentioned were standardized by average method due to long years of study. The labour rates were adjusted accordingly. The rental value of the land per acre was synthesized from the resource farmers of the region in Buria which was 20000/- per acre during 2012. The establishment cost was calculated based on the input used. The maintenance cost, marketing cost and total cost were also estimated accordingly. The B:C ratio were calculated in the positive net return values only. The inference of the best cultivar was drawn based on the performance in terms of net returns per acre and returns per rupee invested.

Results

i) Establishment cost: The total variable cost was least in the Langra cultivar of the mango i.e., Rs. 9957/- which means that least inputs have been used on the establishment of this cultivar and typical results must be low yield per plant, per

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Table-1 Establishment cost of different mango cultivars at RRS Buria

SN	Varieties	A. Variable cost (Rs./acre)								B. Fixed cost (Rs./acre)							Capital Cost (Rs./acre) (6+15)
		Labour cost	Mate-rial cost	Work-ing capital	Interest on working capital @ 7% per annum	Total material cost (3+4)	Total variable cost (1+6)	Manage-ment charges (10% of total variable cost)	Risk factors (10% of total variable cost)	Trans- portation	Rental value of land	Land revenue	Depre- ciation	Fixed cost (7+8+9+ 10+11+ 12)	Interest on fixed cost @ 8% per annum	Total fixed cost (13+ 14)	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	Varun	1520	8312	9832	688	10521	12041	1204	1204	400	11000	30	44	13882	1111	14992	27033
2	Amarpali	1520	8142	9662	676	10339	11859	1186	1186	400	11000	30	44	13845	1108	14953	26812
3	Arun	1440	8212	9652	676	10328	11768	1177	1177	400	11000	30	44	13827	1106	14934	26701
4	Gourab	1365	8160	9525	667	10192	11557	1156	1156	350	11000	30	44	13735	1099	14834	26390
5	Alphanso	1480	7862	9342	654	9996	11476	1148	1148	400	11000	30	44	13769	1107	14871	26347
6	Mallika	1295	7910	9205	644	9849	11144	1114	1114	350	11000	30	44	13653	1092	14745	25889
7	Shorab	1295	7760	9055	634	9689	10984	1098	1098	350	11000	30	44	13620	1090	14710	25694
8	Dashehari	1216	8803	10019	701	10721	11937	1194	1194	225	10000	20	38	12670	1014	13683	25620
9	Chausa	1216	8754	9970	698	10668	11884	1188	1188	225	10000	20	38	12659	1013	13672	25556
10	Langra	1216	6953	8169	572	8741	9957	996	996	225	10000	20	38	12274	982	13256	23213

Table-2 Economics of different mango cultivars at the age of 16 yr at RRS Buria

SN	Cultivars	Plants/acre	Yield/plant (kg)	Yield/acre (kg)	Rates/kg (Rs.)	Gross returns (Rs./acre)	Capital cost (Rs./acre)	Maintenance cost (Rs./acre)	Marketing cost (Rs./acre)	Total cost (Rs./acre)	Net returns (Rs./acre)	B:C Ratio (Returns per rupee invested)
1	Langra	49	99	4827	14	67571	20000	4693	1024	25717	41854	1.63
2	Dushehari	49	88	4332	14	60642	20000	5745	950	26695	33948	1.27
3	Chausa	49	78	3798	14	53165	20000	3594	490	24084	29081	1.21
4	Alphanso	49	76	3714	16	59427	20000	6782	857	27640	31788	1.15
5	Mallika	49	83	4043	14	56595	20000	6483	906	27389	29206	1.07
6	Shorab	49	75	3651	14	51107	20000	6782	848	27630	23477	0.85
7	Gourab	49	72	3508	14	49118	20000	6782	826	27609	21509	0.78
8	Arun	49	70	3450	14	48294	20000	6782	817	27600	20695	0.75
9	Amarpali	49	72	3543	14	49598	20000	8240	831	29071	20527	0.71
10	Varun	49	74	3606	14	50490	20000	9062	961	30023	20467	0.68

acre and net returns and B:C ratio [Table-1]. The highest total variable cost was estimated in Varun cultivar of mango i.e., Rs. 12041/- per acre meant for the higher yield per plant and higher net returns with highest B:C ratio. The fixed was lowest in Langra cultivar of mango i.e., Rs. 13256 per acre as compared to highest in Rs. 14992/- per acre.

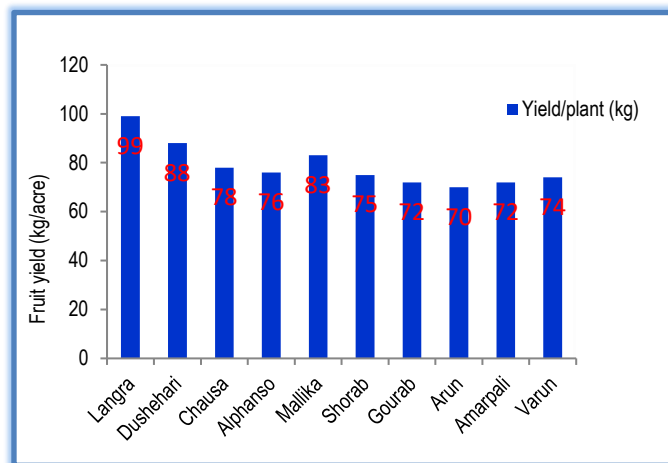


Fig-1 Yield of different mango cultivars at RRS Buria

ii) Yield and returns: Cultivar Langra was the best cultivar among all the cultivars of mango in terms of yield/plant, net returns and returns per rupee invested [Table-1] and [Fig-1]. The yield per plant was 99kg and 4827 kg per acre from 49 plants of Langra cultivar of mango. The gross returns were estimated as Rs. 67571/- per acre with the capital cost of 20000/-. The maintenance cost of Langra was 4693/-. The marketing cost of Langra was estimated as Rs. 1024 per acre. The total cost was 25717/- per acre. The net returns/acre of Langra was estimated at 41854/- per acre. The returns per rupee invested were calculated as 1.63 [Table-2].

Discussion

Labour cost in Langra was Rs.1216, material cost was Rs. 6953/- working capital Rs. 8169, interest on working capital was Rs. 572, and total material cost was Rs. 8741/- resulting in total variable cost of Rs. 9957/-. However, it is an assumption that higher the variable cost, higher will be the yield and gross returns, but in case, langra cultivar was found genetically superior over other cultivars due to its highest yield factor.

Conclusion

Langra cultivar was found most suitable cultivar for growing in North west regions of Haryana in terms of yield per plant, net returns per acre and highest B:C ratio.

Application of research: The application of research can be done in the North Eastern Haryana for promotion of mango orchard and improving the yield potential of mango by adopting the improved varieties in the region.

Research Category: Improved Varieties of Mango

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Abbreviations:

Rs.: Rupees, ha-Hectare, /- Per

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