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Effect of Different Planting Material, Planting Dates and Harvesting Dates on Economy of Turmeric Crop

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ABSTRACT

A two year field experiment was conducted to study the effect of different planting material (Mother rhizome, primary and secondary finger), planting dates (April 25th, May 10th and May 25th) and harvesting dates (25th January, 15th February and 5th March) on economy of turmeric crop to select the best combination under agro-climatic conditions of Punjab. The maximum yield (169.44 q/ha), gross return (1,69,440 Rs/ha) and net return (102474 Rs/ha) were obtained with mother rhizome planted on 25th April and harvested on 5th March. It is concluded that mother rhizome planting material gave maximum monetary profit over primary and secondary planting material combination treatments. In general, the planting date of 25th April and harvesting date of 5th March gave the highest yield (q/ha) gross return (Rs/ha) and net return (Rs/ha) for all the three planting materials

Key words: Turmeric, Planting date, Harvesting date, Punjab

Introduction

Turmeric (*Curcuma longa* L.), an herbaceous plant belongs to family Zingiberaceae is largely used as spice or condiment. It is extensively used as stimulant, blood purifier, tonic as a carminative and remedy against the skin diseases, pain and anthelmintic (Srimal, 1997). India is a major producer, consumer and exporter of turmeric but major part of its produce is consumed with in the country and export accounts for nearly 5.9 per cent of total production. During 2007-08, the turmeric export from India was 49,250 tons valued at Rs 15,700 lakhs contributing 11 per cent of total spices export (Selvan, 2009). Plants originating from the primary rhizome (average weight 19 g) had a greater leaf area and total plant dry weight than the plants originating from secondary rhizome having average weight of 9 g (Maia *et al.,* 1995). The date of planting has a great impact on growth of turmeric. *Curcuma aromatica* rhizomes were planted at 30 days intervals from 15 March to 15 June and the plant height, leaf length, leaf width, leaf number, branch number and leaf weight per plant were significantly more in planting date of 15 March to 16 May as compared to planting date of 15 June (Min *et al.,* 1996). However, its low productivity under Punjab condition is a chronic problem. In the present study, effect of different planting material, planting dates and harvesting dates on economy of turmeric crop were studied to select the best combination under agro-climatic conditions of Punjab.

Materials and Methods

Two years field experiment (2007-08 and 2008-09) were conducted in well drained sandy loam soil under irrigated condition at Punjab Agricultural University, Ludhiana (30-54^0 N latitude and 75 -48^0 E longitude with an altitude of 247 m above mean sea level). The soil was low in available N and medium in P and K with pH value of 7.8. The experimental layout

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accommodated 27 treatment combinations, comprising three planting material (mother rhizome: 25-30 g, primary finger: 15-20 g and secondary finger: 5-10 g), three planting dates (April 25th , May 10th and May 25th) and three harvesting dates 25th January, 15th February and 5th March). The experiment was laid out in randomized block design (factorial) with three replications. A common dose of 30 t ha^{-1} farmyard manure was applied before planting. The costs of cultivation of different inputs (man, material and machine) were adopted as per Table 1 (Anon., 2009). The planting was done manually with *khurpi*. The harvesting was done manually with the help of spade and the weight of fresh rhizomes per plot was recorded and was converted into yield quintals per hectare. The gross and net returns were calculated on the basis of fresh rhizome yield @ Rs. 10/kg.

Results and Discussion

The results of the study shows that the cost of cultivation decreased with decrease in size of planting material from mother rhizome to secondary rhizome irrespective of their combination with different planting dates and harvesting dates (Table-2) The maximum yield (q/ha) gross return (Rs/ha) and net return (Rs/ ha) were significantly more with mother rhizome planting material combination treatments or compared to primary planting material combination treatments which were significantly more than secondary finger planting material combination treatments. Similar result of fresh rhizome yield with mother rhizome planting material as compared to primary and secondary finger planting materials has been reported by Deshmukh *et al.* (2005), Kumar (2005) and Junior *et al.* (2005).

Table 1. Calculation of cost of cultivation

Item		Quantity/ duration	Value (Rs.)
1.	Planting material		
	a) Mother rhizome (q/ha)	14.8	14,800
	b) Primary finger (q/ha)	12.3	12,300
	c) Secondary finger (q/ha)	9.8	9,800
2.	FYM (tonne/ha)	30	2400
3.	Herbicide (Pendimethalin 30 EC) (l/ha)	2.5	950
4.	Irrigations (No.)	24	480
5.	Human labour (hours)	800	12,000
6.	Tractor hours	14	3,150

In mother rhizome combination with different planting dates and harvesting dates, the maximum yield (169.44 q/ha), gross return (1,69,440 Rs/ha) and net return (102474 Rs/ha) were obtained with mother rhizome planted on 25th April and harvested on 5th March which were at par with mother rhizome planted on 25th April and harvested on 15th February and Mother rhizome planted on 25th April and harvested on 25th Jan and significantly higher than rest of mother rhizome treatment. In primary finger planting material treatments, the maximum yield (126.40 q/ha), gross return (126400 Rs/ha) and net return (76594 Rs/ha) were obtained with primary finger planted on 25th April and harvested on 5th March treatment which was at par with primary finger planted on 25th April harvested on 15th February and primary finger planted on 25th April and harvested on 25th January and significantly higher than other primary finger combination treatments.

Similarly, in secondary finger planting material combination treatments, the maximum yield (89.44 q/ha), gross return (89440 R/ha) and net return (56894 Rs/ha) were obtained with secondary finger planted on 25th April and harvested on 5th March treatment which was at par with secondary finger planted on 25th April and harvested on 15th February and secondary finger planted on 25th April and harvested on 25th January and significantly higher than secondary finger planted on 10th May and harvested on 25th January, secondary finger planted on 10th May and harvested on 15th February, secondary finger planted on 10th May and harvested on 5th March, secondary finger planted on 25th May and harvested on 15th February and Secondary finger planted on 25th May and harvested on 5th March.

Conclusions

It is concluded that mother rhizome planting material gave maximum monetary profit over primary and secondary planting material combination treatments. In general, the planting date of 25th April and harvesting date of 5th March

Table 2. Effect of different planting material, planting dates and harvesting dates on economy of turmeric crop as per pooled yield

Treatment	Cultivation cost (Rs./ha)	Yield (Q/ha)	Gross returns (Rs./ha)	Net return (Rs./ha)
Mother rhizome + 25 April + 25 Jan	33,780	163.84	163840	96874
Mother rhizome + 25 April + 15 Feb	33,780	167.04	167040	100074
Mother rhizome + 25 April +5 March	33,780	169.44	169440	102474
Mother rhizome + 10 May + 25 Jan	33,780	148.64	148640	81674
Mother rhizome + 10 May + 15 Feb	33,780	153.44	153440	86474
Mother rhizome + 10 May + 5 March	33,780	154.24	154240	87274
Mother rhizome + 25 May + 25 Jan	33,780	132.64	132640	65674
Mother rhizome + 25 May + 15 Feb	33,780	135.04	135040	68074
Mother rhizome + 25 May + 5 March	33,780	138.24	138240	71274
Primary finger + 25 April + 25 Jan	31,280	123.20	123200	73394
Primary finger + 25 April + 15 Feb	31,280	124.80	124800	74994
Primary finger + 25 April +5 March	31,280	126.40	126400	76594
Primary finger + 10 May + 25 Jan	31,280	113.60	113600	63794
Primary finger + 10 May + 15 Feb	31,280	115.20	115200	65394
Primary finger + 10 May + 5 March	31,280	117.60	117600	67794
Primary finger + 25 May + 25 Jan	31,280	105.60	105600	55794
Primary finger + 25 May + 15 Feb	31,280	109.60	109600	59794
Primary finger + 25 May + 5 March	31,280	112.80	112800	62994
Secondary finger + 25 April + 25 Jan	28,780	85.44	85440	52894
Secondary finger + 25 April + 15 Feb	28,780	87.04	87040	54494
Secondary finger + 25 April + 5 March	28,780	89.44	89440	56894
Secondary finger + 10 May + 25 Jan	28,780	77.44	77440	44894
Secondary finger + 10 May + 15 Feb	28,780	81.44	81440	48894
Secondary finger + 10 May + 5 March	28,780	83.04	83040	50494
Secondary finger + 25 May + 25 Jan	28,780	69.44	69440	36894
Secondary finger + 25 May + 15 Feb	28,780	71.04	71040	38494
Secondary finger + 25 May + 5 March	28,780	71.84	71840	39294
CD (p = 0.05)	-	8.68	6312.2	6618.5

Planting dates: 25th April, 10th May and 25th May. Harvesting dates: 25th Jan, 15th Feb and 5th March.

gave the highest yield (q/ha), gross return (Rs/ha) and net return (Rs/ha) for all the three planting materials.

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