GAU Res. J. 1992. 17 (2) : 172-174

Growth and Yield of Turmeric as Influenced by Time of Planting and Planting Material

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Turmeric (*Curcuma longa* L.) is one of the cash crops largely grown in the States of Bihar, Tamil Nadu, Orissa, Maharashtra, Assam, Kerala and Madhya Pradesh. In Madhya Pradesh, it is extensively grown in Sarguja, Raigarh, Shahdol, Sidhi, Tikamgarh and Bastar districts. Farmers generally plant turmerci after commencemnt of rains due to paucity of irrigation facilities.

The time of planting and the planting material are the major yield contributing factors which influence the growth and yield of turmeric. Study conducted by Om *et al.* (1978) and Randhawa and Mishra (1974) indicated the higher yield of rhizomes when turmerics were planted in the month of May. Mishra (1986) observed higher yield of onion seed with earlier planting and bigger size of mother bulbs. Daughter rhizomes (thin, slender, finger like) being lighter and economic are preferred to mother rhizomes (Thick, round, thumb like) as planting material by the farmers. The present study was, therefore, conducted at Fruit Research Station Kuthulia, Rewa (M.P.) to determine a suitable plantining date and planting material for turmeric cultivation.

The experiment was conducted in 1983-84 on a local cultivar of turmeric, planted within the interspaces of two rows of mango trees with three dates of planting viz, 16th April, 16th May anf 16th June and two planting materials viz., the daughter rhizome and the mother rhizome. The experiment was replicated four times. The healthy rhizomes having three buds were put in earthen urn for twenty days to activate and enhance sprouting, after which they were planted in flat beds of size 6 m x 6 m at distance of 40 cm x 20 cm at 7.5 cm depth. The beds were covered with 'Palas' (*Butea frondosa*) leaves as a mulching material for moisture conservation. The similar treatment was given for all three dates of planting.

The fertilizer mixture of 100 kg N + 60 kg P_2O_5 + 60 kg K_2O/ha was used. Phosphorus, potash and half of the nitrogen were applied at the time of planting and rest half nitrogen after two months. In addition, two sprays of urea (1%) alongwith Rogor (0.03%) were also applied. Growth parameters were recorded at one month interval. Observations recorded on 16th November after six months of planting, when the plants attained maximum growth, were utilized for the analysis. The rhizomes were dug out, when the aerial portion of plants dried, in January and cleaned before recording the fresh weight.

The date of planting significantly influenced the plant height, number of tillers and the number of leaves. The height of plant was

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TABLE 1

Growth and yield of turmeric as influenced by time of planting and planting material.

Planting materials	*Dates of planting*			*Mean*	*C. D. at 5% for*		
	16th April	*16th May*	*16th June*		*Planting materials*	*Planting dates*	*Inter-action*
	1. Height of plant (cm)						
Daughter rhizome	84.65	88.97	93.22	88.95	8.40	6.89	11.94
Mother rhizome	92.50	100.00	75.07	89.19			
Mean	88.58	94.49	84.15				
	2. Number of tillers/plant						
Daughter rhizome	2.40	2.30	1.80	2.17	N.S.	0.29	N.S.
Mother rhizome	2.15	2.62	1.72	2.16			
Mean	2.28	2.46	7.76				
	3. Number of leaves/plant						
Daughter rhizome	11.35	10.95	9.20	10.50	N.S.	1.31	N.S.
Mother rhizome	11.00	13.12	9.37	11.16			
Mean	11.18	12.04	9.29				
	4. Fresh yield of rhizome (q/ha)						
Daughter rhizome	128.87	151.58	129.63	136.69	23.28	28.51	N.S.
Mother rhizome	196.67	204.07	151.10	183.95			
Mean	162.77	177.83	140.37				

found to be increased while number of tillers and number of leaves were observed to be decreased with the date of planting for the daughter rhizome, while all the corresponding parameters attained maximum values of 100.00 cm, 2.62 and 13.12 respectively for the second planting date i.e. 16th May for the mother rhizome (Table 1).

The maximum yield of rhizome (204.07 q/ha) was obtained from the 16th May planting due to the fact that desired moisture and suitable environmental conditions were available for the growth and development of plant, causing higher plant height, more number of leaves and tillers. Plants of 16th May planting were found to perform better as it is clear from Table 1. more average plant height (94.49 cm), number of tillers (2.46), number of leaves (12.04) and the average yield (177.83 q/ha.) The results of the present investigation are in accordance with those observed by Om *et al.* (1978) and Randhawa and Mishra (1974).

Although, the plant height, number of tillers and number of leaves did not differ significantly due to planting materials but these contributed towards significant differences in yield due to the fact that the mother rhizomes helped in early establishment, root development and better utilization of stored food material. However, 16th May planting created favourable conditions for rhizome formation and hence the highest yield. The maximum average yield of 183.95 q/ha was obtained from the plants raised from the mother rhizome as compared to yield from daughter rhizome (136.69 q/ha) indicating that mother rhizomes proved to be an appropriate planting material to get the maximum yield of fresh rhizomes. Irrespective of the date of planting, the highest yields are associated with the growth parameters having maximum values. Thus, the average maximum yield of 177.83 q/ha of fresh rhizome was associated with the average maximum number of tillers (2.46), number of leaves (12.04) and plant height (94.49 cm) while average minimum yield of 140.37 q/ha was associated with minimum values of corresponding parameters (1.76, 9.29 and 84.15 cm). The yield as well as other growth parameters for 16th April planting lie between these two limits and thus indicate that a positive correlation of yield exists with growth parameters. These results are in agreement with Shaha (1988). Thus, it can be concluded that mother rhizomes be planted on 16th May for higher yield.

(Received on 2nd May, 1990)

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