

Effect of dates of planting, fertility levels and varieties on growth and yield of turmeric

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SUMMARY

The investigation were carried out during the successive zaid/*Kharif* season of the year 2006-07 and 2007-0. Maximum plant height were obtained during 2006-07 and 2007-08 when planting was done on 14th June. Height of plant was affected due to various fertility levels. Maximum height were recorded in 2006-07 and 2007-08 at 200 : 100: 100 kg NPK/ha. Height of variety NDH-1 (18) was found superior than NDH-9 during both the years. Minimum number of days 205.25 and 210.25 were involved to mature the crop during 2006-07 and 2007-08, respectively at dates of planting on 29th June. Duration of crop was also affected by various fertility levels. The maximum number of days for the maturation of crop were noted 237.00 and 242.00 during 2006-07 and 2007-08, respectively at 200:100:100 Kg NPK/ha. NDH-1 (18) took maximum days for its maturity. Maximum weights of mother rhizomes were recorded 40.94 and 39.70 g during 2006-07 and 2007-08, respectively at planting on 14th June. Maximum values *i.e.* 43.66 and 42.33 g were recorded in 2006-07 and 2007-08, respectively at 200:100:100 kg NPK/ha fertility levels. Weight of mother rhizomes of NDH-1 (18) was higher than NDH-9. Maximum fresh rhizomes yield (q/ha) *i.e.* 398.98 and 406.33 q/ha was obtained when planting was done on 14th June during 2006-07 and 2007-08, respectively. The yield was recorded 425.50 q/ha during 2006-07 and 433.43 q/ha during 2007-08 at 200:100:100 Kg NPK/ha fertility levels. Yield of cv. NDH-1 (18) was higher than cv. NDH-9.

Key words : Varieties, Turmeric, Fertility level, Planting dates

Turmeric (*Curcuma longa* L.) is important spice crop of India. India is a largest producer and exporter of turmeric contributing about 82% of production and 45 per cent of export. The optimum time of planting of turmeric varies with the varieties. The time of planting plays an important role on growth and yield. Turmeric is a season bound crop. May – June is recommended for its planting. Mishra *et al.* (1997) studied the effect of planting dates on yield of turmeric varieties. During the period of growth, nitrogen, phosphorus and potassium are required in large quantities for healthy growth of the plant. For higher economic yield, balanced nutrient supply is one of the key factor.

Under genus *Curcuma* nearly 40 species have been recognized. *Curcuma longa* L. *Curcuma aromatica*, *Curcuma angustifolia*, *Curcuma amada*, *Curcuma zadoaria* and *Curcuma xanthorrhiza* are prominent species of turmeric. Studies on suitable dates of planting, fertility level (NPK) and varieties of turmeric are meagre in India. Therefore, a detailed study of dates planting, fertility levels (NPK) and varieties on growth and yield of turmeric have been presented in this paper.

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MATERIALS AND METHODS

The experiments were laid out at Main Experiment Station, Vegetable Science, N.D. University of Agriculture and Technology, Kumarganj, Faizabad in a leveled field with proper drainage.

This farm is situated in the main campus of the university on the left side of Faizabad – Raibarelli road at a distance of 42 km away from main city of Faizabad. The investigations were carried out during the successive Zaid/ *Kharif* season of the year 2006-07 and 2007-08.

The experiment was framed in split plot design. Four dates of planting and fertility levels were used. Cultivars of turmeric NDH-1 (18) and NDH-9 were selected for this investigation. Growth and yield characters of turmeric varieties were recorded during both the years.

RESULTS AND DISCUSSION

Data presented in Table 1 indicated that planting of turmeric at various intervals caused non significant response on plant height and as the planting of rhizomes were delayed an increasing trend with respect to enhancement of plant height was observed and maximum plant height *i.e.* 130.20 cm and 134.93 cm were obtained during 2006-07 and 2007-08, respectively when planting was done on 14th June. Hu *et al.* (1996) and Baruah (2001) reported mid May is best planting time for turmeric.

Height of plant was affected due to various fertility

Table 1 : Effect of dates of planting, fertility levels and varieties on growth and yield of turmeric

Treatments	Plant height (cm)		Duration of crop (days)		Weight of mother rhizomes (g)		Yield of rhizome (q/ha)	
	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08	2006-07	2007-08
Dates of planting								
15 th May (D ₁)	117.73	122.46	218.38	223.38	37.03	35.89	360.88	367.64
30 th May (D ₂)	120.29	124.68	216.00	221.00	37.85	36.66	368.58	375.36
14 th June (D ₃)	130.20	134.93	207.50	212.50	40.94	39.70	398.98	406.33
29 th June (D ₄)	127.68	132.36	205.25	210.25	40.16	38.94	391.29	398.58
S.E.±	1.89	1.99	3.20	3.22	0.60	0.58	5.89	6.06
C.D. (P=0.05)	4.80	5.06	8.10	8.17	1.53	1.47	14.93	15.21
Fertility levels (NPK Kg/ha)								
0:0:0 (F ₀)	99.18	103.19	169.75	174.75	31.18	30.25	303.99	309.56
120:60:60 (F ₁)	124.0	128.53	211.75	216.75	39.01	37.80	379.85	386.98
160:80:80 (F ₂)	133.85	138.79	228.63	233.63	42.11	40.81	410.38	417.94
200:100:100 (F ₃)	138.86	143.91	237.00	242.00	43.66	42.33	425.50	433.43
S.E.±	1.63	1.70	2.84	2.90	0.51	0.49	5.04	5.13
C.D. (P=0.05)	3.49	3.64	6.08	6.20	1.10	1.05	10.77	10.97
Varieties								
NDH-1 (18) (V ₁)	130.13	134.94	222.38	227.38	40.94	39.69	398.97	406.33
NDH-9 (V ₂)	117.82	122.27	201.19	206.19	37.05	35.90	360.89	367.63
S.E.±	1.12	1.15	1.86	1.92	0.35	0.34	3.42	3.48
C.D. (P=0.05)	2.38	2.45	3.93	4.05	0.74	0.72	7.24	7.37

levels and a significant increase in plant height was observed when fertility levels were increased. Maximum values were recorded 138.86 cm and 143.91 cm in 2006-07 and 2007-08, respectively at F₃ (200: 100: 100 Kg NPK/ha) fertility level.

Two cultivars of turmeric were tested. NDH-1 (18) was found superior than NDH-9 with respect to plant height during both the years.

Data obtained on account of duration of the crop as influenced by dates of planting, fertility levels and varieties have been presented in Table 1.

Planting of turmeric at various planting dates caused non-significant decrease in duration of crop. Minimum number of days 205.25 and 210.25 were involved to mature the crop during 2006-07 and 2007-08, respectively at planting on 29th June. Duration of crop was also affected by various fertility levels. Maximum number of days for the maturation of crop were noted 237.00 and 242.00 during 2006-07 and 2007-08, respectively at F₃ (200 : 100 : 100 Kg NPK/ha) fertility level. NDH-1 (18) variety took maximum days *i.e.* 222.38 and 227.38 during 2006-07 and 2007-2008, respectively for maturity of the crop.

Data collected on account of weight of mother rhizomes as influenced by dates of planting, fertility levels and varieties have been presented in Table 1.

Planting of turmeric at various planting dates caused

non significant increase in weight of mother rhizomes. Maximum weight of mother rhizomes were recorded 40.94 and 39.70 g during 2006-07 and 2007-08, respectively at planting on 14th June. Maximum values of mother rhizomes *i.e.* 43.66 and 42.33 g were recorded in 2006-07 and 2007-08, respectively at F₃ (200:100:100 Kg NPK/ha) fertility level, Tayde and Deshmukh (1986) studied the effect of planting material and 5 level nitrogen on turmeric and reported that the highest yield of mother rhizome was found (30.67t/ha). Weight of mother rhizomes was found to be more quantitatively in cv. NDH-1 (18) in comparison to NDH-9. The trend of increase was similar during both the years of experimentation.

The observation recorded on yield of fresh rhizomes (q/ha) as influenced by various treatment has been compiled in Table 1. Planting of turmeric at various planting dates caused non significant enhancement with respect to fresh rhizomes yield (q/ha). Maximum yield of fresh rhizomes *i.e.* 398.98 and 406.33 q/ha was obtained when planting was done on 14th June (D₃) during 2006-07 and 2007-08, respectively. Maximum yield of fresh rhizomes was recorded 425.50 q/ha during 2006-07 and 433.43 q/ha during 2007-08 with F₃ (200 : 100: 100 Kg NPK/ha) fertility level. Hussain *et al.* (2006) reported that highest yield of turmeric 117.35 q/ha was obtained with 100 kg N/ha. NDH-1 (18) proved to be superior in regard to production of rhizomes yield than cv. NDH-9.

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