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EFFECT OF DIFFERENT DATE OF SOWING ON THREE TURMERIC CULTIVARS UNDER ARECANUT PLANTATION IN SUB HIMALAYAN TERAI REGION OF WEST BENGAL

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ABSTRACT

An experiment was conducted on three turmeric varieties with three different dates of sowing under arecanut plantation in sub Himalayan terai region of West Bengal during the year 2007-08 and 2008-09. All the varieties varied significantly at different date of sowing for almost all the characters except leaf number and leaf width. All the varieties had better performance at sowing date of one month after harvesting. The variety Suguna performed better than the other two varieties in respect of yield (25.8t/ha of arecanut plantation) and yield attributing characters under arecanut plantation in Sub Himalayan terai region of West Bengal.

Key words: Turmeric, Date of sowing, Suguna, Sudarsana

INTRODUCTION

Turmeric (*Curcuma longa* L) is an important spice crop grown in different parts of the world. Mainly it is grown in tropical and sub tropical part of the world. It is used mainly for culinary purposes as a spice. It is also used to preserve food and as a coloring agent of many things. Its medicinal use is known to almost all people of the world. It is believed that turmeric is stomatic, tonic, blood purifier, anthelmentic, antacid, antiperiodic and carminative. It is being used in treating gall stones and gall complaints. In India, turmeric is used in almost all ritual purposes. It is also used to cure different skin diseases. India is the leading country in terms of area and production. It is grown in full sun light condition. But it can also be grown successfully under partial shade condition (40-50% shade). Turmeric is being grown as an intercrop at pre and post bearing condition of arecanut. It is a common practice in almost all arecanut growing areas. Nagaraj (1974) and Bhandary (1974) reported that cultivation of intercrops did not significantly influence the yield of arecanut. Chenchaiah *et al.* (2002) reported the successful cultivation of turmeric under arecanut plantation. Sit *et al.* (2004) reported the performance of different turmeric cultivars under arecanut plantation in sub Himalayan terai region of West Bengal. They also suggested that out of eleven turmeric cultivars, Suguna, Sudarsana performed better under arecanut canopy in sub Himalayan terai region of West Bengal. Based on the previous study, an experiment was conducted to see the performance of Suguna and Sudarsana cultivars at different date of sowing under arecanut canopy in sub Himalayan terai region of West Bengal and their performance was compared with the Local type.

MATERIALS AND METHODS

The experiment was conducted at Research Centre, Mohitnagar of Central Plantation Crops Research Insititute, during 2007-08 and 2008-09 under arecanut plantation. The palms were about more than 30 years old. The soil of the experimental field was predominantly sandy loam of Teesta alluvial plain with acidic in nature (pH 5.5). The area experienced a typical terai climate through out the year. Inter space of one meter width and four meter long was considered for one bed. Bed was prepared at a height of 15 cm from the base. Three turmeric cultivars Sudarsana (V1), Local type (V2) and Suguna (V3) and was considered in this study. Turmeric was harvested during February end and first planting was done during March (D1). Then second planting (D2) was one month after first planting and third planting (D3) was done after two months of harvesting. In case of D2 and D3 treatment, fingers of turmeric were kept in sand bed. Before planting fingers were treated with carbendazim solution of 0.2% for 30 minutes and kept in shade for 24 hours. Recommended cultural practices were followed (Nambiar, 2001). The experiment was laid out in a 3 × 3 factorial design with three replications. Observations like plant height, leaf number, leaf length and width, number of primary and secondary fingers, length, width and weight of primary finger, weight of mother rhizome, yield per plant, per plot and per hectare of arecanut plantation and dry rhizome weight were recorded and average data two year was used for statistical analysis by the methods given by Panse and Sukhatme (1995).

RESULTS AND DISCUSSION

The growth characters yield and yield attributing characters has been depicted in Table 1. All the parameters varied significantly for all the varieties and in all date of sowing except leaf number and leaf width. Plant height was recorded maximum (137.3cm) in Sudarsana at D2 date of sowing. Among the three varieties Suguna (V3) had the minimum plant height for all the date of sowing. Interaction effect of variety and date of sowing was significant for this character. Variety Suguna is having the shortest height among the varieties under arecanut plantation as reported by Sit *et al.* (2004) from their experimental findings. The same result had also been noticed in this study. In case of plant height it is noticed that sowing of turmeric after harvesting and one month after harvesting did not have significant difference but sowing at two months after harvesting had significant differences. Effect of different date of sowing on three turmeric varieties had no significant effect on leaf number per plant and leaf width. But it had significant effect on leaf length. Maximum leaf length (14.5 cm) was observed in Sudarsana at second date of sowing (D2). Primary fingers/clump was recorded maximum (8.1) in Sudarsana (V1) at second date of sowing (D2) followed by Suguna (V3) at same date of sowing (D2). Whereas, there was no significant differences among the three varieties and also interaction effect was insignificant but date of sowing varied significantly for this character. Similar result was also noticed in case of width of primary finger and yield per plant. Maximum number of secondary fingers (19.1) was found in Suguna (V3) followed by Sudarsana (V2) at second date of sowing (D2). Significant difference for variety and date of sowing was observed for this parameter but their interaction effect was insignificant. Similar result was also noticed in length of primary finger. Maximum length (8.4cm) was recorded in

Table 1. Growth and yield data of three turmeric cultivar sown in three different dates under arecanut canopy

Treat-ment	Plant heigh	Leaf number	Leaf length	Leaf width	No. primary fingers	No. Sec. fingers (cm)	Length of Pri. finger (cm)	Width of primary finger (g)	Weight of Primary finger (g)	Weight of mother rhizome	Yield per plant (g)	Yield per plot (kg)	Yield/ ha of arecanut plantation (t)	Dry yield/ha of arecanut plantation (t)
V1D1	131.6	14.0	57.6	12.4	7.5	16.4	7.7	2.3	28.8	70.3	288.7	14.3	21.45	3.65
V1D2	137.3	14.5	60.1	12.6	8.1	17.9	8.1	2.7	31.5	76.3	304.0	16.2	24.15	3.88
V1D3	124.9	12.9	56.3	12.9	6.2	15.0	7.0	1.7	28.1	67.3	225.0	14.4	21.75	3.35
V2D1	130.0	13.3	55.4	12.4	7.1	13.6	6.7	1.8	25.3	65.0	225.3	12.5	19.95	3.03
V2D2	131.8	13.5	58.0	12.8	7.2	16.7	7.8	2.3	27.5	68.3	257.7	14.7	22.80	3.22
V2D3	114.7	13.2	49.7	12.4	6.5	11.1	7.0	1.7	22.1	61.3	210.7	09.7	18.60	2.34
V3D1	120.6	13.1	51.9	11.9	7.7	12.9	8.1	2.4	27.7	79.3	285.7	14.9	20.55	3.74
V3D2	123.1	13.6	53.7	12.6	8.0	19.1	8.4	2.7	33.5	83.0	307.0	16.8	25.80	4.48
V3D3	108.6	13.4	48.9	12.3	6.7	15.3	7.5	1.9	21.4	72.0	160.7	10.4	15.9	2.24
SEM ±	3.12	—	1.33	—	0.35	1.45	0.25	0.18	2.2	1.42	081.5	0.72	1.09	0.21
CD at 5%	9.36	NS	4.00	NS	1.04	4.34	0.74	0.55	5.1	4.27	019.2	2.17	3.26	0.61
CV	4.33	—	4.24	—	8.34	17.6	5.60	14.6	18.3	3.45	9.10	9.13	9.13	10.50

Suguna (8.4 cm) followed by Sudarsana (8.1 cm) at second date of sowing and Suguna (8.1) at first date of sowing (D1). Width of primary finger was almost at par (2.7 cm) in Sudarsana (V1) and Suguna (V2) at second date of sowing (D2). Significant differences was noticed in weight of primary fingers, yield per plot, fresh yield/one ha of arecanut plantation and dry yield/ha of arecanut plantation for variety, date of sowing and their interaction. Weight of primary fingers was maximum (33.5 g) in Suguna (V3) at second date of sowing followed by Sudarsana (31.5g) at same date of sowing but the difference was at par. There was no significant difference among the varieties under study for weight of mother rhizome. But significant difference was observed in date of sowing and their interaction. Maximum mother rhizome was recorded in Suguna (83 g) at second date of sowing followed by the same variety at first date of sowing (79.3g). Yield per plant was maximum (307 g) in Suguna followed by Sudarsana (304g) at second date of sowing. Maximum fresh yield (16.8 kg) per plot and per hectare of arecanut plantation was recorded in Suguna (16.8 kg and 25.8t, respectively) at second date of sowing followed by Sudarsana (16.2 kg and 24.15t, respectively) at same date of sowing. The yield of cultivar Suguna was reported almost same in coconut plantation by Hore *et al.* (2001). Peter and Kandiannan (1999) reported 28.8t/ha and 23.3t/ha yield of Sudarsana and Suguna, respectively but in this study Suguna performed better than the Sudarsana under arecanut canopy in sub Himalayan Terai region of West Bengal. The more yield of this two varieties attributed with the better performance of other yield attributing characters like, primary and secondary fingers, length, width and weight of primary fingers and weight of mother rhizome. The present experimental findings on yield of these varieties are at par with the research findings of Sit *et al* (2004). Dry yield was calculated and it was varied significantly among the varieties and date of sowing. Maximum dry yield/ha of arecanut plantation (4.48t) was recorded from Suguna followed by Sudarsana (3.88t) at second date of sowing (D2). From the study it is concluded that different turmeric varieties performed differently at different date of sowing under arecanut plantation. Sowing of turmeric just after harvesting or one month after harvesting does not have much differences on yield and other yield attributing characters but there is yield reduction if further delay is their on sowing. Variety Suguna performed better in terms of yield and yield attributing characters under arecanut shade condition. Hence this variety is recommended to grow in arecanut plantation under sub Himalayan terai region of West Bengal and the variety might be sown one month after harvesting.

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