



Effect of planting methods on turmeric production at farmer's field

KEYWORDS

Turmeric, spacing, ridge sowing, semi-automatic potato planter, BC ratio, net returns

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ABSTRACT The study was conducted at three different locations in district Gurdaspur in Punjab to find out the best planting method for turmeric cultivation. Three different planting methods i.e. manual sowing on flat field at a spacing of 30 x 20 cm, manual sowing on ridges at 60 x 15 cm and sowing with semi-automatic potato planter at 60 x 15 cm were evaluated during the study. Significantly higher yield was observed in case of ridge sowing at spacing of 60 X 15 cm whether it is manually sown or sown with semi-automatic potato planter as compared to flat sowing at spacing of 30 X 20 cm. The highest yield (23.58 t/ha) was noted in case of manual sowing on ridges which was statistically at par with the crop sown with semi-automatic potato planter (23.50 t/ha.). Highest net returns (Rs 1,63,750/ha) was obtained where the crop was sown with semi-automatic potato planter with the BC ratio of 3.30 followed by manual sowing on ridges (Rs. 1,61,750) with BC ratio of 3.19

Introduction

Turmeric (*Curcuma longa* L.) belonging to family Zingiberaceae is one of the important herbaceous plant grown and used in India since ancient times as spice or condiment. It has been put to diversified uses by locales. Turmeric of commerce is the dried underground rhizome mainly used in culinary preparations, textile, cosmetic and pharmaceutical industries (Shashidhar and Sulikeri, 1996). India is a major producer, consumer and exporter of turmeric but major part of its produce is consumed within the country and its export accounts for nearly 5.9 per cent of total production. Turmeric offers good scope in diversification of cereal based cropping system in Punjab. Increased cultivation of turmeric in the state will help not only to meet its own requirements but also help the country to boost its export (Kumar and Gill, 2009). Planting method is a soil management tool which affects plant growth and yield (Chattopadhyay et al. 1993). Optimum plant density of a crop varies considerably depending upon climatic conditions of the growing area and fertility status of the soil. Plant distance is an important factor for higher production and gives equal opportunity to the plants for their survival and best use of other inputs. Turmeric is always propagated by finger or rhizomes and large quantities of seeds are required for planting one hectare of land. The quantity of seeds to be used depends on the spacing at which they are planted. Kaur (2001) reported non-significant effect of two spacings (60 cm x 10 cm and 60 cm x 15 cm) on growth, yield and quality characters of turmeric at Ludhiana.

Farmers are growing turmeric following indigenous methods and sowing turmeric manually whether they are growing it in flat fields as well as on ridges. As we all are aware about the shortage of labour in Punjab state which leads to increased cost of cultivation of this crop thus making it less profitable venture. Therefore, research needs to bring improvement in production technologies as well as considering economic return. The study was therefore, designed to determine the effect of spacing on the production of turmeric at farmer's field.

Materials and Methods

The study was conducted at farmer's field at three differ-

ent locations in District Gurdaspur during 2014-15. The Turmeric variety Punjab Haldi No. 1 was sown with three planting methods i.e. manual sowing on flat field at a spacing of 30 x 20 cm, manual sowing on ridges at 60 x 15 cm and sowing with semi-automatic potato planter at 60 x 15 cm. The data thus obtained were analyzed according to Gomez and Gomez (1984).

The crop was sown in the second fortnight of April as per the package of practices recommended by Punjab Agricultural University, Ludhiana. The intercultural practices such as irrigation, weeding, earthing up was done as and when required. Ten plants were selected randomly from each unit plot for collection of necessary information of different yield contributing characters. But the marketable fresh yield was calculated from total harvest of each unit plot and converted to per hectare yield.

The crop was harvested in the second fortnight of January when the plants became completely yellow and the leaves including the base of the pseudo stem dried up completely. Yield and yield contributing data was analyzed and finally economic analysis was done. The crop was harvested by digging manually to record the yield attributes. The economic analysis was done by considering the price of seed as Rs 2000/q, custom hiring charges of semi automatic potato planter and Rs 1000/q as the rate of produce in the market at fresh weight basis.

Results and Discussion

Planting method had significant effect on plant height, number of fingers per hill, yield per hectare except number of leaves per plant (Table 1). However, highest plant height (73.27 cm) was in crop sown with semi automatic potato planter while the lowest (70.32 cm) was in manual sowing in flat field at 30 X 20 cm whereas similar trend was observed in case of number of leaves per plant. Highest number of fingers (12.5) per hill was produced when crop was sown manually on ridges at spacing of 60 X 15 cm followed by sowing with semi automatic potato planter at 60 X 15 cm however the difference was found to be non significant.

Table 1 Effect of planting methods on different parameters of turmeic

Planting method	Spacing (cm)	Plant Height (cm)	No. of leaves per plant	No. of fingers/hill	Yield (t/ha)
Manual sowing in Flat field	30 x20	70.32	6.7	10.9	22.45
Manual sowing on ridges	60 x 15	73.19	7.3	12.5	23.58
Sowing with semi-automatic potato planter	60 x 15	73.27	7.4	12.3	23.50
CD (p=0.05)		1.51	NS	0.65	0.83

The yield was significantly higher in case of ridge sowing at spacing of 60 X 15cm as compared to flat sowing at spacing of 30 X 20 cm (Table 1). The highest yield (23.58 t/ha) was noted when crop was manually sown on ridges which was statistically at par with the crop sown with semi-automatic potato planter (23.50 t/ha.)

Highest net returns (Rs 1,63,750/ha) was obtained where the crop was sown with automatic potato planter with the BC ratio of 3.30 followed by manual sowing on ridges (Rs. 1,61,750) with BC ratio of 3.19 (Table 2) . The lowest net return was obtained in manual sowing in flat field at spacing of 30 X 20 cm with BC ratio of 2.68.

Table 2 Economic performance of turmeric cultivation

Treatments	Yield (t/ha)	Net Return (Profit) in Rs. / ha	BC Ratio
Manual Sowing in flat field at 30X20 cm	22.45	1,40,750	2.68
Manual Sowing on ridges at 60x15 cm	23.58	1,61,750	3.19
Sowing with semi-automatic potato planter at 60x15 cm	23.50	1,63,750	3.30

Conclusions

It may be concluded from the study that the sowing of turmeric could be mechanized by using semi-automatic potato planter as it is economically at par with manual sowing on ridges. Besides this it also helps in drudgery reduction as well as it is a viable solution to combat the menace of labor shortage.

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