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Hanish Munjal
Department of Agriculture,
D.A.V College, Abohar, Punjab,
India

Navdeep Gandhi
Department of Agriculture,
D.A.V College, Abohar, Punjab,
India

Jasreen Kaur
Department of Agriculture,
D.A.V College, Abohar, Punjab,
India

Karampal Singh
Department of Agriculture,
D.A.V College, Abohar, Punjab,
India

Correspondence
Hanish Munjal
Department of Agriculture,
D.A.V College, Abohar, Punjab,
India

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Effect of different dates of sowing on Phenological stages and yield contributing characters of brinjal. (*Solanum melongena* L.)

Hanish Munjal, Navdeep Gandhi, Jasreen Kaur and Karampal Singh

Abstract

This project was carried out to evaluate effect of different dates of sowing on phenological stages and yield contributing characters of brinjal (*Solanum melongena* L.). Variety that used in the experiment was Local. The trials were conducted at three different dates of sowing that are 2 February, 16 February and 1 March. Recommended agronomic practices were followed throughout the experiment. This experiment was to determine which treatment (sowing on 2 February, 16 February and 1 March) is more suitable to the particular locality. It was found that sowing on 2 February was able to show better results. All the phenological parameters such as plant height, no. of branches per plant and yielding parameters such as fruit weight per plant, yield per hectare which were observed during the experiment gave better result in treatment T₁ (sowing on 2 February). It was concluded from the present experiment that sowing on first fortnight of February (2 February) in brinjal showed more promising results than sowing on second fortnight of February (16 February) and first fortnight of march (1 march).

Keywords: Brinjal, different dates, yield, height.

1. Introduction

Brinjal or Eggplant (*Solanum melongena* L.) belongs to the family Solanaceae under the genus *solanum*. It is also known as Aubergine or Guinea squash an economically important vegetable crop widely cultivated in the tropics, subtropics and warm temperate regions. It was originated in South East Asia. Centre of origin of brinjal was the Indo-Burma region. It is a perennial but grown commercially as an annual crop. It has been cultivated in India for the last 4,000 years, Second only to the potato in terms of the total quantity produced, the brinjal continues to be an important domestic crop cultivated across the country accounting for 9% of total vegetable production and covering 14% of the land under vegetable cultivation. There are approximately 2500 varieties of brinjal. The major brinjal producing countries on the globe are India, Bangladesh, Pakistan, China, Egypt, Japan, Philippines, Western Europe (Tawab *et al.* 2015). It is a good source of nutrients, minerals, antioxidants, vitamins, dietary fiber and body proteins (Mehraj *et al.* 2015) [1]. In 2007-08, India exported 338 tonnes of brinjal worth Rs. 1.92 crores. The United Kingdom is the largest importer (258.84 tonnes worth Rs. 1.38 crores) followed by countries like Saudi Arabia, France and Germany. According to National Horticulture Board the total area under brinjal cultivation in 2016-17 was 0.67 million hectare, with a total production of 12.4 million tonnes. (NHB, 2017). The world production was estimated at 32 million tons in 2009 with China (18 million tons) and India (8.4 million tons) as the greatest producers (FAO STAT 2009).

Material and Methods

The experiment was carried out at experimental area D.A.V College, Abohar, Distt. Fazilka, Punjab, 152116, during rabi season 2015-16. The plot size was 3.35 m². The soil of the area is sandy loam. The water holding capacity of soil is good. Land was prepared by spade and khurpa. The transplanting was done manually and plant to plant spacing was kept 60 cm and row to row spacing was 30 cm for all the treatments. Irrigation was applied every week or according to rainfall. Fertilizers were applied according to recommended doses. Weeds were

controlled by hand weeding with the help of khurpa. Hand weeding was done twice for the control of weeds. It was done once after 35 days of transplanting and once after 50 days of transplanting. Picking was done on April 4 in plot 1, April 14 in plot 2 and April 22 in plot 3 respectively. Plant height was measured at 15, 30, 45 and 60 DAT. The height of each plant was measured in cm by using measuring tape from ground surface to top most leaf of the plant and mean was calculated. Counting all branches from each plant and mean was calculated. Fruits were counted from each plant and their average was calculated. Total yield was measured by totaling of fruit yield from each unit plot during the first harvesting and was recorded in ton.

Results and Discussion

Plant Height

Table 1: Average plant height (cm) of brinjal on different transplanting dates

Treatments	Days after transplanting			
	15 DAT	30 DAT	45 DAT	60 DAT
T ₁	38.3	49.7	61.1	73.5
T ₂	28.9	46.6	60.6	71.9
T ₃	26.8	37.2	54.7	68.5

The results have been shown in Table 1 the tallest plant (73.5 cm) was obtained in February 2 planting than February 16 planting (71.9 cm) as well as March 1 planting (68.5 cm). Same result has been observed by Mirzaei *et al.* (2016)^[2]. He studied the effect of different sowing dates on plant height of Marigold. The result indicated that highest plant height obtained when sown on May 26 and minimum plant height on June 10.

No. of Branches per plant

The results have been shown in Table 4.5 the tallest plant (73.5 cm) was obtained in February 2 planting than February 16 planting (71.9 cm) as well as March 1 planting (68.5 cm). Same result has been observed by Mirzaei *et al.* (2016)^[2]. He studied the effect of different sowing dates on plant height of Marigold. The result indicated that highest plant height obtained when sown on May 26 and minimum plant height on June 10.

Table 2: Average no. of branches per plant of brinjal on different transplanting dates

Treatments	Avg. no. of branches/plant
T ₁	8.7
T ₂	8.6
T ₃	8.6

The highest number of branches per plant (8.7) was obtained in February 2 planting than from February 16 and March 1 planting (8.6 and 8.6) (Table 2). It was found that the number of branches per plant decreased from February 2 to March 1 respectively.

The effect of sowing dates on number of branches per plant of sweet pepper was studied (Islam, 2008)^[3]. The maximum average number of branches per plant (5.20) from the September 1 and October 1 sowings which are statistically similar to those of September 15, October 15 and October 30 sowings. Minimum number of branches per plant (4.30) was found at November 30 sowing which are statistically similar to those of November 15 and September 15 sowing.

Number of Fruits per plant

Table 3: Average number of fruits per plant of brinjal on different transplanting dates

Treatments	Avg. no. of fruits/plant
T ₁	3.58
T ₂	3.44
T ₃	2.52

The maximum number of fruits per plant was obtained from February 2 planting (6.90 fruits per plant). This was followed by February 16 planting. Beyond March 1 there was reduction in number of fruits per plant. Similarly, the effect of sowing date on number of fruits per plant of sweet pepper was studied (Islam *et al.*, 2010)^[4]. The highest average number of fruits (8.69 fruits/plant) per plant was found from the plants of October 1 sowing. The study was conducted on the effect of sowing dates on number of fruits per plant of Okra and revealed that highest number of fruits (11.8 pods/plant) per plant was found from the plants of May 14 sowing and lowest average number of fruits (8.9 pods/plant) per plant was found from the plants of April 30 sowing (Asadipour and Madani, 2014)^[5].

Average total yield per hectare

Table 4: Average total yield (ton per ha) of brinjal on different transplanting dates

Treatments	Yield (ton/ha)
T ₁	136.76
T ₂	129.09
T ₃	79.75

February 2 grown plants produced higher yield (136.76 ton/ha). The lowest yield (79.75 ton/ha) was obtained from later sowing (March 1), which was dissimilar from the all planting dates. (Table 4). Similarly, Dilruba *et al.* (2009)^[6] studied the effect of different sowing time on yield response of okra. The experiment consisted of three sowing dates viz. March 22, April 6 and April 21. From the results it was noticed that fruit yield significantly affected by sowing time. In case of sowing times, April 6 sowing produced the highest yield (13.88 ton per ha) and March 22 sowing produced the minimum yield (13.88 ton per ha). Therefore, April 6 sowing is best for better yield of okra. Ghannad *et al.* (2014)^[7] studied the effect of different dates of sowing times and yield related character of okra. The Sowing dates at three levels of May 15, May 21 and June 15 were considered. In conclusion, sowing date of May 15 was recommended to achieve higher yield (10973.92 kg) compared to sowing on June 15 having 8966.73 kg yield.

Conclusion

It was evident from the result that increase in the growth parameter and yield per plant were obtained with the earlier planting (February 2). The highest no. of branches per plant (8.7) was obtained from early planting (February 2) than late planting (8.6). The maximum no. of fruit per plant (3.58) was obtained from the earlier planting (February 2) than late planting (2.52) and in the same trend it was found that the earlier planting (February 2) produced the maximum yield (136.76 ton ha⁻¹) whereas later sowing (March 1) recorded the minimum yield (79.75 ton ha⁻¹). In total given the results shows that the higher yield is obtained from earlier planting of

brinjal.

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