

EFFECT OF AGE OF SEEDLINGS ON GROWTH AND YIELD OF BRINJAL

A. R. Chowdhury, A. K. M. Amin,
Kh. Saif Uddin and J. Haider

*Institute of Postgraduate Studies in Agriculture
Gazipur, Bangladesh.*

Abstract

An experiment was conducted to evaluate the influence of age of seedlings (30, 40, 50 and 60 days) on growth and yield of brinjal. Age of seedlings significantly influenced the number of days to flower, plant height, foliage spread, fruit size, number of fruits per plant and yield. Although the yield was increased with increasing age of seedlings there was no statistical difference among 40, 50 and 60 days old seedlings but they outyielded the crop from 30 days old ones.

Key words : Brinjal, Seedling age, Growth

In case of the transplanted vegetable crops the age of seedlings at transplanting plays a good role in determining growth and yield. Too young transplants may lead to poor stand establishment (Singh *et al.*, 1976) and poor yield (Copper and Morelock, 1983). Even though there are quite a few reports on the optimum age of brinjal seedlings at transplanting the suggested range of the optimum seems to be too wide (4–8 weeks). Som and Maity (1986) suggested 4 - 5 weeks to be the optimum age, while 8 weeks was suggested by Ahmad (1984).

Since there seems to be no such experimental evidence under Bangladesh condition this experiment was conducted at BARI, Joydebpur, Gazipur during the period from October, 1984 to April 1985 on sandy loam soil with pH^H 6.2.

The variety of brinjal used in this experiment was Uttara. There were four treatments of age

of seedlings - 30, 40, 50 and 60 days. The treatments were replicated six times in randomized complete block design. The size of unit plot was 8.4 x 1.0 m. Cowdung @ 15 t/ha, urea @ 350 kg/ha, triple super phosphate @ 150 kg/ha and muriate of potash @ 250 mg/ha were applied in experimental plots. Cowdung and triple super phosphate and half of urea and muriate of potash were applied at the time of land preparation. The remaining urea and muriate of potash were top dressed in two equal installments on 15 January and 15 February. Seeds were sown on 1, 11, 21 and 31 October, 1984 in seed beds containing equal proportion of soil, sand and decomposed cowdung.

Morphological data of the 15 randomly selected seedlings of each age group were recorded on 1 December, 1984. Before lifting the seedlings the seed bed was watered to facilitate uprooting with minimum of damage to the roots. The healthy seedlings were trans-

Table 1. Variation on some morphological characters at four different ages of brinjal seedlings.

Seedlings age (days)	Plant height at transplanting (cm)	No. of leaves per plant	Size of biggest leaf		Stem diameter (just above the ground level (cm))
			Length (cm)	Breadth (cm)	
30	3.62	3.20	4.19	3.11	0.25
40	5.63	4.20	8.26	5.70	0.36
50	12.00	5.40	13.63	9.90	0.44
60	22.86	6.36	16.63	12.16	0.49

planted on 1 December with a spacing of 100 x 60 cm. The seedlings were watered with watering can until they got established. Thereafter, furrow irrigation was given, weeding and mulching were done whenever felt necessary. Harvesting was started on 7 February and continued upto 25 April, 1985.

There was a wide variation among the treatments in different morphological characters like seedling height, number and size of leaves and stem diameter at transplanting (Table 1). The 60 days old seedlings were tallest which was about 5 times taller than those of 30 days old ones. The number of leaves per plant was increased progressively with increased age of seedling and 60 days old seedlings had twice as many leaves as those of 30 days old ones. The

size of leaves and stem diameter were also increased progressively with increase in age of seedlings at transplanting.

Data on growth and yield are presented in Table 2. The older the seedlings the earlier the plants flowered. Every treatments significantly differed from one another in the number of days from transplanting to first flowering. The seedlings transplanted at the age of 60 days flowered about 20 days earlier than those transplanted at the age of 30 days.

There was no statistical difference among the treatments in respect of number of primary branches per plant at the time of final harvest. The stem diameter was also statistically similar for all four treatments.

Table 2. Effect of age of seedlings on the growth and yield of brinjal

Age of seedling (days)	Period to first flowering (days)	No. of primary branches per plant	Plant height (cm)	Plant spread (cm)	Size of fruit		No. of fruits per plant	Fruit yield (t/ha)
					Length	Diameter		
30	60.94 d	8.50	84.05 b	81.33 d	12.08 c	3.93 b	35.75 b	26.33 b
40	52.33 c	8.53	88.45 a	89.05 c	12.50 bc	4.15 ab	46.88 a	37.48 a
50	46.22 b	8.56	90.21 a	98.23 b	12.70 b	4.32 a	52.39 a	40.66 a
60	40.82 a	8.58	94.18 a	106.00 a	13.30 a	4.46 a	52.82 a	42.40 a
cv.%	3.55	-	6.31	5.74	3.80	4.88	12.84	15.05

The ultimate plant height was increased progressively with increase in seedling age at transplanting. However, there was no statistical difference among 40, 50 and 60 days old seedlings while the youngest seedlings produced significantly shorter plants than the older ones. Every increase in seedling age was associated with significant increase in ultimate foliage spread. The results indicate that the older seedlings produced bigger plants in respect of both plant height and foliage spread.

There was wide variation among the treatments in respect of both number and size of fruits. The crop from oldest seedlings produced the highest number and size of fruits. There was, however, no difference between 30 and 40 days old seedlings in this respect. As regards the number of fruits per plant 30 days old seedlings produced much lower number than the three statistically similar treatments of 40, 50 and 60 days old seedlings. The increase in fruit number per plant and size of fruits with increasing age of seedlings may be ascribed to bigger leafage leading to higher photosynthesis.

The older seedlings produced higher yield. There was however no statistical difference among the crops from 40, 50 and 60 days old seedlings which outyielded the crops from 30

days old ones. The increased yield with increasing age of seedlings was resulted from increased size and number of fruits from the older seedlings.

It can be concluded that the brinjal variety - Uttara may be transplanted at the age of 40 to 60 days when the seedlings would produce around 4-5 leaves.

References

- Ahmed, K. 1984. Plant, Animal, Bird and Fish Wealth. Faruque Mahmood, Sharbajanin Granthalaya, 140 New Market, Dhaka.
- Copper, P. E. and T. E. Morelock. 1983. Effect of transplant age on calories, total yield and fruit weight of tomato [cited from Hort. Abstr. 2513, 54(5), 1984.]
- Singh A. R.; P. C. Jain, and S. M. Singh. 1960. Studies on transplanting of vegetable crops. 1. Effect of age and number of seedlings with or without starter solution and hardening on cauliflower. Indian J. Hort. 17: 217 - 224
- Souma, S.; Y. Hirai and H. Iwabuchi. 1976. The effect of environment on the growth and quality of tomatoes. II. Effect of the length of seedling stage on the growth, yield and quality of tomatoes. Bulletin of Hokkaido Prefect. Agril. Sta. 34 : 32- 40.