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ORIGINAL PAPER



Heterostyly in Brinjal

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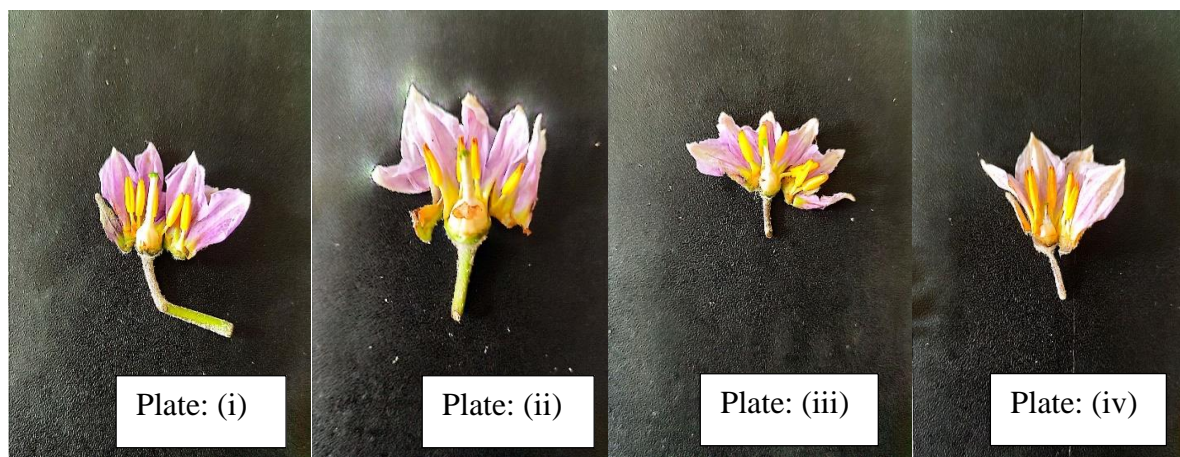
Brinjal (*Solanum melongena* L.) is an important vegetable crop cultivated throughout India. The fruit contains carbohydrate, fibre, protein, calcium, magnesium, phosphorous, sulphur and vitamin A. It is a self-pollinating crop, but 6-10% cross-pollination may occur due to the transferring pollen by insects such as bees, ants and thrips (George 1985, Lawande and Chavan 1998). The flower of brinjal is hermaphrodite and actinomorphic, show heterostyly phenomenon (Kowalska 2006). The flowers are large, violet-colored and either solitary or in clusters of two or more (Lawande and Chavan 1998). The flowering are continuous throughout the whole life of the crop. The flower consists of calyx and corolla. Calyx is five lobed, gamosepalous and persistent with or without spines depending on the types of cultivar. The cup like structure its form at the base. Corolla is five lobed gamopetalous with margins of lobes incurved. The hypogynus gynoecium is syncarp located obliquely in relation to the median. In most varieties the perfect flowers are borne singly and opposite the leaves. There are five stamens which are free and inserted at the throat of corolla. Anthers are free cone shaped with apical dehiscence. Ovary is bicarpellary, hypogynous, syncarpous and with basal placentation. In brinjal, heterostyly is a common feature. Four types of flowers have been reported depending on the length of styles, viz. (i) long-styled with large ovary, (ii) medium-styled with medium size ovary, (iii) Pseudoshort-styled with rudimentary ovary and (iv) true short-styled with very rudimentary ovary (Krishnamurthi and Subramaniam, 1954).

It has been reported that long and medium-styled flowers produce fruits whereas pseudo-short and short-styled flowers do not set any fruits. Further, chances of cross

pollination are more in long style flowers. The percentage of long and medium styled flowers is a varietal character. Fruit setting of long- styled flowers varies from 70% to 86.7% in different varieties. In medium styled flowers, fruit set ranges from 12.5% to 55.6%. All varieties have flowers with different style length. The position of the stigma in relation to stamens varies with the cultivars and can also vary in different flowers of same cultivar. Stigmas are either found above, on the same level as or below the stamens and the highest percentage of fruit set is found where the stigma is above the stamens.

Table 1: Fruit set percentage in brinjal

S. No.	Percentage of fruit set in long styled flower	Percentage of fruit set in long styled flower	Name of the author with year
a.	42.6-50.9	20.1-30.1	Passam <i>et al.</i> , 2001
b.	63.0	15.0	Gorecki and Espinoza-Flores 1996
c.	70-86.7	12.5-55.6	Prasada and Prakasha 1968
d.	90.0	5.0 (short pistil)	Rylski <i>et al.</i> , 1984



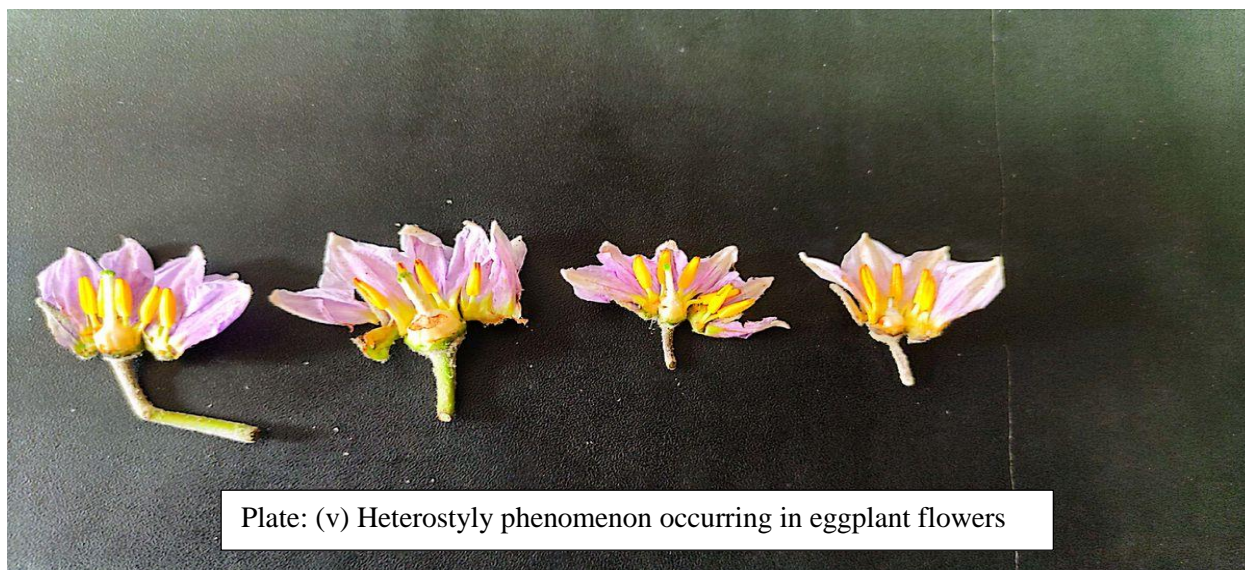


Plate: (i) long-styled with large ovary (ii) medium-styled with medium size ovary, (iii) Pseudoshort-styled with rudimentary ovary and (iv) True short-styled with very rudimentary ovary (v) Heterostyly phenomenon occurring in eggplant flowers

In short-styled flowers the androecium is fertile but the stigma is smaller with underdeveloped papillae and lower sugar content than that in long-styled flowers. There is no pollen germination on the stigma or penetration of pollen tube into short styles (Rylski *et. al.* 1984). Raja K., 2021 reported in Brinjal cv. PLR 1 and PLR (Br.) 2 the highest fruit setting observed 82.9 and 86.5% in the long styled flowers (82.9 and 86.5%) and in medium styled flowers (78.2 and 77.2%). The flowers with long and medium pistil set fruit, but flowers with short pistil did not set fruits in brinjal. The percentage of fruit setting may reduce in flower having very long pistil length above 1.2 cm. The highest percentage of fruit setting observed in long pistil length, the short distance between stigma and anther in flower (Passam and Bolmatis 1997).

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