

## EFFECT OF PLANTING DATES ON GROWTH AND FLOWERING OF HIPPEASTRUM (*Hippeastrum hybridum*)

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### ABSTRACT

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Response of *Hippeastrum* growth and flowering against different planting dates were studied to find out optimum growing period in the garden of Horticulture Department at Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur. Different planting dates, viz. July, August, September, October and November were used in the experiment. It was observed that August planting was mostly suitable for profuse growth and flowering. First leaf emergence, number of leaves, plant height, number of bulblets, length of floral scape, flowers per scape, diameter of flower and percent of flowering, all this selected growth and flower characters except flower scape emergence and days to flower bud appearance showed best results with August planting which was closely followed by the result found with July planting. Late planting that means November planting did not come out with satisfactory results.

**Keywords:** Growth, flowering stage, planting dates

### INTRODUCTION

*Hippeastrum (Hippeastrum hybridum)* is an ornamental bulbous flowering plant belongs to the family Amaryllidaceae, it has large and showy flowers with many bright colors and commonly known as Royal Dutch Amaryllis (Jana, 1995). They are native to Central and South America, and are easily grown in the tropical and subtropical regions (Okubo, 1993). *Hippeastrum*'s are often erroneously described as Amaryllis (*Amaryllis belladonna*) although these two plants have distinct difference between them. Propagation can be accomplished by using seed, offset bulblets and twin scaling (Siddique *et al.*, 2006, Vijverberg, 1981). They are suitable for planting in the bed, pot, rookery, shrubbery and greenhouse garden and also in landscaping. It is usually a spring planting bulb and can be grown under wide environmental conditions ranging from tropical to subtropical or temperate climate (Okubo, 1993; Jana, 1995). This plant so far do not tested truly in the climatic condition of Bangladesh, i.e., different factors affecting growth and flowering behavior need to be determine more precisely for successful cultivation of *Hippeastrum* in Bangladesh

### MATERIALS AND METHOD

The bulbs of *Hippeastrum* plant cv. Apple Blossom were collected from Kyushu University, Japan. The bulbs were grown in the garden of Horticulture Department at Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur, Bangladesh. The mixture of the garden soil and cowdung was used at the 2:1 ratio for growing the bulbs of *Hippeastrum*. The climate of the experimental site was tropical in nature characterized by heavy rainfall during the months from June to September and scanty rainfall during the period of October to March. There were five planting dates, namely, 02' July, 02' August, 02' September, 02' October and 02' November, to observe the growth and flowering performance of *Hippeastrum*. The data were analyzed by analysis of variance using MSTAT-C statistical package.

### RESULTS AND DISCUSSION

**Days to first leaf emergence:** Time required for first leaf emergence varied widely (13.67 to 28.00 days). The earliest (13.67 days) first leaf emergence found at August planting which statistically similar to July planting (Table 1). The maximum time required in case of November planting. It appeared that August and July planting was mostly suitable for earliest leaf emergence and more would required in the late months.

**Number of leaves per plant:** Maximum leaf number (11.67) was found in August planting followed by July planting (9.33). Number of leaf per plant reduced considerably against the other three planting dates but they were statistically similar. August planting responded well may be due to prevailing favorable temperatures and rainfall. Hertogh *et al.* (2000) documented leaf number (15.4-18.6) in case of Apple Blossom while Bose *et al.* (1981) reported maximum number leaves in long day treated plant.

**Plant Height:** Plant height varied widely (27.67-41.00 cm) against different planting dates. The maximum (41.00 cm) plant height measured in August planting while the second highest observed in July planting. A decreasing trend was observed in case of plant height from September planting and the lowest measured at November planting.

Bose *et al.* (1979) measured plant height 47.6 cm in case of *Hippeastrum*. This fluctuation in result is probably due to difference in treatment combination and bulb storing environment.

**Number of bulblets per plant:** Number of bulblets per plant differed significantly due to planting dates (Table 1). The maximum of bulblets (3.66) was found in plant of August planting. The lower number of bulblets (1.0) per plant was obtained from plant of November planting, which was statistically similar to September and October planting. This was possibly due to August planting plant received comparatively favorable environment for higher vegetative growth. The temperature and photoperiod prevailed during this time was perhaps favorable for the maximum vegetative growth of the plants and lead to formation of higher photosynthetic products which resulted in higher number of bulblets of plants. Increased day length promoted the number of daughter bulb (Bose *et al.*, 1981).

**Days to flower scape emergence:** Time required for flower scape emergence varied much against different planting dates. July planting required significantly more time compared to other planting dates. July planting took the longest period (239.00 days) for flower scape emergence and that of shortest period (175.0 days) for November planting. The temperature prevailed during early planting dates is not favorable for induce flowering. For this reason, early planting required time for receiving favorable cool temperature, which may induce flowering scape emergence.

Table 1. Effects of planting dates on growth characters of *Hippeastrum*

Treatments	Days to first leaf emergence	Number of leaf/plant	Plant height (cm)	Number of daughter bulb/plant	Days to flower scape emergence
02' July	15.00d	9.33b	38.67b	02.33b	239.00a
02' August	13.67d	11.67a	41.00a	03.66a	204.00c
02' september	19.00c	07.66c	34.33c	1.66bc	231.30b
02' October	23.00b	06.67c	32.00d	1.33c	194.00d
02' November	28.00a	06.66c	27.67e	1.00c	175.00e

Means bearing uncommon letter(s) in a column varied significantly at 5% level.

**Length of flower scape:** The longest flower scape (40.67 cm) was found at August planting, which was statistically higher from other planting dates. The shortest scape (24.00cm) was obtained from November planting, which was statistically similar which that of October planting. From this result, it might be concluded that in Bangladesh condition longest flower scape could be obtained from August planting. Hertogh *et al.* (2000) documented 43.60 cm tall flower scape in case of Apple Blossom in USA while Bose *et al.* (1981) measured flower scape length between 47 and 58 cm in India.

**Days to flower bud appearance:** Time required for flower bud emergence was influenced noticeably by the planting dates. The earliest (204.33 days) was recorded at November planting while slowest required for flower bud emergence (262.00 days) at July planting which statistically differed with that of other planting. Bose *et al.* (1981) observed flower bud appearance with in 307 days in the long days.

**Number of flower per scape:** The number of flower per scape differed significantly by planting dates. The maximum number of flower per scape (4.66) was found in August planting followed by July planting. The minimum number (1.66) of flower per scape was obtained from November planting which was statistically similar to that of September and October planting. Bose *et al.* (1981) documented number of flower per plant 4.6-5.0 in the long days. This discrepancy might be due to alteration of Photoperiod and temperature.

**Diameter of flower:** Planting dates greatly influenced the diameter of flower. The highest (12.67 cm) diameter of flower was gained from August planting where the lowest lowest found at November planting which was statistically similar to that of October planting. Hertogh *et al.* (2000) measured flower diameter 19.3 cm in case of Apple Blossom in America. On the other hand Bose *et al.* (1981) documented flower diameter 15.2-16.6 cm.

**Percent of flower:** Planting dates had great influence on percent of flowering (Table 2). The highest (98.33) percentage of flowering was observed at August planting which differed significantly with all other planting dates. The lowest (55.49%) percentage was found in case of November planting. So it is concluded that August planting was mostly suitable for obtaining profuse flowering.

Table 2. Effect of planting dates on flowering characters of *Hippeastrum*

Treatments	Length of flower scape (cm)	Days to flower bud appearance	Number of flower per scape	Diameter of flower (cm)	Percent of flowering
02' July	33.6b	262.00a	3.33b	11.00b	91.66b
02' August	40.67a	223.00c	4.66a	12.67a	98.33a
02' september	30.00b	255.63b	2.66c	9.66bc	82.09c
02' October	25.00c	221.67d	2.00c	8.33c	65.66d
02' November	24.00c	204.33e	1.66c	8.33c	55.49e

Means bearing uncommon letter(s) in a column varied significantly at 5% level.

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