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Varietal Evaluation of Lisianthus (*Eustoma grandiflorum*) under Naturally Ventilated Polyhouse Conditions in Prayagraj

Lakeyi Bhargav*, Devi Singh and Urfi Fatmi

Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Science (SHUATS), Prayagraj, India

**Corresponding author*

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A B S T R A C T

An experiment was carried out in Randomized Block Design to study thevarietal evaluation of lisianthus (*Eustoma grandiflorum*) under naturally ventilated polyhouse conditions in prayagrajagro-climatic condition at Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Science, Prayagraj. Based on the experiment, it can be concluded that the highest plant height was observed in Areena champange (73.55cm), the widest plant spread was recorded in Rosita Red (176.22cm), more number of leaves were observed in Areena champange (42), Minimum number of days taken to flower bud emergence was observed in Areena Pink (108.440) Maximum flower were harvested from the Echo purple (17.663). Maximum cost: Benefit ratio was recorded from Echo purple (1:3.3).

Introduction

Lisianthus (*Eustoma grandiflorum*) belongs to the family Gentianaceae. It originated from the eastern slope of Rocky Mountains (USA), where it is known as the prairies gentian (Halevy and Kofranek, 1984). *Eustoma* is named after the two Greek words Eu (beautiful, good, well), and stoma (mouth).

Lisianthus is popular and have a number of cultivars grown for the cut flower market. Cut flower production of lisianthus has risen enormously in the recent years, and commercial cultivars have been intensively developed in Japan (Halevy and Kofranek, 1984). Actually, it presents, as well as several cut stem species, a huge amount of varieties and hybrids differing on morphological and qualitative characteristics (height and thickness of stems, size and colours of flower buds) (Corr and Katz, 1997; Croft and Nelson, 1998) but also for biological aspects.

The choice of the cultivars is often not so simple, in particular without available information of insitu crop response, but often represents one of the most important factors

for the economic success of the culture. Therefore, it is fundamental to select the most suitable varieties to particular environmental and growing conditions and which contemporarily possess ornamental traits appreciated by the consumers (Harbaugh and Bell, 2000).

Lisianthus is becoming one of the most highly ranked cut flowers in the international market due to its rose like flowers, excellent post-harvest life and blue / purple colour. It gained importance on account of a variety of cultivars developed with respect to many traits like uniform flowering throughout the year, lack of rossetting, heat tolerance, flower colour, flower size and form including double flower etc. (Toa, 2006). Tsukada *et al.*, (1982) classified the corolla shape of lisianthus into four groups: funnel-shape, cup-shape, shallow bowl shape and bell shape whereas Harbough (2006) described flower shapes as flat/open petals, bell shape and tubular shape.

Lisianthus is a seed produced pot plant florist crop, with flowers that appear quite similar to those of tulip. The colour range include pink, white and purple (Asen *et al.*, 1986). The stem is monopodial at the base and branches apically. Stem length of most commercially available cultivars varies from 500-750mm. Individual flowers last for 2 weeks and a whole plant can remain in bloom for up to 5 weeks (Ruffoni and Savona, 2006; Gnesback *et al.*, 1988).

Materials and Methods

The experiment was conducted in Naturally ventilated polyhouse at Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Science, Prayagraj. The study was laid out as Randomized Block Design with 6 different varieties. Varieties used for experiment were Areena Pink, Echo Purple, Croma Green, Croma III White, Areena Champange and Rosita Red.

Results and Discussion

The maximum plant height was recorded in Areena Champange (73.55cm) followed by Croma III white (66.88cm). The maximum plant spread was recorded in Rosita Red (176.22cm) followed by Areena Champange (172.44). Maximum Number of leaves was noticed in Areena Champange (42) followed by Croma III white (38.55). Minimum number of days taken to flower bud emergence was observed in Areena pink(108.440) and the followed by Croma green, Rosita red and Croma III white (111.99).

Table.1

	Vegetative parameters			Floral Parameters		
Varieties	**Plant height(cm)**	**Plant spread(cm)**	**Number ofLeaves**	**Days to Flower bud emergence**	**Days to Flower bloom**	**Vase life**
Areena pink	58.553	111.44	27.887	108.44	14.11	13.66
Croma Green	52.217	99.22	29.553	111.997	13.773	13.773
Rosita Red	66.327	176.22	37.667	111.997	13.887	13.66
Croma III White	66.883	108.107	38.55	111.217	13.55	13.883
Echo Purple	63.773	141.107	30.883	113.217	13.22	13.887
Areena Champange	73.553	172.443	42	114.22	13.107	13.55

Minimum number of days taken to flower bloom was noticed in Echo purple (13.22) and then followed by Croma III white (13.55). Maximum vase life is observed in Echo purple (13.88) and then followed by Croma III white (13.88).

From the present investigation, it is concluded that among all varieties Rosita Red, Areena Champange and Echo Purple is found to be best in terms of plant height, spread, number of leaves and flower qualities like number of flower buds per plant, days taken to flower bloom, number of flowers per plant, blooming period and Echo purple is found to be best in vase life. These three varieties performed well under naturally ventilated polyhouse conditions in prayagraj and can be recommended for new cut flower for commercial purpose.

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