

PERFORMANCE OF GLADIOLUS IN THE LOW HILLS OF NAGALAND DURING SUMMER

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ABSTRACT

Gladiolus is one of the most important cut-flower in the floriculture industry. its cultivation has assumed a remunerative commercial venture now-a-days. The demand of gladiolus is ever increasing in India and abroad because of its captivating wie spectrum of colours creating eye appeal and highly suitable for interior decoration with its longer vase life. The physiographical situatin with varying elevations and conducive climatic conditions favoured the growth and development of gladiolus even when grown during summer in the low hills of Nagaland. Experimental evidences supporting the commercial exploitation of gladiolus in low hills of the state are presented in this paper.

INTRODUCTION

In India, floriculture has assumed a potential industry as it is becoming important for the domestic and export markets. During the Eight Plan period, the Ministry of Commerce identified floriculture as an extreme focal segment (Singh and Singh, 1998). Among flowering plants, gladiolus is one of the flowers which has been identified for production in various areas of India for commercial cut-flowers (Bhalla and Singh, 1997). It ranks next to tulip in the Netherlands and other European Countries in the trade for use as cut flowers of bulbous crops and fourth in the international trade of ornamentals as cut-flowers (Rogers, 1980). The climatic situation of Nagaland favours the growth and development of gladiolus. Climatic factors like temperature and day length influence various plant characters. These climatic factors influencing different characters were experimentally substantiated by Coccozza (1977) and Kosugi and Kondo (1959). It was being thought that only mid and high hills of the North East India is ideally suitable for growing the gladiolus commercially. The gladioli show a great degree of variation in their growth and development due to climatic condition and adapted cultural practices when it is grown on the low hills or foot hills during summer. The best planting time for gladiolus in the hills of North East India is Febreuary to April (Chattopadhyay, 1992 and Paswan, 1990). The present study was undertaken to ascertain the suitability of commercial cultivation of gladioli in the low hills of Nagaland to enlarge the scope of economic condition of the growers and to evaluate the performance of few commercial gladioli varieties.

Nagaland lies between 20°06' and 27°04'N latitude and 93°20' and 95°15'E longitude. The state of Nagaland with its rolling mountains, mat of greenery, rapidly running brooks with its enchanting valleys is an embodiment of the choicest beauties of nature. The soil of Nagaland in higher altitude is mostly acidic in nature with pH varying from 5.5 to 6.5. The state enjoys the splendid blend of tropical, sub-tropical and temperate climate. The average rainfall ranges from 2000 to 2500 mm covering a period of nine months of the year with the highest rainfall occurring in the month of July and August. During the rainy season the average relative humidity is 85-95%. The hottest months are July and August though it is not very hot but rather warm (Changkija et al., 1992). The temperature and rainfall during the period of experiment is given in Table 1.

Table 1. Monthly average temperature and rainfall during experiment period at Medziphema (Nagaland) - 1998.

| Month | Temperature | | Rainfall (total) (mm) |
|-------|-------------|--------|--------------------------|
| | Max °C | Min °C | |
| March | 28.83 | 16.88 | 45.98 |
| April | 26.81 | 22.26 | 120.30 |
| May | 31.23 | 26.69 | 126.30 |
| June | 29.09 | 25.71 | 52.50 |

MATERIALS AND METHODS

The experiment was conducted with two commercial varieties viz. Friendship and Oscar at the Horticultural Experimental Farm, Nagaland University, School of Agricultural Sciences and Rural Development, Medziphema, Nagaland in the month of March, 1998. The farm is situated around 25°45'43"N latitude and 93°53'04"E longitude, at an elevation of 310 m above mean sea level. Healthy and uniform corms of gladiolus having 5.0 cm diameter were planted at 7 cm depth. A distance of 30 cm between row to row and 20 cm plant to plant was kept. Five kg well decomposed farm yard manure/m² was incorporated in all plots two weeks prior to planting (Arora et al., 1987). A basal fertilizer dose comprising 150 kg P₂O₅ and 150 kg K₂O/ha and 100 kg N at 2 leaf stage and 100 kg N at 4 leaf stage were applied (Bhattacharjee, 1981). Cultural operations like hoeing, weed cleaning, irrigation, staking, plant protection measures, etc. were duly followed (Chattopadhyay, 1995). The experiment was replicated four times. Observations of growth and flowering parameters were collected from the five randomly tagged plants in each treatment.

RESULT AND DISCUSSIONS

The performance of two varieties of gladioli (Table 2) exhibited encouraging response under the ambient agroclimatic condition prevailing in the low hills. The percentage of sprout (90.16), number of sprouts/corm (1.98), number of leaves/plant (13.20 cm) in the variety Friendship excelled the corresponding growth parameters in variety Oscar. However,

length of leaf (74.32 cm) and height of plant (54.54 cm) in Oscar showed superiority to Friendship. Incidentally both the varieties showed better growth performances when the same were compared with the result of Banker and Mukhopadhyay (1980) who recorded maximum plant height (49.67 cm) under the agroclimatic condition in Bangalore when planted during the month of March. Better growth performances of plant has strong bearing on the flowering characteristics and various flower parameters in gladioli.

Oscar took longer time (67.50 days) for the emergence of spike and first flower opening (75.33 days) as compared to Friendship (Table 2). Other important floral characteristics of Oscar particularly length of spike (77.61 cm), diameter of spike (1.13 cm) and number of florets/spike (18.16) are quite higher than Friendship which may be considered most conducive parameter from commercial exploitation point of view. However, the diameter of floret/spike (10.09 cm) and length of floret/spike (11.93 cm) in Friendship had little edge over Oscar, while vase life of Friendship (8.80 days) and Oscar (7.65 days) had marginal difference.

Table 2. Growth parameters and flowering attributes of Friendship and Oscar

| Growth characters | Friendship | Oscar |
|-------------------------------------|------------|-------|
| Percentage of sprouting | 90.16 | 85.91 |
| No. of sprouts/corm | 1.98 | 1.43 |
| No. of leaves/plant | 13.20 | 11.40 |
| Length of leaf (cm) | 67.56 | 74.32 |
| Height of plant (cm) | 53.38 | 54.54 |
| No. of days to spike emergence | 57.60 | 67.50 |
| No. of days to first flower opening | 66.36 | 75.33 |
| Length of spike (cm) | 69.15 | 77.61 |
| Diameter of the spike (cm) | 1.01 | 1.13 |
| Diameter of the floret/spike (cm) | 10.09 | 9.23 |
| No. of florets/spike | 12.66 | 18.16 |
| Length of the florets/spike (cm) | 11.93 | 11.19 |
| Vase-life | 8.80 | 7.65 |

Commercial evaluation of the two varieties as per standard set by American system of classification clearly suggested that diameter of floret/spike in Friendship (10.09 cm) and Oscar (9.23 cm) were within the standard set for 'Decorative' gladioli. Further, the gradation number of florets/spike come within the limit of 'Standard' and 'Fancy' with variety Friendship and Oscar respectively set for the commercial marketing.

From the perusal of results above, it may be concluded that the low hills of Nagaland can be conveniently exploited for cultivation of gladioli during summer and the variety Oscar can be used for cultivation of gladioli for commercial purpose in view of its floral and growth performances.

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