T Manjunatha Rao, S S Negi,
T Janakiram, Rajiv Kumar*,
T Usha Bharathi and S Sujatha

Arka Ranjini: A novel Gladiolus cultivar

Gladiolus, is commercially grown worldwide for its magnificent spike with array of colourful florets and is called as Queen of bulbous flowers. There is a demand for new genotypes having novel attractive flower colour, improved spike qualities like spike with compactly arranged florets in double rows, more number of spikes per plant, more number of florets remain open at a time and good corm multiplication ability. To meet this demand, during 2019, scientists at ICAR-IIHR, Bengaluru have identified for release one novel gladiolus cultivar i.e. Arka Ranjini for its quality florets and spike. It is suitable for cut flower, bouquet preparation, floral arrangement and garden display.

GLADIOLUS (*Gladiolus hybridus* Hort.) is one of the most important bulbous flowering crops commercially grown for cut flowers, garden display and floral arrangements. It belongs to the family Iridaceae. As there is a demand, importance was given on development of hybrids having attractive novel floret colour, more number of well arranged florets, short spikes, more number of florets remain open at a time and good corm multiplication ability. As a result of hybridization followed by selection and several years of evaluation, ICAR-Indian Institute of Horticultural Research, Bengaluru, Karnataka has developed and identified for release during 2019, a new novel gladiolus cultivar 'Arka Ranjini' for its quality florets and spikes. The brief description of 'Arka Ranjini' is summarized below.

Arka Ranjini

This novel gladiolus cultivar derived from the cross 'Arka Poonam' × 'Gold Medal 412'. As per Royal Horticultural Society (RHS) colour chart, colour of the florets is Purple (78.A) middle having Red-Purple (72.A) margin with Green-Yellow (1.D) blotch. Florets are open-faced, tepals are thick, slightly ruffled and arranged in double rows. It takes about 65 days for flowering. The plants are medium (121.85 cm) having short spike (104.55 cm) with good rachis length (45.80 cm) and bears 13 florets per spike. About six florets remain open at a time in a spike, which makes it excellent for cut flower, bouquet preparation, floral arrangement and for garden display. On an average, it produces two spikes per corm, 2.22 number of corms and 27.24 number of cormels per corm. It has vase life of 7.67 days (Table 1).

Table 1. Salient characteristics of gladiolus cultivar Arka Ranjini

Sl. No.	Character	Arka Ranjini
1.	Days to flowering	65.03
2.	Plant height (cm)	121.85
3.	Spike length (cm)	104.55
4.	Rachis length (cm)	45.80
5.	Floret diameter (cm)	9.61
6.	Florets per spike (Nos.)	13.01
7.	Florets remain open at a time (Nos.)	6.38
8.	Total spikes per corm (Nos.)	2.00
9.	Corm per corm (Nos.)	2.22
10.	Cormel per corm (Nos.)	27.24
11.	Weight of corm (g)	60.33
12.	Vase life (days)	7.67
13.	Floret type	Open-faced
14.	Floret texture	Thick
15.	Floret structure	Slightly ruffled
16.	Floret placement	Double row
17.	Floret colour	Purple (78.A) middle. Having Red-Purple (72.A) margin with Green-Yellow (1.D) blotch

CULTIVATION

Gladiolus can be grown in wide range of climates from tropical to temperate. It prefers open sunny locations. The ideal day temperature should range between 20°C to 25°C.

Soil

Well-drained sandy loam soil rich in organic matter and nutrients with *p*H of 5.5 to 6.5 is ideal. Soil with poor drainage should be avoided.

Planting techniques

In and around Bengaluru, planting during June, October and November months was found to be the best considering the quality of the spike. Planting can be done

Arka Ranjini - Spikes

Arka Ranjini flowering in field

during August to November in plains of northern India and March-April in hilly regions.

For getting good quality flowers healthy corms of above 3 cm diameter should be selected and treated with Carbendazim (2 g/Litre) and Captan (2 g/Litre) for 20 minutes. Gladiolus is generally planted in ridges and furrows system of planting with varying distance of 30 cm × 20 cm, 30 cm × 15 cm and 30 cm × 10 cm between rows and plants within the rows depending on size of the corms and the variety. The corms should be planted in staggered manner at intervals of 10-15 days to get flower spikes for longer period and to avoid market glut.

Irrigation

The soil should have sufficient moisture at the time of planting so that no irrigation is required till sprouting. After the corms sprouted, field may be irrigated once or twice a week and should be adjusted in accordance with the prevailing weather conditions. After harvest of flower spikes, irrigation frequency should be reduced.

Nutrient management

Apply 10 tonne FYM per hectare if soil organic carbon levels are 0.5% to 0.75%. If soil organic carbon is below 0.5%, apply higher quantity of FYM or organic manures. The dose of manure and fertilizer depends upon the soil health and nutrients content. In gladiolus, the major nutrient requirement is 250 kg N, 50 kg P_2O_5 and 200 kg K_2O per ha based on nutrient removal pattern of different cultivars raised from corms as planting material. Half dose of phosphorus and potash are applied at the time of land preparation as basal dose. Remaining half dose of phosphorus and potash is top-dressed at 3-leaf stage of the crop along with half dose of Nitrogen fertilizer. Remaining half dose of Nitrogen is applied at 6-leaf stage to get quality flowering. At the time of top dressing, earthing up should be done. The residual leaf biomass and other waste biomass can be ploughed back.

Intercultural operations

The field should be kept free from weeds. The earthing up should be done at the time of fertilizer application or 3 to 4-leaf stage. It provides support to plant and prevents exposure of corms. Second earthing up is to be done one month after first earthing up or at 6-leaf stage.

Harvesting of spikes and storage of corms

For local market, spikes are harvested when the first floret is open, whereas, for distant markets when the lowermost 2 to 3 florets are showing colour, by leaving atleast 4-leaves intact on the plants for proper development of corm and cormels. The corms are lifted 6 to 8 weeks after flowering. The lifted corms should be cleaned and shade dried for 5 to 6 days. The stalk and old dried corm should be removed. Then, corms should be treated with Carbendazim (2 g/Litre) and Captan (2 g/Litre), dried under shade and cold stored at 4°C to 6°C.

Disease and Insect-pest management

The gladiolus is attacked by fungal, viral and bacterial pathogens as well as insects and mites. *Fusarium* wilt caused by *Fusarium oxysporum* f.sp. *gladioli* is a severe problem. The fungus is carried in corm/cormel and in soil. Yellowing of older leaves, and wilting of plants is observed. Use of healthy corms, clean cultivation, treatment of corms and cormels with Carbendazim (2 g/Litre) and Captan (2 g/Litre) for 20 minutes before planting and after harvesting is absolutely important to manage this disease. Destroying infected corms, using resistant/tolerant varieties and crop rotation are also recommended.

Among insect-pests attack, thrips generally feed on leaves, spikes and florets. Silver and brown streaks may be noticed on leaves affected by thrips. As the insects pupate in soil, drenching with chloropyrifos (0.1%) and spraying of dimethoate 30 EC @ 2 ml/L or imidacloprid 17.8 SL @ 0.5 ml/L when initial symptoms are noticed at two weeks interval is effective in controlling thrips.

Yield

The spike and corm yield in gladiolus vary depending on the cultivar, corm size, planting density and management practices. On an average, Arka Ranjini produces 1.8 lakh spikes and 2 lakhs corms per hectare.

For further interaction, please write to:
Rajiv Kumar, ICAR-IIHR, Hesaraghatta Lake Post, Bengaluru 560 089, Karnataka. Corresponding author *e-mail:* flori_rajiv@yahoo.co.in