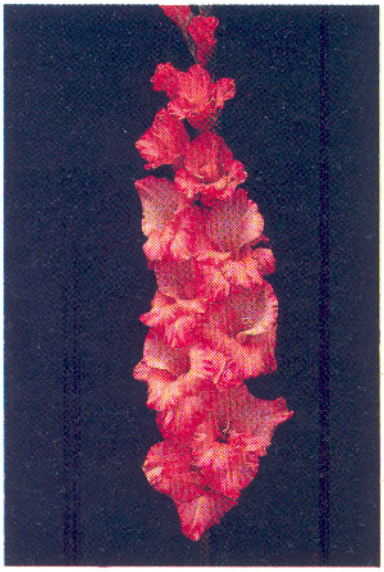
GLADIOLUS GROWING IN THE FOOT HILLS OF HIMALAYAS

INSTITUTE OF HIMALAYAN BIORESOURCE TECHNOLOGY, PALAMPUR



Gladiolus flowers are in demand for their elegant attractive spikes of different hues and good keeping quality. Gladiolus can be easily grown with a little care and attention in beds for garden decoration and cut flower production and also in pots for interior and outdoor decoration. In India, gladiolus has become a very popular flower and millions and millions of spikes are being sold every year. Gladiolus can be grown outdoor and under greenhouse conditions.

In the plains, gladiolus flowers are available during the winter months only. Very high temperature during the summer days may adversely affect the flower spikes. In the hilly areas (upto 2000 metres) with moderate summer, the gladiolus can be grown for almost throughout the year. In places where winter is severe, the gladiolus crop may be affected by frost.

Gladiolus cultivars can be classified into five groups based on the flower size viz. i) Miniature (floret diameter < 6.4 cm), ii) Small (6.4-8.9 cm), iii) Decorative (8.9-11.4 cm), iv) Standard or Large (11.4-14.0 cm) and v) Giant (> 14.0 cm). Gladiolus can also be classified into three groups on the basis of time to flower from the date of planting of corms - a) Early (flowering within 60 days), b) Medium (between 60-90 days) and c) Late (> 90 days).

Temperature & Light

For proper development of flowers, gladiolus is dependent on ample light, suitable temperature and plenty of soil moisture. However, there are a number of cultivars which are less sensitive to light, Gladiolus plants prefer a temperature regime between 10° and 25°C. It can, however, temporarily tolerate very high temperatures like 40° C provided the relative humidity is high and the soil is moist.

Soil

Gladiolus could be grown in any type of soil provided it is well drained. For good performance, it prefers a sandy loam soil, rich in organic matter. When the soil is of

heavy texture, gladiolus should be grown on raised beds or on ridges. In light soils, the plants can be grown in the flat beds. For good performance, a soil pH between 6 and 7 is ideal. However, a soil with pH ranging from 5 to 7 can also be used for gladiolus cultivation. A soil with pH lower than 5 should be treated with lime to make it suitable for gladiolus. Gladiolus plant is sensitive to salt which have a retarding effect on root growth and flowering performance of the plants.

To avoid the damage caused by soil borne diseases, gladiolus should be grown in new soils where earlier there was no cultivation of gladiolus. If it is not possible, then select a plot of land where gladiolus has not been grown for the last six years or more. Otherwise, to reduce the disease population, the soil should be sterilised.

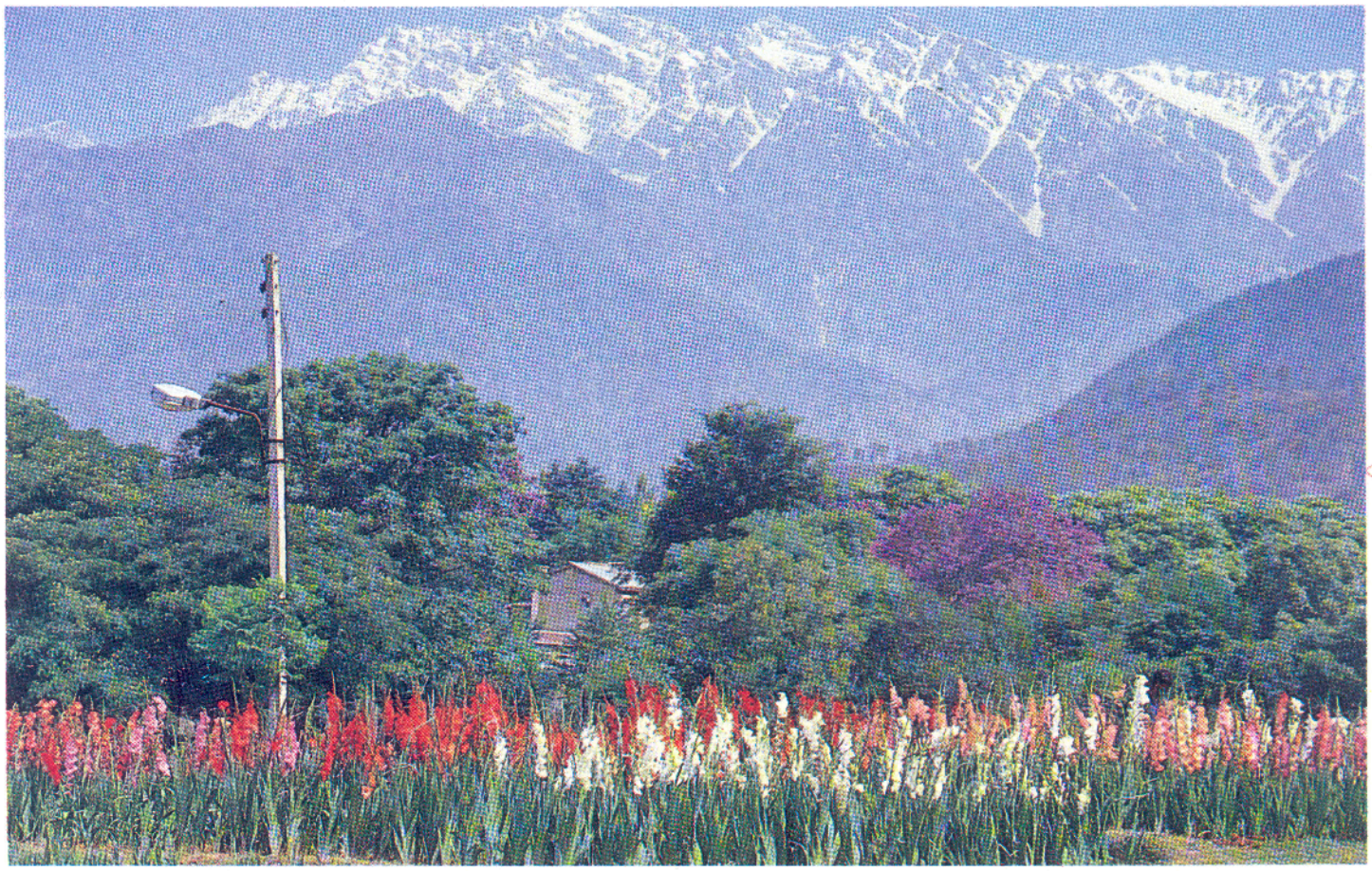
The land should be thoroughly prepared by digging the soil to a depth of 45-60 cm. If the soil is of clay type to improve the texture, sand may be incorporated with the soil. Application of well decomposed FYM @ 10 kg per m^2 will enrich the soil and will also improve the moisture holding capacity of the soil. The beds should be irrigated a day in advance before planting the corms. This will help in planting the corms in a sufficiently moist but not too wet soil. Watering during the first or second week after planting can then be reduced to a minimum.

Selection and treatment of corms

A large corm of 16/18 (measuring circumference of the corm) size as compared to a smaller (8/10 size) corm, is preferred to get taller and healthy plants, early and uniform flowering and heavier spikes.However the biggest corm is always not the best one. The performance of a high crowned corm is much better than a large flat corm. Only the sprouted corms should be selected for planting. Well retarded corms which has passed the dormancy period (3-5 months after harvesting) should be selected for planting. Two or three weeks, prior to planting, the coldstored(4°-10°C) corms and cormels should be kept in a well ventilated room with a temperature of30°-35°C to break the dormancy and to encourage the root swelling.The brown dry scales or the tunics, should be removed to encourage the sprouting. Before planting, the gladiolus corms should be disinfected properly to reduce the chance of disease attack. The disinfection of corms is done by submerging the corms in a solution of fungicide for about 1 hour. The corms may be planted immediately after the disinfection treatment.

Planting method

Corms can be planted in two ways viz. on flat beds and ridges. For high rainfall areas, it is advisable to plant in ridges. Depending on the plantation method, approximately 30-50 corms of 10/12 size per m^2 or 0.8-1.0 lakh corms are planted per acre. As the corms



start sprouting, earthing up is to be done gradually. The soil encircling the plant will help in keeping the plants erect. The planting depth of the corms depends on the type of soil and planting time. Compared to heavy soils, more deep plantations should be made in lighter soils.

Irrigation

Gladiolus plants require plenty of water during the entire growth period. The most critical period of water requirement, however, starts with the formation of third leaf and ends when the seventh leaf appears. Watering should be done early in the morning.

Weed Control

To control the weeds, herbicides like glyphosate and paraquat may be applied to the soil one or two weeks in advance before planting of corms to control the weeds. Subsequent spraying should be done between the rows and preferably in the early morning or evening hours to reduce the chance of damage.

Nutrition

The corms contain sufficient amount of reserve food material for a healthy growth during the first few weeks. It is better to defer the application of nitro- genous fertilizers till the 3rd leaf appears. Gladiolus plants do not require heavy feeding. At the time of soil preparation, 30 kg of $P_2 0_5$ and 50 Kg of $K_2 0$ per acre should be applied. After the appearance of the 3rd leaf, 20 kg of N and again after one month balance 20 kg of N should be applied.

Post harvest care

The stage of cutting of flower spikes depends on the distance of the market where the flowers are to be sold. For nearby markets, the spikes with the lowest 2 or 3 florets, in about to open condition may be harvested. For distant markets, spikes with well developed flower buds in tight bud stage with the lowest floret (tip of the floret) showing colour is harvested. It is always preferable to cut the spikes in the morning hours. Immediately after cutting, the cut ends of the spikes should be kept dipped under water. Care should be taken that the cut spikes should always be kept in an upright position to prevent bending of the spikes. The cut spikes treated with different flower preservatives will extend the longevity of the flowers. For distant markets, the spikes with unopened buds should be wrapped with paper to avoid any bruising of the flowers or to prevent withering of the flowers. The spikes should preferably be packed in perforated card board boxes of 120X60X30 cm. size.

Gladiolus is usually a seven month crop. The harvesting of corms is usually carried out during October-November in the hills and during April-May in plains. For quality corm and cormel production, the flowers should be sacrificed i.e. decapitated at the earliest opportunity. Only a few flowers (not exceeding 10% of the population) to verify true to type nature of flowers may be allowed to open.

Insects and Diseases

The gladiolus plants are affected by a number of insect and pests. Hence, regular spraying of insecticides like Rogor, Monocil, Malathion, Metasystox etc. is essential.

Among many fungal diseases which attack the gladiolus plants, Fusarium, Botrytis, Stromatinia etc. are the most destructive. To reduce disease incidence, only disease free corms should be used. Regular application of different fungicides viz. Dithane M-45, Bavistin, Benlate, Captan etc., will reduce infection. Virus infected plants should be uprooted at the earliest opportunity and to be destroyed .

Varieties for Hills

A number of gladiolus varieties have been found to grow well under sub-temperate conditions viz. Aldebaran,American Beauty Eurovision, Friendship, Friendship Pink, Gold Field, Green Woodpecker, Her Majesty, Jacksonvilla Gold, Jester,Orange Emperor Oscar, Peter Pears, Priscilla, Red Beauty, Spic & Span, Top Brass, Traderhorn, Tropic Seas, Victor Borge, Video, White Goddess,White Friendship, White Prosperity.

THIS BROCHURE IS PUBLISHED BY

Director
Institute of Himalayan
Bioresource Technology
Palampur - 176 061 (HP)

Tel: 91-1894-- 30411
FAX: 91-1894-- 30433
Telegram: CONSEARCH
E-Mail: director@csihbt.ren.nic.in

SEPTEMBER , 1998

Designed & Printed at :
Azad Offset Printers (P) Ltd.
144-Press Site, Ind. Area 1,
Chandigarh 160 002
Tel. : 0172-652349, 654411