

PERFORMANCE OF INDIGENOUS AND EXOTIC CULTIVARS OF GLADIOLUS FOR GROWTH, FLOWERING AND POSTHARVEST LIFE

काशी हिन्दू
विश्वविद्यालय



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In

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Supervisor

Prof. Anil Kumar Singh

Submitted by

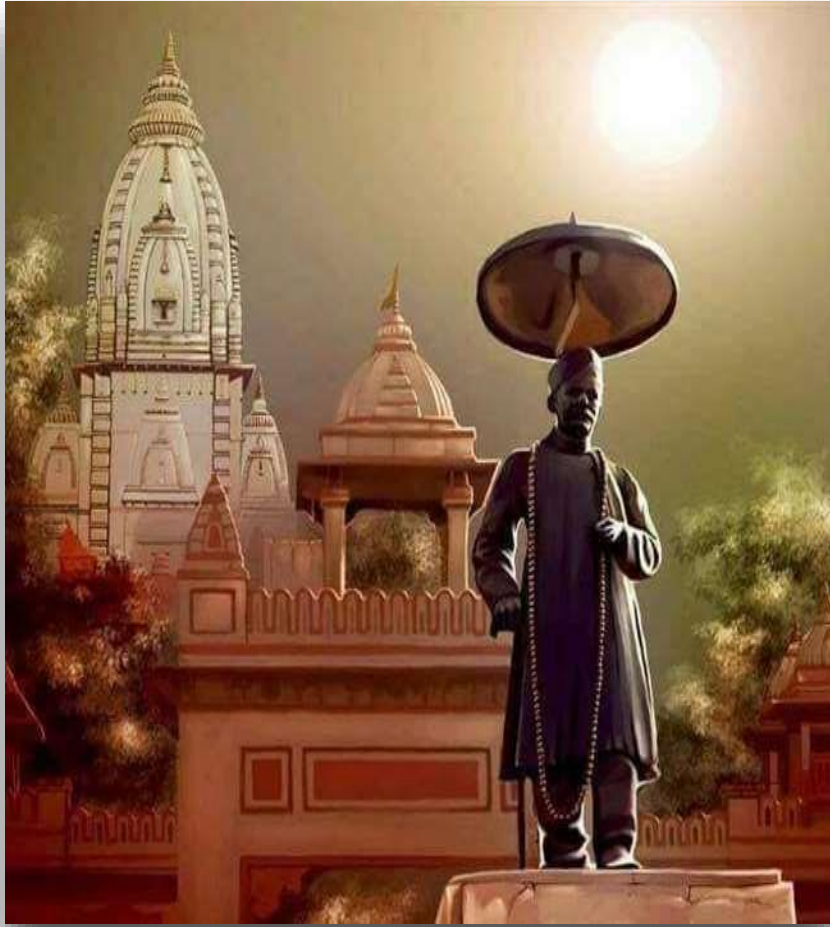
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Dedicated To

My

Parents

Mrs. Vidya Devi

Mr. Tara Chand Prasad

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Sir,

I have great pleasure in forwarding the thesis entitled “**Performance of 30 Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life**” submitted by **Mr. Anish Kumar Sah, I.D. No. 18412HOR017** and **Enrolment No. 406013** in partial fulfilment of the requirements for the award of the degree of **Master of Science (Agriculture)** in **Horticulture** from Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

This is to certify that the work has been carried out solely by **Mr. Anish Kumar Sah**, under my guidance and data forming the basis of this thesis, to the best of my knowledge, are genuine and original and no part of the work has been submitted for any other degree or distinction.

Thanking you.

Your's faithfully

Forwarded

(Anil K. Singh)
Supervisor



**PERFORMANCE OF INDIGENOUS AND EXOTIC CULTIVARS
OF GLADIOLUS FOR GROWTH, FLOWERING AND
POSTHARVEST LIFE**

by
Anish Kumar Sah

Thesis submitted in partial fulfilment of the requirements
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Date:

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(Anish Kumar Sah)

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LIST OF ABBREVIATIONS

Abbreviations	Description
%	Per cent
<	Less than
>	Greater than
≤	Less than or equal to
=	Equal to
⁻¹ and /	Per
°C	Degree celsius
cv.	Cultivars
d.f.	Degree of freedom
DAP	Days after planting
<i>etc.</i>	(<i>Etcetera</i>) and so forth
<i>et al.</i>	(<i>et albeit</i>) and others/Co-workers
Fig.	Figure
g	gram
ha	Hectare
hrs.	Hours
<i>i.e.</i>	(<i>Id est.</i>) that is
kg	Kilogram
m ⁻²	per square meter
mg	Milligram
mg/l	Milligram per litre
M	Millions (10 lakh)
Max.	Maximum
Min.	Minimum
ml	Milliliter
mm	Millimeter
No.	Number
ppm	Parts per million
®	Registered trade marks
r	Replication
RBD	Randomized Block Design
R.H.	Relative humidity
T	Treatment
vis à vis	in relation to; with regard to
<i>viz.</i>	(<i>Videlicet</i>) namely
w.r.t.	with respect to

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Chapter 1

INTRODUCTION

Horticulture is the science and art of growing plant for consumption and happiness, for the health of communities and amalgamation of nature into human civilisation (Hynes and Lopez, 2009). In simplest form, the intensive use of plant for people, like orcharding, floriculture, olericulture, gardening, *etc.* pertains horticulture. Indeed, the root words *hortus*, meaning a garden, and *cultura*, for which the dictionary refers to the word culture. Horticulture has a broad impacts on all the activities and aspects of human though, more that its literal meaning of gardening. Its origin is entwined with the beginning of agriculture. Reviewing the history of development of horticulture vis à vis the evolution of civilisation, the plant have more than mere role in food, fibre and medicine. It adds ornamental value and satisfies the appetite for ones aesthetic needs. Horticultural art and technology survived the dark ages in monastic gardens and gardening became an integral part of monastic life. Gardens and Botanical gardens are the rich depository of varieties and species of a particular plant and have a role in their sustainability. Thus, horticulture has greater role in the preserving our biodiversity and sustainable environment.

Floriculture is a branch of horticulture that deals ornamental horticulture aspects concerned with growing and marketing flowers and ornamental plants, as well as with flower arrangement. In simplest form, it addresses flower and ornamental plant cultivation and propagation of flowering plants for gardens, greenhouses, nurseries and landscapes comprising of floral industry. Floriculture crops includes bedding plants, houseplants, flowering gardens and potted-indoor and outdoor plants, dried flowers or cut cultivated greens, loose and cut flowers which may be annuals, biennials or perennials *viz.* trees, shrubs, climbers and herbaceous perennials in their growth habit. In this was, the singularity of ornamentation and aesthetic aspects are comprised within floriculture. It also includes the production of planting materials through technology and tools evolving throughout the beginning of practise of conventional horticulture brought to modern and advanced scientific era of

hybridization, biotechnology and genetic engineering. Apart from seeds, cuttings, layering, budding and grafting, the use of tissue culture and genetic modification are increasingly used for mass and convenient production of planting materials. It is well known about shortage of quality planting material has been a bottleneck (Barman *et al.*, 2005) in success of flower production, wriggling its potential growth and a making it less lucrative farming option for many, especially for farmers of countries like India, Nepal and few others, which have yet to make its profound identity in export quality large scale production, despite, suitable agro climate and fertile lands. A good planting material is best known to have better adaptability for any particular agro-ecosystem. Thus, a more scientific and precise management practice should be calibrated for varying conditions in a country. So, that the unnecessary cost input in the production can be dwarfed and economic success of the crops can be assured.

Indian has a rich culture and the tradition of floriculture has been better companion of this richness since time being. References to flowers and gardens are found in many ancient sanskrit classics like the Rig Veda (C 3000-2000 BC), Ramayana (C 1200-1300 BC), Mahabharata (Prior to 4th Century BC), Shudraka (100 BC), Ashvagodha (C 100 AD), Kalidasa (C 400 AD) and Sarangdhara (C 1200 AD). Many people's lives and tradition of community has a very significant and sacred role of flowers. The primary uses of flower has amazingly similar purposes across diverse cultures: celebration of milestone in anybody's life, cultural and religious ceremony, to gift bouquet in birthdays and marriage, garlands in death to bid one's last goodbye, also gives a natural touch in mundane living or workspace (Faust and Dole, 2021). Flowers are used as adornment and decorative purpose at different social ceremonies. It has been a tradition of offering and exchange of flowers on all social occasions, during the worship of deity and the like. In fact, *puja* which is two syllabic word, 'pu', that means 'flower' and 'ja' mean 'water or chanting'. Thus, *puja*, simply attributes to offering of flower (or fruits), offering *jal* and reciting Vedic *sloks*. In Hindu mythology, offering deity a specific flower with particular fragrance and colour, has been considered auspicious, like goddess *Lakshmi* is offered Lotus (Preferably red) and supposed to bring abundance and good fortune, the Lord of obstacle removals,

Ganesha, accepts red flowers just like goddess *Lakshmi*, Goddess of Knowledge, *Swarwati*, is pleased when offered her favourite colour yellow/white, while, offering prayers to her if one offers Indian Magnolia (Champa) or Flame of the Forest (Yellow Palash) it is considered very auspicious, the lord of ultimate power, lord *Shiva* is never offered lovely flowers as he loves Datura, Dry lotus, Kaner, Kusum, Aak, Kush, and likewise. Apart that, different colour symbolise different sense and meaning in general people's life, like, red symbolise admiration, pink romanticise and symbolise grace and innocence, white pacifies and symbolise purity and sympathy *etc.* Similarly, *Antheia* was one of the Charites or Graces of Greek mythology and was the goddess of flowers and flowery wreaths. In this way, flower has profound presence and entwined as a part of social fabric, since time immemorial.

Our love of flowers might seem frivolous, but it drives a worldwide industry worth billions of capital. The scope of floriculture is seemingly increasing every then and now. The countries involved in the import of flowers are the Netherlands, France, Germany, Italy and Japan, while, those involved in export are the Netherlands, Colombia, Israel, Spain and Kenya. The leading flower producing country in the world is the Netherlands, while, Germany is the biggest consumer of flowers. Holland (another name for the Netherlands) dominates the global flower market, re-exporting 43.7% of total world exports in 2018 (Anmala and Kumar, 2021), while, countries on the equator *viz.* Ecuador, Colombia, Kenya and Ethiopia are becoming increasingly important as a grower in the industry. For more than two century, the Netherlands remained the heart of global trade in cut flower but with transport technology developing, newer players in the flower trade are making their presence felt, shifting the dynamics of production and export. India ranks 2nd next to china under With suitable agro climate for floriculture cultivation and having an area of 309,000 hectares with a production of 1.653 million tonnes of loose flowers and 593 thousand tonnes of cut flowers as per the reports of 2017, National Horticulture Board, India is next to China and holds 2nd position in terms of production (Avilala *et al.*, 2020). According to reported by APEDA in 2018, despite the low percentage share of India's floriculture *i.e.* exports and imports were 0.40% and 0.12%, respectively but during

the same period India's total export of floriculture in monetary value was US\$ 81.94 million, while, the total imports were US\$ 25.06 million (Anmala and Kumar, 2021), that is a handsome net gain to the economy of the country. In this way, floriculture is contributing to National income. The key floricultural crops in India are rose, gladiolus, tuberose, chrysanthemum, carnation, iris, narcissus, lilies, gerbera, *etc.* Gladiolus in the global cut flower trade, it is ranked 4th after rose, carnation and chrysanthemum (Tirkey *et al.*, 2017), while, among bulbous ornamentals, 5th ranked according to report of Flower council of Holland published in 2008 was gladiolus (*Gladiolus* sp.), with tulip (*Tulip* sp.), lily (*Lilium* sp.), fressia (*Fressia* sp.) and hippestrum (*Hippestrum* sp.) in higher order to to gladiolus. Of the total area (50,000 ha) under bulbous ornamentals in the world, about 20% (9500 ha) of the area is used for gladiolus cultivation (Tomar *et al.*, 2019; Sankari *et al.*, 2012). Major gladiolus growing countries in the world are the Netherlands, UK, USA, Japan, South Africa and Australia where U.S.A. is a major producer of gladiolus and exports 6.5 million gladiolus spikes while its import is around 13 million cut stems per year (Sankari *et al.*, 2012). Now a days, commercial value of gladiolus gaining momentum in India, owing to its local and export market value. India production have gone up 75.3 millions spikes (Sankari *et al.*, 2012) that are consumed both in domestic and traded in dollar markets. Gladiolus have been attractive to the country farmer, indeed, due to attractiveness of spike itself. They have huge form of florets with dazzling colour and longer keeping quality. It produces magnificent inflorescence with variety of colours which makes it attractive and useful for flower beddings in gardens, pot crops, rockeries, *etc.* (Abbasi *et al.*, 2005). In India, it is commercially cultivated in West Bengal, Himachal Pradesh, Karnataka, Uttar Pradesh, Punjab, New Delhi (Rani *et al.*, 2007) and Sikkim (Avilala *et al.*, 2020), The area of the states of U. P., Uttarakhand and Delhi sub-urban grows gladiolus mostly for capital Delhi flower market. The important pocket areas for commercial gladiolus cultivation in U.P. are Ayodhya, Bulandshahr, Ghaziabad, Lucknow, Meerut, Muzaffarnagar, Prayagraj and Varanasi. Hence, varieties evaluation becomes necessary to find out suitable cultivars for regional specific environmental conditions.

Gladiolus is native to South Africa (Randhawa and Mukhopadhyay, 2010). It is one of the largest genera in Iridaceae family. *Gladiolus* as genus was suggested by Tournefort, which, was accepted in botanical literature by Linnaeus (Lewis *et al.*, 1972). However, the name gladiolus was originally coined by Pliny the Elder (C. ad. 23-79) as reported by firm Hutchinson (2015) from the Latin word gladius meaning a sword, for a small sword in allusion to the shape of the leaves, and known as 'Sword lily'. Gladiolus was also called 'xiphium' based on the Greek word 'Xiphos' also meaning sword (Kumar *et al.*, 2019). 'Corn flag' is another common name in Europe because of its wild occurrence as weed in the corn fields (Kumar *et al.*, 2020). *Gladiolus* species was recognised 2000 years ago growing in the corn field of Asia minors and were known as "Corn Lillies" (Larson, 2013). It belongs to sub family Ixioideae, tribe Ixieae and sub tribe Gladiolinene (Azimi, 2020; Ranjan *et al.*, 2010; Rao and Jankiram, 2006) having 260 species and more than 30,000 cultivars (Ghadage, 2020; Nalage *et al.*, 2019). The higher the genetic variability, higher would be chances of improvement of a crop, as extent of divergence existing in germ plasm provides better chances of selecting superior genotypes (Burton and Devane, 1953; Kumar *et al.*, 2011) for hybridisation programmes anticipated to abate climate stressed growing conditions (Swaroop, 2020). The basic chromosome number is $X=15$ with most of genus heteroploids having diploid, triploid, tetraploid, pentaploid, hexaploid, octaploid or hyper-aneuploid and chromosome number varying $2N=30-120$ (Singh and Sisodia, 2017). It is herbaceous, perennial plant which develops from axillary buds on the corm, usually unbranched leafy, basal and cauline leaves and sword shaped (Goldblatt *et al.* 1998).

Agro ecological conditions such as Light, temperature, rainfall, humidity and soil condition are important in flowering of this crop. In gladiolus or any bulbous plants temperature, the basis of the techniques used to control flowering during forcing is thermo periodicity (Rees, 1992), affects all aspects of plant growth including shoot emergence, leaf area and flower development (White and Warrington, 1988; Hodges, 1991; Smith and Langhans, 1962). Gladiolus is considered as winter crop in plain areas and summer crop in hilly areas (Aftab *et al.*, 2007). Gladiolus at

first was considered barely temperate crop and in India cultivation was restricted in the hills, mostly north-easter region, albeit, hilly regions of West Bengal (Kalimpong) and Sikkim remains major supplier of planting material to other parts of country (Dadlani, 1997). However, improvement in agronomic technique and management, many other regions, northern plains of Delhi, Haryana, Punjab, Uttar Pradesh, Maharastra and in south, Tamil Nadu, Karnataka and Andhra Pradesh has emerged as market of production (Dadlani, 1997) along with growth in demand and trade. Now, the extent of research and dedication of researchers have made breakthrough and enabled successful cultivation of gladiolus in tropical, subtropical and temperate climates (Ghadage, 2020; Nalage *et al.*, 2019). It is important commercial bulbous spike crop and have pivotal place as cut spike both in domestic and international export markets.

Gladiolus was introduced into cultivation towards the end of the sixteenth century. It is relatively easy to grow and is ideal for bedding and exhibition purposes. The fascinating spikes bear a large number of florets, which have exhaustive range of sizes, shades and forms with smooth, ruffled or deeply crinkled tepals (Singh, 2017a) making it the most attractive bulbous cut flower ornamental. In recent years, demand for gladiolus has increased owing to its durability in long shipping and for its fantastic colour shades from blue to white, red, yellow, pink, mauve and combinations of all the these colours (Tomar *et al.*, 2019). Except black, green and true blue, albeit, some of the hue of violet may appear near to blue in subdued light (Larson, 2013), practically all colours are available in gladiolus (Singh, 2017b). It is also ideal both for garden display and floral arrangements for table and interior decoration as well as making high quality bouquet. It is also one of the most popular landscape and cut flower industry plant (Swaroop, 2020; Mehra, 2016) and may be considered as queen of landscape when in its varying hue.

Modern types of gladioli can be classified into several sub categories based on the plant height, size of flower and their arrangement on the spike. On the basis of floret size, gladiolus is classified into 5 classes *viz.* ‘100’, designated named is ‘Miniature’ in which the diameter of floret size is less than 6.4 cm (<64 mm), ‘200’,

designated named is 'Small or miniature' in which the diameter of floret size is between 6.4 cm and 8.9 cm (≥ 64 to < 89 mm), '300', designated named is 'Decorative' in which the diameter of floret size is between 8.9 cm and 11.4 cm (≥ 89 to < 114 mm), '400', designated named is 'Standard or large' in which the diameter of floret size is between 11.4 cm and 14 cm (≥ 114 to 140 mm) and '500', designated named is 'Giant' in which the diameter of floret size is more than 14 cm (> 140 mm). On the basis of the plant height and their arrangement on the spike, gladiolus is classified into 7 sub categories viz. 'Grandifloras' or large flowered (*Grandavensis*) hybrids which are large or exhibition type gladiolus. Plants are vigorous, spike are strong and erect bearing large florets (10 to 15 cm across), arranged closely and symmetrically on 90 to 150 cm long spike, 'Primulinus' hybrids which are which are less vigorous and small flower (5 to 10 cm across), arranged in zig-zag pattern flowering on 40-45 cm long spike, 'Butterfly' hybrids are alike 'Primulinus' but spike length is shorter than 45 cm, 'Miniature' hybrids are recently developed categories that have about 40 cm spike length but the tepal is ruffled giving a unique appearance, 'Face ups' hybrids are dwarf cultivars of gladiolus with diameter of floret 5-6 cm and facing up, 'Colvillei' hybrids of (*G. tristis* $\times$ *G. cardinalis*) which are early flowering cultivars and mostly suitable for green house conditions and 'Orchidiolas' are new developed group of gladiolus by Israel that produce smaller florets that are slightly hooded on shorter and weak stems (Rao and Jankiram, 2006), winter flowering, light weight and attractive colours (Cohen and Batzilay, 1991) especially, this group of miniature gladioli could constitute attractive new flowering pot plants if dwarfed successfully (Barzilay, *et al.* 1992). In commerce, gladiolus is graded on the basis of spike length and the minimum no. of floret spike bears. 'Fancy' grade gladiolus have spike length of more than 107 cm (> 107 cm) long spike and bears minimum of 16 florets, grade 'Special' have spike length between 96 cm and 107 cm (> 96 cm to ≤ 107 cm), while, it has minimum of 15 florets in spike, grade 'standard' have spike length between 81 cm and 96 cm (> 81 cm to ≤ 96 cm) and should have minimum of 12 florets in spikes and grade 'Utility' have spike length less than 81 cm (≤ 81 cm) with minimum no. of floret should be 10.

Gladiolus has been recorded being cultivated since the era of ancient Greece. It was introduced into cultivation towards the end of the sixteenth century. After being introduced in France it quickly spread to England, Germany, Holland, and North American as documented by Lyte (1586) in *A Nieuwe Herball* or *Histoire des Plantes* in 1578. Europe introduced South African genotypes during the middle of eighteen century. *Gladiolus tristis* a close kin of *Gladiolus grandis* was first introduced from Cape region and Walat in England (Chelsea) in 1745 and *Gladiolus illyricus* is origin of Mediterranean region, while, *G. grandis* was introduced in Spain from South Africa in 1749 (Singh and Sisodia, 2017). Among such a rich species in *Gladiolus*, 180 species are South Africa origin (Manning *et al.*, 2002; Duncan 2000, 1996; Goldblatt and Manning 1998; Goldblatt 1996; Goldblatt *et al.* 1993;). *Gladiolus* breeding begin as early as 19th century and modern hybrid cultivars are the result of the hybridisation and mutation. Arora *et al.* (2002) speculates modern gladiolus hybrid (*Gladiolus grandifloras* Hort.) that have been cultivating nowadays might have developed from 23 different genotype of gladiolus. Breeding of gladiolus is carried in Britain, Czechoslovakia, France, Germany, Israel, Japan, the Netherlands, Polands, U.S.A. including a well breeding programme carried for more than 2-3 decades in India, developing several promising cultivars.

There are so many developmental programmes that initiated by Government of India mainly through the schemes of Ministry of Agriculture (National Horticulture Board, National Horticulture Mission, Horticulture Mission for North East and Himalaya States (NEH), *etc.*) and Ministry of Commerce (APEDA). National Horticulture Board (NHB), National Horticulture Mission (NHM) have influenced the awareness regarding horticulture in rural areas while Rashtriya Krishi Vikas Yojana (RKVY) further led to growth of the sector. National Bank for Agricultural Rural Development (NABARD) is providing financial assistance to the farmer to adopt protected cultivation and precision farming. There are so many research activities are being operated at several research institutions under the Indian Council of Agricultural Research (ICAR), Council of Scientific and Industrial Research (CSIR) and in the horticulture departments of state agriculture universities and under the All

India Coordinated Research Project (AICRP) on Floriculture established during 4th five year plan in 1970-1971 (Kadam *et al.*, 2020). Government of India (GOI) introduces various training related programmes for farmers and entrepreneurs. One of major thrust to expand floriculture export, by GOI is setting up International Flower Auction Board in 2002. They have even set up a number of model farms and wholesale markets in the country. The government provides a range of concession (subsidy) on seeds, planting materials, various types of equipments and most of all, airfreight for export, which have been the major hurdle before the export orientation of country, to facilitate domination of flower industry in globe and expedite the economy of country (Kumar, 2018).

Gladiolus being such a varietal rich ornamental plants and every year there is an addition of new varieties (Kumar and Yadav, 2005). The performance of any crop or variety largely depends on genotypic and environmental interaction. As a result, cultivars, which perform well in one region, may not perform same in other regions of varying climatic conditions. Hence, it becomes very much necessary to study the morphological variation, development of high yielding varieties with better quality spikes. Therefore, present investigation was initiated with the main objectives for the investigation of to find out suitable cultivar for a particular environmental condition based on the study on growth, flowering and post harvest parameters of different cultivars;

1. To see the performance of different cultivars of gladiolus for plant growth in environmental conditions of Varanasi.
2. To find out suitable cultivars for flowering parameters in gladiolus.
3. To evaluate the best of indigenous and exotic cultivars of gladiolus for postharvest life.



Chapter 2

REVIEW OF LITERATURE

Gladiolus being one of the riches in the varietal wealth and continuing demand of improved and novel cultivar, introduction of cultivar is economical and convenient approach. However, being introduced from environment that is dissimilar to prevailing conditions here. This might make cultivar prone to diseases, inviting apprehensive diseases like fungal attack. Cultivars introduced may not perform well under such varying agro-climate of local conditions of here. In early 1970, with All India Coordinated Research Project (AICRP) on floriculture, India approach towards the improvement programmes. This has lead toward the breeding of several indigenous cultivars. But, development in particular environment again further required acclimatization across the country. Thus, in this chapter, an attempt has been made to review the similar work by previous workers to evaluate the performance of these indigenous and some introduced exotic cultivars suitable to the prevailing local conditions as done in the experiment entitled “Performance of Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life”

Swaroop (2020) in a comparative study with 39 cultivars observed in the pooled data of two year found that cultivar Malviya Kundan took maximum days to flowering (117.50 days) while minimum was recorded in cultivar Punjab Glad-2 (83.75 days). The maximum height of the plant (122.50 cm) and the maximum spike length (112.50 cm) were recorded in cultivar Novalux and while minimum was recorded in cultivar Punjab Glance, both plant height (82.50 cm) and spike length (69.50 cm). w.r.t rachis length, cultivar Malviya (61.0 cm) was recorded maximum rachis length and minimum was recorded in cultivar Punjab Glance (32.25 cm). Number of florets/spike was maximum observed in cultivar Punjab Pink Elegance (19.33) and minimum was recorded in cultivar Vicki’s Glory (12.16). No. of corms/ plant was recorded maximum in cultivar Aldebaran (3.82) and minimum was recorded in cultivar Simon Cello (1.66).

Azimi (2020) studied the performance of 5 cultivar of *Gladiolus grandiflorus* impetus to recommend cultivar specific to suitability of Iran. The maximum plant height (172.88 cm), maximum length of spike (84.6 cm), number of florets (18.00) and vase life (9.33 days) was recorded in cultivar Oscar. The maximum corm weight (51.16 mm), numbers of cormlets (54.66) were observed in cultivar Red Advance.

Kadam *et al.* (2020) in an experiment impetus to identify indigenous gladiolus cultivars of commercial traits conducted at Directorate of Floricultural Research, Pune found the trait spike length in order of ascending as cultivars Phule Neelrekha (102.54 cm), Phule Ganesh (102.84 cm), Melody Open (105.50 cm), Arka Amar (110.73 cm) and maximum for Suchitra (113.37 cm). Another trait of rachis length in the ascending order are Pusa Kiran (62.22 cm), Phule Neelrekha (64.39 cm), Suchitra (65.92 cm), Phule Ganesh (67.60 cm), Sweta (68.32 cm) and maximum was recorded in cultivars Melody Open (71.06 cm) and Number of florets/spike follows cultivars Phule Neelrekha (18.11), Ps Hybrid 40 (18.22), Suryakiran (18.56), Subhangini (19.00), Pusa Suhagin (19.55) in ascending order, while, maximum was recorded in cultivars Pusa Urmi (19.56). They also classified different varieties in early, mid and late flowering cultivars based on days to spike emergence and days to colour show. Cultivars Arka Kesar and Melody Open were early bloomer, followed by cultivars Arka Amar, Arka Naveen, Phule Ganesh and Phule Neelrekha again followed by cultivar Pusa Sinduri which was categorised as late flowering.

Singh *et al.* (2020) in an experiment, impetus to evaluate vegetative and floral characters under Bundelkhand conditions, with 14 cultivars of gladiolus found that maximum and minimum plant height was recorded in White Prosperity (124.25 cm) and Punjab Morning (84.22 cm) respectively. Spike length was found maximum and minimum in White Prosperity (110.65 cm) and Red White (65.07 cm) respectively. Early days to spike emergence was recorded in cultivar Jester (90.50 days) and cultivar White Prosperity took maximum days (108.05 days). Maximum longevity (field life) of spike was recorded in cultivar Willas Pink (18.61 days) but Peter Pears recorded minimum longevity (13.28 days). Number of florets/spike was found maximum in cultivar Willas Pink (19.95) and minimum was found in cultivar Red

White (10.56). Maximum floret diameter was recorded by cultivar Willas Pink (9.66 cm) and minimum floret diameter was recorded in cultivar White Prosperity (8.27 cm). Maximum vase life was recorded in cultivar Black Star (10.22 days) and minimum in White Prosperity (6.95 days).

Kumar *et al.* (2020) in an experiment of performance of 14 cultivars under Chattisgarh Plains, found early days to spike emergence (60.49 days) in cultivar Novalux, cultivar American Beauty was early days to colour show (67.09 days), the minimum days of opening of first floret (68.25 days) was by cultivar American Beauty, the spike length was maximum observed in cultivar Saffron (78.13 cm). Cultivar White Prosperity was observed maximum length of rachis (69.81 cm) and inter nodal length (3.02 cm) was also maximum. The maximum number of florets/spike was observed in cultivar Candyman (15.03), the maximum diameter of florets was recorded in the cultivar Fancy Pink (10.73 cm), the cultivar Gunjan has recorded maximum longevity (field life) of spike (32.22 days). The maximum vase life (8.26 days) in tap water of gladiolus was observed in the cultivar Candyman.

Kaur and Bajpay (2019) conducted a study for finding suitable cultivar under prevailing conditions of Punjab with 10 cultivars of gladiolus. Growth and flowering parameters were recorded. The days to sprouting was recorded minimum in American Beauty (7.87 days) while maximum was recorded in cultivar Jester (12.70 days). The maximum Plant height (135.30 cm) and spike length (106.7 cm) was recorded in cultivar Summer Sunshine. Early days to spike emergence was recorded in Punjab Dawn (66.53 days) while cultivar Jester had late days to spike emergence (91.73 days). Cultivar Punjab Dawn took minimum days to colour show (72.27 days) while maximum was recorded in cultivar Jester (99.73 days). Opening of first floret was earlier in Punjab Dawn (80.0 days) while late in cultivar Jester (109.60 days). Cultivar Punjab Dawn had minimum diameter of first floret (9.83 cm) while larger diameter of first floret was recorded in cultivar Sarla (13.20 cm). Cultivar Arti recorded maximum sprouts/plant (2.30) while, cultivar Summer Sunshine recorded maximum floret/spike (17.13) and duration of flowering (14.27 days). Maximum no. of leaves/plant was recorded maximum in cultivar Summer Sunshine (9.13).

Verma and Sharma (2019) investigated 10 cultivars of gladiolus and w.r.t. flowering yield and quality parameter, they found cultivar Chipper White and Summer Sunshine out performed among all. The minimum number of day for spike emergence (58.73 days) and minimum days to colour show (68.20) was observed in cultivar Chipper White. The maximum spike length (75.33 cm), the maximum number of florets per spike (12.86) as well as maximum (57.53 cm) length of rachis, the maximum number of florets opened at a time (2.86) and maximum flowering (field life) duration (23.93) and vase life (7.06) in tap water were observed maximum in cultivar Summer Sunshine.

Nalage *et al.* (2019) in an experiment conducted among different cultivars of gladiolus under Konkan conditions of Maharastra found that cultivar Phule Ganesh proved to be superior and took minimum days to sprouting of corms (4.0 days) while followed by maximum for spike length (88.61 cm), corm diameter (23.39 cm), number of florets/spike (13.47) and vase life (11.47 days). The maximum number of corms sprouted (19.78), thus highest sprouting percentage (98.89 %) was recorded in cultivar Phule Tejas. The maximum number of leaves/plant (12.97), number of spikes/hills (2.33), thus greater yield spikes hactre⁻¹ (0.345 M) was recorded in cultivar G-11 while cultivar Rose Supreme was recorded minimum days in emergence of spike (45.4 days) and the maximum number of cormels/plant (138.87) was recorded in cultivar Phule Perna.

Tomer *et al.* (2019) in an experiment evaluated for growth and flower production of gladiolus under Bhagpat district of U.P. found that cultivar Jester Gold was recorded to have significant height with maximum plant height (69.70 cm) and maximum length of leaf (60.25 cm) among 18 different cultivars of gladiolus. Cultivar Picotes recorded maximum number of leaves/plant (20.25), spike length (120.25 cm) and size of floret (13 cm). Rachis length (50.75 cm) was maximum observed in cultivar Red Beauty. Maximum width of the longest leaf (4 cm) was recorded in two cultivars Picotes and Jester Gold. In mean average days, the first emergence of spike (65.60 days) and opening of first floret (71.40 days) were

recorded in cultivar Gulai. Maximum number of florets/spike (17.15) was recorded in cultivar Sancere.

Safeena and Thangam (2019) studied under humid agro climatic conditions of Goa reported that the maximum plant height (87.58 cm), leaf length (80.56 cm) with significantly maximum no. of leaves/plant (19.6) was observed in cultivar Arka Amar. Leaf width (3.86 cm) was significantly maximum for cultivar Jester Gold. After the onset of reproductive phase, the earliest (minimum days) emergence of spike (56.33 days), minimum days for opening of first pair of florets (64.40 days) were observed in cultivar Arka Gold and was found earliest in heading. Significantly maximum no. of spikes/plant (2.8) was recorded in cultivar Arka Amar. Length of spike (100.56 cm) was recorded maximum in cultivar Darshan whereas cultivar Novalux yellow produced shortest (minimum length) spike (44.75 cm). Maximum florets/spike (14.02) with significantly higher weight of the spike (67.56 g) and flower spikes remained attractive (vase life) for longer time (9.40 days) were observed in cultivar Arka Amar. Cultivar Darshan was observed maximum length of the floret (10.46 cm) and cultivar Arka Gold was found to have maximum diameter of the floret (10.20 cm). Results on corm and cormel characteristics showed that cultivar Arka Amar produced maximum corm diameter (4.41 cm), number of corms/plant (3.20), weight of corm (32.97 g) and significantly high no. of cormels/plant (32.12). Cultivar Cormel weight/plant (2.64 g) was significantly higher in cultivar Darshan.

Islam *et al.* (2017) conducted an experiment to evaluate adaptability and performance of 4 cultivars of gladiolus the climatic conditions of Tista Mendar Flood plain Agro Ecological Zone in Bangladesh. The maximum plant height was recorded in cultivar BARI gladiolus-5 (85.13 cm) followed by cultivar BARI gladiolus-4 (80.47 cm) in the year 2015 while the next year in 2016, the maximum plant height was recorded in cultivar cultivar BARI gladiolus-4 (107.09 cm) followed by cultivar BARI gladiolus-5 (97.79 cm). Albeit, the minimum plant height, in both year 2015 and 2016, was recorded in cultivar BARI gladiolus-1 (67.83 cm and 70.03 cm respectively). The no. of florets/spike, spike length and rachis length were recorded maximum in cultivar BARI gladiolus-1 (13.20, 103.6 cm and 55.33 cm respectively)

in year 2015 and in year 2016, maximum was recorded in BARI gladiolus-4 (19.41, 150.0 cm and 61.72 cm respectively). The minimum no. of florets/spike, spike length and rachis length were recorded in cultivar BARI gladiolus-4 (11.20, 82.80 cm and 39.97 respectively) in year 2015 and in year 2016 it was recorded in cultivar BARI gladiolus-5 (12.98, 129.57 cm and 52.92 cm respectively). The maximum wt. of the single spike and spike yield were recorded in cultivar BARI gladiolus-5 (160.0 g and 28.91 t ha⁻¹ respectively) in year 2015 and in year 2016, it was recorded in cultivar BARI gladiolus-4 (177.81 g and 27.95 t ha⁻¹ respectively). The minimum wt. of the single spike in cultivar BARI gladiolus-1 (86.0 g and 104.7 g in year 2015 and 2016). The minimum spike yield was recorded in cultivar BARI gladiolus-3 (14.83 and 15.64 t ha⁻¹ in 2015 and 2016 respectively).

Singh *et al.* (2017a) in an experiment impetus to study vase life and corm parameters in gladiolus found that the cultivar Trader horn was superior and recorded maximum number of cormels/plant (70.83). The cultivar Legend was noted best yielding variety w.r.t. maximum number of corms/plant (2.50) and number of corms/plot (37.67). The cultivar Darshan recorded maximum vase life (17.56 days) and cultivar Hunting Song recorded maximum number of opened florets at a time (6.78).

Singh *et al.* (2017b) in an experiment conducted, among several Indian and exotic varieties of gladiolus, in Eastern Uttar Pradesh. conditions, Purple Flora was observed for earliest spike emergence (73.67 days), days to colour show (86.33 days) and opening of first (88.67 days), third (90.00 days) and fifth florets (90.56 days). However, maximum spike length (74.39 cm) was recorded with variety Anjali. Cultivar Red Beauty resulted into maximum rachis length (62.40 cm) whereas, minimum spike length (45.22 cm) and rachis length (30.67 cm) was observed in White Prosperity. Maximum number of florets/spike (14.78) was recorded with variety American Beauty. Cultivar Pusa Kiran recorded maximum diameter of first (10.46 cm) and fifth (10.28 cm) florets.

Kujur *et al.* (2016) in an experiment of impetus to evaluate 14 different cultivars of gladiolus under agro-climatic conditions of Chhattisgarh plains found that

cultivar Punjab Dawn took minimum days to sprout (8.66 days), early days to spike emergence (55.66 days) and minimum days to first floret opening (64 days). Number of sprouts/plant (2.60), number of corms/plant (2.66) and number of florets/spike (15.13) was recorded maximum for cultivar White Prosperity. Plant height (99.93 cm) and spike length (81.19 cm) and was maximum recorded in cultivar GS-2. Cultivar Candyman recorded maximum number of leaves/plant (7.93), maximum corm weight (95.40 g) and maximum diameter of corm (6.68 cm). Cultivar Novalux recorded maximum leaf length (48.56 cm) and maximum rachis length (65.63 cm). Maximum number of cormels/plant was recorded in cultivar Advantage (111.73) and maximum weight of cormels/plant was recorded in cultivar Gunjan (45.33 g).

Sarkar *et al.* (2016) in an experiment of varietal performance test of 10 indigenous and exotic variety of gladiolus in North Eastern Himalayan region by the mean pooled result of experiment conducted in 2008-09 and 2009-10 found following outcomes. Early sprouting of corm and maximum vase life of spike in tap water (9.67 days) was found with the variety American Beauty (18.60 days) where as maximum number of days to sprouting (33.45 days) and maximum size (width) of floret (14.42 cm) was found in cultivar Jester. Cultivar White Prosperity have maximum rachis length (92.28 cm) and also found maximum field life (longevity) of spike (13.59 days). Spike length (125.36 cm) was found maximum in cultivar Candyman and also maximum number of florets/spike (19.92).

Chaurasiya and Mishra (2015) with an aim to evaluate most suitable among 5 cultivar in Manipal, Surguja district of Chattisgarh found that cultivar White Prosperity (7.25 days) followed by Punjab morning (9.0 days) were early sprouting, cultivar White prosperity (3.5) followed by cultivar Punjab morning (3.25) produced more plants/corm and cultivar White Prosperity recorded maximum plant height (48.25 cm). The floral characteristics showed that cultivar White prosperity (55.20 days) followed by cultivar Delhi Local (48.50 days) were earlier for spike emergence, cultivar White prosperity (45.30 days) followed by cultivar Delhi Local (48.50 days) took minimum days to flowering, maximum number of florets/spike were produced by cultivar White prosperity (20.25) and Maximum spike length (90.25 cm) and

longevity (field life) of spike (8.20 days) was recorded for cultivar White Prosperity. The corm and cormels characteristics showed that cultivar Delhi local produced more number of corms/plant (3.20) and maximum number of cormels (2.50). Cultivar White prosperity accumulated maximum corm size (6.22 cm) followed by cultivar Punjab morning (5.50 cm) and cormel size was maximum for two cultivars, Delhi Local and Punjab morning jointly (1.25 cm), maximum corm weight was recorded in cultivar Punjab Morning (60.30 g).

Momin *et al.* (2015) experimented with 22 cultivars under agro-climatic condition West Garo Hills and found that sprouting of corms was earliest in cultivar Interpid (6.67 days) but took maximum time in cultivar Wedding Bouquet (29.00 days). Maximum plant height (97.13 cm), leaf length (65.47 cm), number of leaves/plant (9.80), spike length (109.77cm) and rachis length (65.50 cm) and corm weight (93.00 g) in cultivar Candyman, whereas, leaf width (5.27cm) was recorded in cultivar Wing Wang Sang. Earliness in spike emergence (68.58 days) and days opening of first floret (77.53 days) was recorded in cultivar Eight Wonder, florets/spike (15.13) in Wedding Bouquet. Longevity (Field life) (14.10 days) and maximum vase life under tap water was observed in cultivar Charm Glow (11.73 days) when checked against cultivar Candyman.

Sudeep *et al.* (2015) in an experiment on performance of 10 gladiolus cultivars conducted in Mudigere hill zone of Karnataka found early days to spike emergence (62.80 days) and opening of first floret (73.87 days) in cultivar Red Majesty while it was maximum (late) for both in cultivar Jester (79.00 days and 91.80 days)., The spike length recorded in cultivar Red Ginger (114.23 cm) was maximum and it was statistically at par with cultivar White Prosperity (107.73 cm) and minimum in cultivar Her Majesty (70.3 cm). Number of florets/spike was maximum in cultivar White Prosperity (18.27) and minimum was recorded in cultivar Her Majesty (10.80). Maximum diameter of floret (11.63 cm) was recoded in cultivar American Beauty and it was minimum in cultivar Her Majesty (8.89 cm). Spike yield was maximum in cultivar Summer Sunshine (0.116 M spikes/hectare) followed by cultivar Red Ginger (0.105 M spikes/hectare) and Red Majesty (0.101 M spikes/hectare), whereas,

minimum in cultivar Jester (59259.00 spikes hectare⁻¹). Among the cultivars studied, vase life was maximum in cultivars American Beauty (11.67 days), whereas minimum in cultivar Her Majesty (7.33 days). Number of corms/plant was maximum in cultivar Summer Sunshine (1.47). Maximum corm diameter was recorded in cultivar Summer Sunshine (7.64 cm) and minimum was recorded in cultivar Her Majesty (5.39 cm). In terms of weight maximum yield of corms/hectare was recorded in cultivar Summer Sunshine (9058.67 kg) and minimum in cultivar Her Majesty (921.67g).

Rao and Sushma (2015) in an experiment with seven cultivar of gladiolus for 4 consecutive year (2010-14) conducted at Floricultural Research Station, Hyderabad and cultivar IIHR-G-12 recorded maximum plant height (101.1 cm), spike length (90.1 cm), number of plants/hill (2.0), number of spikes/plant (2.1), number of corms/plant (2.1), diameter of cormel (1.45 cm) and early days to spike emergence (57.1 days) and flowering duration of first floret (68.5 days). The cultivar White prosperity recorded maximum number of leaves/plant (8.6), width of leaf (2.9 cm), number of florets/spike (12.5), size of second floret (10.0 cm), number of cormels/plant (40.1), weight of cormels/plant (50.0 g). Pusa Kiran recorded maximum length of rachis (38.8 cm) and size of corm (5.37 cm). Pusa Shubham recorded maximum in weight of corms/plant (60.6 g).

Naresh *et al.* (2015) tested the performance of eight gladiolus hybrids against an adopted variety Dhiraj as a check under coastal Andhra Pradesh conditions. Plant height and leaf area at maturity was recorded at maximum in the hybrid White Prosperity as compared to other hybrids and check variety. White Prosperity produced the longest spikes, however spike yield/plot was maximum (63.46) in the hybrid Darshan followed by White Prosperity (52.26) as against the check variety Dhiraj (42.93).

Bhatta *et al.* (2015) evaluated the performance of 16 cultivars of gladiolus under South Gujarat agro-climate conditions. The result is outcome of 3 years of pooled data (2008-09, 2009-10 and 2010-2011) and found cultivar Her Majesty had maximum plant height (73.04 cm), cultivar Sancerre recorded maximum area of leaf

(104.79 cm²) and was found superior w.r.t. qualitative traits like floret (diameter) size (10.47 cm), no. of florets/spike (14.29), length of spike (76.86 cm), length of rachis (43.78 cm), longevity (field life) spike (17.80 days), vase life (10.31 days) and weight of corms (48.74 g). Early flower spike emergence (52.82 days) and minimum opening of first floret (65.36 days) was recorded in cultivar Green Star. Cultivar *Psittacinus* Hybrid recorded the maximum number of leaves/plant (9.09) and spikes/plant (2.64). Daughter corm diameter (7.56 cm) and corms/plant (2.53) was obtained maximum in cultivar Candyman and Priscilla, respectively. Whereas, maximum weight of cormels/plant (11.10 g) was recorded in cultivar Gunjan.

Sarkar and Chakraborty (2014) conducted an experiment of varietal performance again among 15 indigenous and exotic variety of gladiolus. The result of the experiment is the mean pooled result of the same experiment conducted in North Eastern Himalayan Region twice, 2012 and 2013. They recorded that cultivar Jester had maximum number of days to flowering (102.83 days), length of spike (121.03 cm), length of rachis (87.60 cm), number of florets opened at a time (7.41), size of floret (14.42 cm). Cultivars Darshan was recorded to have maximum field life of spike (21.48 days) and maximum vase life of spike in tap water (8.63 days), cultivar Kumkum was recorded to have maximum number of florets/spike (18.99), cultivars Swarnima was found to have highest longevity (field life) of spike (13.90 days).

Kadam *et al.* (2014) found in an experiment with 26 gladiolus cultivars, that cultivar Peter Pears (3.40 days) took the minimum days required for sprouting, whereas early days to spike emergence (86.33 days) and first floret opening (100.33 days) in cultivar Hunting Song. Maximum plant height (115.87 cm) and spike length (101.20 cm) were found in cultivar Amsterdam, whereas maximum rachis length (73.39 cm) was recorded in Snow Princess. Snow Princess and Priscilla recoded maximum number of florets/spike (18.60) and maximum florets size (9.77 cm) respectively. The cultivar Yellow Stone was found with maximum number of corms/plant (2.68), whereas highest average corm weight (71.60 g) and corm size (64.87 mm) were recorded in cultivar Forta Rosa and highest cormels weight (17.50 g) in cultivar Argentina. The cultivars Arka Amar, Chandani, Dhanvantari, Punjab Down,

P.S. Hybrid, Phule Ganesh, Shahanoda, Arka Naveen, Melody Open, Phule Neelrekha, Punjab Glance, Pusa Shubham, Suryakiran, Pusa Suhagin and Urmi were early sprouting and recorded 9-12 days to sprouting, cultivars Sweta, Gunjan, Shobha, Solan Shringar, UHFS Glos HB-11-10, Arka Darshan and Arka Kesar recorded 13-16 days for sprouting, cultivars Gulal, Suchitra, Swarnima, Aarti, Punjab Pink Elegance and Pusa Sinduri recorded 17-20 days for sprouting and the late sprouting was recorded in cultivars Bindiya, Pusa Kiran, Tambri and Punjab Lemon Delight.

Geeta *et al.* (2014) in an experiment comprising 15 cultivars of gladiolus to decide growth, yield and flower quality found that cultivar Summer Sunshine produced maximum plant height (85.70 cm), cultivar Vedanapoli and cultivar Summer Sunshine have maximum number of leaves/plant (9.60) each, early days to spike emergence (88.20 days) in cultivar Eight Wonder while early performer was cultivar Punjab Morning which had minimum (59.90 days). Cultivar Delhi Local recorded minimum days to show colour stage (70.90 days) in first, second and third floret and maximum days to show colour stage in cultivar Eight wonder (98.70 days) followed by Jester Gold (98.20 days). Spike length and rachis length was recorded maximum in cultivar Red Majesty but the number of florets/spike (17.30) was surpassed by cultivar Eight wonder. Cultivar Delhi Local had maximum number of spikes/plant (3.0) but the diameter of florets was recorded significantly low and it was minimum (6.99 cm) which may be the cause of more spikes/plant. while diameter of florets was maximum in cultivar Red Majesty (11.45 cm). Vase life was observed longest for cultivar Candyman (10.60 days) and minimum for cultivar Her Majesty (7.10 days). Cultivar Delhi Local found to have maximum number of daughter corms/plant (3.50) but the diameter of the daughter corm was recorded minimum (4.46 cm) and also the weight of daughter corms/plant was also found minimum (33.67 g). The maximum diameter and weight of the daughter corms was recorded in Punjab Morning (6.30 cm) and Summer Sunshine (84.01 g/plant) respectively. No. of corms/plant was recorded minimum in Punjab Morning (18).

Saleem *et al.* (2013) in their study for suitability of five potential, exotic cultivars of gladiolus Cantate, Corveira, Eminence, Essential and Fado for

commercial production found cultivar Essential was early spike bearer (74.2 days), maximum number of leaves/plant (8.8), number of florets/spike (13.9), length of spike (46.8 cm), diameter of spike (1.0 cm), vase life (14.3 day), cormel diameter (0.7 cm) and average weight of a cormel (0.3 g). Cultivar Fado was earlier sprouting (4.6 day) and maximum number of cormels/clump (283.0) was recorded. while leaf area and spike length was maximum in cultivar Cantate (98.6 cm² and 84.7 cm, respectively). Early days to spike emergence (103.5 day) in cultivar Eminence.

Shaukat *et al.* (2013) found in an adaptability and performance of five cultivars of Gladiolus that cultivar Applause took minimum days for sprouting (8.33 days), days to flowering (66.33 days) and days for spike emergence (62.89 days) while maximum plant height (160.0 cm), florets/spike (20.66), spike length (90.0 cm), no. of cormels (90.0) and cormel weight (2.01 g). Cultivar Fidelio produced maximum corm/plants(4.10), corm weight (66.78 g) and cultivar Peter pears had maximum longevity (20.55 days) and no. of corms (5.33).

Susila (2013) in a study, under in Visakhapatnam district of Andhra Pradesh, to find out the suitable gladiolus, cultivar Tilak were found to have maximum plant height, length of the spike and number of florets per spike. Maximum number of leaves/plant were found in cultivar Sindhuri. Early flowering was recorded in cultivar Meera while both cultivar Meera and Sindhuri were bearing larger size of florets.

Kumar (2009) in an investigation carried on 16 exotic cultivars of gladiolus for cut flower and cormel production during 2003-04 at Research Complex of ICAR in North East Himalayan (NEH) region (Meghalaya) found that vegetative, reproductive, cormel and corm characteristics showed a significant differences among the cultivars studied. Cultivars Gold Beauty had maximum plant height (105.03 cm), leaf length (57.30 cm), early days to spike emergence (58.16 days), days to colour show (65.83 days) and opening of first floret (68.33 days), cultivar friendship pink had maximum spike length (70 cm), rachis length (50.05 cm), florets/spike (15.00) and durability of spikes- field life (13 days). Cultivar Green Bay had maximum corm diameter (5.76 cm), weight of corm (55.11 g), polar diameter (2.71 cm), equatorial

diameter (2.29 cm) and weight of five corm (300.00 g), however cultivar Creamy white has maximum size of floret (11 cm), no. of cormels (50.22) and weight of cormels/plant (4.05 g).

Prakash and Kumar (2009) in an experiment of performance trail of 11 cultivars of gladiolus under Western Plain Zone Conditions found that cultivar Friendship had maximum plant height (93.37 days), maximum rachis length (51.38 cm), maximum number of florets/spike (13.78) and maximum corm diameter (6.13 cm), cultivar Sylvia had maximum number of leaves/plant (9.12), cultivar White Goddess had maximum number of sprouts/plant. Number of corms in a plant (11.0) was maximum in cultivar Priyadarshini, maximum spike length (82.13 cm) were found in cultivar Dassio.

Ramachandrudu and Thangam (2008) under agro-climatic conditions of Goa, in an experiment impetus to study performance of 8 gladiolus cultivars, comparing all the results of winter season planting, found that the cultivar Rose Supreme records maximum plant height (78.05cm) whereas minimum was recorded in variety Dhiraj (62.38 cm). Cultivar Dhiraj also had recorded maximum number of leaves/plant (12.23) and it was significantly superior to other cultivars. Length of spike was maximum for cultivar Rose Supreme (64.76 cm) while leaf width was maximum recorded for cultivar Wigs Sensation (3.48 cm). Spikes length was maximum recorded in Wigs Sensation (125.28cm). The rachis length (50.73 cm) and number of florets/spike (17.4) were observed in cultivar Mascagni. The size (diameter) of floret was maximum in cultivar Wigs Sensation (10.80 cm). Days to harvesting was recorded earliest in White Prosperity (58.6 days) while delayed in cultivar Dhiraj (75.6 days). No. of daughter corms/plant was recorded maximum in cultivar Dhiraj (1.6), maximum cormels/plant was recorded in cultivar Rose Supreme (40.90) while both corm size (6.78 cm) and weight (100.52 g) were found maximum in Wigs Sensation.

Kumar *et al.* (2007) in a experiment done in over thirty cultivars under western Uttar Pradesh conditions, found that the cultivar Jyotsana recorded maximum for the plant height (73.50 cm), maximum length of leaf (55.59 cm), cultivar Sabnam

was recorded with maximum number of leaves/plant (24.65) and width of the longest leaf (4.10 cm). In the flowering study, cultivar Gunjan was found to have shown earliest spike emergence (62.25 days) and also opening of the first floret (70.50 days). Maximum number of florets/spike (19.25), spike length (120.25 cm) and diameter of flower (13.0 cm) were recorded in cultivar Picotttee. Maximum rachis length (50.75 cm) was found in cultivar Red Beauty and Cultivar Jester Gold had maximum number of plants/hills (4.6).

Rao and Janakiram (2006) worked on the performance of gladiolus cultivars especially comparing indigenous cultivars developed by IIHR *viz.* cultivars Darshan, Dhiraj and Kumkum against exotic cultivars *viz.* Adi and Tal tal of 'Orchidiola' hybrids developed by Israel. They observed that the plant height, spike length and rachis length were maximum in Dhiraj while minimum rachis length and floret size were recorded in Tal tal. Cultivar Darshan was early to opening of florets flower. Maximum floret size was in cultivar Kum kum whereas, cultivars Dhiraj recorded maximum number of florets/spike. Cultivar Adi recorded minimum no. of florets/spike.

Kumar and Yadav (2005) among 31 gladiolus varieties (20 Indian and 11 exotic) conducted by in Meghalaya, Pusa Dhanvantari was found superior with respect to plant height (115.83 cm), length (60.00 cm) and width of leaf (4.60 cm), leaves/plant (9.00), spike length (33 cm) and equatorial diameter of corm (2.23 cm). Cultivar Smoky Lady recorded earliest heading (63.50 day), first floret showing colour (71.22 day), full opening of first floret (73.87 day) with maximum florets open at first (3.32) while Pusa Dhanvantari was late in flowering. Among the cultivars studied, Jester Gold recorded maximum florets/spike (14.30) and longest rachis (50.16 cm). However, larger floret (10.00 cm), maximum polar diameter of conn (2.59 cm) and cormels/plant (62.00) were observed in Chantiler. Maximum diameter (6.88 cm) and weight (87.22 g) of corm was found in Pusa Archana and Pusa Sagun, respectively. Cultivar Light Purple recorded maximum cormel weight/plant (11.36 g).

Kamble *et al.* (2004) studied the performance of 9 cultivars of gladiolus for flowering and flower quality. Cultivar Snow White, showed earliness in days of spike emergence (58.20 days) and first floret opening 66.70 days) and late days to spike emergence (80.80 days) and first floret opening (98.13 days) was recorded in cultivar Magic and. The field life was recorded maximum for cultivars Magic (110.00 days) and minimum for cultivars Melody (85.1 days). Maximum spike length was recorded in cultivar Summer Sunshine (93.90cm) and cultivar. Sylvia and Cultivar Trust was recorded minimum and equal spike length (69.60 cm) and rachis length (37.70). The maximum number of florets/spike was recorded in cultivar Summer Sunshine (15.33) and minimum was recorded in cultivar Trust (11.27). Cultivar Summer Sunshine produced maximum diameter of flowers (11.91 cm) and minimum was recorded in cultivar Sylvia (6.45cm). The vase life was maximum observed in cultivars Summer Sunshine (8.33 days) and minimum was observed in cultivar Sylvia (5.33 days).

Nair and Singh (2004) found in an experiment to standardise spacing conducted in Andaman, cultivar Darshan produced the maximum number of spikes m^{-2} (24.33), or where spacing was 30 cm $\times$ 25 cm and had longest vase life. The maximum length of spike (73.01 cm) was recoded for Pusa Suhagin with bigger floret size (7.47 cm) but the spike produced was 19 m^{-2} . Pusa Suhagin also produced maximum corms/plant and cormels/plant.

These are some of only few notable work done by researcher in field of study to best suggest the cultivars based on their experimental results to recognise the importance and commercial value of certain cultivars specified for the region of experiment conducted.



Chapter 3

MATERIALS AND METHODS

This chapter deals with the description of materials used and technique followed during the course of investigation. The experiment entitled “Performance of Indigenous and Exotic Cultivars of *Gladiolus* for Growth, Flowering and Postharvest Life” was conducted from November (2019) to April (2020) at Horticulture Research Farm of Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India. The details of materials used, methodologies adopted and experimental techniques employed for the study are discussed in this chapter.

Gladiolus is herbaceous plant which develops from axillary buds on the corm, usually unbranched leafy, basal and cauline leaves and sword shaped (Goldblatt *et al.*, 1998). The fascinating spikes bear a large number of florets, which exhibit varying sizes, shades and forms with smooth, ruffled or deeply crinkled tepals (Singh, 2017b) making it the most attractive bulbous cut flower crops. Due to attractiveness of spike having huge form of florets with dazzling colour and longer keeping quality, It is florist demand ornamental. It produces magnificent inflorescence with variety of colours which makes it attractive and useful for flower beddings in gardens, pot crops, rockeries etc (Abbasi *et al.*, 2005). Physically, light, temperature, rainfall, humidity and soil condition are important in for *gladiolus*. In *gladiolus*, temperature, the basis of techniques used to control flowering during forcing is thermo periodicity (Rees, 1992), affects all aspects of plant growth including shoot emergence, leaf width and flower development (White and Warrington, 1988; Hodges, 1991; Smith and Langhans, 1962) and post harvest preparedness of spike harvested. Thirty (30) genotype of *gladiolus* on the basis of their phenotypic variability were investigated in the present experiment. During the entire investigation, all the standard cultural practices and plant protection measures were followed throughout crop stand for their growth and development.

3.1 Experimental design and Layouts

The trial was replicated thrice and laid in randomised blocked designed. The present experiment was performed in Horticulture Research Farm of Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University in Varanasi equipped with adequate facility for entire research experiment.

3.2 Agro-climatic condition

Varanasi which lies in the northern part of India and situated in Uttar Pradesh. It is located on the banks of sacred river, Ganges. This region has mainly three seasons *i.e.* summer, rainy and winter. During summer season, the temperature may rise up to 45°C which generally begins from April and lasts till June and followed by rainy season where high rainfall and humidity comes in late June or early July for about two months. On other hand, winter in Varanasi have warm days and cold nights characterized by fog. The temperature may be lowered down even below 5°C. The average rainfall is about 1100 mm per annum. Metrological data that were recored during the experimentation period is presented in Table 3.1 and graphically represented in Fig. 3.1.

3.3 Details of the experiment

3.3.1 Experimental site

Well levelled piece of land with adequate irrigation facility and proper drainage facility were ensured for experiment. Type of soil of the research area is sandy loam having fertile soil suitable for cultivation of gladiolus.

3.3.2 Experimental material

Thirty (30) cultivars of indigenous and exotic origin of gladiolus corms were collected from Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India.

Table 3.1 Weekly metrological data of experimentation during 2019-20.

WEEK K NO.	MONTH & DATE	RAIN FALL (mm)	TEMPERATURE °C		EVAPOR ATION (mm)	R.H. %		SUNSHINE HOURS
			MAX.	MIN.		MORN.	EVEN.	
1	NOVEMBER 12-18, 2019	0.0	29.0	11.2	1.8	90	41	-
2	19-25	0.0	27.3	11.3	1.7	90	52	-
3	26-02	0.0	27.7	14.6	1.2	92	56	-
4	DECEMBER 03-09	0.0	24.7	11.7	1.4	91	48	-
5	10-16	36.6	21.6	14.0	0.8	95	74	-
6	17-23	0.0	17.8	8.9	0.9	92	68	0.4
7	24-31	0.0	13.6	7.0	0.7	94	79	1.6
8	JANUARY 01-07, 2020	0.8	20.5	11.1	1.2	95	65	1.5
9	8-14	2.9	18.5	9.6	1.2	93	73	3.8
10	15-21	0.0	21.7	10.8	1.5	84	55	4.4
11	22-28	0.0	21.5	9.1	2.0	85	51	6.9
12	29-04	0.0	21.8	10.1	2.2	84	49	6.6
13	FEBRUARY 05-11	0.0	22.4	8.7	2.0	92	44	6.8
14	12-18	0.0	24.9	11.4	2.7	81	41	7.5
15	19-25	8.6	24.7	15.3	1.9	88	68	3.7
16	26-04	2.2	26.0	14.9	2.3	94	61	4.5
17	MARCH 05-11	0.0	26.4	15.4	3.1	85	58	5.6
18	12-18	45.8	26.9	16.7	2.5	93	69	6.6
19	19-25	0.0	30.9	16.9	2.5	83	40	8.3
20	26-01	0.0	33.5	18.1	3.8	73	99	9.6
21	APRIL 02-08	0.0	35.3	17.6	5.5	63	21	9.4
22	09-15	0.0	38.1	21.3	5.4	60	25	8.7
23	16-22	0.0	36.9	24.8	5.7	70	37	7.8
24	23-29	20.2	33.7	22.5	5.7	80	45	7.2
25	30-06	5.8	34.7	23.0	5.3	66	45	10.5

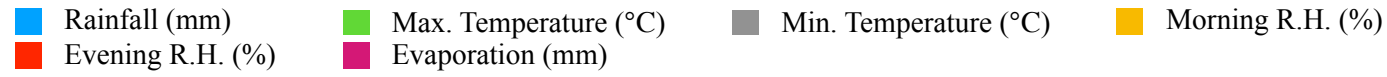
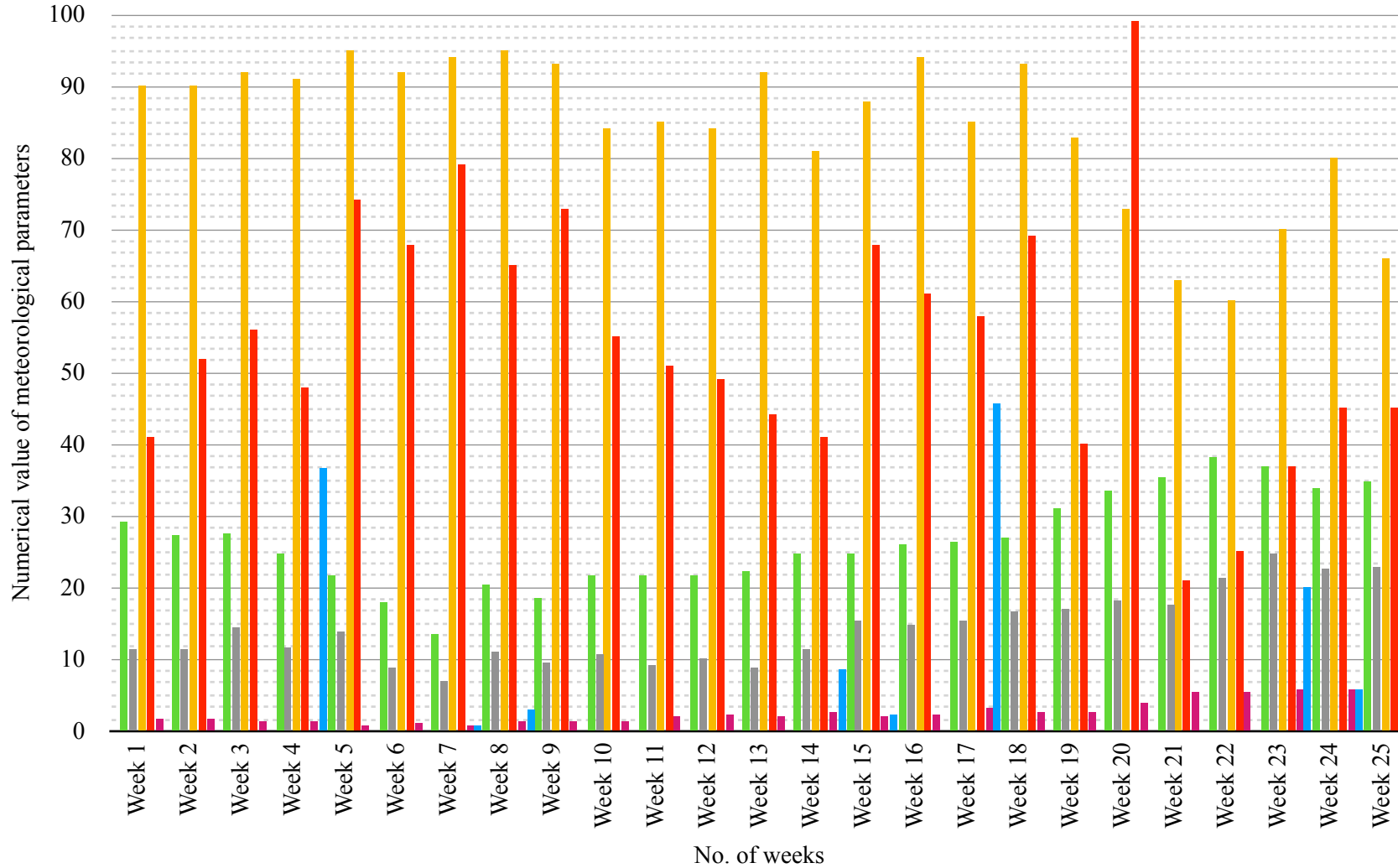


Fig. 3.1 Graphical representation of weekly metrological data of experimentation during 2019-20.



3.3.3 Layout plan

1. Design of experiment: Randomized Block Design (RBD)
2. Number of treatments: 30
3. Number of replications: 3
4. Number of plots: 90
5. Plot size: 3 m × 2 m
6. Net experimental plot area: 540 m²
7. Spacing
 - a. Row to row distance: 30 cm
 - b. Plant to plant distance: 20 cm
 - c. Depth of planting: 7-8 cm
8. Number of rows per plot: 10
9. Number of plants per row: 10
10. Number of plants per plot: 100
11. Date of transplanting: 18 November, 2019
12. Season: Winter

3.3.4 Experimental details

The experiment was conducted in RBD. The design consisting of 30 treatments and replicating each treatment thrice. The plot was laid along north-south direction separated into two column by sub irrigation channels that is derived from main irrigation channel laid along east-west direction. The sub irrigation channel leads into each plots through lateral channel. The size of plot was 3.00 m × 2.00 m and the border between the plots was 50 cm. The details of the experimental plot is outlined below in Fig. 3.2.

3.3.5 Treatments

Thirty (30) different cultivars of indigenous and exotic origin of gladiolus as treatments with their respective notation are listed in the Table 3.2.

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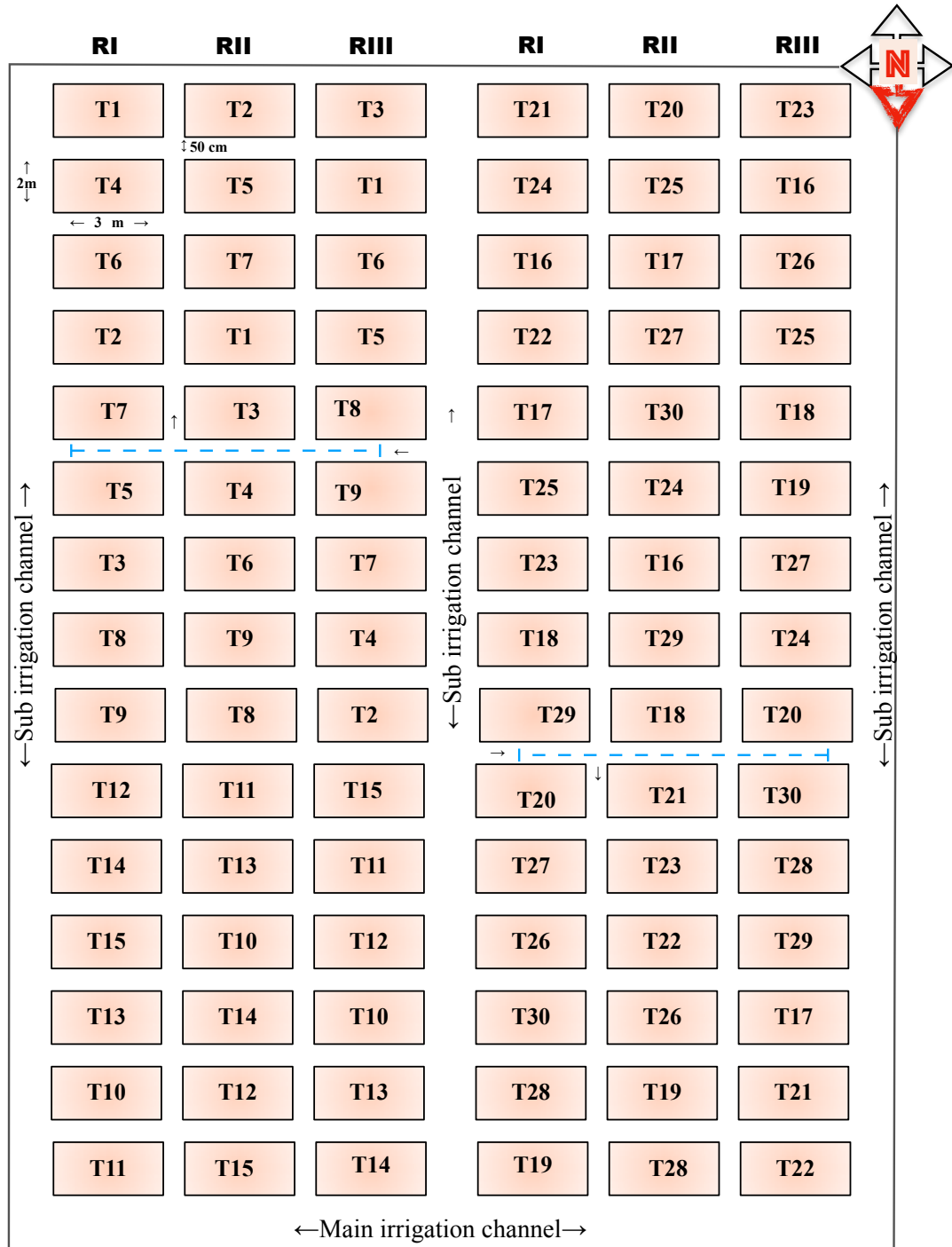
RI :Replication 1,**RII**: Replication 2,**RIII**: Replication 3,**--** : Lateral channel

Fig. 3.2 Layout of the plots showing randomisation of the treatments and replications.

Table 3.2 Lists of different treatments of gladiolus with their notation.

TREATMENTS	NOTATION
Aldebaran	T1
American Beauty	T2
Arti	T3
Chandni	T4
Darshan	T5
Dhanvantri	T6
Friendship Pink	T7
Green Star	T8
Gulal	T9
Hunting Song	T10
IIHR	T11
Jester Yellow	T12
Jyostna	T13
Mohini	T14
Nova Lux	T15
Plum Tart	T16
Priscilla	T17
Punjab Dawn	T18
Punjab Morning	T19
Pusa Kiran	T20
Pusa Shubham	T21
Regency	T22
Snow Princess	T23
Subhangini	T24
Sunanya	T25
Surya Kiran	T26
Swarnima	T27
Tiger Flame	T28
True Love	T29
White Prosperity	T30

3.4 Cultural operations

The intercultural practises such as weeding, hoeing, stalking, spraying, *etc.* were regularly and carefully done without any disturbance to the plants throughout the experiment trial. Light irrigation were provided at different critical and other proper stages of the plant growth to maintain in normal moisture for optimal health of the plants. All the cultural operations practised are discussed below.

3.4.1 Field preparation

The experimental field was prepared by ploughing through the mould board plough followed by harrowing, levelling, collection of crop debris and the field was made free from weed. The field was divided into different plots as per the requirement of treatments.

3.4.2 Corms treatment

The corms were treated with the powder of fungicides Bavistin® (Carbendazim 50% WP at 2g/l) as a protective measure against dreaded fungal attack before planting. Corms were soaked in anti-fungal solution for about 1 hour then kept it out and put in a shade place for drying. After drying, corms were ready for planting.

3.4.3 Planting

The common method of propagation of gladiolus is through corms. Healthy uniform sized (4.5-5.0 cm) treated corms were planted in along rows maintaining the spacing of 30 cm × 20 cm at 7-8 cm deep keeping terminal buds upward and later covered with soil. During winter, corms were planted on 18 of November, 2019.

3.4.4 Irrigation

Irrigated of field was uniform and frequency depending upon the water requirement of the crop and environmental condition. Irrigation was withheld 30 days in advance of harvesting of corms.

3.4.5 Weeding and earthing up

The experimental site was kept free from weed throughout the whole experimental period by regular hand weeding in order to avoid crop weed competition. Earthing up was also done to cover the exposure of corms and also to prevent the lodging of the crop.

3.4.6 Staking

With the onset of reproductive phase, the spike is prone to break due to wind or its own weight, hence, bamboo or *narkat* (reeds) stakes are used to support the plant. Cultivars True Love, IIHR required staking because of lanky vegetative growth while cultivars Regency, Hunting Song, Mohini, Gulal, *etc.* required staking due to heavy weight of spike.

3.4.7 Plant protection

Plant protection measures were adopted as per the need in order to protect the crop from infestation of pest and disease. Fusarium wilt and pest infestation was noticed during the growing period so Copper oxychloride at 2% (2 mg/100 ml) and Profenofos 40% (4 g/100 ml) + Cypermethrin 4% (4 g/l) was sprayed, respectively.

3.4.8 Harvesting of spikes

When the lowermost or in few case, if the second floret opened earlier than first floret, second florets of spike were about to open, these florets were harvested for the post-harvest studies of the spike. The harvested spikes were kept in 4% sucrose (4 g/1000 ml) solutions and the observations were recorded. After recording complete observations of the spike, the spikes were removed to facilitate the growth of the daughter corms and cormels.

3.5 Biometrical observations record

Random sampling method was adopted for recording the observation in gladiolus. Three observational plants from each replication were randomly selected and tagged from the inner side of the plot leaving the outer border rows of the plot for recording the observations. The data noted was averaged for each replication and mean data was used for the statistical analysis. The various parameters during the observation is detailed below.

3.5.1 Growth parameters

Growth is the attributes of vegetative phase of the plant. Various parameters from days to sprouting of corms to days to emergence of spike were recorded at 3 critical stages of plants viz. 30, 45 and 60 days after planting. The description of method of recording growth parameters are as follow.

3.5.1.1 Days to sprouting of corm

No. of days to 50%, 75% and 90% sprouting of the corms after planting were counted. The average was calculated and recorded in days.

3.5.1.2 No. of plants/hill

No. of plants per hill at 30, 45 and 60 days after planting were counted. The average was calculated and recorded.

3.5.1.3 No. of leaves/plant

Number of leaves per plant at 30, 45 and 60 days after planting were counted. The average was calculated and recorded.

3.5.1.4 Plant height

Plant height at 30, 45 and 60 days after planting were measured from ground level to the tip of the uppermost leaf using metre scale. The average was calculated and recorded in centimetres.

3.5.1.5 Leaf length

Leaf length at 30, 45 and 60 days after planting was measured from the base of the leaf attached to the plant to the tip of the leaf using metre scale. The average was calculated and recorded in centimetres.

3.5.1.6 Width of scape

Width of scape at 30, 45 and 60 days after planting were measured. The average was calculated and recorded in centimetres.

3.5.1.7 Leaf width

Leaf width at 30, 45 and 60 days after planting were measured using the centimetre scale. The average was calculated and recorded in centimetres.

3.5.2 Flowering parameters

Flowering is the reproductive stage of the plant. Various parameters on the flowering stage of plant from days to spike emergence to withering of last floret were recorded on daily basis. The description of method of recording flowering parameters are as follow.

3.5.2.1 Days to spike emergence

No. of days to emergence of spike from day after planting of corms was recorded. The average was calculated and recorded in days.

3.5.2.2 Days to colour show

No. of days to colour show of first floret from planting of corms was recorded. The average was calculated and recorded in days.

3.5.2.3 Opening of 1st, 3rd and 5th florets

Days to opening of first, third and fifth florets after planting of the corms were recorded in days. The average was calculated and recorded in days.

3.5.2.4 Withering of 1st, 3rd and 5th florets

Days to withering of first, third and fifth florets after planting of the corms were noted. The average was calculated and recorded in days.

3.5.2.5 Length of 1st, 3rd and 5th florets

Length of first, third and fifth florets from the basal end of floret to the tip of the floret using a metre scale. The data was averaged and recorded in centimetres.

3.5.2.6 Diameter of 1st, 3rd and 5th florets

Diameter of first, third and fifth florets was measured using a metre scale. The data was averaged and recorded in centimetres.

3.5.2.7 No. of florets opened at a time

Number of florets opened before first floret withered were counted. The data was averaged and recorded.

3.5.2.8 No. of opened florets/spike

Number of florets opened in a spike over total duration of flowering were counted. The data was averaged and recorded.

3.5.2.9 No. of florets/spike

All the florets in a spike, including both opened as well as unopened were counted. The data was averaged and recorded.

3.5.2.10 Percentage of opened florets/spike

Percentage of opened florets/spike was calculated by dividing no. of opened florets/spike by no. of florets/spike expressed in percentage. The data was averaged and recorded.

3.5.2.11 Spike length

Spike length is the length from second internode of spike to tip of spike. It was measured twice, initial spike length is measured at opening of first floret and final spike length was measured at withering of last floret. The data was recorded using a meter scale. The data was averaged and recorded in centimetres.

3.5.2.12 Rachis length

Rachis length is the length from base of first floret in spike to tip of the spike. It was measured twice, initial rachis length is measured at opening of first floret and final rachis length was measured at withering of last floret. The data was recorded using a meter scale. The data was averaged and recorded in centimetres.

3.5.2.13 Internodal length

Internodal length is length between two internodes. Internode length varies along bottom to tip. To get average, length between any four nodes (3 internodal length) was measured using a metre scale and divided by three. The averaged data was recorded in centimetres.

3.5.2.14 Withering of last floret

Days to withering of last floret after planting of the corms were noted. The average was calculated and recorded in days.

3.5.2.15 Total duration of flowering

No. of days was calculated by subtracting days to opening of first floret and days to withering of last floret. The data was averaged and recorded in number of days.

3.5.3 Postharvest parameters

Spikes was harvested when first four (4) basal florets are at colour show while 1st floret is about to opening. Spike was slant cut at second internode. Harvested spikes was brought at postharvest laboratory. Spikes was dipped in 200 ml of 4% (4g/

100ml) sucrose solution. Various parameters discussed below were noted, averaged and recorded.

3.5.3.1 Opening of 1st, 3rd and 5th florets

No. of days to opening of first, third and fifth florets were noted in days on daily basis. The noted data were averaged and recorded.

3.5.2.4 Withering of 1st, 3rd and 5th florets

Days to withering of first, third and fifth florets after planting of the corms were noted. The average was calculated and recorded in days.

3.5.2.5 Length of 1st, 3rd and 5th florets

Length of first, third and fifth florets from the basal end of floret to the tip of the floret using a metre scale. The data was averaged and recorded in centimetres.

3.5.2.6 Diameter of 1st, 3rd and 5th florets

Diameter of first, third and fifth florets was measured using a metre scale. The data was averaged and recorded in centimetres.

3.5.2.7 No. of florets opened at a time

Number of florets opened before first floret withered were counted. The data was averaged and recorded.

3.5.2.8 No. of opened florets/spike

Number of opened florets in a spike over total duration of flowering were counted. The data was averaged and recorded.

3.5.2.9 No. of florets/spike

All florets in a spike, including both opened as well as not opened were counted. The data was averaged and recorded.

3.5.2.10 Percentage of opened florets/spike

Percentage of opened florets/spike was calculated by dividing no. of opened florets/spike by no. of florets/spike expressed in percentage. The data was averaged and recorded.

3.5.3.9 Spike length on 1st, 3rd, 6th and 9th day

Spike length was measured, at four intervals *viz.* first, third, sixth and ninth day of spike cut, using metre scale. The data was averaged and recorded in centimetres.

3.5.3.10 Rachis length on 1st, 3rd, 6th and 9th day

Rachis length was measured, at four intervals *viz.* first, third, sixth and ninth day of spike cut, using metre scale. The data was averaged and recorded in centimetres.

3.5.3.11 Weight of spike on 1st, 3rd, 6th and 9th day

Weight of the spike was measured, at four intervals *viz.* first, third, sixth and ninth day of spike cut, using digital weighting balance. The data was averaged and recorded in grams.

3.5.3.12 Volume of solution uptake on 3rd, 6th and 9th day

Volume of solution uptake was measured, at four intervals *viz.* on third, sixth and ninth day of spike cut, using a measuring cylinder. The noted values were averaged and recorded in millilitres.

3.5.3.13 Withering of last floret

Days to withering of last floret, after day spike cut, was noted. The average was calculated and recorded in days.

3.5.3.14 Vase life

Vase life was calculated subtracting days to withering of last floret and days to opening of first floret. The data was averaged and recorded in number of days.

3.6 Statistical analysis of data

The treatment means for all the parameters was subjected to the following statistical analysis separately.

3.6.1 Analysis of variance (ANOVA)

Differences between the thirty treatments for different parameters were tested for significance by using analysis of variance technique on the basis of the model proposed by Panse and Sukhatme (1961).

$$Y_{ij} = \mu + g_i + y_j + e_{ij}$$

Where,

- Y_{ij} = Phenotypic observation in i^{th} genotype and j^{th} replication
 μ = General mean
 g_i = True effect of i^{th} genotype
 y_j = True effect of j^{th} replication
 e_{ij} = Random error associated with i^{th} genotype and j^{th} replication

Different treatment's level of significance was interpreted with F (variance ratio) test, treatment means was tested against the critical difference (C.D._{0.05}) at probability level of 5%, where F test was statistically significant. The observations were subjected to analyze with the help of ANOVA table by Cochran and Cox (1963) given below in Table 3.3.

Table 3.3 ANOVA Table.

SOURCE OF VARIATION	d.f	SS	MS	Fcal
Treatment	(t-1)	TrSS	TrMS=TRSS/(t-1)	TrSS/EMS
Replication	(r-1)	RSS	RSS=RSS/(r-1)	RSS/EMS
Error	(r-1)(t-1)	ESS	EMS=ESS/(r-1) (t-1)	
Total	rt-1	TSS		

Where,

r	=	Number of replications
t	=	Number of treatments
d.f.	=	Degree of freedom
RSS	=	Replication sum of square
TrSS	=	Treatment sum of square
ESS	=	Error sum of square
TSS	=	Total sum of square
RMS	=	Replication mean sum of square
TrMS	=	treatment mean sum of square
EMS	=	Error mean sum of square

A significant value of 'F' test indicates that the test is significantly different among different treatments while computing C.D. _(0.05).

$$C.V. (\%) = \frac{\sqrt{EMS}}{GM} \times 100$$

$$SE_{diff.} = \sqrt{(2EMS/r)}$$

$$C.D. \text{ at } 5\% \text{ probability level } (C.D._{0.05}) = t_{0.05 \text{ at error df}} \times SE_{diff.}$$

Where,

C.V. %	=	Coefficient of variation percentage
SE _{diff.}	=	Standard error of difference
GM	=	General mean
C.D. _{0.05}	=	Critical difference at 5% probability level
t _{0.05}	=	t-value at 5% probability level



Chapter 4

EXPERIMENTAL FINDINGS

This chapter acknowledge with the results of the investigation performed at Horticulture Research Farm of Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh in India entitled “Performance of Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life” during the winter season of 2019-2020 to evaluate vegetative, flowering and postharvest phases of 30 different gladiolus cultivars.

4.1 Growth parameters

Parameters recorded at vegetative phase in different cultivars of the experimental trail on gladiolus. Growth parameters such as sprouting of corms, no. of plants/hill, no. of leaves/hill, plant height , leaf length, width of scape and leaf width has been analysed, discussed under following headings and graphically represented in form of bar graph.

4.1.1 Days to sprouting of corm

Number of days to 50%, 75% and 90% sprouting of corms after planting of gladiolus is discussed under sub headings below.

4.1.1.2 Days to 50% sprouting

No. of days to 50% sprouting of corms of 30 cultivars of gladiolus is presented in Table 4.1 and graphically represented in Fig. 4.1.

The result showed that maximum days to sprouting 50% was recorded in cultivar Punjab Dawn (20 days) and was significant to all other cultivars except cultivar Nova lux, which was statistically at par with it and the result was followed by cultivars Jester Yellow, Pusa Kiran, Jyotsna, Mohini, True love, American Beauty, Darshan, Pink Friendship, Green star, Swarnima and Punjab Morning.

The minimum days to sprouting 50% (8 days) were recorded in cultivars Aldebaran and Regency and were significant to all other cultivars except those which were statistically at par with cultivars Arti, Chandni, Dhanvantri and Pusa Shubham. The result was followed by Priscilla, Snow Princess, Subhangini, Tiger Flame, Gulal, Hunting Song, IIHR, Plum Tart, Sunanya, Surya Kiran, White Prosperity.

4.1.1.2 Days to 75% sprouting

No. of days to 75% sprouting of corms of 30 cultivars of gladiolus is presented in Table 4.2 and graphically represented in Fig. 4.2.

The result showed that maximum days to 75% sprouting (24 days) were found in cultivar Nova Lux and Punjab Dawn and were significantly late, with all other cultivars statistically non-significant. The result was followed by cultivars Friendship Pink, Mohini, Pusa Kiran, Jester Yellow, Swarnima, Green Star, Jyostna, American Beauty, IIHR, Darshan, Punjab Morning and True Love.

The minimum days to 75% sprouting (10 days) were taken by cultivars Aldebaran, Arti and Regency and were significant to all other cultivars excepts those which are statistically at par *i.e.* cultivars Chandni, Pusa Shubham, Snow Princess and Tiger Flame and the result was followed by Hunting Song, Subhangini, Sunanya, Dhanvantri, Gulal, Plum Tart, Priscilla, Surya Kiran and White Prosperity.

4.1.1.3 Days to 90% sprouting

No. of days to 90% sprouting of corms of 30 cultivars of gladiolus is presented in Table 4.3 and graphically represented in Fig. 4.3.

The result showed that maximum days to 90% sprouting was found in cultivar Mohini (30 days) and was significant to all other cultivars excepts those which were statistically at par *i.e.* cultivars Jester Yellow, Nova Lux, Punjab Dawn and Pusa Kiran and the result was followed by Friendship Pink, IIHR, Swarnima, Gulal, True Love, American Beauty, Chandni, Darshan, Dhanvantri, Punjab Morning, Pusa Shubham, Subhangini and Priscilla.

The minimum days to 90% sprouting was found in cultivars Regency (11 days) and was significant to all other cultivars excepts cultivar Snow Princess which was statistically at par with cultivars Regency. The result was followed by Hunting Song, White Prosperity, Arti, Sunanya, Plum Tart, Surya Kiran, Aldebaran, Jyostna, Green Star and Tiger Flame.

4.1.2 No. of plants/hill

Number of plants per hill of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.2.1 No. of plants/hill at 30 DAP

No. plants/hill at 30 DAP for 30 cultivars is presented in Table 4.4 and graphically represented in Fig. 4.4.

The result showed that the maximum no. of plants per hill was found in cultivar Pusa Kiran (2.67) followed by cultivars Pusa Shubham, Jyostna, Regency, Priscilla, Sunanya and Hunting Song, which were statistically at par with cultivar Pusa Kiran. The result was followed by Chandni, Gulal, Arti, Surya Kiran, Tiger Flame, Nova Lux and Aldebaran.

The minimum no. of plants per hill were found in cultivars Jester Yellow and Punjab Dawn (1.0) followed by cultivars American Beauty, Subhangini, Punjab Morning, Friendship Pink, Green Star, True Love, Plum Tart and Swarnima, which were statistically at par with cultivar Jester Yellow and Punjab Dawn. The result was followed by cultivars White Prosperity, IIHR, Darshan, Dhanvantri, Mohini and Snow Princess.

4.1.2.2 No. plants/hill at 60 DAP

No. plants/hill at 45 DAP for 30 cultivars is presented in Table 4.5 and graphically represented in Fig. 4.5.

The result showed that the maximum no. of plants per hill was found in cultivar Pusa Kiran (3.33) followed by cultivars Pusa Shubham, Priscilla and Regency, which were statistically at par with cultivar Pusa Kiran. The result was followed by Jyostna, Sunanya and Hunting Song.

The minimum no. of plants per hill was found in cultivars Punjab Dawn (1.17) followed by cultivars American Beauty, Subhangini, Friendship Pink, Punjab Morning, Jester Yellow, Green Star, True Love, Swarnima, Plum Tart, White Prosperity, IIHR, Mohini, Nova Lux, Snow Princess, Darshan, Dhanvantri, Surya Kiran, Tiger Flame, Arti, Aldebaran, Gulal and Chandni, which were statistically at par with cultivar Punjab Dawn.

4.1.2.3 No. plants/hill at 60 DAP

No. plants/hill at 60 DAP for 30 cultivars is presented in Table 4.6 and graphically represented in Fig. 4.6.

The result showed that the maximum no. of plants per hill was found in cultivar Pusa Shubham (3.37) and was significant to all other cultivars except Pusa Kiran, which was only statistically at par with cultivar Pusa Shubham, followed by cultivar Regency, Jyostna and Priscilla.

The minimum no. of plants per hill was found in cultivars American Beauty (1.20) followed by Friendship Pink, Subhangini, Punjab Morning, Green Star, True Love, Swarnima, Plum Tart, Punjab Dawn, White Prosperity, IIHR, Jester Yellow, Mohini, Nova Lux, Snow Princess, Darshan, Dhanvantri, Surya Kiran, Tiger Flame, Arti, Gulal, Chandni, which were statistically at par with cultivar American Beauty. The result was followed by Aldebaran, Hunting Song and Sunanya.

4.1.3 No. of leaves/plant

No. of leaves per plant of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.3.1 No. of leaves/plant at 30 DAP

No. of leaves/plant at 30 DAP for 30 cultivars is presented in Table 4.7 and graphically represented in Fig. 4.7.

The result showed that the maximum number of leaves per plant was found in cultivar Pusa Shubham (3.77) and was significant to all other cultivars except cultivars Dhanvantri, Mohini, IIHR, Chandni and Hunting Song. The result was followed by cultivars Plum Tart, Aldebaran, Priscilla, Sunanya, American Beauty, Arti, Regency, Snow Princess, Tiger Flame, True Love, White Prosperity, Surya Kiran and Punjab Morning.

The result showed that the minimum number of leaves per plant was found in cultivar Jester Yellow (1.67) and was significant to all other cultivars except cultivars Punjab Dawn, Pusa Kiran and Darshan. The result was followed by cultivars Nova Lux, Friendship Pink, Swarnima, Green Star, Jyostna, Gulal and Subhangini.

4.1.3.2 No. of leaves/plant at 45 DAP

No. of leaves/plant at 45 DAP for 30 cultivars is presented in Table 4.8 and graphically represented in Fig. 4.8.

The result showed that the maximum number of leaves per plant was found in cultivar IIHR (4.87) and was significant to all other cultivars except cultivars Hunting Song, Chandni, Mohini, Pusa Shubham, Snow Princess, Dhanvantri, American Beauty, Plum Tart, Priscilla, which were statistically at par with cultivar IIHR. The result was followed by cultivars Regency, Sunanya, Arti, Green Star, Gulal, True Love, White Prosperity, Aldebaran and Tiger Flame.

The result showed that the minimum number of leaves per plant was found in cultivar Punjab Dawn (2.50) and was significant to all other cultivars except cultivars Jester Yellow and Pusa Kiran, which were statistically at par with cultivar Punjab Dawn. The result was followed by cultivars Nova Lux, Darshan, Friendship Pink, Swarnima, Punjab Morning, Surya Kiran and Subhangini.

4.1.3.3 No. of leaves/plant at 60 DAP

No. of leaves/plant at 60 DAP for 30 cultivars is presented in Table 4.9 and graphically represented in Fig. 4.9.

The result showed that the maximum number of leaves per plant was found in cultivar IIHR (7.20) and was significant to all other cultivars except cultivars Mohini and Hunting Song, which were statistically at par with cultivar IIHR. The result was followed by cultivars Chandni, Snow Princess, American Beauty, Sunanya, Dhanvantri, White Prosperity, Plum Tart, Priscilla, Pusa Shubham, Regency, Gulal and Subhangini.

The result showed that the minimum number of leaves per plant was found in cultivar Friendship Pink (4) and was significant to all other cultivars except cultivars Jester Yellow, Punjab Dawn, Pusa Kiran, Nova Lux and Darshan, which were statistically at par with cultivar Friendship Pink. The result was followed by cultivars True Love, Tiger Flame, Punjab Morning, Swarnima, Jyostna, Green Star, Arti, Surya Kiran and Aldebaran.

4.1.4 Plant height (cm)

The plant height of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.4.1 Plant height at 30 DAP

Plant height at 30 DAP for 30 cultivars is presented in Table 4.10 and graphically represented in Fig. 4.10.

The result showed that the maximum plant height was found in cultivar Dhanvantri (56.60 cm) and was significantly longer than all other cultivars except cultivar Hunting Song, which was only statistically at par with cultivar Dhanvantri. The result was followed by cultivars Swarnima, Regency, Mohini, American Beauty, Arti, Plum Tart, Jyostna, IIHR, Tiger Flame, Snow Princess, Chandni, Punjab Morning, Priscilla, Gulal, Pusa Shubham and Aldebaran.

The result showed that the minimum plant height was found in cultivar Nova Lux (25.27 cm) and was significant to all other cultivars except cultivars Pusa Kiran, Friendship Pink, Green Star, Punjab Dawn, Jester Yellow and Darshan, which were statistically at par with cultivar Nova Lux. The result was followed by cultivars White Prosperity, Surya Kiran, Subhangini, True Love and Sunanya.

4.1.4.2 Plant height at 45 DAP

Plant height at 45 DAP for 30 cultivars is presented in Table 4.11 and graphically represented in Fig. 4.11.

The result showed that the maximum plant height was found in cultivar Dhanvantri (67.40 cm) and was significantly longer, with all other cultivars statistically non-significant. The result was followed by cultivars Hunting Song, Plum Tart, Swarnima, Regency, Mohini, American Beauty, IIHR, Punjab Morning, Jyostna, Snow Princess, Arti, Priscilla, Gulal, Chandni and Tiger Flame.

The result showed that the minimum plant height was found in cultivar Pusa Kiran (33.27 cm) and was significant to all other cultivars except cultivars Nova Lux, Punjab Dawn, Jester Yellow, Green Star and Darshan, which were statistically at par with cultivar Pusa Kiran. The result was followed by cultivars True Love, Surya Kiran, Friendship Pink, Pusa Shubham, Sunanya, Subhangini, White Prosperity and Aldebaran.

4.1.4.3 Plant height at 60 DAP

Plant height at 60 DAP for 30 cultivars is presented in Table 4.12 and graphically represented in Fig. 4.12.

The result showed that the maximum plant height was found in cultivar Dhanvantri (70.33 cm) and was significantly longer to all other cultivars except cultivar Plum Tart, which was only statistically at par with cultivar Dhanvantri. The result was followed by cultivars Swarnima, Hunting Song, Regency, Mohini, IIHR,

American Beauty, Punjab Morning, Snow Princess, Tiger Flame, Gulal, Jyostna and Sunanya.

The result showed that the minimum plant height was found in cultivar Pusa Kiran (34.70 cm) and was significant to all other cultivars except cultivars Nova Lux, Pusa Shubham, Darshan, Green Star, Punjab Dawn and Jester Yellow, which were statistically at par with cultivar Pusa Kiran. The result was followed by cultivars Surya Kiran, Chandni, True Love, Friendship Pink, Arti, Subhangini, Aldebaran, Priscilla and White Prosperity.

4.1.5 Leaf length (cm)

Leaf length of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.5.1 Leaf length at 30 DAP

Leaf length at 30 DAP for 30 cultivars is presented in Table 4.13 and graphically represented in Fig. 4.13.

The result showed that the maximum leaf length was found in cultivar Dhanvantri (45.83 cm) and was significantly longer than all other cultivars except cultivar Hunting Song and Swarnima, which were statistically at par with cultivar Dhanvantri. The result was followed by cultivars Punjab Morning, Arti, American Beauty, Regency, Jyostna, Plum Tart, Tiger Flame, Priscilla, White Prosperity, Gulal, Snow Princess, Chandni, Mohini, Aldebaran and Pusa Shubham.

The result showed that the minimum leaf length was found in cultivar Friendship Pink (21.07 cm) and was significant to all other cultivars except cultivars Pusa Kiran, Nova Lux, Jester Yellow and Green Star, which were statistically at par with cultivar Friendship Pink. The result was followed by cultivars Punjab Dawn, Darshan, Surya Kiran, True Love, Sunanya, Subhangini and IIHR.

4.1.5.2 Leaf length at 45 DAP

Leaf length at 45 DAP for 30 cultivars is presented in Table 4.14 and graphically represented in Fig. 4.14.

The result showed that the maximum leaf length was found in cultivar Dhanvantri (52.10 cm) and was significantly longer than all other cultivars except cultivar Hunting Song and Swarnima, which were statistically at par with cultivar Dhanvantri. The result was followed by cultivars Punjab Morning, Arti, American Beauty, Regency, Jyostna, Plum Tart, Tiger Flame, Priscilla, White Prosperity, Gulal, Snow Princess, Chandni, Mohini and Aldebaran.

The result showed that the minimum leaf length was found in cultivar Pusa Kiran (25.23 cm) and was significant to all other cultivars except cultivars Nova Lux and Green Star, which were statistically at par with cultivar Pusa Kiran. The result was followed by cultivars Friendship Pink, Jester Yellow, Surya Kiran, Punjab Dawn, True Love, Darshan, Sunanya, White Prosperity, Pusa Shubham, Subhangini and Chandni.

4.1.5.3 Leaf length at 60 DAP

Leaf length at 60 DAP for 30 cultivars is presented in Table 4.15 and graphically represented in Fig. 4.15.

The result showed that the maximum leaf length was found in cultivar Dhanvantri (55.01 cm) and was significantly longer than all other cultivars except cultivar Plum Tart, Swarnima and Hunting Song, which were statistically at par with cultivar Dhanvantri. The result was followed by cultivars Punjab Morning, Pusa Shubham, Mohini, Regency, Tiger Flame, Snow Princess, Aldebaran, Jyostna, Priscilla, IIHR and American Beauty.

The result showed that the minimum leaf length was found in cultivar Pusa Kiran (28.00 cm) and was significant to all other cultivars except cultivars Nova Lux, which was only statistically at par with cultivar Pusa Kiran. The result was followed

by cultivars Friendship Pink, Green Star, Surya Kiran, Jester Yellow, Chandni, Arti, Darshan, Punjab Dawn, Sunanya, White Prosperity, True Love, Subhangini and Gulal.

4.1.6 Width of scape (cm)

The width of scape of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.6.1 Width of scape at 30 DAP

Width of scape at 30 DAP for 30 cultivars is presented in Table 4.16 and graphically represented in Fig. 4.16.

The result showed that the maximum width of scape was found in cultivar American Beauty (1.78 cm) and was significant to all other cultivars except cultivars Regency, Mohini, Green Star, Friendship Pink, True Love and Aldebaran, which were statistically at par with cultivar American Beauty. The result was followed by cultivars Swarnima, Gulal, Priscilla, Hunting Song, Plum Tart, Tiger Flame and Sunanya.

The minimum scape width of scape was found in cultivar Punjab Dawn (0.57 cm) and was significant to all other cultivars except cultivars Punjab Morning, Nova Lux, Surya Kiran, IIHR and Subhangini, which were statistically at par with cultivar Punjab Dawn. The result was followed by cultivars Chandni, Darshan, Pusa Kiran, Jester Yellow, Dhanvantri, White Prosperity, Pusa Shubham, Arti, Jyostna and Snow Princess.

4.1.6.2 Width of scape at 45 DAP

Width of scape at 45 DAP for 30 cultivars is presented in Table 4.17 and graphically represented in Fig. 4.17.

The result showed that the maximum width of scape was found in cultivar Mohini (2.01 cm) and was significant to all other cultivars except cultivars Friendship Pink and American Beauty, which were statistically at par with cultivar Mohini. The result was followed by cultivars Regency, True Love, Green Star, Aldebaran,

Swarnima, Tiger Flame, Jester Yellow, Plum Tart, Gulal, Dhanvantri, Priscilla and Hunting Song.

The minimum width of scape was found in cultivar Punjab Dawn (0.82 cm) and was significant to all other cultivars except cultivars Punjab Morning, Surya Kiran and Darshan, which were statistically at par with cultivar Punjab Dawn. The result was followed by cultivars Pusa Kiran, Jyostna, Nova Lux, Pusa Shubham, Chandni, White Prosperity, Arti, Snow Princess, IIHR, Sunanya and Subhangini.

4.1.6.3 Width of scape at 60 DAP

Width of scape at 60 DAP for 30 cultivars is presented in Table 4.18 and graphically represented in Fig. 4.18.

The result showed that the maximum width of scape of was found in cultivar Friendship Pink (2.13 cm) and was significantly broader to all other cultivars except cultivars Mohini, which was statistically at par with cultivar Friendship Pink. The result was followed by cultivars Regency, American Beauty, True Love, Jester Yellow, Green Star, Aldebaran, Tiger Flame, Plum Tart, Swarnima, Sunanya, Gulal, Dhanvantri and Priscilla, Hunting Song and White Prosperity.

The minimum scape width of scape was found in cultivar Punjab Morning (0.87 cm) and was significant to all other cultivars except cultivars Punjab Dawn, Surya Kiran, Arti, Chandni and Darshan, which were statistically at par with cultivar Punjab Morning. The result was followed by cultivars Jyostna, Pusa Kiran, Nova Lux, Pusa Shubham, Snow Princess, IIHR and Subhangini.

4.1.7 Leaf width (cm)

Leaf width of longest leaf of 30 different cultivars of the gladiolus at 30 DAP, 45 DAP and 60 DAP is discussed under sub headings below.

4.1.7.1 Leaf width at 30 DAP

Leaf width at 30 DAP for 30 cultivars is presented in Table 4.19 and graphically represented in Fig. 4.19.

The result showed that the maximum leaf width of longest leaf was found in cultivar Sunanya (3.58 cm) and was significant to all other cultivars except cultivars Regency, American Beauty, Snow Princess, Gulal, White Prosperity, Mohini and Swarnima, which were statistically at par with cultivar Sunanya. The result was followed by cultivars Hunting Song, Aldebaran, Dhanvantri, True Love and Subhangini.

The minimum leaf width of longest leaf was found in cultivar Punjab Dawn (1.08 cm) and was significant to all other cultivars except cultivars Nova Lux, Surya Kiran, Darshan, Punjab Morning and Pusa Kiran, which were statistically at par with cultivar Punjab Dawn. The result was followed by cultivars Jester Yellow, Pusa Shubham, Plum Tart, IIHR, Green Star, Jyostna, Arti, Friendship Pink, Chandni, Tiger Flame and Priscilla.

4.1.7.2 Leaf width at 45 DAP

Leaf width at 45 DAP for 30 cultivars is presented in Table 4.20 and graphically represented in Fig. 4.20.

The result showed that the maximum leaf width of longest leaf was found in cultivar Sunanya (3.88 cm) and was significant to all other cultivars except cultivars Snow Princess, White Prosperity, American Beauty, Gulal, Regency and Dhanvantri, which were statistically at par with cultivar Sunanya. The result was followed by cultivars Subhangini, Swarnima, Friendship Pink, Hunting Song, Mohini, Aldebaran, Jester Yellow and True Love.

The minimum leaf width of longest leaf was found in cultivar Punjab Dawn (1.53 cm) and was significant to all other cultivars except cultivars Surya Kiran, Darshan, Punjab Morning and Nova Lux, which were statistically at par with cultivar

Punjab Dawn. The result was followed by cultivars Arti, Jyostna, Green Star, Pusa Shubham, Tiger Flame, Plum Tart, Chandni, Pusa Kiran, Priscilla and IIHR.

4.1.7.3 Leaf width at 60 DAP

Leaf width at 60 DAP for 30 cultivars is presented in Table 4.21 and graphically represented in Fig. 4.21.

The result showed that the maximum leaf width of longest leaf (3.92 cm) were found in cultivars Sunanya and Snow Princess and were significant to all other cultivars except cultivars Gulal, White Prosperity, Regency, Dhanvantri, American Beauty and Swarnima, which were statistically at par with cultivar Sunanya and Snow Princess. The result was followed by cultivars Friendship Pink, Mohini, Aldebaran, Hunting Song, Jester Yellow and True Love.

The minimum leaf width of longest leaf was found in cultivar Punjab Dawn (1.63 cm) and was significant to all other cultivars except cultivars Surya Kiran, Punjab Morning and Darshan, which were statistically at par with cultivar Punjab Dawn. The result was followed by cultivars Arti, Jyostna, Chandni, Nova Lux, Tiger Flame, Pusa Shubham, Green Star, Subhangini, Plum Tart, Pusa Kiran, Priscilla and IIHR.

Table 4.1 Performance of gladiolus on days to 50% sprouting of corms.

TREATMENTS	DAYS TO 50% SPROUTING
T1-Aldebaran	8
T2-American Beauty	13
T3-Arti	9
T4-Chandni	9
T5-Darshan	13
T6-Dhanvantri	9
T7-Friendship Pink	13
T8-Green Star	13
T9-Gulal	11
T10-Hunting Song	11
T11-IIHR	11
T12-Jester Yellow	16
T13-Jyostna	14
T14-Mohini	14
T15-Nova Lux	19
T16-Plum Tart	11
T17-Priscilla	10
T18-Punjab Dawn	20
T19-Punjab Morning	12
T20-Pusa Kiran	15
T21-Pusa Shubham	9
T22-Regency	8
T23-Snow Princess	10
T24-Subhangini	10
T25-Sunanya	11
T26-Surya Kiran	11
T27-Swarnima	13
T28-Tiger Flame	10
T29-True Love	14
T30-White Prosperity	11
C.D. at 5%	1.66

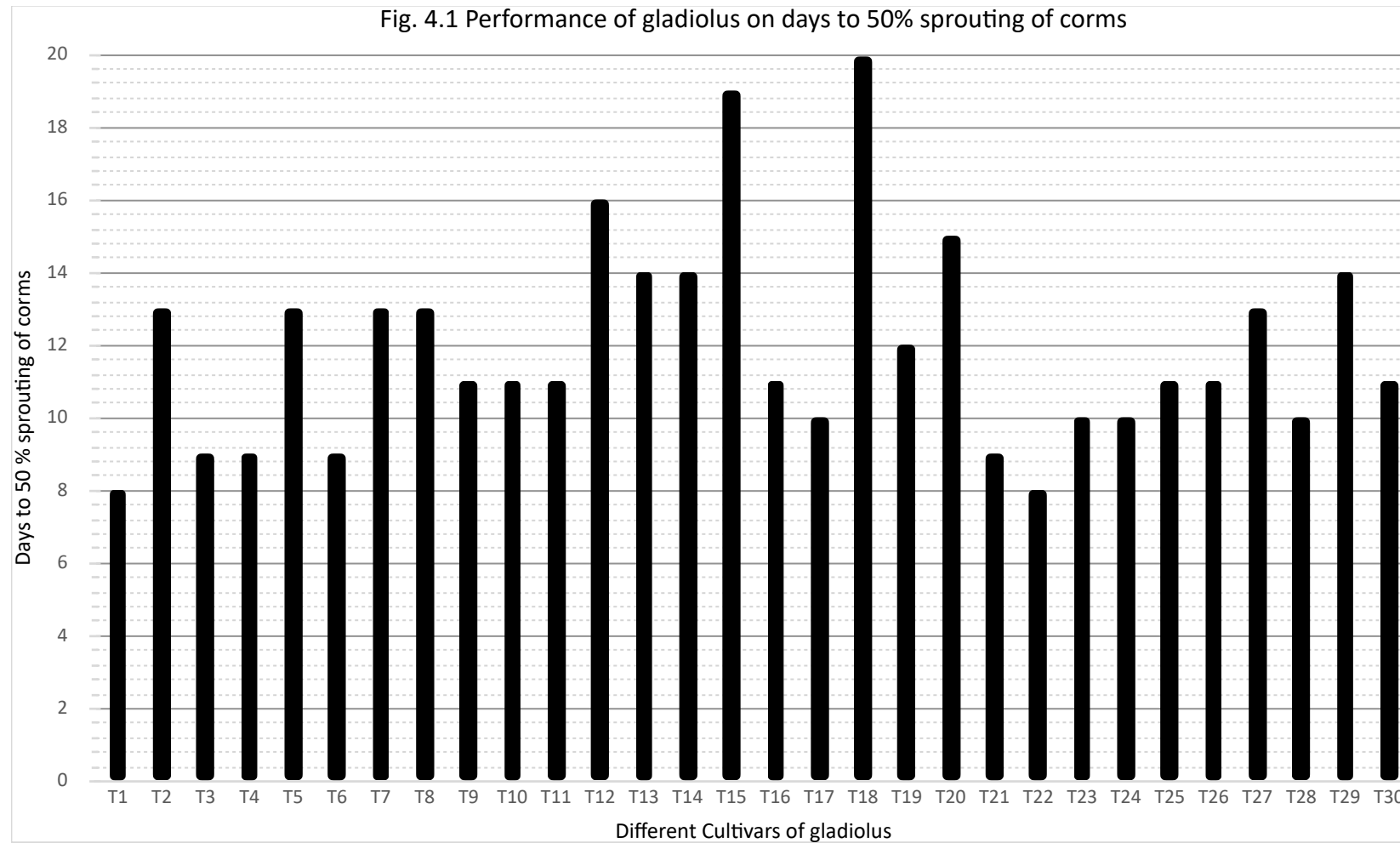


Table 4.2 Performance of gladiolus on days to 75% sprouting of corms.

TREATMENTS	DAYS TO 75% SPROUTING
T1-Aldebaran	10
T2-American Beauty	16
T3-Arti	10
T4-Chandni	11
T5-Darshan	15
T6-Dhanvantri	13
T7-Friendship Pink	22
T8-Green Star	17
T9-Gulal	13
T10-Hunting Song	12
T11-IIHR	16
T12-Jester Yellow	18
T13-Jyostna	17
T14-Mohini	20
T15-Nova Lux	24
T16-Plum Tart	13
T17-Priscilla	13
T18-Punjab Dawn	24
T19-Punjab Morning	15
T20-Pusa Kiran	20
T21-Pusa Shubham	11
T22-Regency	10
T23-Snow Princess	11
T24-Subhangini	12
T25-Sunanya	12
T26-Surya Kiran	13
T27-Swarnima	18
T28-Tiger Flame	11
T29-True Love	15
T30-White Prosperity	13
C.D. at 5%	1.66

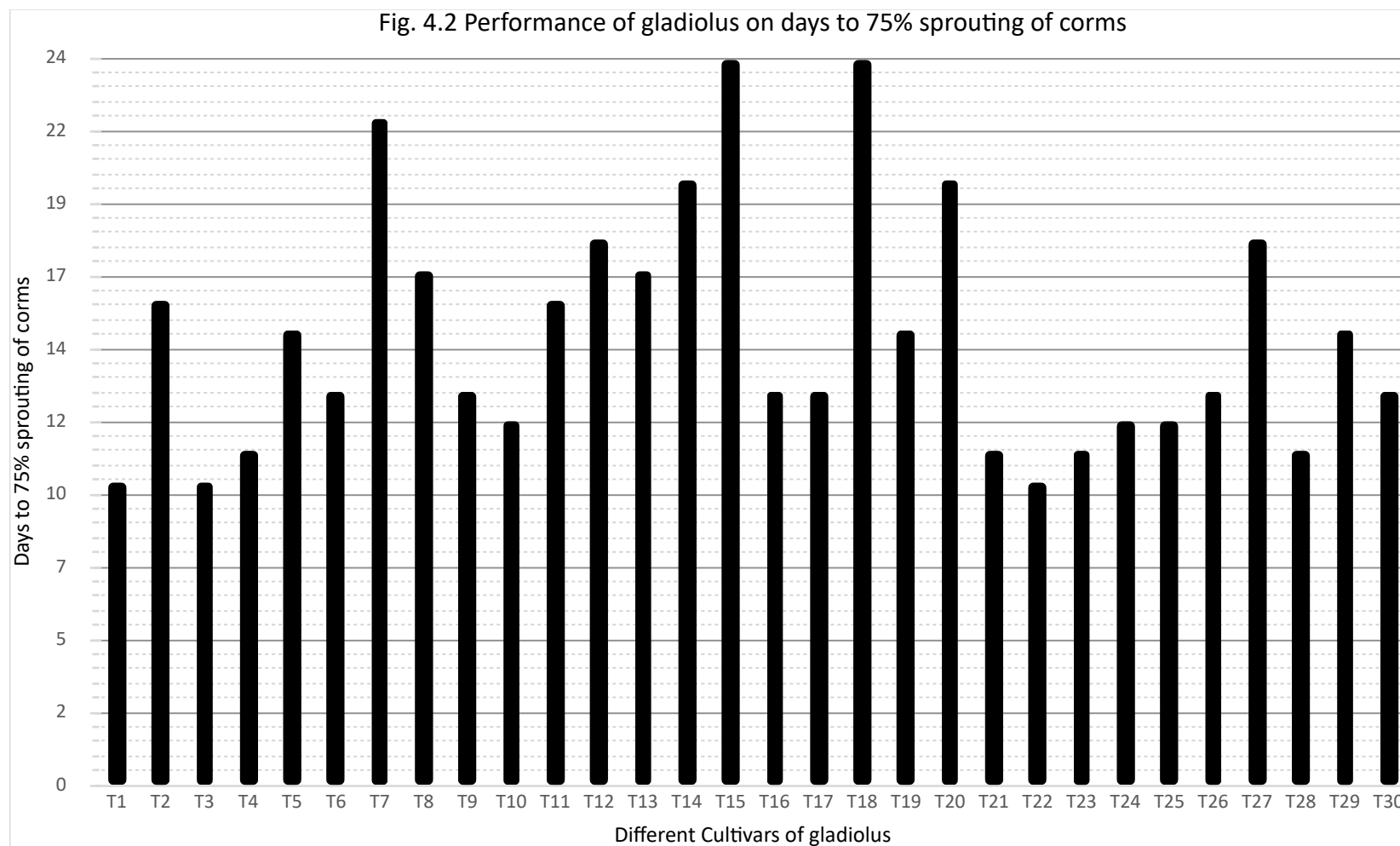


Table 4.3 Performance of gladiolus on days to 90% sprouting of corms.

TREATMENTS	DAYS TO 90% SPROUTING
T1-Aldebaran	18
T2-American Beauty	25
T3-Arti	16
T4-Chandni	24
T5-Darshan	24
T6-Dhanvantri	24
T7-Friendship Pink	28
T8-Green Star	22
T9-Gulal	26
T10-Hunting Song	13
T11-IIHR	28
T12-Jester Yellow	29
T13-Jyostna	21
T14-Mohini	30
T15-Nova Lux	29
T16-Plum Tart	17
T17-Priscilla	23
T18-Punjab Dawn	29
T19-Punjab Morning	24
T20-Pusa Kiran	29
T21-Pusa Shubham	24
T22-Regency	11
T23-Snow Princess	12
T24-Subhangini	24
T25-Sunanya	16
T26-Surya Kiran	17
T27-Swarnima	28
T28-Tiger Flame	22
T29-True Love	26
T30-White Prosperity	15
C.D. at 5%	1.66

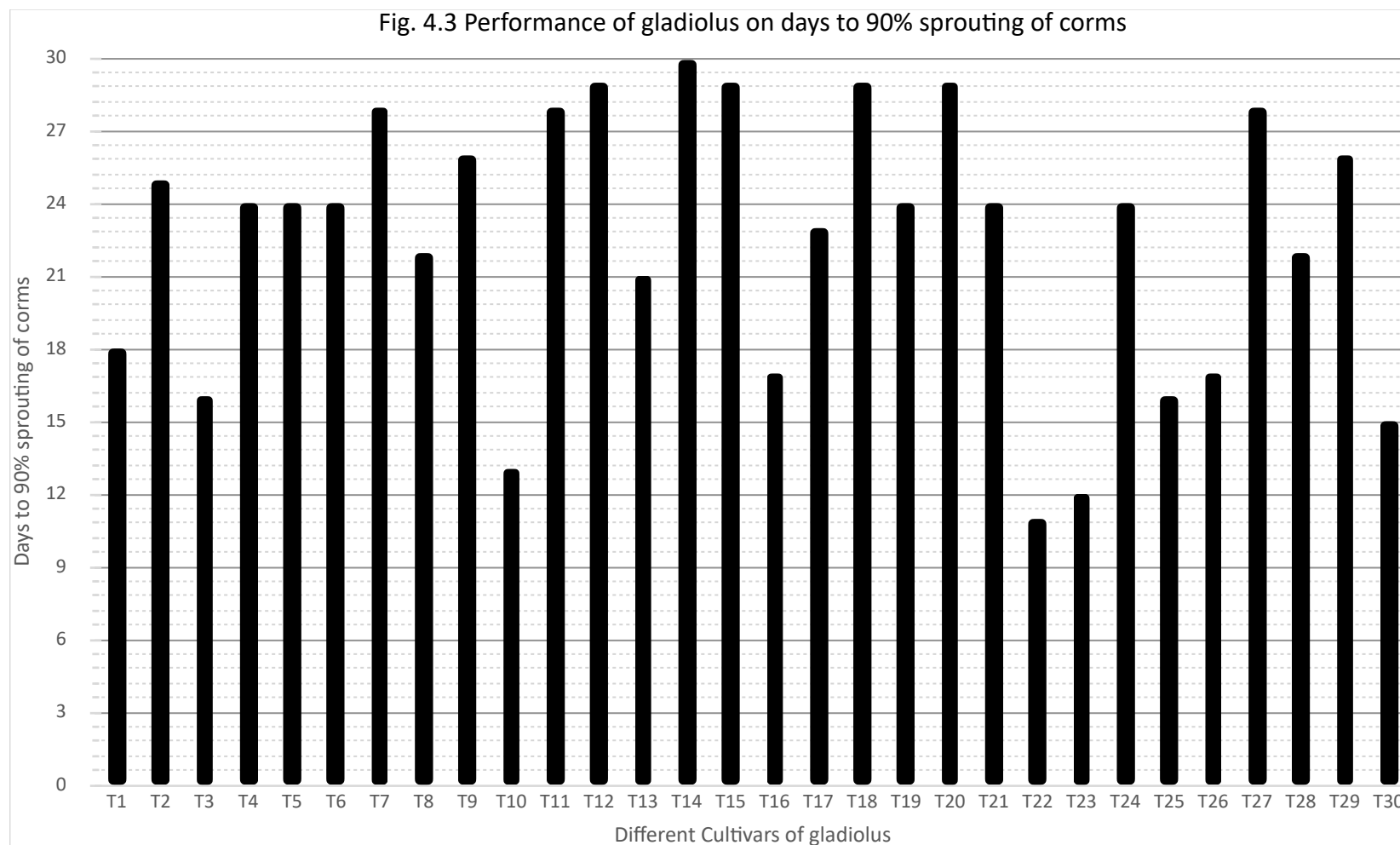


Table 4.4 Performance of gladiolus on number of plants per hill at 30 DAP.

TREATMENTS	PLANTS PER HILL AT 30 DAP
T1-Aldebaran	1.87
T2-American Beauty	1.20
T3-Arti	1.90
T4-Chandni	2.00
T5-Darshan	1.77
T6-Dhanvantri	1.77
T7-Friendship Pink	1.33
T8-Green Star	1.50
T9-Gulal	1.99
T10-Hunting Song	2.11
T11-IIHR	1.75
T12-Jester Yellow	1.00
T13-Jyostna	2.37
T14-Mohini	1.77
T15-Nova Lux	1.88
T16-Plum Tart	1.55
T17-Priscilla	2.20
T18-Punjab Dawn	1.00
T19-Punjab Morning	1.30
T20-Pusa Kiran	2.67
T21-Pusa Shubham	2.57
T22-Regency	2.33
T23-Snow Princess	1.77
T24-Subhangini	1.22
T25-Sunanya	2.13
T26-Surya Kiran	1.89
T27-Swarnima	1.62
T28-Tiger Flame	1.89
T29-True Love	1.51
T30-White Prosperity	1.67
C.D. at 5%	0.66

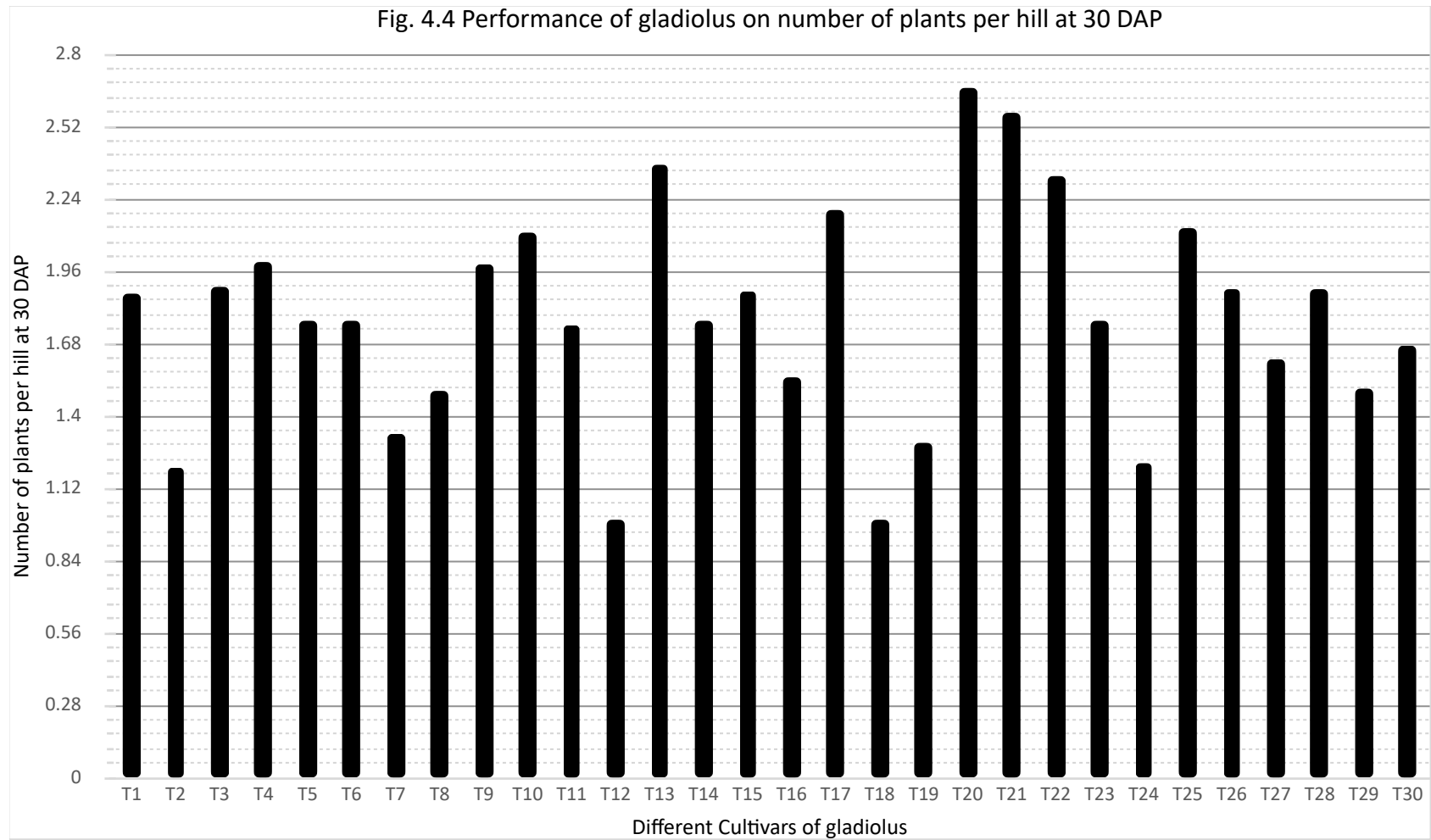


Table 4.5 Performance of gladiolus on number of plants per hill at 45 DAP.

TREATMENTS	PLANTS PER HILL AT 45 DAP
T1-Aldebaran	1.97
T2-American Beauty	1.20
T3-Arti	1.90
T4-Chandni	2.00
T5-Darshan	1.89
T6-Dhanvantri	1.89
T7-Friendship Pink	1.33
T8-Green Star	1.50
T9-Gulal	1.99
T10-Hunting Song	2.11
T11-IIHR	1.73
T12-Jester Yellow	1.44
T13-Jyostna	2.37
T14-Mohini	1.88
T15-Nova Lux	1.88
T16-Plum Tart	1.66
T17-Priscilla	3.10
T18-Punjab Dawn	1.17
T19-Punjab Morning	1.40
T20-Pusa Kiran	3.33
T21-Pusa Shubham	3.13
T22-Regency	2.53
T23-Snow Princess	1.88
T24-Subhangini	1.31
T25-Sunanya	2.13
T26-Surya Kiran	1.89
T27-Swarnima	1.62
T28-Tiger Flame	1.89
T29-True Love	1.51
T30-White Prosperity	1.67
C.D. at 5%	0.84

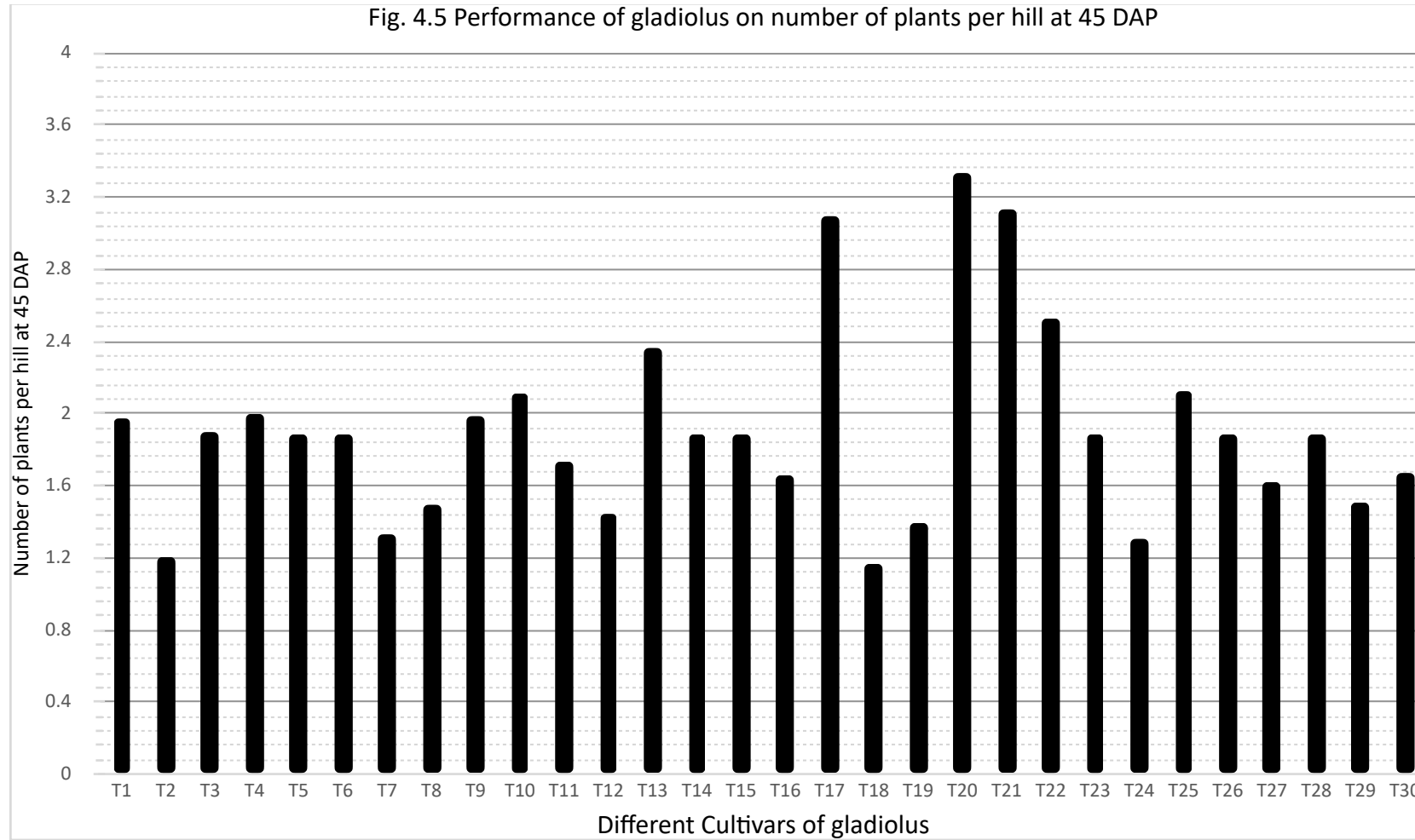


Table 4.6 Performance of gladiolus on number of plants per hill at 60 DAP.

TREATMENTS	PLANTS PER HILL AT 60 DAP
T1-Aldebaran	2.07
T2-American Beauty	1.20
T3-Arti	1.90
T4-Chandni	2.00
T5-Darshan	1.89
T6-Dhanvantri	1.89
T7-Friendship Pink	1.33
T8-Green Star	1.50
T9-Gulal	1.99
T10-Hunting Song	2.11
T11-IIHR	1.73
T12-Jester Yellow	1.78
T13-Jyostna	2.37
T14-Mohini	1.88
T15-Nova Lux	1.88
T16-Plum Tart	1.66
T17-Priscilla	2.33
T18-Punjab Dawn	1.67
T19-Punjab Morning	1.40
T20-Pusa Kiran	3.33
T21-Pusa Shubham	3.37
T22-Regency	2.55
T23-Snow Princess	1.88
T24-Subhangini	1.33
T25-Sunanya	2.13
T26-Surya Kiran	1.89
T27-Swarnima	1.62
T28-Tiger Flame	1.89
T29-True Love	1.51
T30-White Prosperity	1.67
C.D. at 5%	0.81

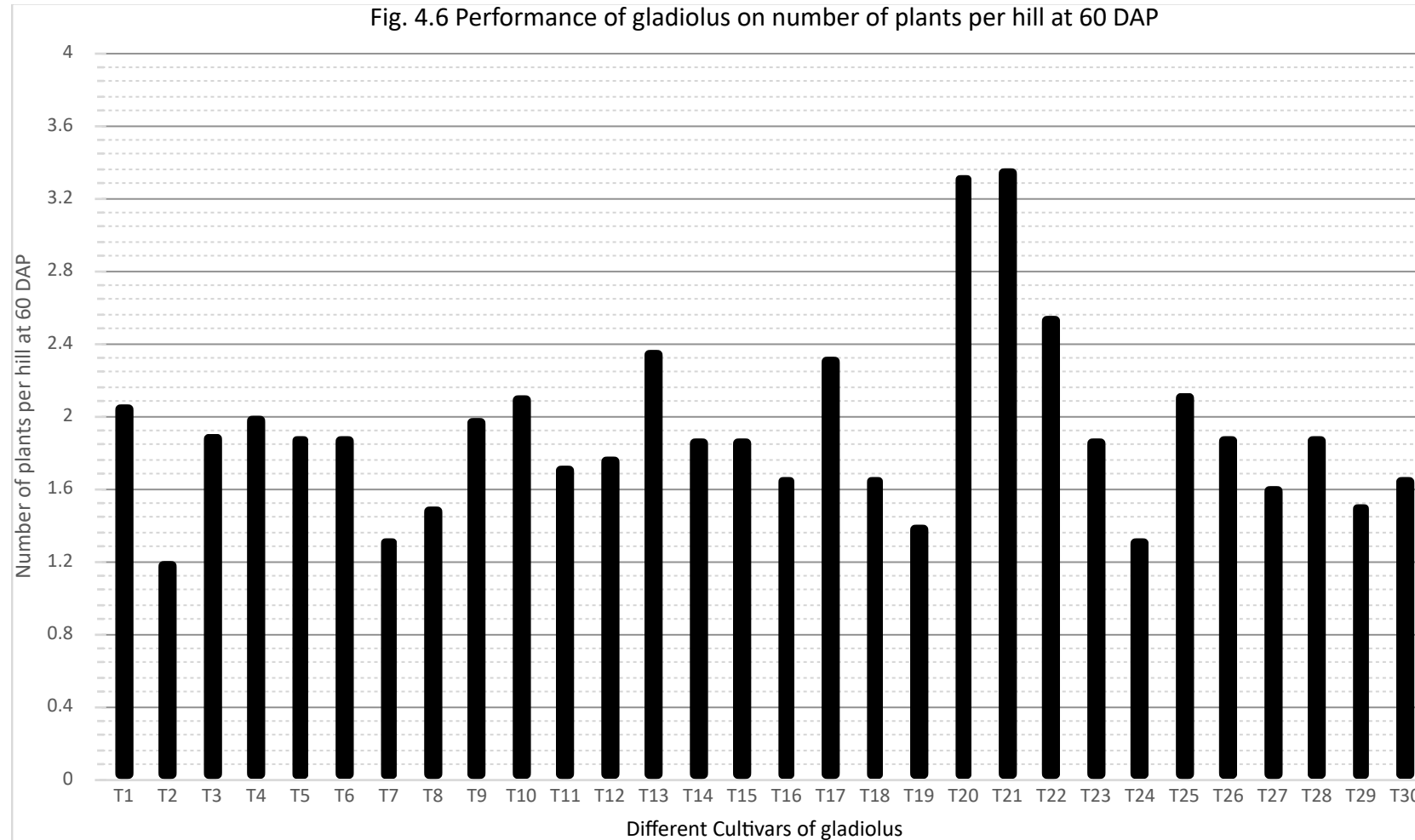


Table 4.7 Performance of gladiolus on number of leaves per hill at 30 DAP.

TREATMENTS	LEAVES PER HILL AT 30 DAP
T1-Aldebaran	3.10
T2-American Beauty	3.00
T3-Arti	3.00
T4-Chandni	3.33
T5-Darshan	2.22
T6-Dhanvantri	3.53
T7-Friendship Pink	2.33
T8-Green Star	2.61
T9-Gulal	2.65
T10-Hunting Song	3.33
T11-IIHR	3.40
T12-Jester Yellow	1.67
T13-Jyostna	2.63
T14-Mohini	3.44
T15-Nova Lux	2.33
T16-Plum Tart	3.11
T17-Priscilla	3.10
T18-Punjab Dawn	2.00
T19-Punjab Morning	2.87
T20-Pusa Kiran	2.17
T21-Pusa Shubham	3.77
T22-Regency	3.00
T23-Snow Princess	3.00
T24-Subhangini	2.77
T25-Sunanya	3.10
T26-Surya Kiran	2.89
T27-Swarnima	2.57
T28-Tiger Flame	3.00
T29-True Love	3.00
T30-White Prosperity	3.00
C.D. at 5%	0.61

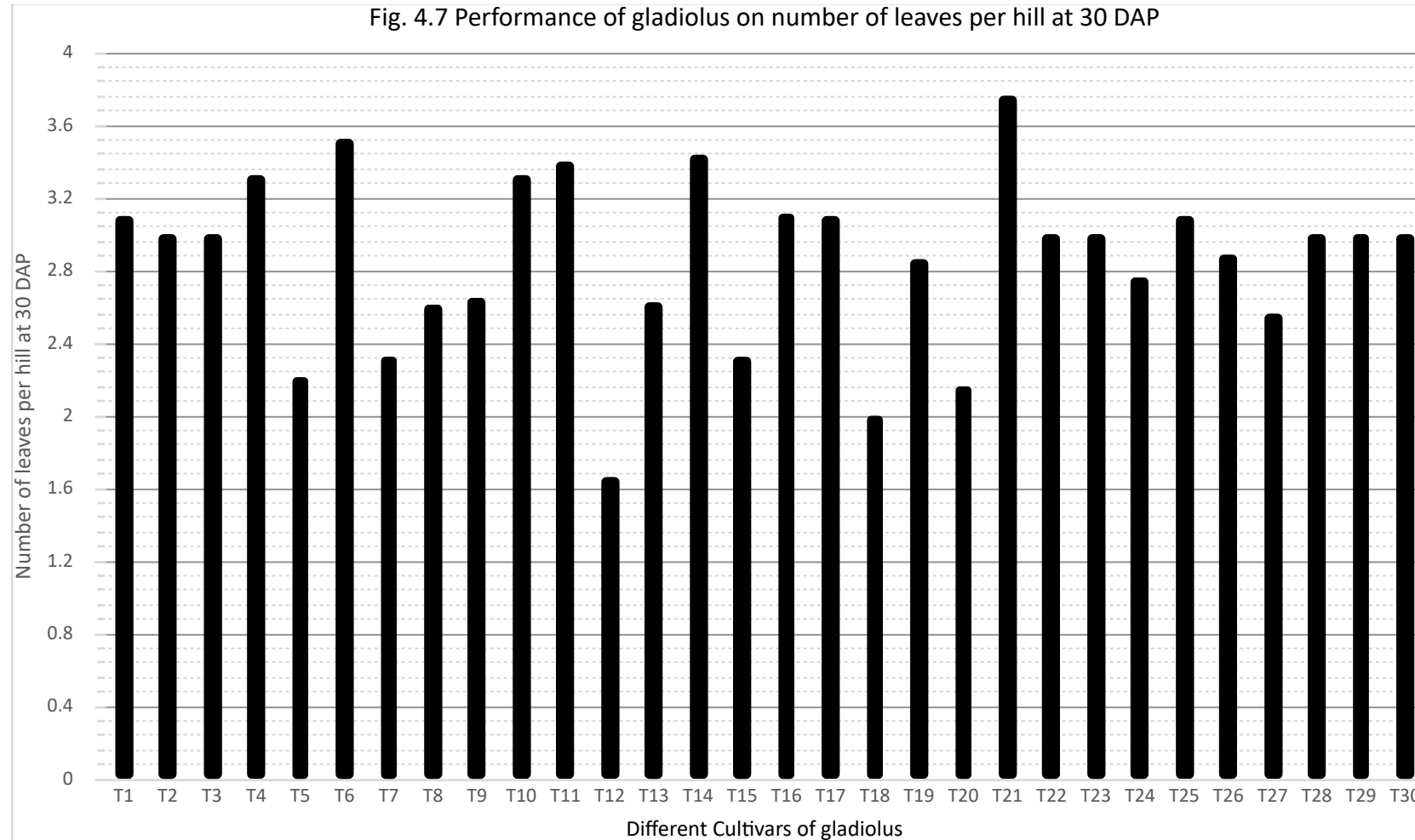


Table 4.8 Performance of gladiolus on number of leaves per hill at 45 DAP.

TREATMENTS	LEAVES PER HILL AT 45 DAP
T1-Aldebaran	3.97
T2-American Beauty	4.23
T3-Arti	4.00
T4-Chandni	4.71
T5-Darshan	3.22
T6-Dhanvantri	4.43
T7-Friendship Pink	3.67
T8-Green Star	4.00
T9-Gulal	4.00
T10-Hunting Song	4.78
T11-IIHR	4.87
T12-Jester Yellow	2.89
T13-Jyostna	3.57
T14-Mohini	4.55
T15-Nova Lux	3.22
T16-Plum Tart	4.21
T17-Priscilla	4.20
T18-Punjab Dawn	2.50
T19-Punjab Morning	3.73
T20-Pusa Kiran	3.00
T21-Pusa Shubham	4.53
T22-Regency	4.10
T23-Snow Princess	4.44
T24-Subhangini	3.87
T25-Sunanya	4.10
T26-Surya Kiran	3.78
T27-Swarnima	3.70
T28-Tiger Flame	3.97
T29-True Love	4.00
T30-White Prosperity	4.00
C.D. at 5%	0.69

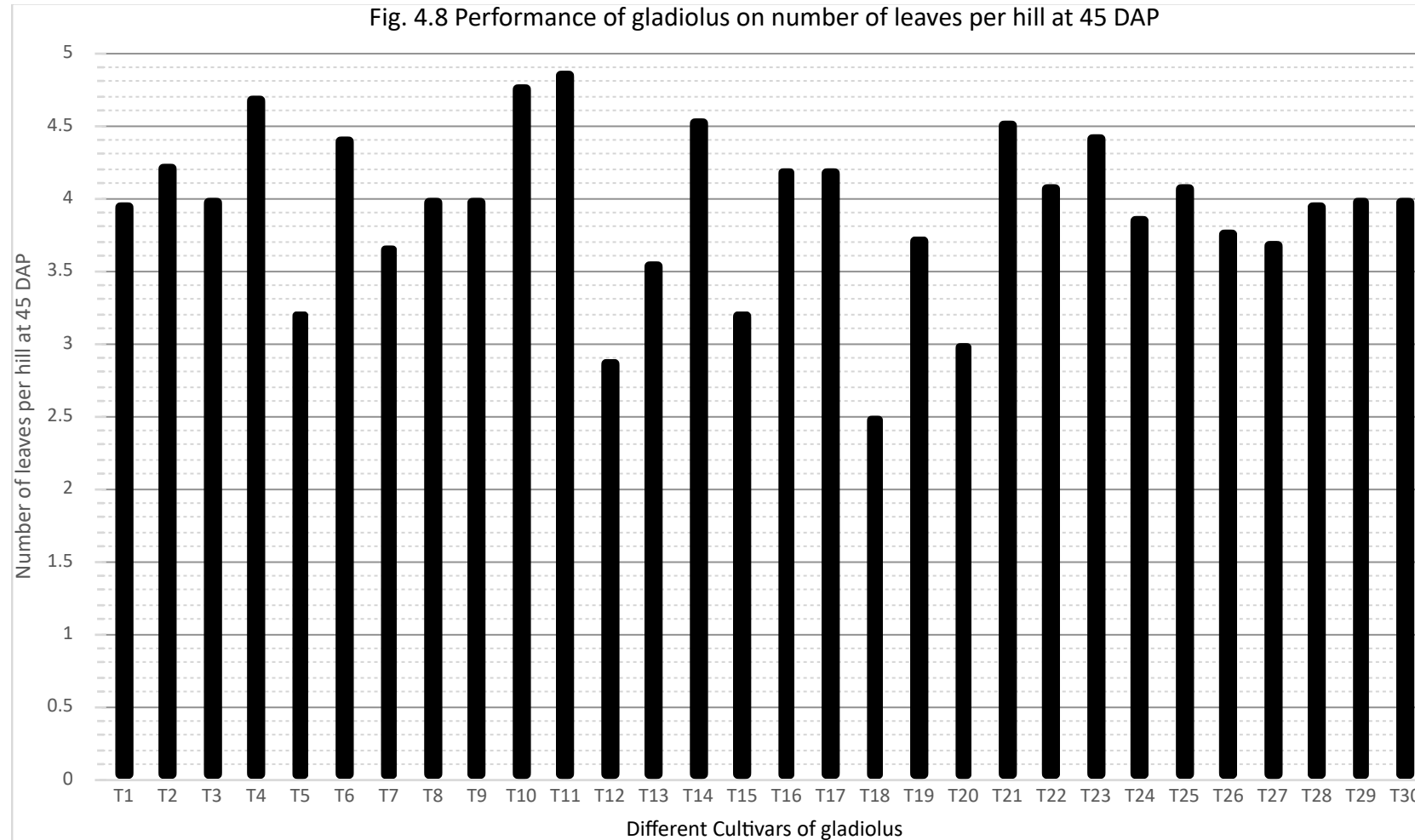


Table 4.9 Performance of gladiolus on number of leaves per hill at 60 DAP.

TREATMENTS	LEAVES PER HILL AT 60 DAP
T1-Aldebaran	5.50
T2-American Beauty	6.10
T3-Arti	5.43
T4-Chandni	6.33
T5-Darshan	4.66
T6-Dhanvantri	6.07
T7-Friendship Pink	4.00
T8-Green Star	5.33
T9-Gulal	5.66
T10-Hunting Song	6.55
T11-IIHR	7.20
T12-Jester Yellow	4.23
T13-Jyostna	5.23
T14-Mohini	6.66
T15-Nova Lux	4.55
T16-Plum Tart	6.00
T17-Priscilla	5.87
T18-Punjab Dawn	4.33
T19-Punjab Morning	5.20
T20-Pusa Kiran	4.50
T21-Pusa Shubham	5.87
T22-Regency	5.83
T23-Snow Princess	6.11
T24-Subhangini	5.63
T25-Sunanya	6.10
T26-Surya Kiran	5.44
T27-Swarnima	5.23
T28-Tiger Flame	5.10
T29-True Love	5.00
T30-White Prosperity	6.00
C.D. at 5%	0.85

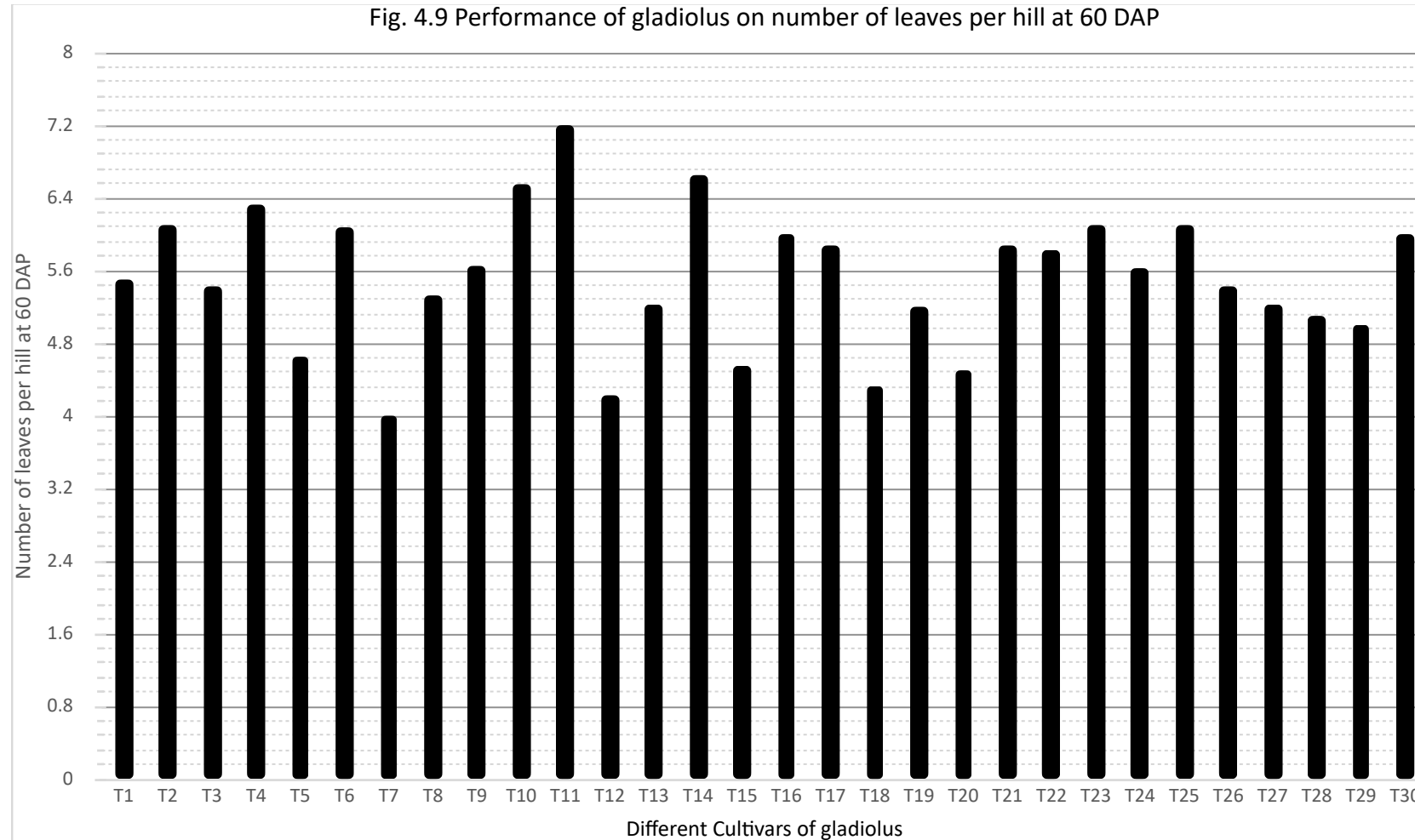


Table 4.10 Performance of gladiolus on plant height at 30 DAP.

TREATMENTS	PLANT HEIGHT AT 30 DAP (cm)
T1-Aldebaran	39.77
T2-American Beauty	44.27
T3-Arti	44.07
T4-Chandni	41.43
T5-Darshan	32.07
T6-Dhanvantri	56.60
T7-Friendship Pink	28.80
T8-Green Star	29.53
T9-Gulal	40.23
T10-Hunting Song	51.40
T11-IIHR	42.23
T12-Jester Yellow	29.67
T13-Jyostna	42.47
T14-Mohini	45.37
T15-Nova Lux	25.27
T16-Plum Tart	43.07
T17-Priscilla	40.30
T18-Punjab Dawn	29.57
T19-Punjab Morning	40.70
T20-Pusa Kiran	26.27
T21-Pusa Shubham	39.93
T22-Regency	46.91
T23-Snow Princess	41.60
T24-Subhangini	37.03
T25-Sunanya	38.73
T26-Surya Kiran	36.73
T27-Swarnima	48.93
T28-Tiger Flame	41.67
T29-True Love	37.33
T30-White Prosperity	36.70
C.D. at 5%	7.55

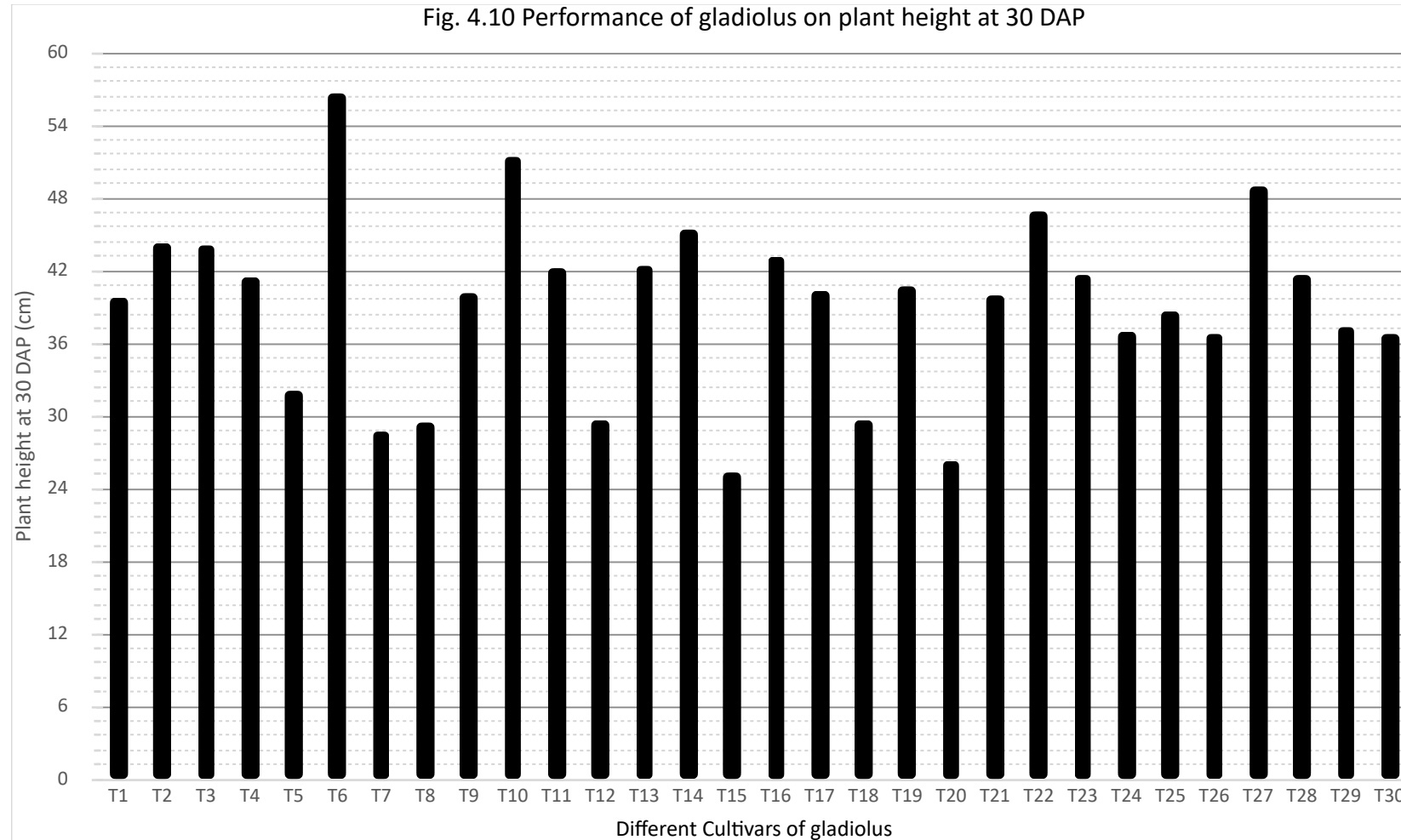


Table 4.11 Performance of gladiolus on plant height at 45 DAP.

TREATMENTS	PLANT HEIGHT AT 45 DAP (cm)
T1-Aldebaran	47.80
T2-American Beauty	53.87
T3-Arti	49.73
T4-Chandni	48.40
T5-Darshan	39.93
T6-Dhanvantri	67.40
T7-Friendship Pink	44.27
T8-Green Star	38.87
T9-Gulal	48.47
T10-Hunting Song	59.47
T11-IIHR	51.77
T12-Jester Yellow	37.63
T13-Jyostna	50.73
T14-Mohini	56.47
T15-Nova Lux	35.03
T16-Plum Tart	57.47
T17-Priscilla	49.67
T18-Punjab Dawn	37.27
T19-Punjab Morning	51.33
T20-Pusa Kiran	33.27
T21-Pusa Shubham	44.33
T22-Regency	56.87
T23-Snow Princess	49.77
T24-Subhangini	45.97
T25-Sunanya	45.73
T26-Surya Kiran	44.27
T27-Swarnima	57.13
T28-Tiger Flame	48.40
T29-True Love	42.50
T30-White Prosperity	47.63
C.D. at 5%	7.03

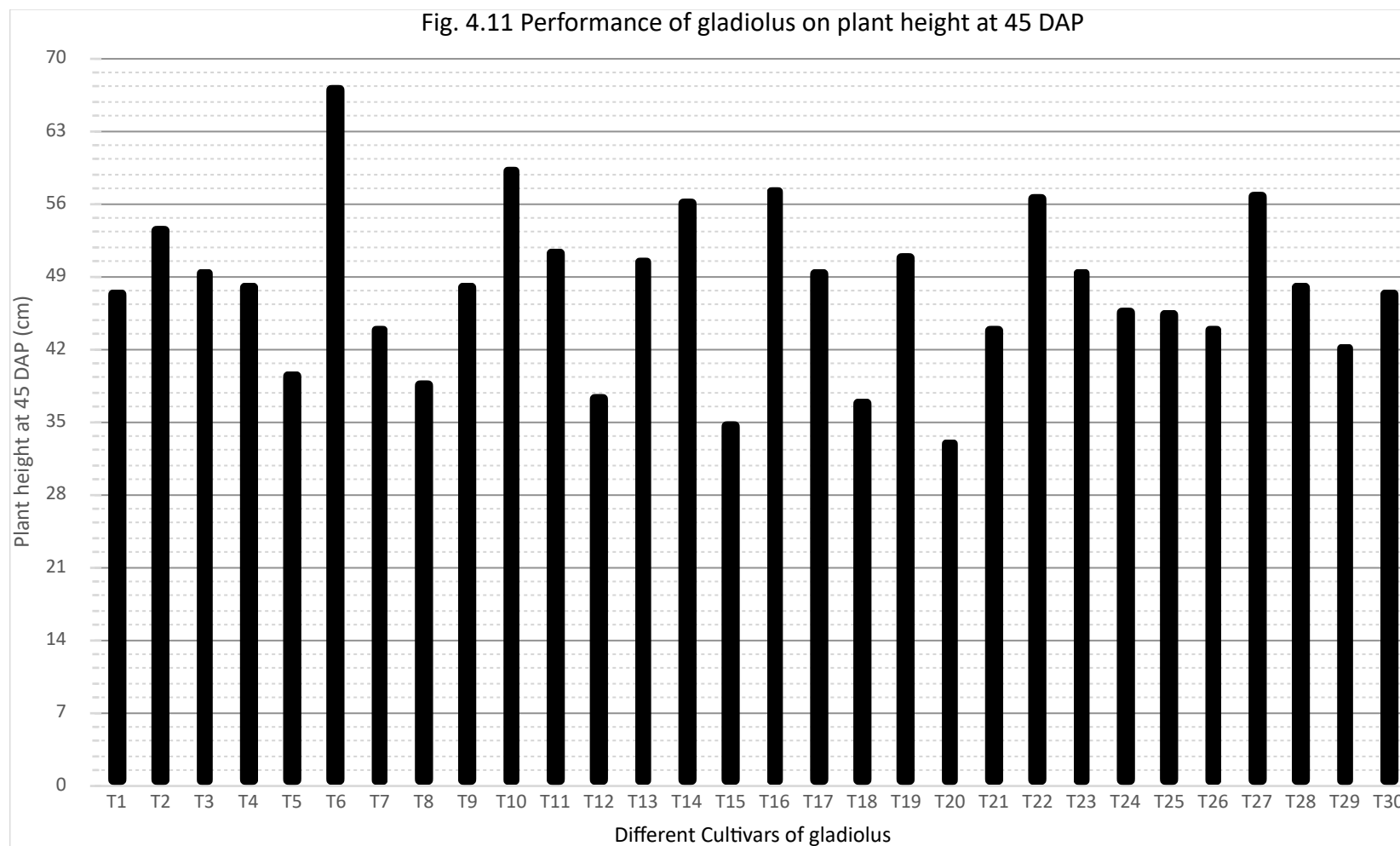


Table 4.12 Performance of gladiolus on plant height at 60 DAP.

TREATMENTS	PLANT HEIGHT AT 60 DAP (cm)
T1-Aldebaran	48.40
T2-American Beauty	52.37
T3-Arti	47.90
T4-Chandni	46.80
T5-Darshan	41.07
T6-Dhanvantri	70.33
T7-Friendship Pink	47.00
T8-Green Star	41.20
T9-Gulal	50.00
T10-Hunting Song	59.50
T11-IIHR	53.17
T12-Jester Yellow	41.75
T13-Jyostna	49.90
T14-Mohini	58.43
T15-Nova Lux	36.83
T16-Plum Tart	63.40
T17-Priscilla	48.73
T18-Punjab Dawn	41.47
T19-Punjab Morning	51.97
T20-Pusa Kiran	34.70
T21-Pusa Shubham	39.70
T22-Regency	59.47
T23-Snow Princess	50.53
T24-Subhangini	48.40
T25-Sunanya	49.50
T26-Surya Kiran	45.03
T27-Swarnima	60.17
T28-Tiger Flame	50.23
T29-True Love	46.87
T30-White Prosperity	48.97
C.D. at 5%	8.15

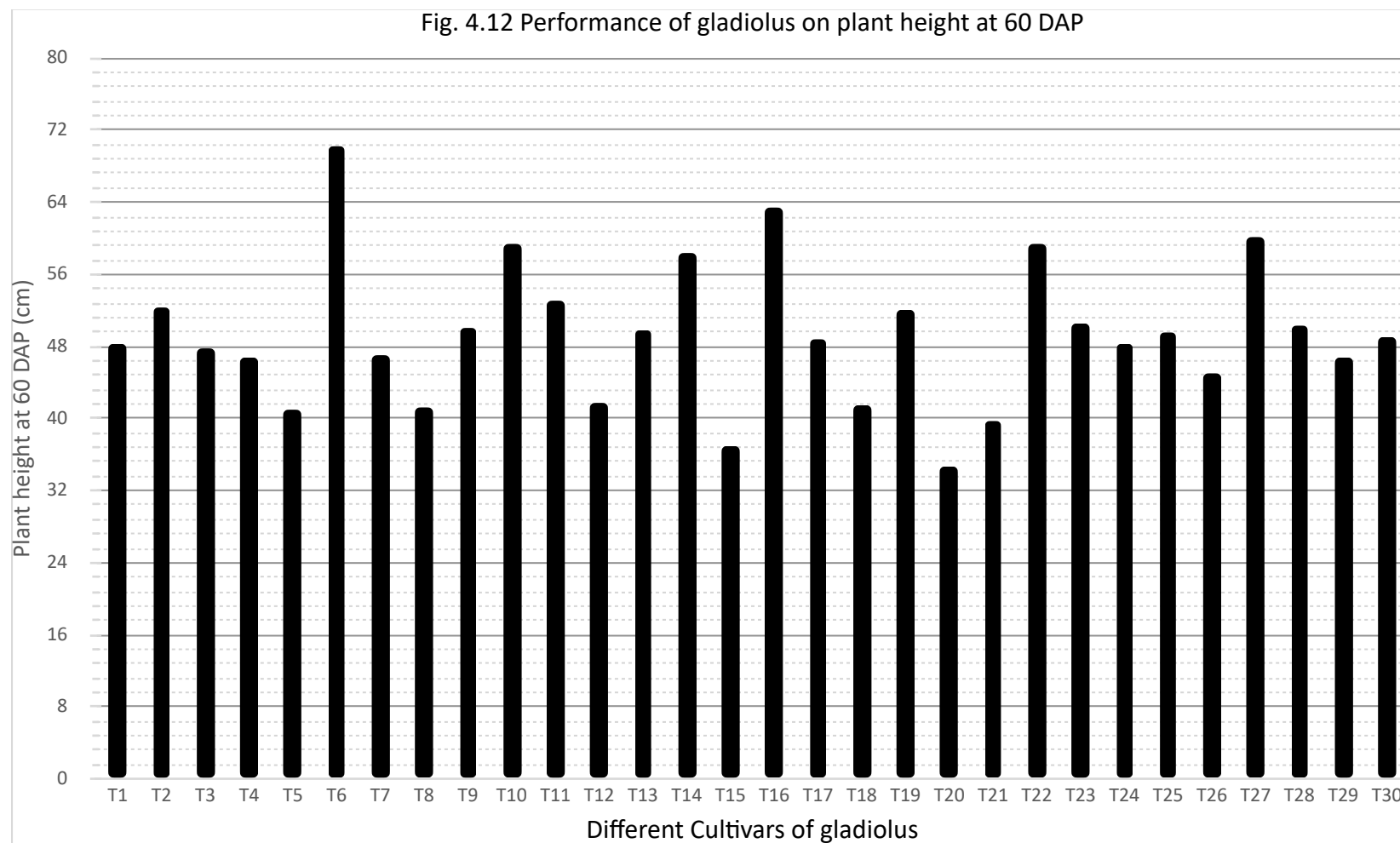


Table 4.13 Performance of gladiolus on leaf length at 30 DAP.

TREATMENTS	LEAF LENGTH AT 30 DAP (cm)
T1-Aldebaran	33.33
T2-American Beauty	37.03
T3-Arti	37.30
T4-Chandni	34.40
T5-Darshan	28.27
T6-Dhanvantri	45.83
T7-Friendship Pink	21.07
T8-Green Star	25.00
T9-Gulal	34.57
T10-Hunting Song	41.17
T11-IIHR	32.13
T12-Jester Yellow	24.80
T13-Jyostna	35.73
T14-Mohini	33.60
T15-Nova Lux	23.07
T16-Plum Tart	35.60
T17-Priscilla	35.23
T18-Punjab Dawn	27.63
T19-Punjab Morning	38.00
T20-Pusa Kiran	21.90
T21-Pusa Shubham	33.10
T22-Regency	36.07
T23-Snow Princess	34.50
T24-Subhangini	32.13
T25-Sunanya	30.77
T26-Surya Kiran	30.00
T27-Swarnima	40.97
T28-Tiger Flame	35.47
T29-True Love	30.53
T30-White Prosperity	35.00
C.D. at 5%	6.35

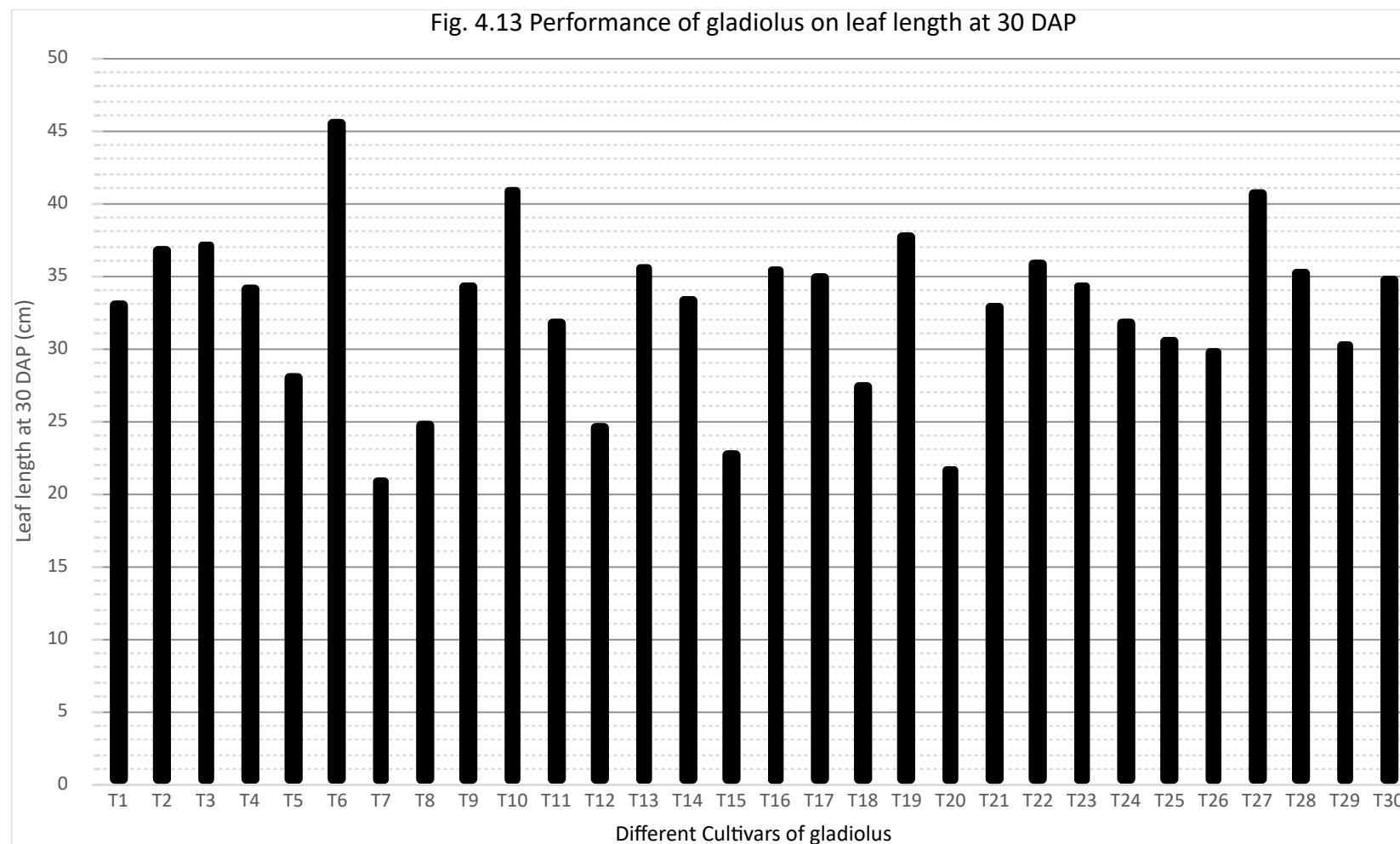


Table 4.14 Performance of gladiolus on leaf length at 45 DAP.

TREATMENTS	LEAF LENGTH AT 45 DAP (cm)
T1-Aldebaran	38.87
T2-American Beauty	42.87
T3-Arti	40.63
T4-Chandni	38.60
T5-Darshan	36.13
T6-Dhanvantri	52.10
T7-Friendship Pink	31.43
T8-Green Star	29.83
T9-Gulal	39.90
T10-Hunting Song	46.20
T11-IIHR	39.76
T12-Jester Yellow	34.27
T13-Jyostna	43.40
T14-Mohini	42.00
T15-Nova Lux	28.73
T16-Plum Tart	46.97
T17-Priscilla	40.73
T18-Punjab Dawn	34.73
T19-Punjab Morning	44.85
T20-Pusa Kiran	25.23
T21-Pusa Shubham	38.03
T22-Regency	40.03
T23-Snow Princess	40.87
T24-Subhangini	38.07
T25-Sunanya	36.33
T26-Surya Kiran	34.50
T27-Swarnima	46.50
T28-Tiger Flame	40.77
T29-True Love	35.97
T30-White Prosperity	37.63
C.D. at 5%	6.03

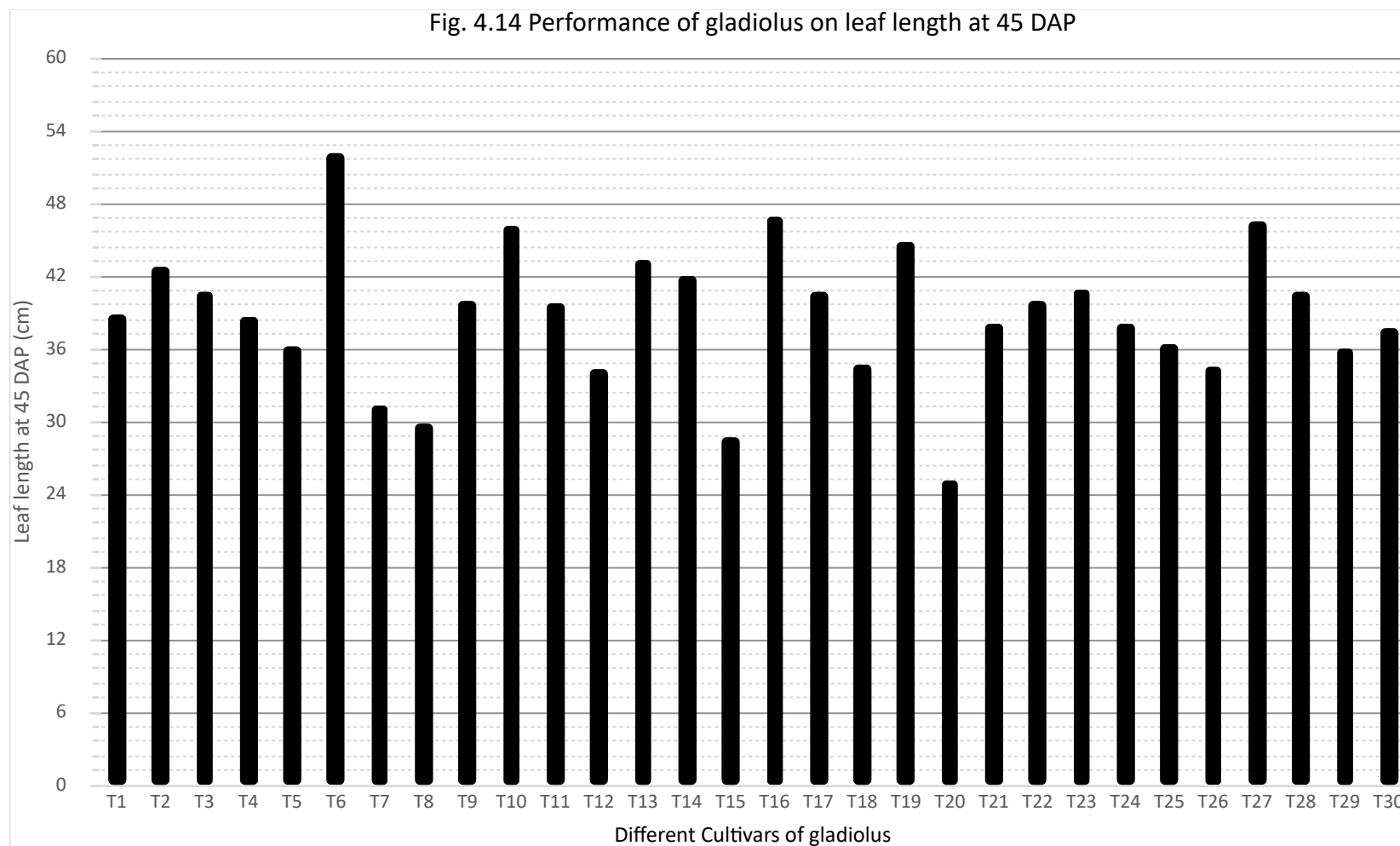


Table 4.15 Performance of gladiolus on leaf length at 60 DAP.

TREATMENTS	LEAF LENGTH AT 60 DAP (cm)
T1-Aldebaran	43.80
T2-American Beauty	42.50
T3-Arti	38.60
T4-Chandni	37.53
T5-Darshan	38.83
T6-Dhanvantri	55.01
T7-Friendship Pink	34.77
T8-Green Star	35.57
T9-Gulal	41.53
T10-Hunting Song	49.27
T11-IIHR	42.63
T12-Jester Yellow	37.37
T13-Jyostna	43.80
T14-Mohini	45.17
T15-Nova Lux	29.33
T16-Plum Tart	52.27
T17-Priscilla	43.70
T18-Punjab Dawn	38.93
T19-Punjab Morning	46.87
T20-Pusa Kiran	28.00
T21-Pusa Shubham	46.50
T22-Regency	45.03
T23-Snow Princess	44.27
T24-Subhangini	41.37
T25-Sunanya	39.00
T26-Surya Kiran	36.17
T27-Swarnima	50.73
T28-Tiger Flame	44.87
T29-True Love	40.63
T30-White Prosperity	39.53
C.D. at 5%	6.56

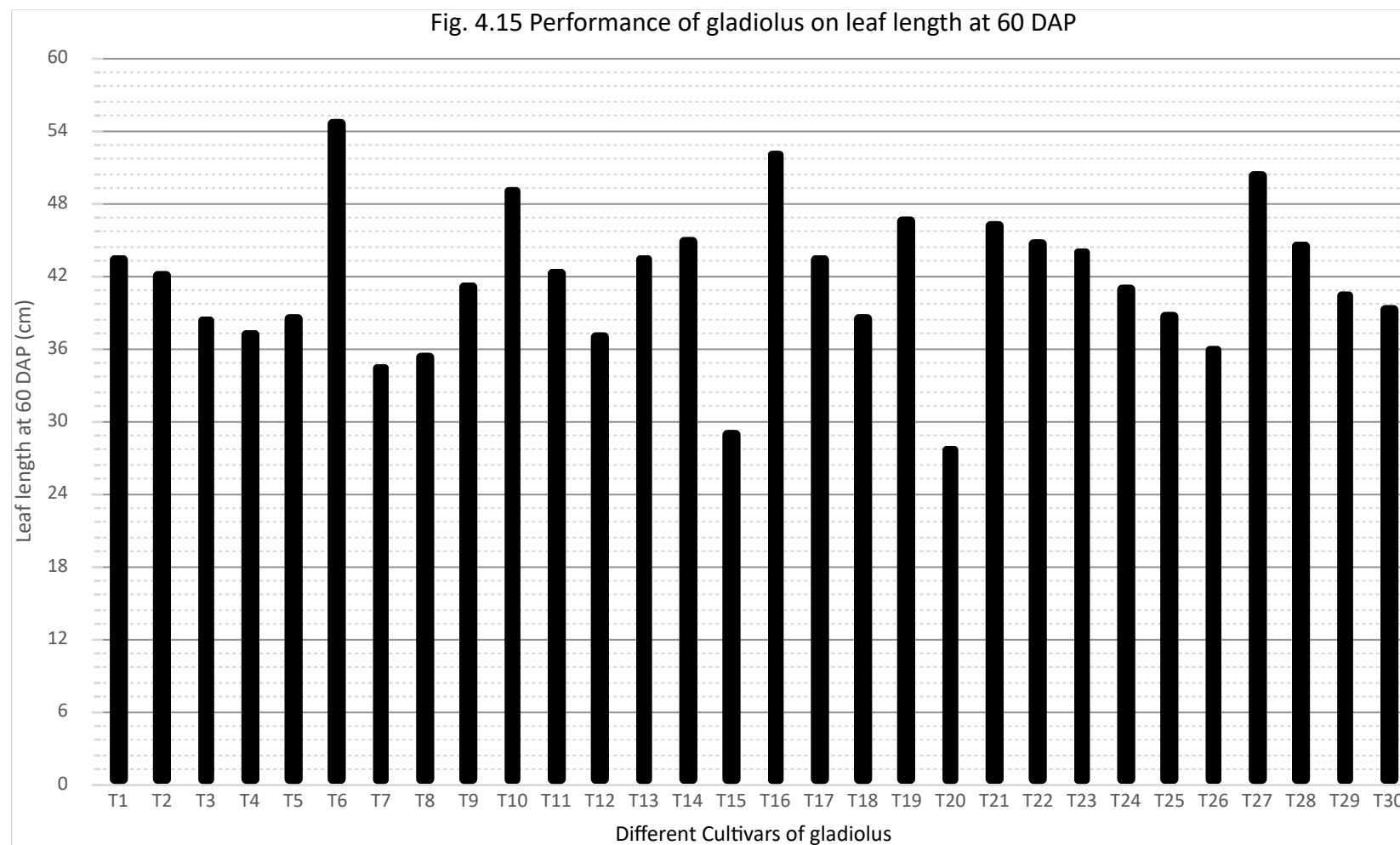


Table 4.16 Performance of gladiolus on width of scape at 30 DAP.

TREATMENTS	WIDTH OF SCAPE AT 30 DAP (cm)
T1-Aldebaran	1.52
T2-American Beauty	1.78
T3-Arti	1.10
T4-Chandni	0.93
T5-Darshan	0.99
T6-Dhanvantri	1.07
T7-Friendship Pink	1.60
T8-Green Star	1.60
T9-Gulal	1.38
T10-Hunting Song	1.35
T11-IIHR	0.89
T12-Jester Yellow	1.07
T13-Jyostna	1.11
T14-Mohini	1.69
T15-Nova Lux	0.79
T16-Plum Tart	1.33
T17-Priscilla	1.38
T18-Punjab Dawn	0.57
T19-Punjab Morning	0.70
T20-Pusa Kiran	1.00
T21-Pusa Shubham	1.10
T22-Regency	1.76
T23-Snow Princess	1.17
T24-Subhangini	0.90
T25-Sunanya	1.28
T26-Surya Kiran	0.88
T27-Swarnima	1.48
T28-Tiger Flame	1.29
T29-True Love	1.54
T30-White Prosperity	1.10
C.D. at 5%	0.28

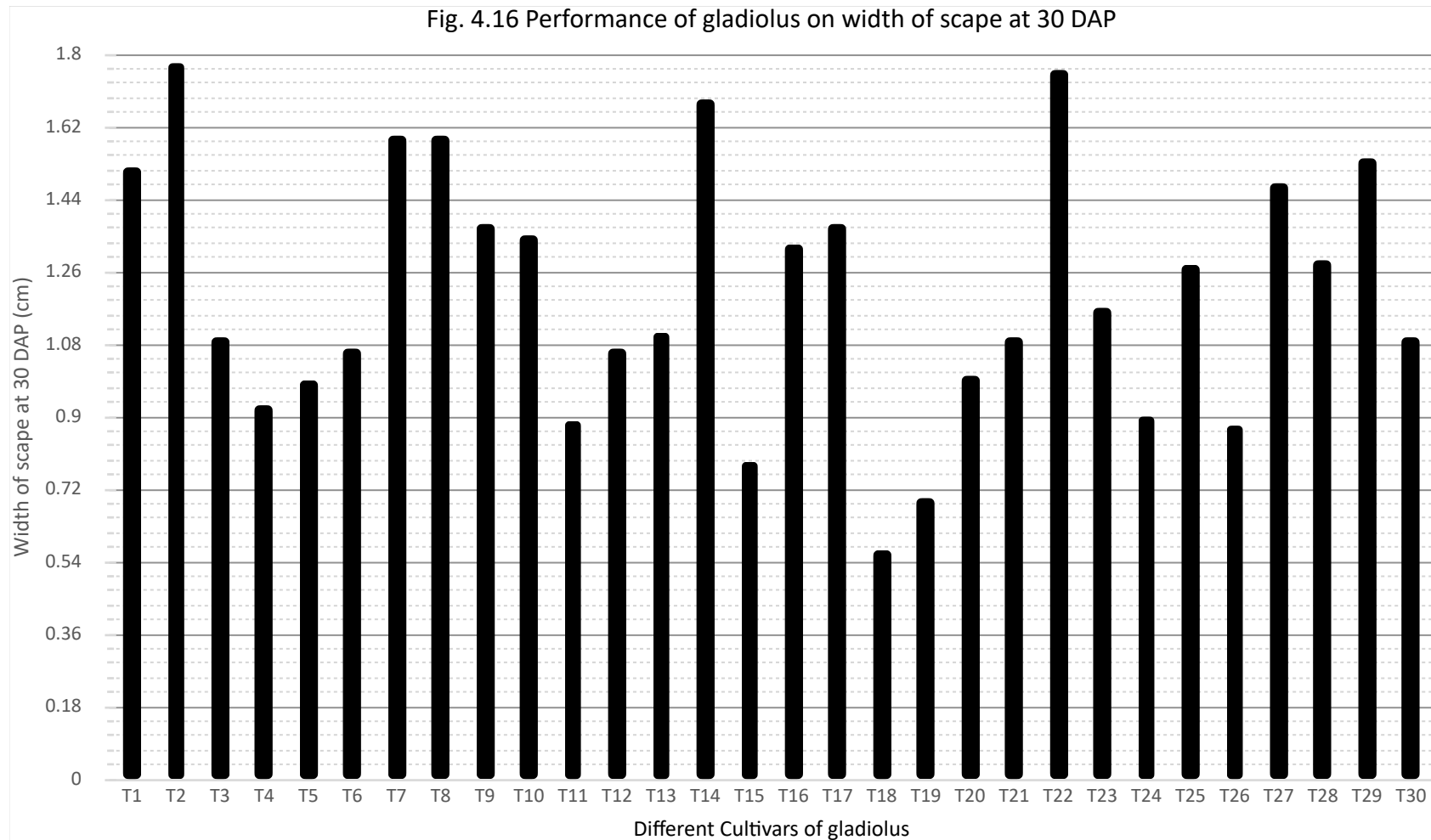


Table 4.17 Performance of gladiolus on width of scape at 45 DAP.

TREATMENTS	WIDTH OF SCAPE AT 45 DAP (cm)
T1-Aldebaran	1.60
T2-American Beauty	1.80
T3-Arti	1.22
T4-Chandni	1.20
T5-Darshan	1.01
T6-Dhanvantri	1.45
T7-Friendship Pink	1.93
T8-Green Star	1.70
T9-Gulal	1.48
T10-Hunting Song	1.40
T11-IIHR	1.24
T12-Jester Yellow	1.50
T13-Jyostna	1.16
T14-Mohini	2.01
T15-Nova Lux	1.18
T16-Plum Tart	1.49
T17-Priscilla	1.43
T18-Punjab Dawn	0.82
T19-Punjab Morning	0.84
T20-Pusa Kiran	1.05
T21-Pusa Shubham	1.20
T22-Regency	1.78
T23-Snow Princess	1.24
T24-Subhangini	1.35
T25-Sunanya	1.33
T26-Surya Kiran	0.91
T27-Swarnima	1.51
T28-Tiger Flame	1.51
T29-True Love	1.71
T30-White Prosperity	1.22
C.D. at 5%	0.22

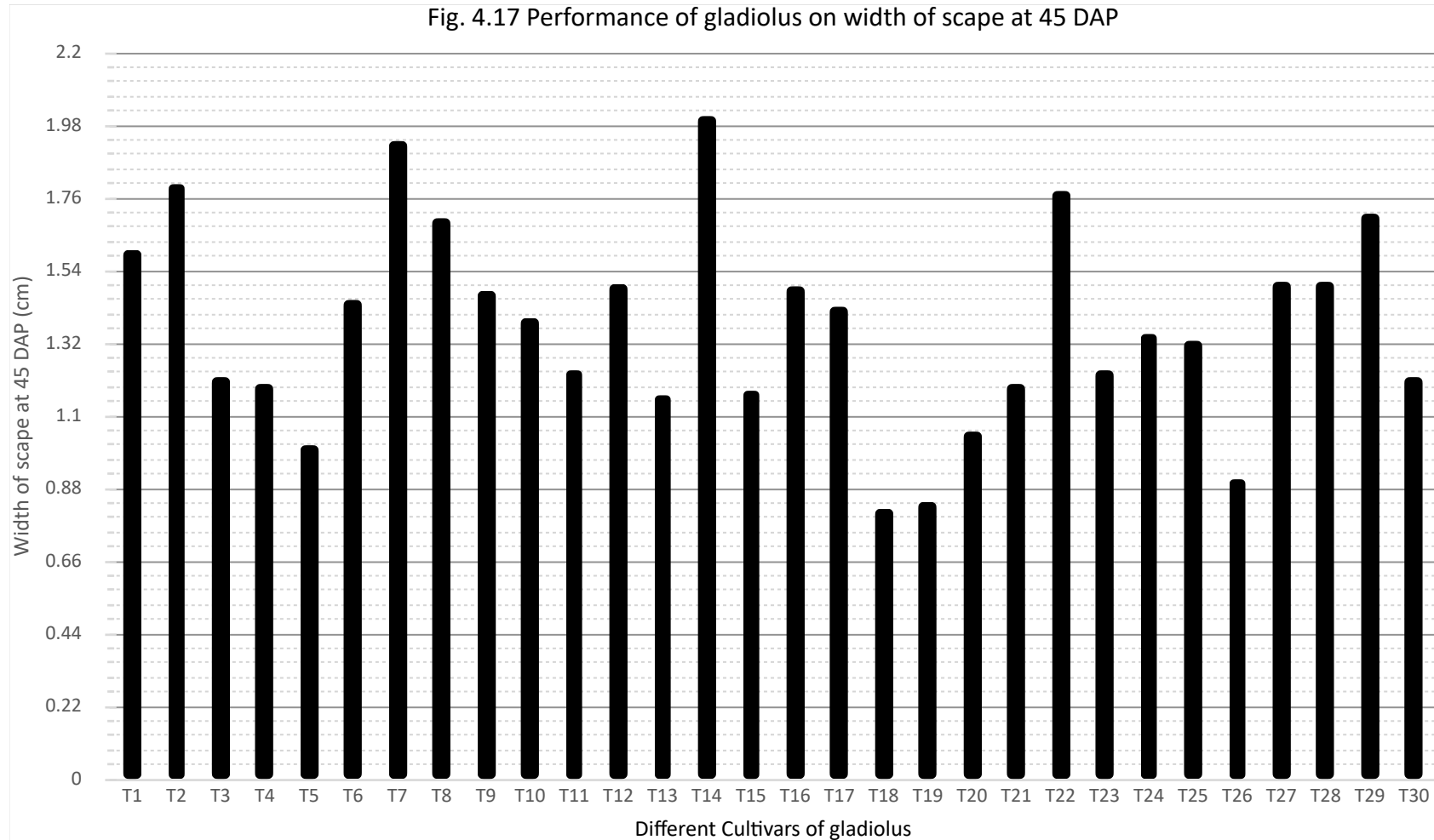


Table 4.18 Performance of gladiolus on width of scape at 60 DAP.

TREATMENTS	WIDTH OF SCAPE AT 60 DAP (cm)
T1-Aldebaran	1.67
T2-American Beauty	1.81
T3-Arti	1.01
T4-Chandni	1.03
T5-Darshan	1.06
T6-Dhanvantri	1.50
T7-Friendship Pink	2.13
T8-Green Star	1.72
T9-Gulal	1.53
T10-Hunting Song	1.46
T11-IIHR	1.30
T12-Jester Yellow	1.73
T13-Jyostna	1.11
T14-Mohini	2.07
T15-Nova Lux	1.22
T16-Plum Tart	1.58
T17-Priscilla	1.48
T18-Punjab Dawn	0.95
T19-Punjab Morning	0.87
T20-Pusa Kiran	1.13
T21-Pusa Shubham	1.27
T22-Regency	1.81
T23-Snow Princess	1.28
T24-Subhangini	1.39
T25-Sunanya	1.54
T26-Surya Kiran	0.98
T27-Swarnima	1.55
T28-Tiger Flame	1.59
T29-True Love	1.74
T30-White Prosperity	1.45
C.D. at 5%	0.21

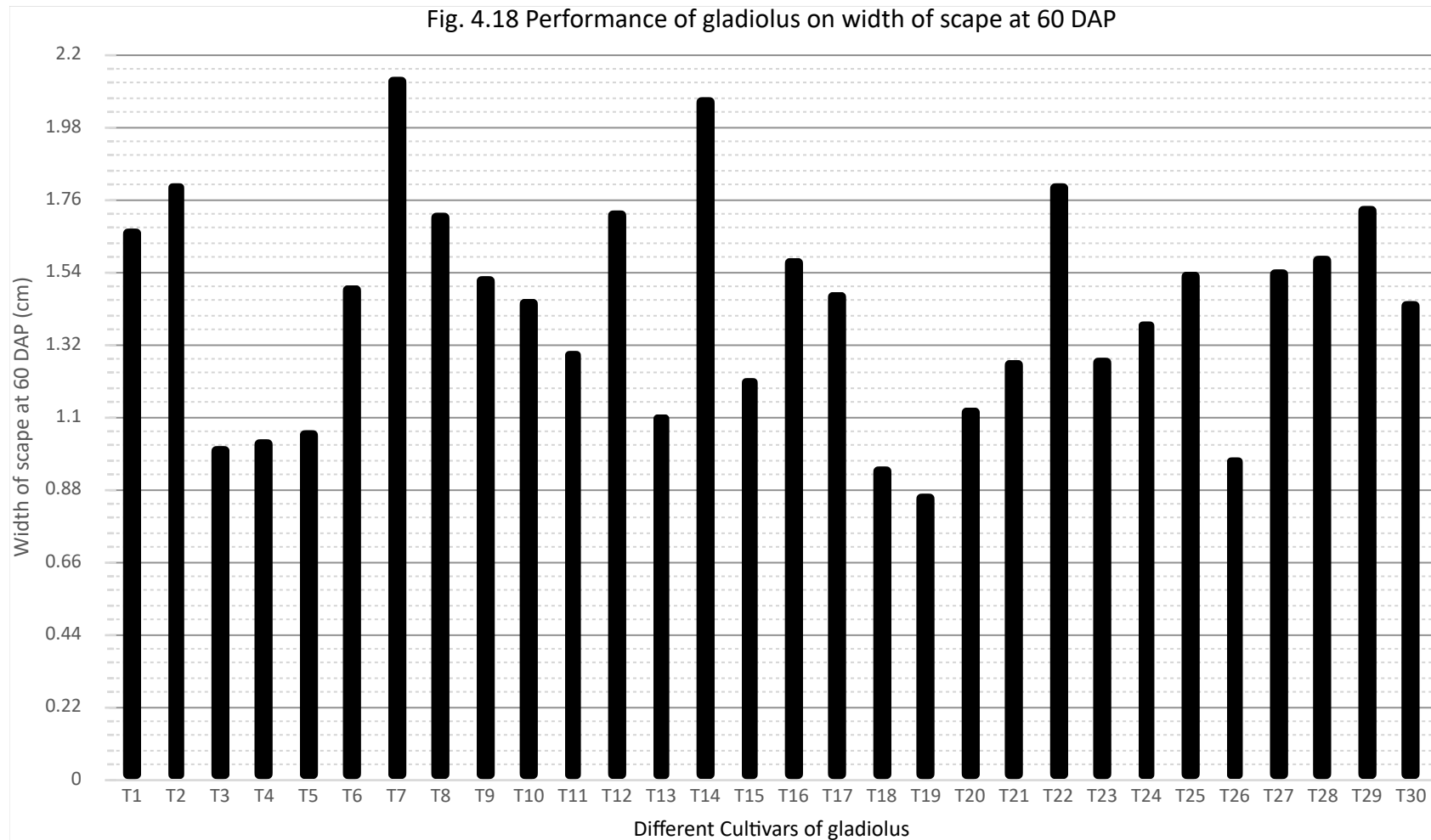


Table 4.19 Performance of gladiolus on leaf width at 30 DAP.

TREATMENTS	LEAF WIDTH AT 30 DAP (cm)
T1-Aldebaran	2.83
T2-American Beauty	3.49
T3-Arti	2.14
T4-Chandni	2.18
T5-Darshan	1.80
T6-Dhanvantri	2.77
T7-Friendship Pink	2.17
T8-Green Star	2.12
T9-Gulal	3.38
T10-Hunting Song	2.90
T11-IIHR	2.10
T12-Jester Yellow	2.06
T13-Jyostna	2.13
T14-Mohini	3.02
T15-Nova Lux	1.60
T16-Plum Tart	2.10
T17-Priscilla	2.27
T18-Punjab Dawn	1.08
T19-Punjab Morning	1.83
T20-Pusa Kiran	1.85
T21-Pusa Shubham	2.07
T22-Regency	3.54
T23-Snow Princess	3.46
T24-Subhangini	2.53
T25-Sunanya	3.58
T26-Surya Kiran	1.63
T27-Swarnima	2.98
T28-Tiger Flame	2.27
T29-True Love	2.68
T30-White Prosperity	3.37
C.D. at 5%	0.61

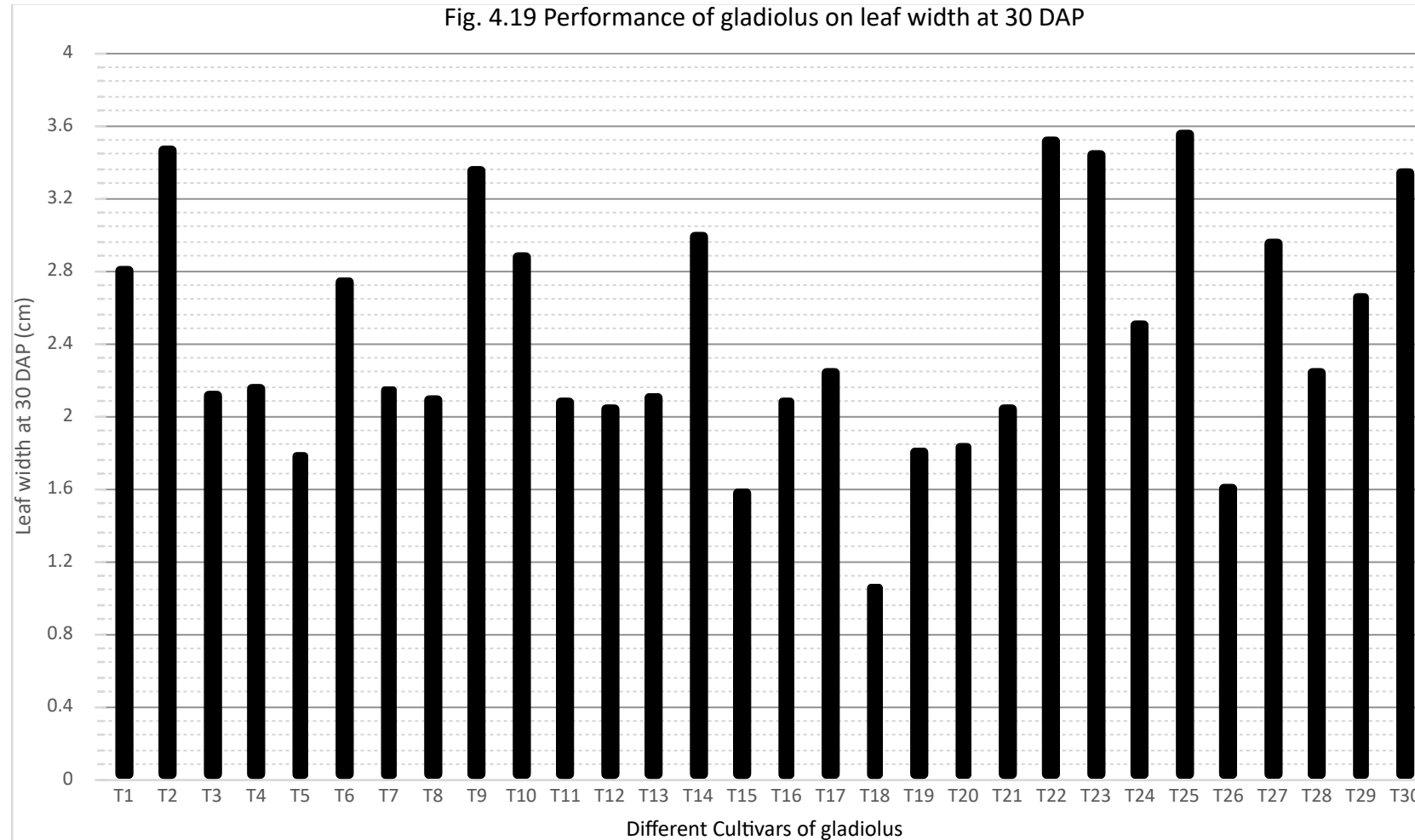


Table 4.20 Performance of gladiolus on leaf width at 45 DAP.

TREATMENTS	LEAF WIDTH AT 45 DAP (cm)
T1-Aldebaran	2.93
T2-American Beauty	3.72
T3-Arti	2.14
T4-Chandni	2.32
T5-Darshan	1.91
T6-Dhanvantri	3.43
T7-Friendship Pink	2.97
T8-Green Star	2.18
T9-Gulal	3.64
T10-Hunting Song	2.96
T11-IIHR	2.67
T12-Jester Yellow	2.87
T13-Jyostna	2.16
T14-Mohini	2.95
T15-Nova Lux	1.95
T16-Plum Tart	2.29
T17-Priscilla	2.67
T18-Punjab Dawn	1.53
T19-Punjab Morning	1.93
T20-Pusa Kiran	2.48
T21-Pusa Shubham	2.21
T22-Regency	3.61
T23-Snow Princess	3.85
T24-Subhangini	3.30
T25-Sunanya	3.88
T26-Surya Kiran	1.78
T27-Swarnima	3.11
T28-Tiger Flame	2.27
T29-True Love	2.81
T30-White Prosperity	3.76
C.D. at 5%	0.45

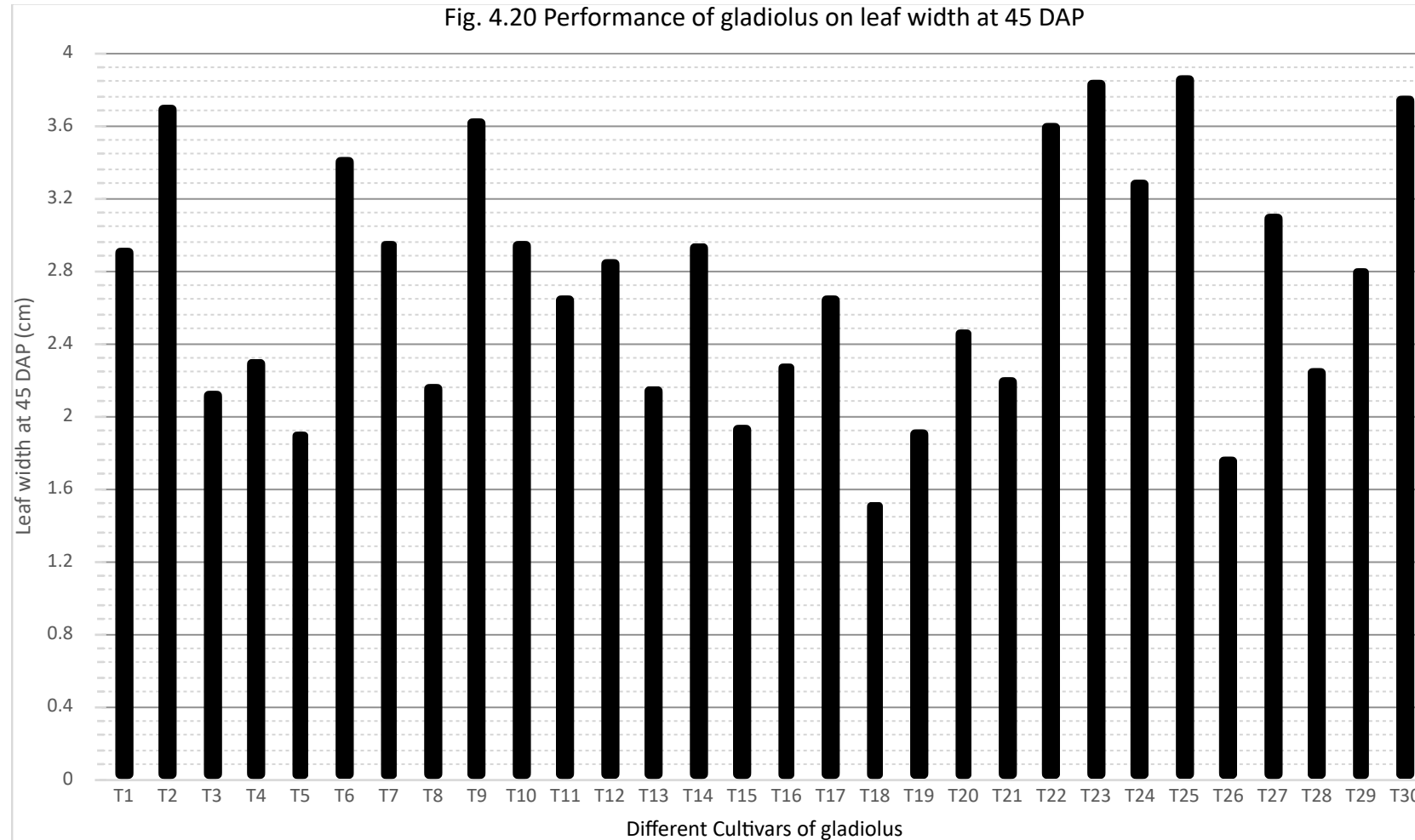
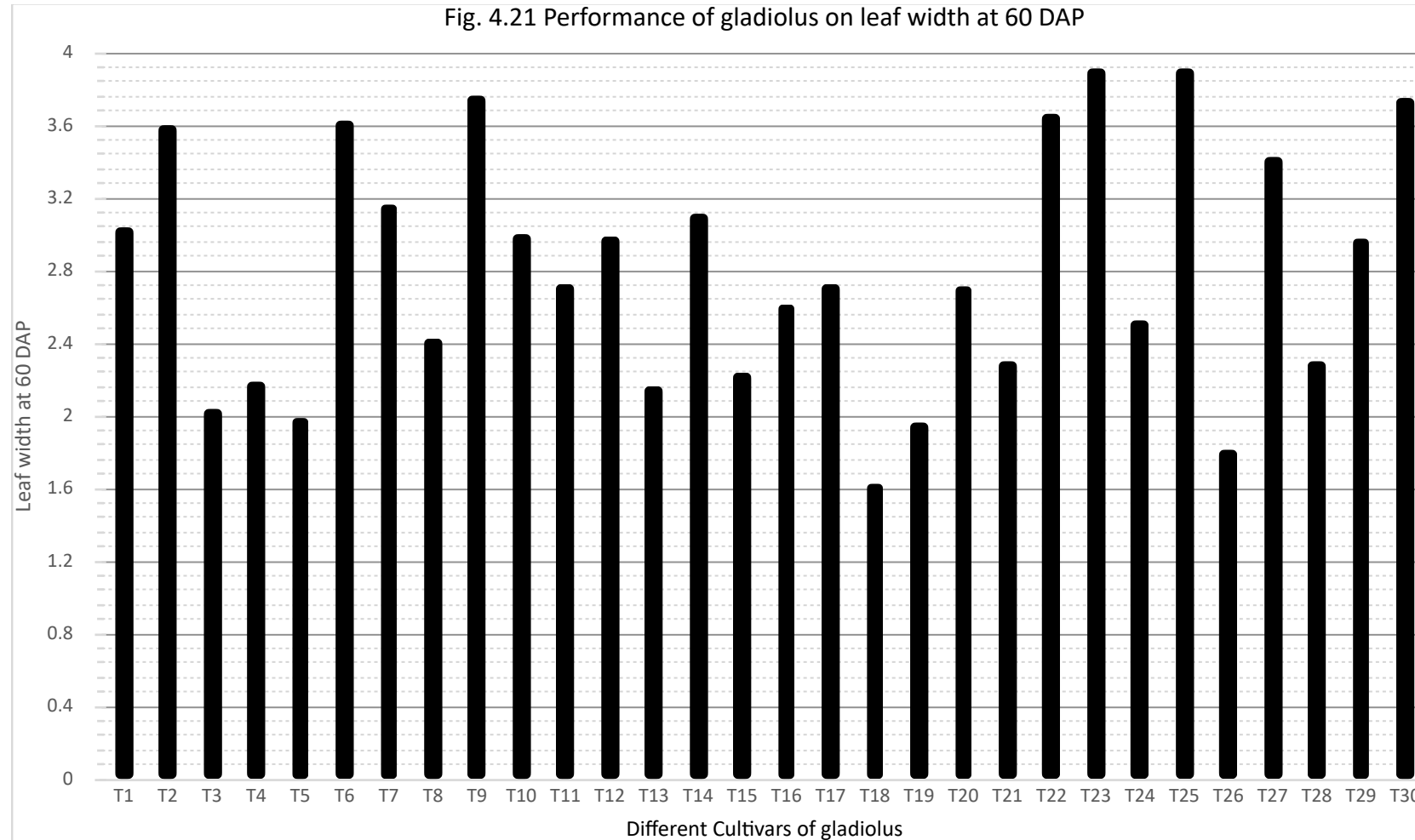


Table 4.21 Performance of gladiolus on leaf width at 60 DAP.

TREATMENTS	LEAF WIDTH AT 60 DAP (cm)
T1-Aldebaran	3.04
T2-American Beauty	3.60
T3-Arti	2.04
T4-Chandni	2.19
T5-Darshan	1.99
T6-Dhanvantri	3.63
T7-Friendship Pink	3.17
T8-Green Star	2.43
T9-Gulal	3.77
T10-Hunting Song	3.00
T11-IIHR	2.73
T12-Jester Yellow	2.99
T13-Jyostna	2.17
T14-Mohini	3.11
T15-Nova Lux	2.24
T16-Plum Tart	2.61
T17-Priscilla	2.73
T18-Punjab Dawn	1.63
T19-Punjab Morning	1.97
T20-Pusa Kiran	2.72
T21-Pusa Shubham	2.30
T22-Regency	3.67
T23-Snow Princess	3.92
T24-Subhangini	2.53
T25-Sunanya	3.92
T26-Surya Kiran	1.82
T27-Swarnima	3.43
T28-Tiger Flame	2.30
T29-True Love	2.98
T30-White Prosperity	3.75
C.D. at 5%	



4.2 Flowering parameters

Parameters recorded at reproductive phase in different cultivars of the experimental trail on gladiolus. Flowering parameters such as days to spike emergence, days to colour show, opening, withering, diameters and length of 1st, 3rd and 5th florets, no. of florets opened at a time, no. of opened florets/spike, no. of florets/spike, percentage of opened florets/spike, spike length and rachis length at two phases, internodal length, withering of last floret and total duration of flowering has been analysed and discussed under following headings and graphically represented in form of bar graph.

4.2.1 Days to spike emergence

Number of days to spike emergence after planting of gladiolus is discussed below and presented in Table 4.22 while graphically represented in Fig. 4.22.

The result showed that the maximum days to spike emergence was found in cultivar Swarnima (87.50 days) and was significant to all other cultivars except cultivars Punjab Dawn, True Love, Tiger Flame, Green Star, Jester Yellow, Darshan, Nova Lux, Pusa Kiran, Arti and Friendship Pink which were statistically at par with cultivar Swarnima. The result was followed by cultivars Dhanvantri, Pusa Shubham, Surya Kiran and Aldebaran.

The minimum days to days to spike emergence was found in cultivar Chandni (69.77 days) and was significant to all other cultivars except cultivars American Beauty, Sunanya, IIHR and Jyostna, which were which were statistically at par with cultivar Chandni. The result was followed by cultivars Snow Princess, Subhangini, Priscilla, White Prosperity, Hunting Song, Gulal, Regency, Mohini, Punjab Morning and Plum Tart.

4.2.2 Days to colour show

Number of days to colour show after planting of gladiolus is discussed below and presented in Table 4.23 while graphically represented in Fig. 4.23.

The result showed that the maximum no. of days to colour show was found in cultivar True Love (99 days) and was significant to all other cultivars except cultivars Green Star, Punjab Dawn, Jester Yellow, Arti, Friendship Pink, Nova Lux, Pusa Kiran, Darshan, Dhanvantri and Swarnima, which were statistically at par with cultivar True Love. The result was followed by cultivars Tiger Flame, Surya Kiran, Aldebaran and Pusa Shubham.

The minimum no. of days to colour show was found in cultivar Jyostna (79.83 days) and was significant to all other cultivars except cultivars American Beauty and Chandni, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Priscilla, IIHR, Sunanya, Subhangini, Snow Princess, White Prosperity, Regency, Punjab Morning, Gulal, Mohini, Hunting Song and Plum Tart.

4.2.3 First floret

No. of days to opening and withering, diameter and length of 1st floret of gladiolus is discussed in following sub headings.

4.2.3.1 Opening of first floret (days)

No. of days to opening of 1st floret in 30 cultivars of gladiolus is presented in Table 4.24 and graphically represented in Fig. 4.24.

The result showed that the maximum no. of days to opening of first floret was found in cultivar True Love (104.33 days) and was significant to all other cultivars except cultivars Swarnima, Punjab Dawn, Darshan, Dhanvantri, Friendship Pink and Arti, which were statistically at par with cultivar True Love. The result was followed by cultivars Tiger Flame, Pusa Kiran, Nova Lux, Green Star and Jester Yellow.

The minimum no. of days to opening of first floret was found in cultivar Jyostna (87.83 days) and was significant to all other cultivars except cultivars Chandni, American Beauty and Sunanya, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Priscilla, Subhangini, Snow Princess,

Regency, IIHR, Mohini, White Prosperity, Gulal, Hunting Song, Aldebaran, Plum Tart, Punjab Morning, Surya Kiran and Pusa Shubham.

4.2.3.2 Withering of first floret (days)

No. of days to withering of 1st floret in 30 cultivars of gladiolus is presented in Table 4.25 and graphically represented in Fig. 4.25.

The result showed that the maximum no. of days to withering of first floret was found in cultivar True Love (106.67 days) and was significant to all other cultivars except cultivars Swarnima, Punjab Dawn, Darshan, Nova Lux and Dhanvantri, which were statistically at par with cultivar True Love. The result was followed by cultivars Arti, Pusa Kiran, Tiger Flame, Friendship Pink, Jester Yellow, Green Star, Surya Kiran and Pusa Shubham.

The minimum no. of days to withering of first floret was found in cultivar Jyostna (90.83 days) and was significant to all other cultivars except cultivars Chandni, American Beauty and Sunanya, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Priscilla, Subhangini, Snow Princess, IIHR, Regency, Hunting Song, Gulal, White Prosperity, Mohini, Aldebaran, Plum Tart and Punjab Morning.

4.2.3.3 Diameter of first floret (cm)

Diameter of 1st floret in 30 cultivars of gladiolus is presented in Table 4.26 and graphically represented in Fig. 4.26.

The result showed that the maximum diameter of first floret was found in the cultivar American Beauty (11.17 cm) and was significantly larger than all other cultivars except IIHR which was only one statistically at par with cultivar American Beauty. The result was followed by cultivars Pusa Shubham, Tiger Flame, Aldebaran, Priscilla, Mohini, Green Star, Plum Tart, Friendship Pink, Sunanya, White Prosperity, Gulal, Dhanvantri, Nova Lux, Jyostna and Hunting Song.

The minimum diameter of the first floret was found in the cultivar Pusa Kiran (5.60 cm) and was significant to all other cultivars except cultivars Regency, Darshan, Snow Princess and Arti which were statistically at par with cultivar Pusa Kiran. The result was followed by cultivars True Love, Chandni, Swarnima, Subhangini, Jester Yellow, Surya Kiran, Punjab Morning and Punjab Dawn.

4.2.3.4 Length of first floret (cm)

Length of 1st floret in 30 cultivars of gladiolus is presented in Table 4.27 and graphically represented in Fig. 4.27.

The result showed that the maximum length of first floret was found in the cultivar IIHR (11.50 cm) and was significantly bigger than all other cultivars except American Beauty which was only one statistically at par with cultivar IIHR. The result was followed by cultivars Dhanvantri, Pusa Shubham, White Prosperity, Hunting Song, Jyostna, Subhangini, Friendship Pink, Priscilla, Sunanya, Tiger Flame, Gulal, Green Star, Mohini, Swarnima and Snow Princess.

The minimum length of first floret was found in the cultivar Regency (7.77 cm) and was significant to all other cultivars except cultivar Pusa Kiran, which was statistically at par with cultivar Regency. The result was followed by cultivars Darshan, Jester Yellow, True Love, Chandni, Arti, Plum Tart, Punjab Morning, Nova Lux, Punjab Dawn, Surya Kiran and Aldebaran.

4.2.4 Third floret

No. of days to opening and withering, diameter and length of 3rd floret of gladiolus is discussed in following sub headings.

4.2.4.1 Opening of third floret (days)

No. of days to opening of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.28 and graphically represented in Fig. 4.28.

The result showed that the maximum no. of days to opening of third floret was found in cultivar True Love (105.67 days) and was significant to all other cultivars except cultivars Swarnima, Punjab Dawn, Arti, Darshan and Dhanvantri, which were statistically at par with cultivar True Love. The result was followed by cultivars Pusa Kiran, Friendship Pink, Tiger Flame, Nova Lux, Green Star, Jester Yellow and Pusa Shubham.

The minimum no. of days to opening of third floret was found in cultivar Jyostna (89.17 days) and was significant to all other cultivars except cultivars American Beauty, Chandni and Sunanya, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Priscilla, Subhangini, Regency, IIHR, Snow Princess, Mohini, White Prosperity, Hunting Song, Gulal, Punjab Morning, Plum Tart, Surya Kiran and Aldebaran.

4.2.4.2 Withering of third floret (days)

No. of days to withering of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.29 and graphically represented in Fig. 4.29.

The result showed that the maximum no. of days to wither third floret was found in cultivar True Love (108.33 days) and was significant to all other cultivars except cultivars Swarnima, Punjab Dawn and Arti, which were statistically at par with cultivar True Love. The result was followed by cultivars Darshan, Pusa Kiran, Dhanvantri, Nova Lux, Tiger Flame, Friendship Pink, Jester Yellow, Green Star and Surya Kiran.

The minimum no. of days to withering of third floret was found in cultivar Jyostna (92.67 days) and was significant to all other cultivars except cultivars Chandni, American Beauty and Sunanya, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Subhangini, Priscilla, Hunting Song, IIHR, Snow Princess, Regency, White Prosperity, Gulal, Mohini, Plum Tart, Aldebaran, Punjab Morning and Pusa Shubham.

4.2.4.3 Diameter of third floret (cm)

Diameter of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.30 and graphically represented in Fig. 4.30.

The result showed that the maximum diameter of the 3rd floret was found in the cultivar American Beauty (10.67 cm) and was significantly larger than all other cultivars except IIHR, which was only one statistically at par with cultivar American Beauty. The result was followed by cultivars Mohini, Priscilla, Aldebaran, Friendship Pink, White Prosperity, Plum Tart, Tiger Flame, Pusa Shubham, Sunanya, Gulal, Dhanvantri, Green Star, Hunting Song and Jyostna.

The minimum diameter of third floret was found in the cultivar Pusa Kiran (5.63 cm) and was significant to all other cultivars except cultivars Darshan, Arti, Regency, Swarnima and Snow Princess, which were statistically at par with cultivar Pusa Kiran. The result was followed by cultivars Chandni, Punjab Morning, Subhangini, True Love, Punjab Dawn, Nova Lux, Jester Yellow and Surya Kiran.

4.2.4.4 Length of third floret (cm)

The length of the 3rd floret in 30 cultivars of gladiolus is presented in Table 4.31 and graphically represented in Fig. 4.31.

The result showed that the maximum length of third floret was found in the cultivar American Beauty (10.87 cm) and was significant to all other cultivars except cultivars IIHR, Dhanvantri, Pusa Shubham, Friendship Pink, White Prosperity and Mohini, which were statistically at par with cultivar American Beauty. The result was followed by cultivars Tiger Flame, Priscilla, Sunanya, Subhangini, Gulal, Hunting Song, True Love, Jyostna, Surya Kiran, Aldebaran and Swarnima.

The minimum length of third floret was found in the cultivar Regency (7.57 cm) and was significant to all other cultivars except cultivars Darshan and Pusa Kiran, which were statistically at par with cultivar Regency. The result was followed by cultivars Nova Lux, Jester Yellow, Chandni, Punjab Morning, Snow Princess, Arti, Green Star, Plum Tart and Punjab Dawn.

4.2.5 Fifth floret

No. of days to opening and withering, diameter and length of 5th floret of gladiolus is discussed in following sub headings.

4.2.5.1 Opening of fifth floret (days)

No. of days to opening of 5th floret in 30 cultivars of gladiolus is presented in Table 4.32 and graphically represented in Fig. 4.32.

The result showed that the maximum no. of days to opening of fifth floret was found in cultivar True Love (107.0 days) and was significant to all other cultivars except cultivars Swarnima, Punjab Dawn, Arti, Darshan and Dhanvantri, which were statistically at par with cultivar True Love. The result was followed by cultivars Tiger Flame, Pusa Kiran, Friendship Pink, Nova Lux, Jester Yellow, Green Star and Pusa Shubham.

The minimum days to opening of fifth floret was found in cultivar Jyostna (91.0 days) and was significant to all other cultivars except cultivars Chandni, American Beauty, Sunanya, Subhangini, Priscilla and Regency, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Snow Princess, IIHR, Mohini, Hunting Song, White Prosperity, Gulal, Punjab Morning, Plum Tart, Aldebaran and Surya Kiran.

4.2.5.2 Withering of fifth floret (days)

No. of days to withering of 5th floret in 30 cultivars of gladiolus is presented in Table 4.33 and graphically represented in Fig. 4.33.

The result showed that the maximum no. of days to withering fifth floret was found in cultivar True Love (109.67 days) and was significant to all other cultivars except cultivars Swarnima, Darshan, Punjab Dawn, Pusa Kiran and Arti, which were statistically at par with cultivar True Love. The result was followed by cultivars Dhanvantri, Nova Lux, Friendship Pink, Tiger Flame, Jester Yellow, Green Star, Surya Kiran and Pusa Shubham.

The minimum no. of days to withering fifth floret was found in cultivar Jyostna (94.19 days) and was significant to all other cultivars except cultivars American Beauty, Chandni, Sunanya, Snow Princess, IIHR, Regency and Subhangini, which were statistically at par with cultivar Jyostna. The result was followed by cultivars Priscilla, Hunting Song, White Prosperity, Gulal, Mohini, Plum Tart, Punjab Morning, Aldebaran.

4.2.5.3 Diameter of fifth floret (cm)

Diameter of 5th floret in 30 cultivars of gladiolus is presented in Table 4.34 and graphically represented in Fig. 4.34.

The result showed that the maximum diameter of fifth floret was found in cultivar American Beauty (10.17 cm) and was significant to all other cultivars except cultivars Surya Kiran, Mohini, IIHR, Friendship Pink, Subhangini, Aldebaran, Priscilla, White Prosperity, Sunanya and Hunting Song, which were statistically at par with cultivar American Beauty. The result was followed by cultivars Plum Tart, True Love, Gulal, Dhanvantri, Pusa Shubham and True Love.

The minimum diameter of fifth floret (5.70 cm) were found in cultivar Darshan and Arti and were significant to all other cultivars except cultivars Pusa Kiran, Snow Princess, Regency, Chandni, Punjab Morning, Punjab Dawn, Jester Yellow and Nova Lux, which were statistically at par with cultivars Darshan and Pusa Kiran. The result was followed by cultivars Swarnima, Jyostna and Green Star.

4.2.5.4 Length of fifth floret (cm)

The length of 5th floret in 30 cultivars of gladiolus is presented in Table 4.35 and graphically represented in Fig. 4.35.

The result showed that the maximum length of fifth floret was found in cultivar American Beauty (10.50 cm) and was significant to all other cultivars except cultivars Friendship Pink, IIHR, White Prosperity, Dhanvantri, Hunting Song, Sunanya, Gulal, Pusa Shubham, Mohini, Priscilla and Snow Princess, which were

statistically at par with cultivar American Beauty. The result was followed by cultivars Jyostna, Subhangini, Swarnima, Plum Tart, Tiger Flame and Surya Kiran.

The minimum length of fifth floret was found in cultivar Regency (7.33 cm) and was significant to all other cultivars except cultivars Darshan and Jester Yellow, which were statistically at par with cultivar Regency. The result was followed by cultivars Nova Lux, Chandni, Punjab Dawn, Punjab Morning, Pusa Kiran, Green Star, Aldebaran, Arti and True Love.

4.2.6 No. of florets opened at a time

No. of florets opened at a time in gladiolus is discussed below and presented in Table 4.36 while graphically represented in Fig. 4.36.

The result showed that the maximum no. of florets opened at a time was found in cultivar Mohini (6.37) and was significant to all other cultivars except cultivars Priscilla, Green Star, Chandni and Punjab Morning, which were statistically at par with cultivar Mohini. The result was followed by cultivars Snow Princess, White Prosperity, American Beauty, IIHR, Subhangini, Gulal, Plum Tart, Jyostna, Friendship Pink, Hunting Song, Pusa Kiran and Sunanya.

The minimum no. of florets opened at a time was found in cultivar True Love (3.33) and was significant to all other cultivars except cultivars Arti, Regency, Surya Kiran, Darshan and Pusa Shubham, which were statistically at par with cultivar True Love. The result was followed by cultivars Swarnima, Jester Yellow, Tiger Flame, Dhanvantri, Punjab Dawn and Nova Lux.

4.2.7 No. of opened florets/spike

Number of opened florets per spike of gladiolus is discussed below and presented in Table 4.37 while graphically represented in Fig. 4.37.

The result showed that the maximum number of opened florets per spike was found in cultivar True Love (17) and was significantly greater to all other cultivars except cultivar Friendship Pink, which was only statistically at par with cultivar True

Love. The result was followed by cultivars Hunting Song, Green Star, Jester Yellow, Regency, Dhanvantri, Snow Princess, Surya Kiran, Mohini and Tiger Flame.

The minimum number of opened florets per spike was found in cultivar Aldebaran (6) and was significant to all other cultivars except Pusa Shubham, Punjab Morning, Arti, Chandni, Darshan and Sunanya, which were statistically at par with cultivar Aldebaran. The result was followed by cultivars Nova Lux, Punjab Dawn, Plum Tart, Jyostna, Subhangini, White Prosperity, Swarnima, Pusa Kiran, American Beauty, Gulal, IIHR and Priscilla.

4.2.8 No. of florets/spike

Number of florets per spike of gladiolus is discussed below and presented in Table 4.38 while graphically represented in Fig. 4.38.

The result showed that the maximum number of florets per spike was found in cultivar True Love (18) and was significantly greater to all other cultivars except cultivar Friendship Pink, which was only statistically at par with cultivar True Love. The result was followed by cultivars Hunting Song, Green Star, Jester Yellow, Regency, Snow Princess, Dhanvantri, Surya Kiran, Mohini, Tiger Flame and American Beauty.

The minimum number of florets per spike was found in cultivar Aldebaran (7.20) and was significant to all other cultivars except Punjab Morning, Pusa Shubham, Arti, Chandni, Darshan and Sunanya, which were statistically at par with cultivar Aldebaran. The result was followed by cultivars Punjab Dawn, Nova Lux, Jyostna, Plum Tart, Subhangini, White Prosperity, Swarnima, Pusa Kiran, Gulal, IIHR and Priscilla.

4.2.9 Percentage of opened florets/spike

Percentage of opened florets per spike of gladiolus is discussed below and presented in Table 4.39 while graphically represented in Fig. 4.39.

The result showed that the maximum percentage of opened florets per spike was found in cultivar True Love (94.40 %) and was significant to all other cultivars except cultivars Friendship Pink, Hunting Song, Jester Yellow, Regency, Dhanvantri, Green Star, Tiger Flame, Mohini and Surya Kiran, which were statistically at par with cultivar True Love. The result was followed by cultivars IIHR, Gulal, Snow Princess, Priscilla, Swarnima, Pusa Kiran and White Prosperity.

The minimum percentage of opened florets per spike was found in cultivar Aldebaran (83.03%) and was significantly smaller than all other cultivars except cultivar Arti, which was only statistically at par with cultivar Aldebaran. The result was followed by cultivars Pusa Shubham, Punjab Morning, Arti, Chandni, Sunanya, Nova Lux, Punjab Dawn, Plum Tart and Subhangini.

4.2.10 Spike length (cm)

Spike length at two phases of gladiolus is discussed under following sub headings.

4.2.10.1 Initial spike length

Initial spike length for 30 cultivars of gladiolus is presented in Table 4.40 and graphically represented in Fig. 4.40.

The result showed that the maximum initial spike length was found in cultivar True Love (78 cm) and was significantly longer than all other cultivars except cultivar Tiger Flame, which was only statistically at par with cultivar True Love. The result was followed by cultivars Dhanvantri, Mohini, Green Star, Hunting Song, Snow Princess, IIHR, Friendship Pink, Regency, Jester Yellow, Priscilla, American Beauty, White Prosperity, Sunanya, Plum Tart and Subhangini.

The minimum initial spike length was found in cultivar Arti (33.97 cm) and was significant to all other cultivars except cultivars Darshan, Punjab Morning, Pusa Shubham and Aldebaran, which were statistically at par with cultivar Arti. The result

was followed by cultivars Surya Kiran, Punjab Dawn, Gulal, Nova Lux, Chandni, Pusa Kiran, Swarnima and Jyostna.

4.2.10.2 Final spike length

Final spike length for 30 cultivars of gladiolus is presented in Table 4.41 and graphically represented in Fig. 4.41.

The result showed that the maximum final spike length was found in cultivar True Love (78.50 cm) and was significant to all other cultivars except cultivars Tiger Flame, Dhanvantri and Mohini, which were statistically at par with cultivar True Love. The result was followed by cultivars Green Star, Hunting Song, Snow Princess, IIHR, Friendship Pink, Priscilla, Regency, Jester Yellow, American Beauty, White Prosperity, Plum Tart, Subhangini and Sunanya.

The minimum final spike length was found in cultivar Arti (34.10 cm) and was significant to all other cultivars except cultivars Darshan, Punjab Morning, Pusa Shubham and Aldebaran, which were statistically at par with cultivar Arti. The result was followed by cultivars Punjab Dawn, Surya Kiran, Gulal, Nova Lux, Pusa Kiran, Chandni, Jyostna and Swarnima.

4.2.11 Rachis length (cm)

Rachis length at two phases of gladiolus is discussed under following sub headings.

4.2.11.1 Initial rachis length

Initial rachis length of 30 cultivars of gladiolus is presented in Table 4.42 and graphically represented in Fig. 4.42.

The result showed that the maximum initial rachis length was found in cultivar True Love (56.50 cm) and was significantly longer, with all other cultivars statistically non-significant. The result was followed by cultivars Tiger Flame, Hunting Song, Snow Princess, Dhanvantri, Mohini, Green Star, IIHR, White

Prosperity, Friendship Pink, Regency, Jester Yellow, Subhangini, American Beauty, Plum Tart, Priscilla, Swarnima and Pusa Kiran.

The minimum initial rachis length was found in cultivar Punjab Morning (19.63 cm) and was significant to all other cultivars except cultivars Darshan, Arti, Punjab Dawn, Chandni, Pusa Shubham, Aldebaran, Nova Lux and Jyostna, which were statistically at par with cultivar Punjab Morning. The result was followed by cultivars Surya Kiran, Sunanya and Gulal.

4.2.11.2 Final rachis length

Final rachis length of 30 cultivars of gladiolus is presented in Table 4.43 and graphically represented in Fig. 4.43.

The result showed that the maximum final rachis length was found in cultivar True Love (57 cm) and was significantly longer with all other cultivars statistically non-significant. The result was followed by cultivars Tiger Flame, Hunting Song, Snow Princess, Dhanvantri, Mohini, Green Star, IIHR, White Prosperity, Friendship Pink, Regency, Jester Yellow, Subhangini, Priscilla, American Beauty, Swarnima and Plum Tart.

The minimum final rachis length was found in cultivar Punjab Morning (20.10 cm) and was significant to all other cultivars except cultivars Darshan, Arti, Punjab Dawn, Chandni, Aldebaran, Pusa Shubham, Nova Lux and Jyostna, which were statistically at par with cultivar Punjab Morning. The result was followed by cultivars Surya Kiran, Sunanya, Gulal and Pusa Kiran.

4.2.12 Internodal length (cm)

The internodal length of spike of gladiolus is discussed below and presented in Table 4.44 while graphically represented in Fig. 4.44.

The result showed that the maximum internodal length was found in cultivar True Love (13.83 cm) and was significant to all other cultivars except cultivars Jester Yellow, IIHR, American Beauty, White Prosperity, Subhangini, Tiger Flame, Mohini,

Pusa Kiran, Hunting Song, Sunanya and Friendship Pink, which were statistically at par with cultivar True Love. The result was followed by cultivars Regency, Plum Tart, Snow Princess and Priscilla.

The minimum internodal length was found in cultivar Surya Kiran (8 cm) and was significant to all other cultivars except cultivars Punjab Morning, Arti and Darshan, which were statistically at par with cultivar Surya Kiran. The result was followed by cultivars Gulal, Punjab Dawn, Swarnima, Chandni, Aldebaran, Pusa Shubham, Dhanvantri, Green Star and Nova Lux.

4.2.13 Withering of last floret (days)

No. of days to withering of last floret in 30 cultivars of gladiolus is discussed below and presented in Table 4.45 while graphically represented in Fig. 4.45.

The result showed that the maximum no. of days to withering of last floret was found in cultivar True Love (114 days) and was significant to all other cultivars except cultivars Swarnima, Friendship Pink and Jester Yellow, which were statistically at par with cultivar True Love. The result was followed by cultivars Punjab Dawn, Dhanvantri, Nova Lux, Tiger Flame, Darshan, Pusa Kiran, Arti, Green Star and Surya Kiran.

The minimum no. of days for withering of last floret was found in cultivar Chandni (96.23 days) and was significant to all other cultivars except cultivars Jyostna, Regency, Subhangini, Sunanya and American Beauty. The result was followed by cultivars Priscilla, IIHR, White Prosperity, Snow Princess, Gulal, Aldebaran, Mohini, Plum Tart, Punjab Morning, Pusa Shubham and Hunting Song.

4.2.14 Total duration of flowering (days)

Total duration of flowering in 30 cultivars of gladiolus is discussed below and presented in Table 4.46 while graphically represented in Fig. 4.46.

The result showed that the maximum total duration of flowering was found in cultivar Surya Kiran (10.67 days) and was significant to all other cultivars except

cultivars Jester Yellow, Friendship Pink, Snow Princess, True Love, Hunting Song, Swarnima, American Beauty, Dhanvantri, Mohini, Jyostna, Priscilla, IIHR, Nova Lux and Tiger Flame, which were statistically at par with cultivar Surya Kiran.

The minimum field life of spike was found in the cultivar Regency (5.67) and was significant to all other cultivars except cultivars Subhangini, Aldebaran, Green Star, White Prosperity, Sunanya, Darshan, Pusa Shubham, Plum Tart, Arti, Punjab Dawn, Punjab Morning, Gulal, Pusa Kiran and Chandni, which were statistically at par with cultivar Regency.

Table 4.22 Performance of gladiolus on days to spike emergence.

TREATMENTS	DAYS TO SPIKE EMERGENCE
T1-Aldebaran	79.83
T2-American Beauty	71.20
T3-Arti	84.20
T4-Chandni	69.77
T5-Darshan	85.03
T6-Dhanvantri	83.20
T7-Friendship Pink	84.00
T8-Green Star	85.67
T9-Gulal	77.30
T10-Hunting Song	76.00
T11-IIHR	71.77
T12-Jester Yellow	85.67
T13-Jyostna	72.17
T14-Mohini	78.03
T15-Nova Lux	84.57
T16-Plum Tart	79.33
T17-Priscilla	74.33
T18-Punjab Dawn	87.17
T19-Punjab Morning	78.17
T20-Pusa Kiran	84.33
T21-Pusa Shubham	81.20
T22-Regency	77.67
T23-Snow Princess	74.07
T24-Subhangini	74.07
T25-Sunanya	71.50
T26-Surya Kiran	80.50
T27-Swarnima	87.50
T28-Tiger Flame	85.77
T29-True Love	86.00
T30-White Prosperity	75.13
C.D. at 5%	4.09

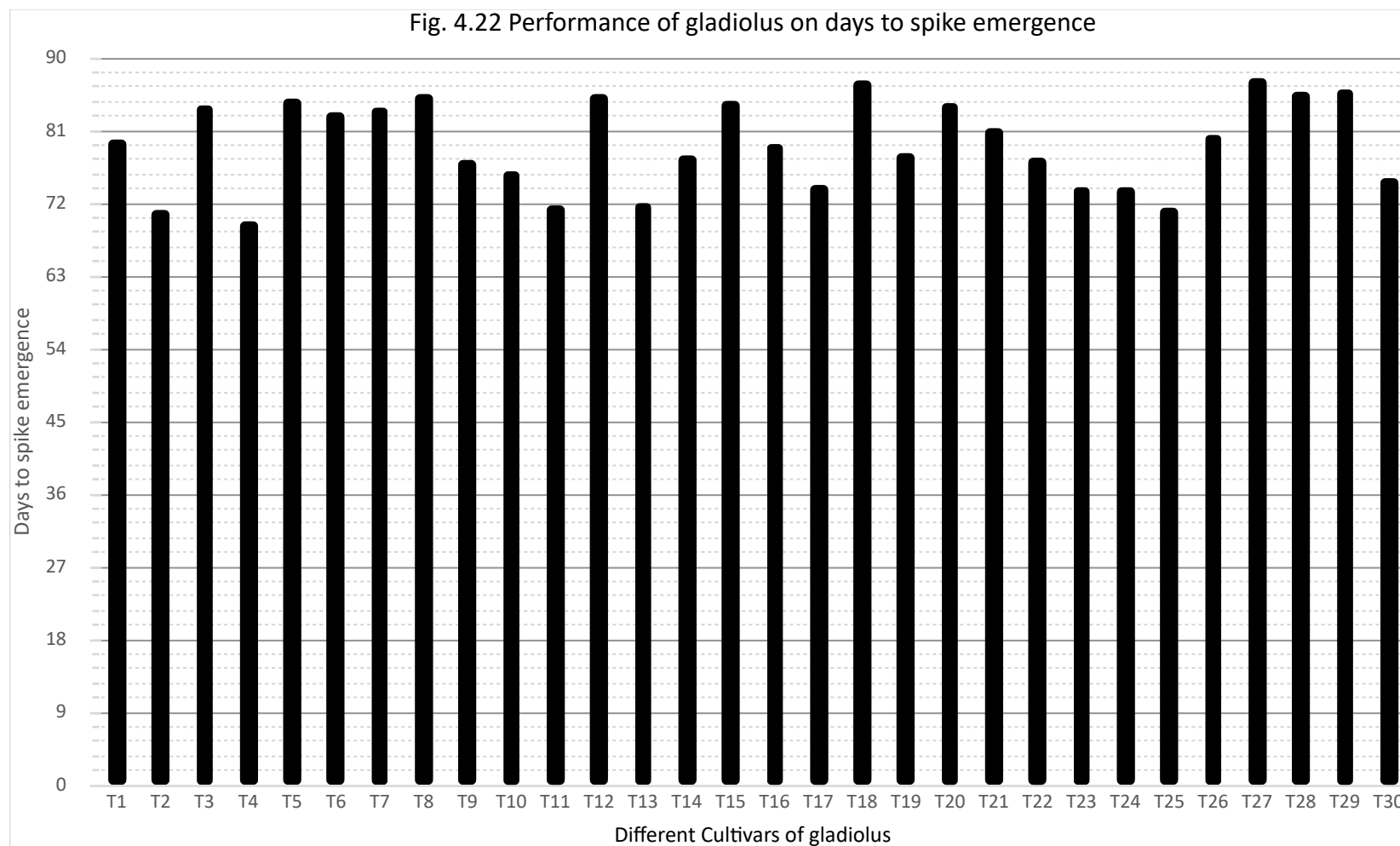


Table 4.23 Performance of gladiolus on days to colour show.

TREATMENTS	DAYS TO COLOUR SHOW
T1-Aldebaran	92.30
T2-American Beauty	82.57
T3-Arti	96.97
T4-Chandni	82.77
T5-Darshan	96.17
T6-Dhanvantri	95.10
T7-Friendship Pink	96.67
T8-Green Star	98.00
T9-Gulal	89.80
T10-Hunting Song	90.33
T11-IIHR	85.47
T12-Jester Yellow	97.00
T13-Jyostna	79.83
T14-Mohini	89.87
T15-Nova Lux	96.47
T16-Plum Tart	90.67
T17-Priscilla	84.77
T18-Punjab Dawn	97.83
T19-Punjab Morning	89.00
T20-Pusa Kiran	96.33
T21-Pusa Shubham	91.87
T22-Regency	87.33
T23-Snow Princess	86.33
T24-Subhangini	86.27
T25-Sunanya	85.97
T26-Surya Kiran	92.50
T27-Swarnima	95.03
T28-Tiger Flame	94.23
T29-True Love	99.00
T30-White Prosperity	86.83
C.D. at 5%	4.19

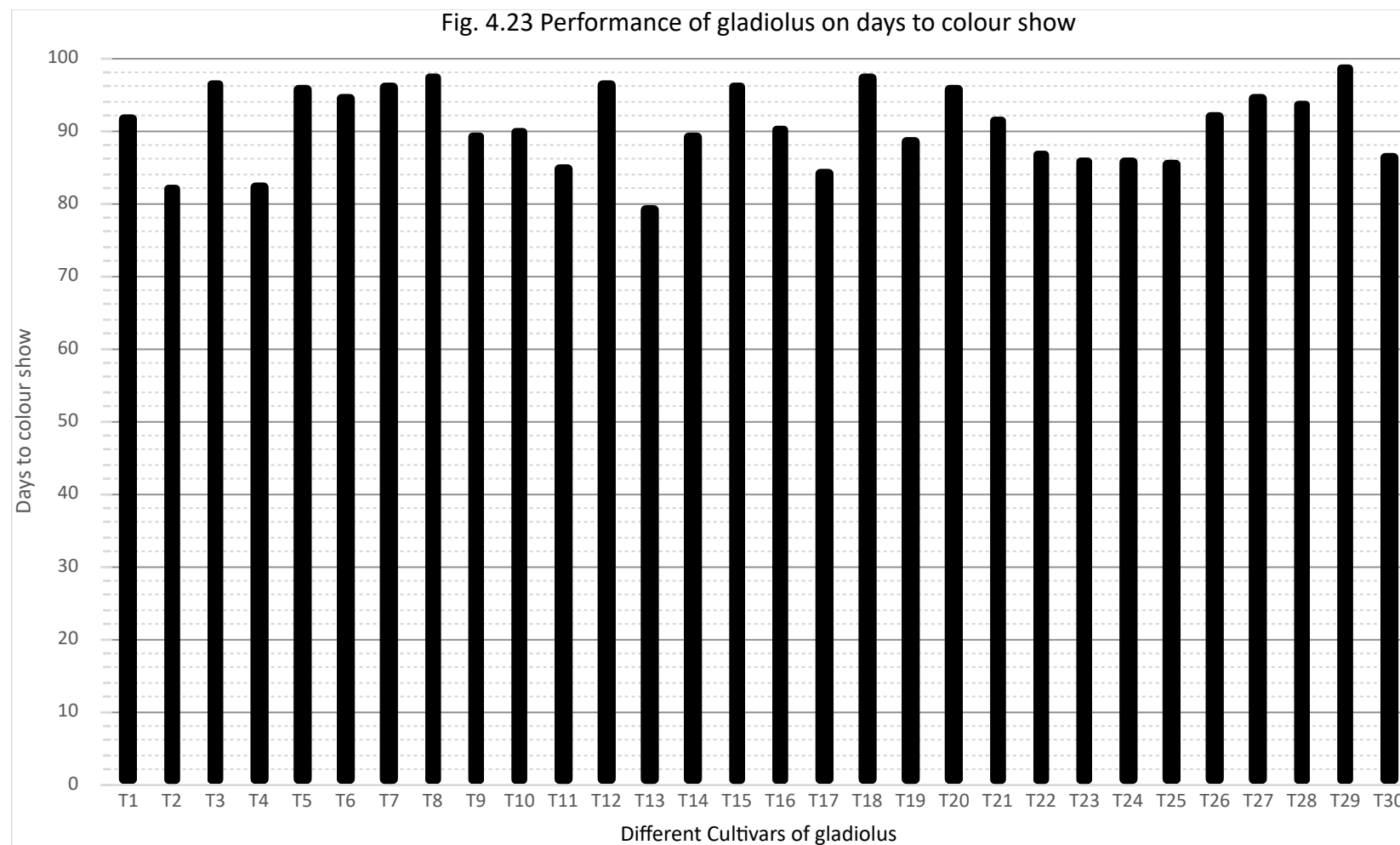


Table 4.24 Performance of gladiolus on opening of first floret.

TREATMENTS	OPENING OF FIRST FLORET (DAYS)
T1-Aldebaran	95.57
T2-American Beauty	90.23
T3-Arti	101.00
T4-Chandni	88.10
T5-Darshan	101.33
T6-Dhanvantri	101.13
T7-Friendship Pink	101.00
T8-Green Star	100.67
T9-Gulal	94.00
T10-Hunting Song	94.17
T11-IIHR	92.57
T12-Jester Yellow	100.33
T13-Jyostna	87.83
T14-Mohini	93.70
T15-Nova Lux	100.67
T16-Plum Tart	95.67
T17-Priscilla	91.43
T18-Punjab Dawn	102.83
T19-Punjab Morning	95.67
T20-Pusa Kiran	100.67
T21-Pusa Shubham	96.10
T22-Regency	92.33
T23-Snow Princess	92.00
T24-Subhangini	91.90
T25-Sunanya	90.93
T26-Surya Kiran	96.00
T27-Swarnima	102.83
T28-Tiger Flame	100.77
T29-True Love	104.33
T30-White Prosperity	93.83
C.D. at 5%	3.51

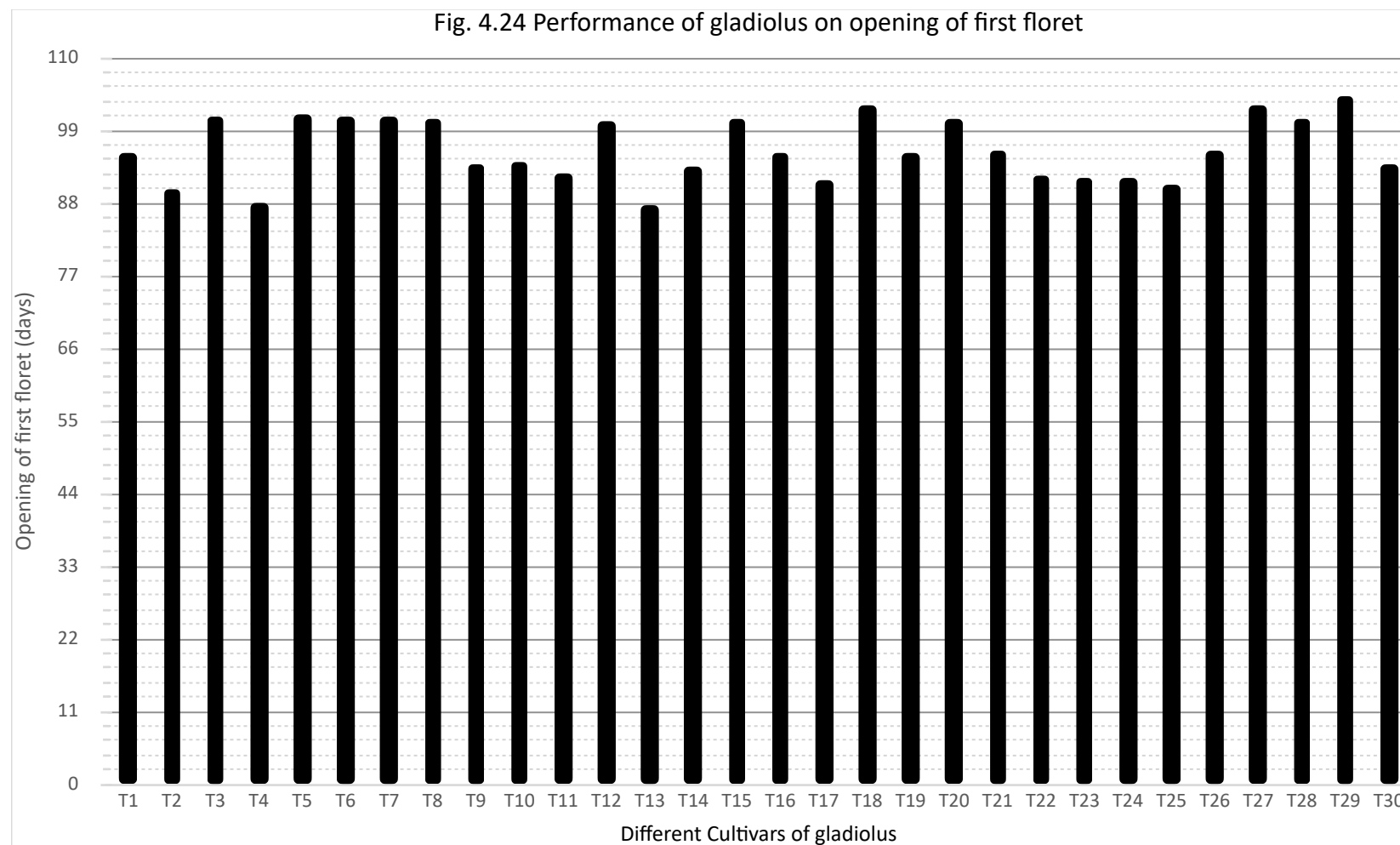


Table 4.25 Performance of gladiolus on withering of first floret.

TREATMENTS	WITHERING OF FIRST FLORET (DAYS)
T1-Aldebaran	97.80
T2-American Beauty	92.67
T3-Arti	103.33
T4-Chandni	92.33
T5-Darshan	103.57
T6-Dhanvantri	103.43
T7-Friendship Pink	102.67
T8-Green Star	101.67
T9-Gulal	96.13
T10-Hunting Song	95.33
T11-IIHR	94.77
T12-Jester Yellow	102.33
T13-Jyostna	90.83
T14-Mohini	96.90
T15-Nova Lux	103.57
T16-Plum Tart	97.90
T17-Priscilla	94.53
T18-Punjab Dawn	104.17
T19-Punjab Morning	98.33
T20-Pusa Kiran	103.33
T21-Pusa Shubham	98.47
T22-Regency	95.33
T23-Snow Princess	94.67
T24-Subhangini	94.60
T25-Sunanya	93.23
T26-Surya Kiran	99.83
T27-Swarnima	105.35
T28-Tiger Flame	102.90
T29-True Love	106.67
T30-White Prosperity	96.30
C.D. at 5%	3.29

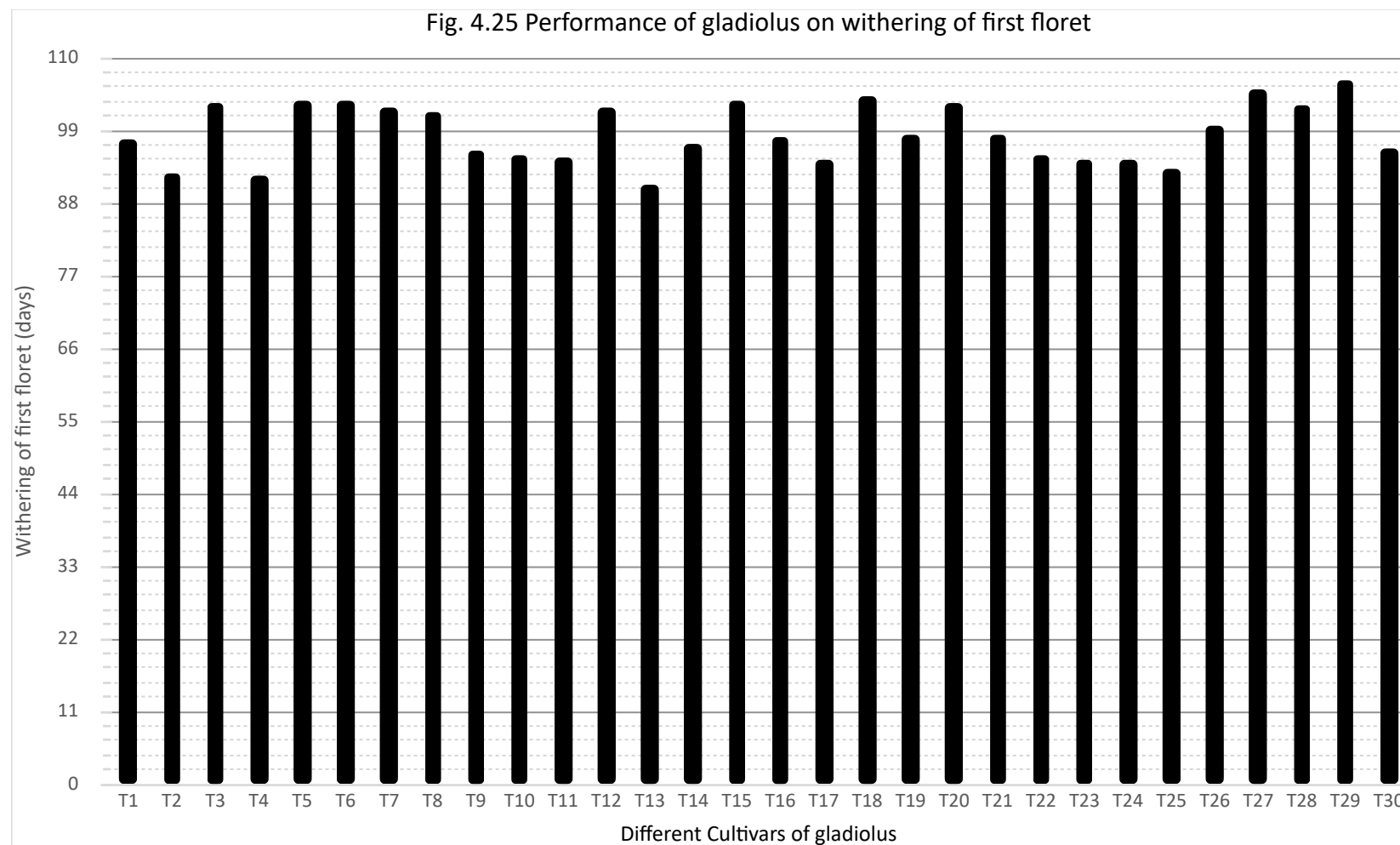


Table 4.26 Performance of gladiolus on diameter of first floret.

TREATMENTS	DIAMETER OF FIRST FLORET (cm)
T1-Aldebaran	9.33
T2-American Beauty	11.17
T3-Arti	6.92
T4-Chandni	7.63
T5-Darshan	6.07
T6-Dhanvantri	8.80
T7-Friendship Pink	9.03
T8-Green Star	9.20
T9-Gulal	8.83
T10-Hunting Song	8.48
T11-IIHR	10.03
T12-Jester Yellow	7.97
T13-Jyostna	8.50
T14-Mohini	9.27
T15-Nova Lux	8.79
T16-Plum Tart	9.08
T17-Priscilla	9.27
T18-Punjab Dawn	8.20
T19-Punjab Morning	8.13
T20-Pusa Kiran	5.60
T21-Pusa Shubham	9.40
T22-Regency	6.03
T23-Snow Princess	6.80
T24-Subhangini	7.80
T25-Sunanya	9.03
T26-Surya Kiran	8.07
T27-Swarnima	7.77
T28-Tiger Flame	9.37
T29-True Love	7.53
T30-White Prosperity	9.03
C.D. at 5%	1.49

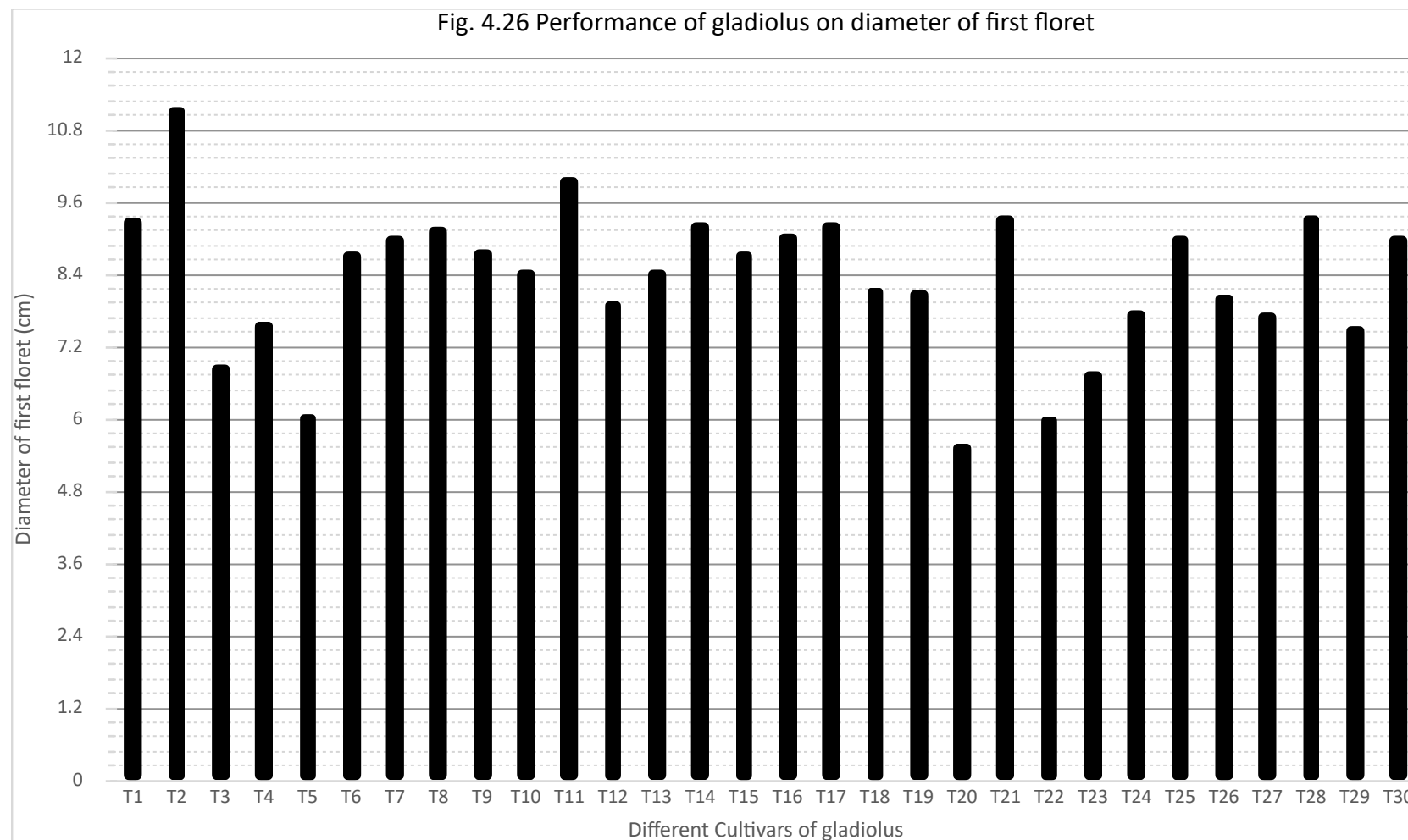


Table 4.27 Performance of gladiolus on length of first floret.

TREATMENTS	LENGTH OF FIRST FLORET (cm)
T1-Aldebaran	9.90
T2-American Beauty	11.20
T3-Arti	9.40
T4-Chandni	9.40
T5-Darshan	8.63
T6-Dhanvantri	10.70
T7-Friendship Pink	10.40
T8-Green Star	10.17
T9-Gulal	10.20
T10-Hunting Song	10.50
T11-IIHR	11.50
T12-Jester Yellow	9.13
T13-Jyostna	10.50
T14-Mohini	10.13
T15-Nova Lux	9.63
T16-Plum Tart	9.51
T17-Priscilla	10.30
T18-Punjab Dawn	9.67
T19-Punjab Morning	9.57
T20-Pusa Kiran	8.33
T21-Pusa Shubham	10.63
T22-Regency	7.77
T23-Snow Princess	9.93
T24-Subhangini	10.43
T25-Sunanya	10.27
T26-Surya Kiran	9.83
T27-Swarnima	10.10
T28-Tiger Flame	10.23
T29-True Love	9.33
T30-White Prosperity	10.53
C.D. at 5%	0.77

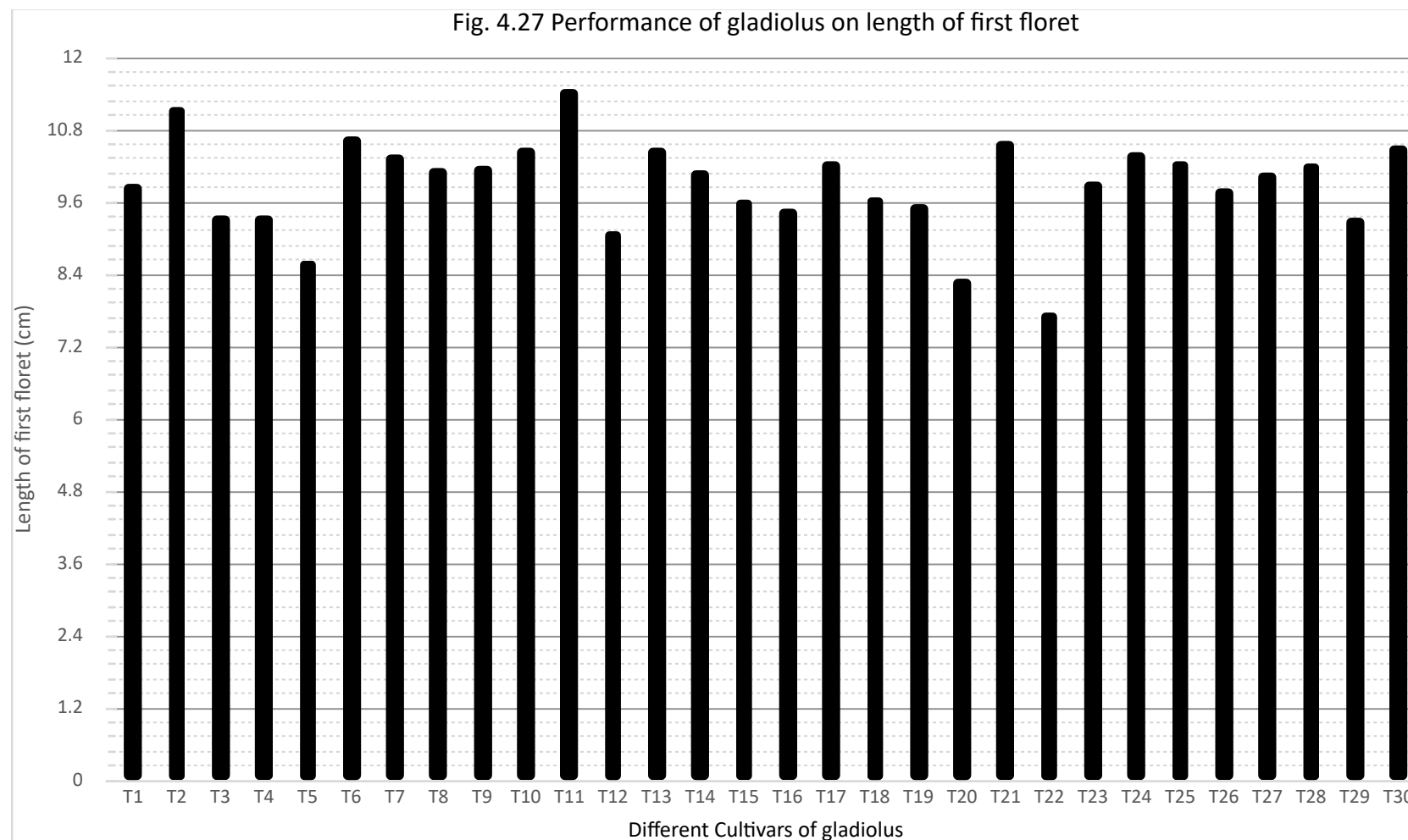


Table 4.28 Performance of gladiolus on opening of third floret.

TREATMENTS	OPENING OF THIRD FLORET (DAYS)
T1-Aldebaran	97.23
T2-American Beauty	91.20
T3-Arti	103.03
T4-Chandni	91.23
T5-Darshan	102.87
T6-Dhanvantri	102.57
T7-Friendship Pink	102.00
T8-Green Star	101.67
T9-Gulal	95.23
T10-Hunting Song	95.17
T11-IIHR	93.67
T12-Jester Yellow	101.33
T13-Jyostna	89.17
T14-Mohini	94.10
T15-Nova Lux	101.67
T16-Plum Tart	97.00
T17-Priscilla	92.80
T18-Punjab Dawn	104.00
T19-Punjab Morning	96.83
T20-Pusa Kiran	102.00
T21-Pusa Shubham	97.67
T22-Regency	93.33
T23-Snow Princess	93.77
T24-Subhangini	93.07
T25-Sunanya	92.10
T26-Surya Kiran	97.17
T27-Swarnima	104.50
T28-Tiger Flame	101.97
T29-True Love	105.67
T30-White Prosperity	94.97
C.D. at 5%	3.50

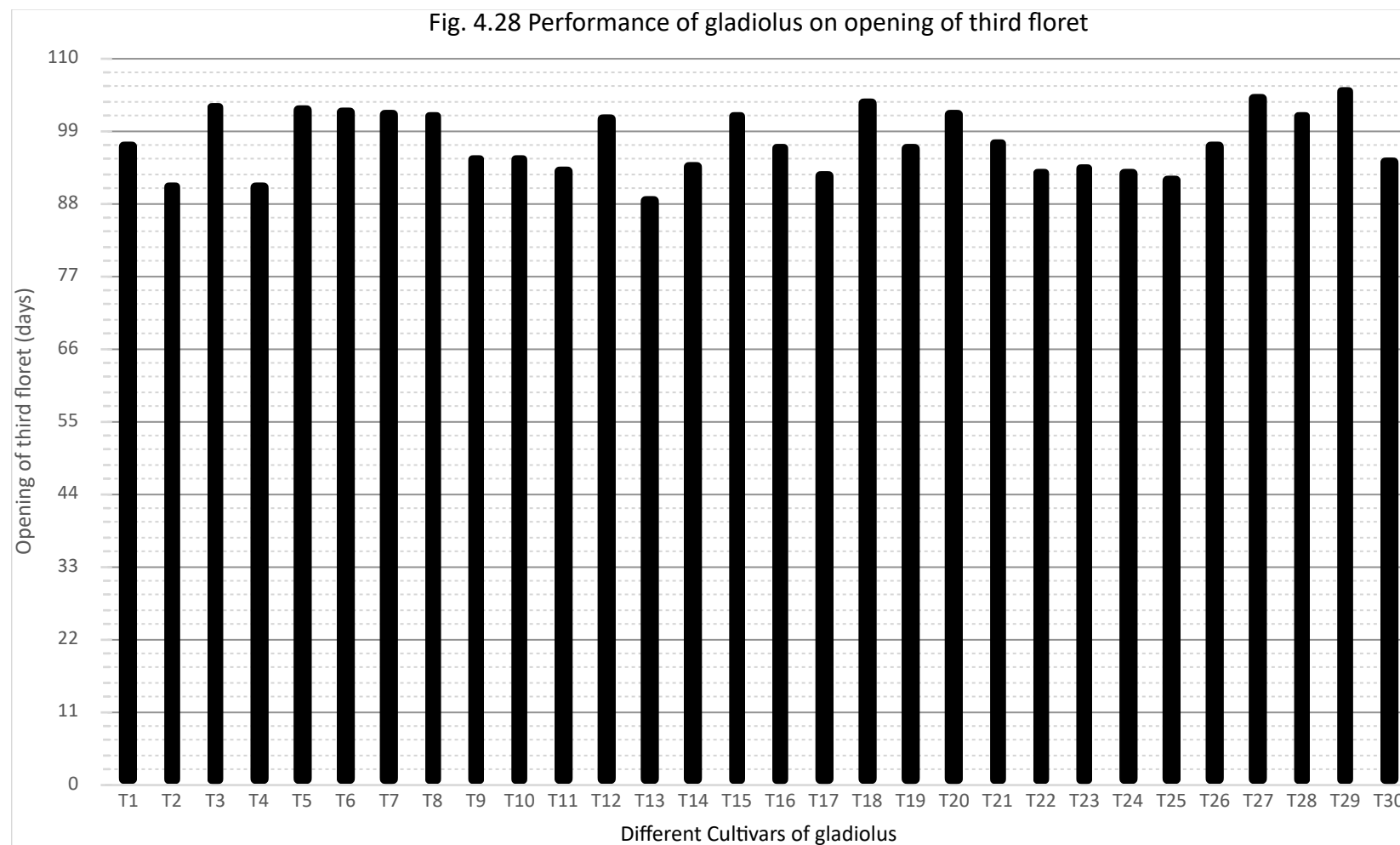


Table 4.29 Performance of gladiolus on withering of third floret.

TREATMENTS	WITHERING OF THIRD FLORET (DAYS)
T1-Aldebaran	99.33
T2-American Beauty	93.87
T3-Arti	105.13
T4-Chandni	93.77
T5-Darshan	105.00
T6-Dhanvantri	104.63
T7-Friendship Pink	103.67
T8-Green Star	102.67
T9-Gulal	97.33
T10-Hunting Song	96.33
T11-IIHR	96.40
T12-Jester Yellow	103.33
T13-Jyostna	92.67
T14-Mohini	98.10
T15-Nova Lux	104.13
T16-Plum Tart	99.10
T17-Priscilla	96.20
T18-Punjab Dawn	105.33
T19-Punjab Morning	99.50
T20-Pusa Kiran	104.67
T21-Pusa Shubham	99.97
T22-Regency	96.67
T23-Snow Princess	96.43
T24-Subhangini	96.00
T25-Sunanya	94.77
T26-Surya Kiran	101.33
T27-Swarnima	106.83
T28-Tiger Flame	103.77
T29-True Love	108.33
T30-White Prosperity	97.30
C.D. at 5%	3.29

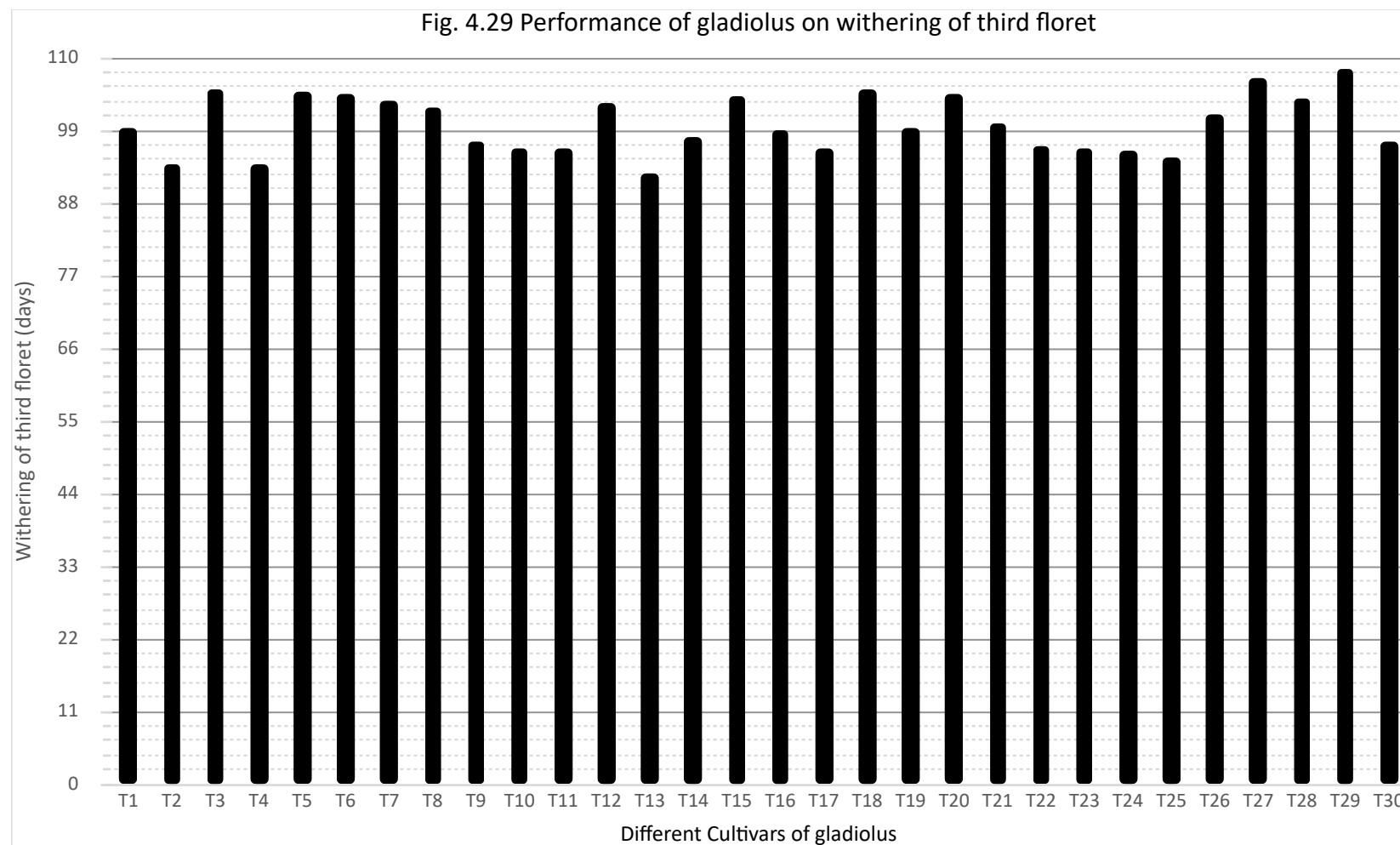


Table 4.30 Performance of gladiolus on diameter of third floret.

TREATMENTS	DIAMETER OF THIRD FLORET (cm)
T1-Aldebaran	9.07
T2-American Beauty	10.67
T3-Arti	6.13
T4-Chandni	7.07
T5-Darshan	5.90
T6-Dhanvantri	8.50
T7-Friendship Pink	9.07
T8-Green Star	8.40
T9-Gulal	8.53
T10-Hunting Song	8.23
T11-IIHR	9.40
T12-Jester Yellow	7.83
T13-Jyostna	8.10
T14-Mohini	9.20
T15-Nova Lux	7.73
T16-Plum Tart	9.01
T17-Priscilla	9.10
T18-Punjab Dawn	7.63
T19-Punjab Morning	7.40
T20-Pusa Kiran	5.63
T21-Pusa Shubham	8.90
T22-Regency	6.43
T23-Snow Princess	6.83
T24-Subhangini	7.43
T25-Sunanya	8.67
T26-Surya Kiran	7.87
T27-Swarnima	6.67
T28-Tiger Flame	8.93
T29-True Love	7.55
T30-White Prosperity	9.03
C.D. at 5%	1.38

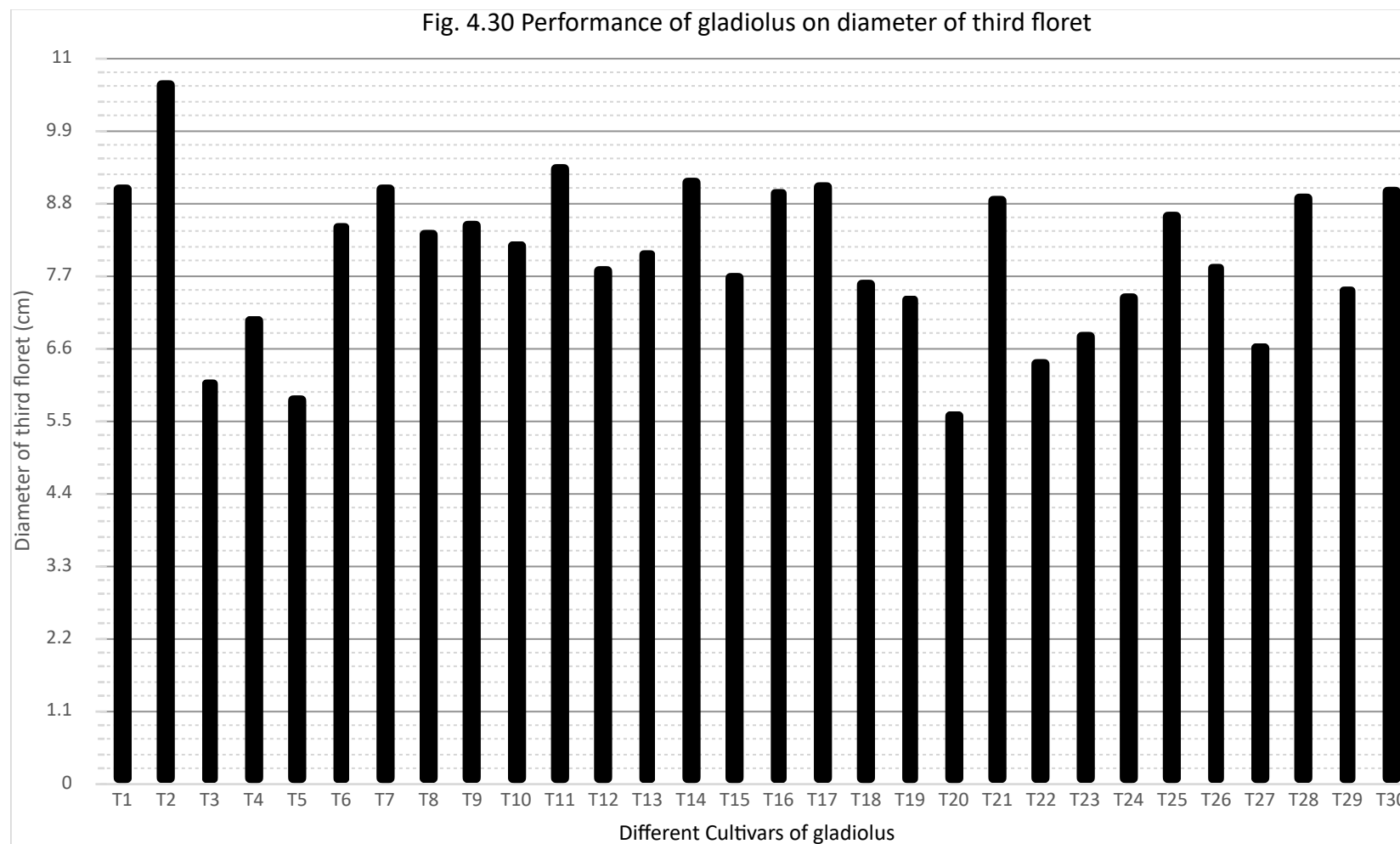


Table 4.31 Performance of gladiolus on length of third floret.

TREATMENTS	LENGTH OF THIRD FLORET (cm)
T1-Aldebaran	9.57
T2-American Beauty	10.87
T3-Arti	9.30
T4-Chandni	8.93
T5-Darshan	7.90
T6-Dhanvantri	10.63
T7-Friendship Pink	10.33
T8-Green Star	9.43
T9-Gulal	9.80
T10-Hunting Song	9.73
T11-IIHR	10.83
T12-Jester Yellow	8.90
T13-Jyostna	9.63
T14-Mohini	10.17
T15-Nova Lux	8.67
T16-Plum Tart	9.44
T17-Priscilla	10.03
T18-Punjab Dawn	9.47
T19-Punjab Morning	9.13
T20-Pusa Kiran	8.33
T21-Pusa Shubham	10.43
T22-Regency	7.57
T23-Snow Princess	9.17
T24-Subhangini	9.83
T25-Sunanya	9.87
T26-Surya Kiran	9.63
T27-Swarnima	9.57
T28-Tiger Flame	10.07
T29-True Love	9.73
T30-White Prosperity	10.23
C.D. at 5%	0.77

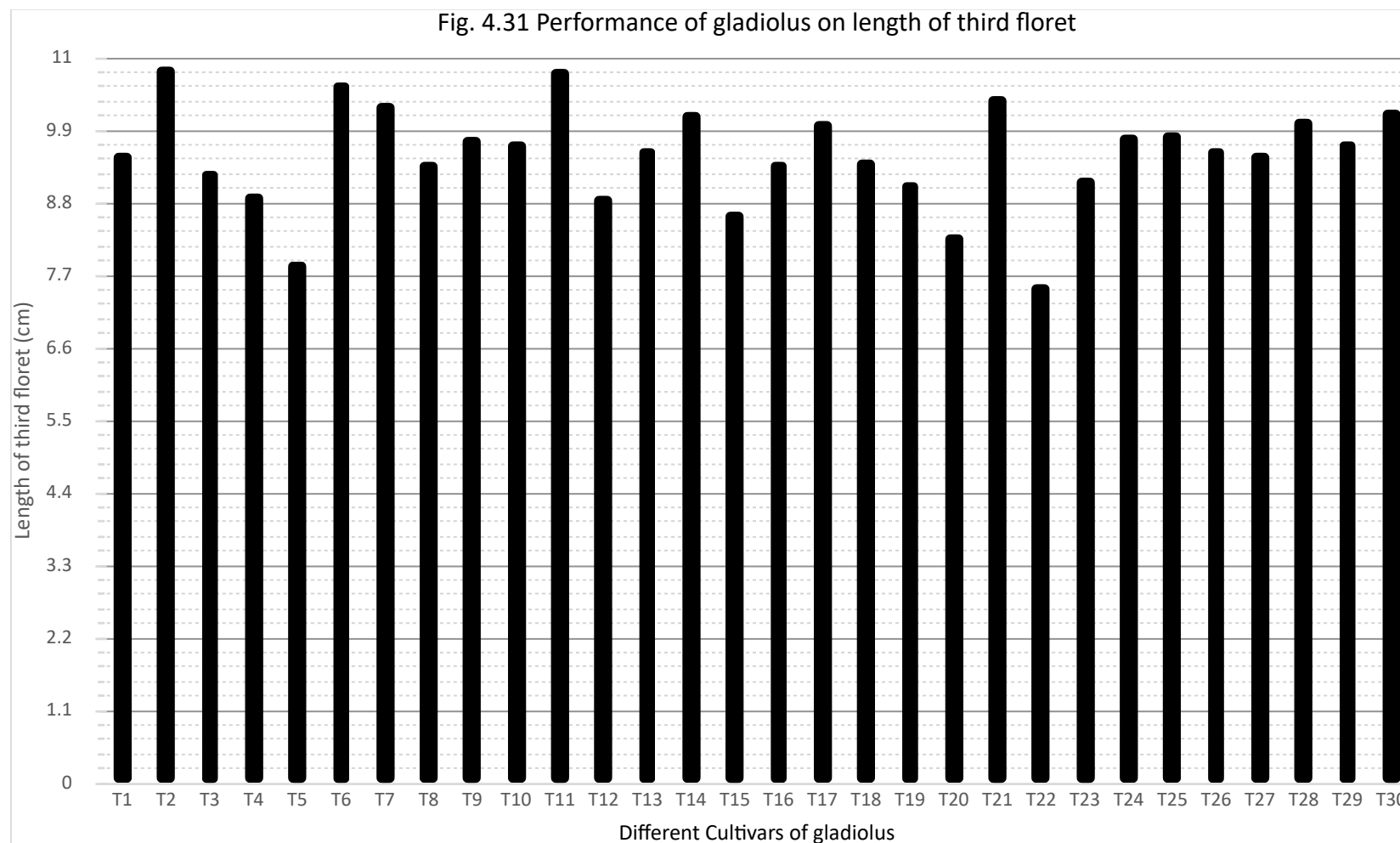


Table 4.32 Performance of gladiolus on opening of fifth floret.

TREATMENTS	OPENING OF FIFTH FLORET (DAYS)
T1-Aldebaran	98.80
T2-American Beauty	92.87
T3-Arti	104.67
T4-Chandni	92.53
T5-Darshan	104.50
T6-Dhanvantri	103.97
T7-Friendship Pink	103.00
T8-Green Star	102.67
T9-Gulal	96.33
T10-Hunting Song	95.83
T11-IIHR	94.87
T12-Jester Yellow	102.67
T13-Jyostna	91.00
T14-Mohini	95.53
T15-Nova Lux	102.67
T16-Plum Tart	98.03
T17-Priscilla	94.10
T18-Punjab Dawn	105.33
T19-Punjab Morning	97.83
T20-Pusa Kiran	103.33
T21-Pusa Shubham	99.10
T22-Regency	94.33
T23-Snow Princess	94.43
T24-Subhangini	94.07
T25-Sunanya	93.23
T26-Surya Kiran	98.83
T27-Swarnima	106.50
T28-Tiger Flame	103.33
T29-True Love	107.00
T30-White Prosperity	96.07
C.D. at 5%	3.42

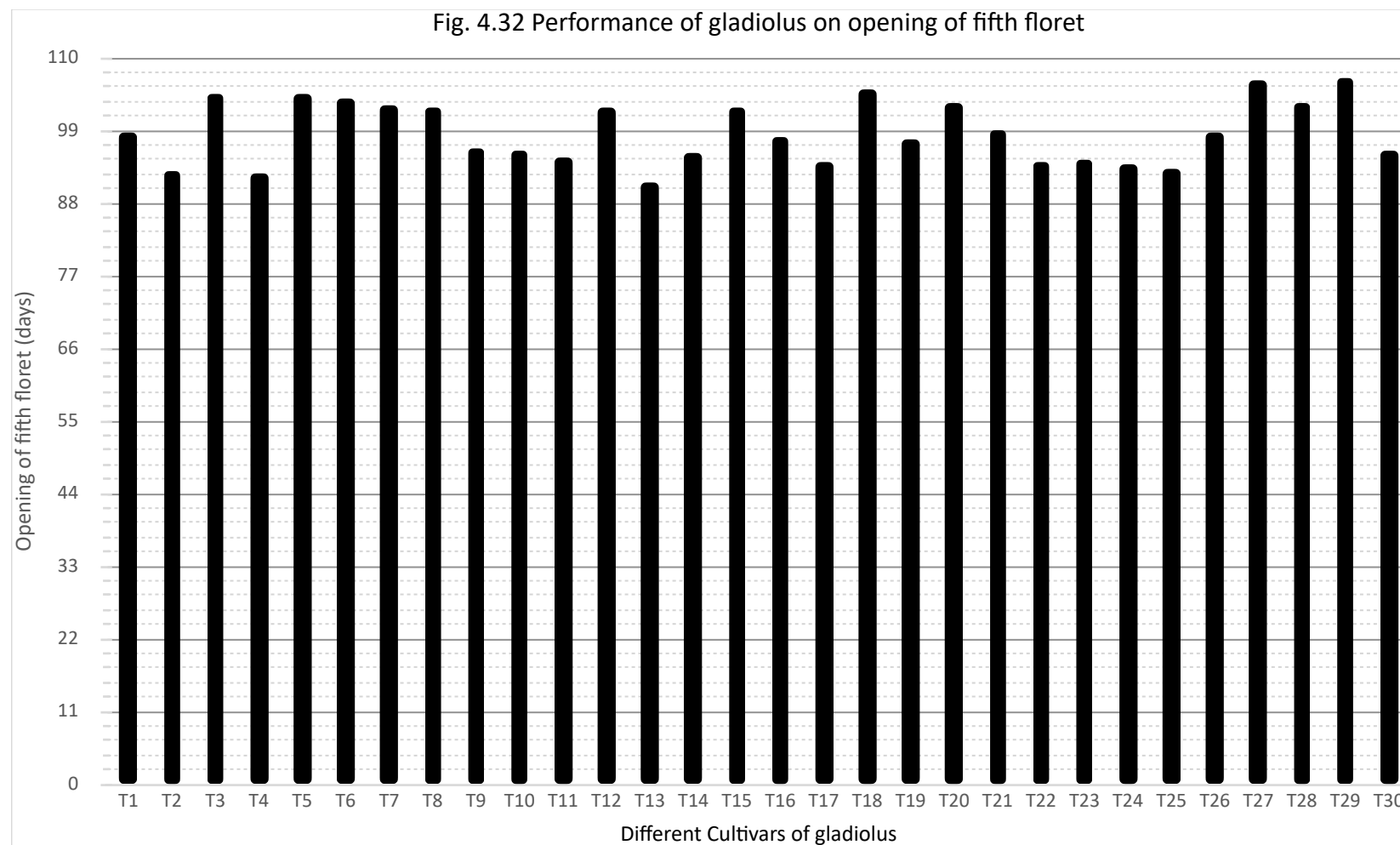


Table 4.33 Performance of gladiolus on withering of fifth floret.

TREATMENTS	WITHERING OF FIFTH FLORET (DAYS)
T1-Aldebaran	101.10
T2-American Beauty	95.53
T3-Arti	106.27
T4-Chandni	95.57
T5-Darshan	106.50
T6-Dhanvantri	105.87
T7-Friendship Pink	105.00
T8-Green Star	104.00
T9-Gulal	98.87
T10-Hunting Song	98.00
T11-IIHR	97.20
T12-Jester Yellow	104.33
T13-Jyostna	94.19
T14-Mohini	99.00
T15-Nova Lux	105.13
T16-Plum Tart	99.97
T17-Priscilla	97.67
T18-Punjab Dawn	106.50
T19-Punjab Morning	100.50
T20-Pusa Kiran	106.33
T21-Pusa Shubham	101.57
T22-Regency	97.33
T23-Snow Princess	96.83
T24-Subhangini	97.40
T25-Sunanya	95.93
T26-Surya Kiran	103.33
T27-Swarnima	109.00
T28-Tiger Flame	105.00
T29-True Love	109.67
T30-White Prosperity	98.50
C.D. at 5%	3.40

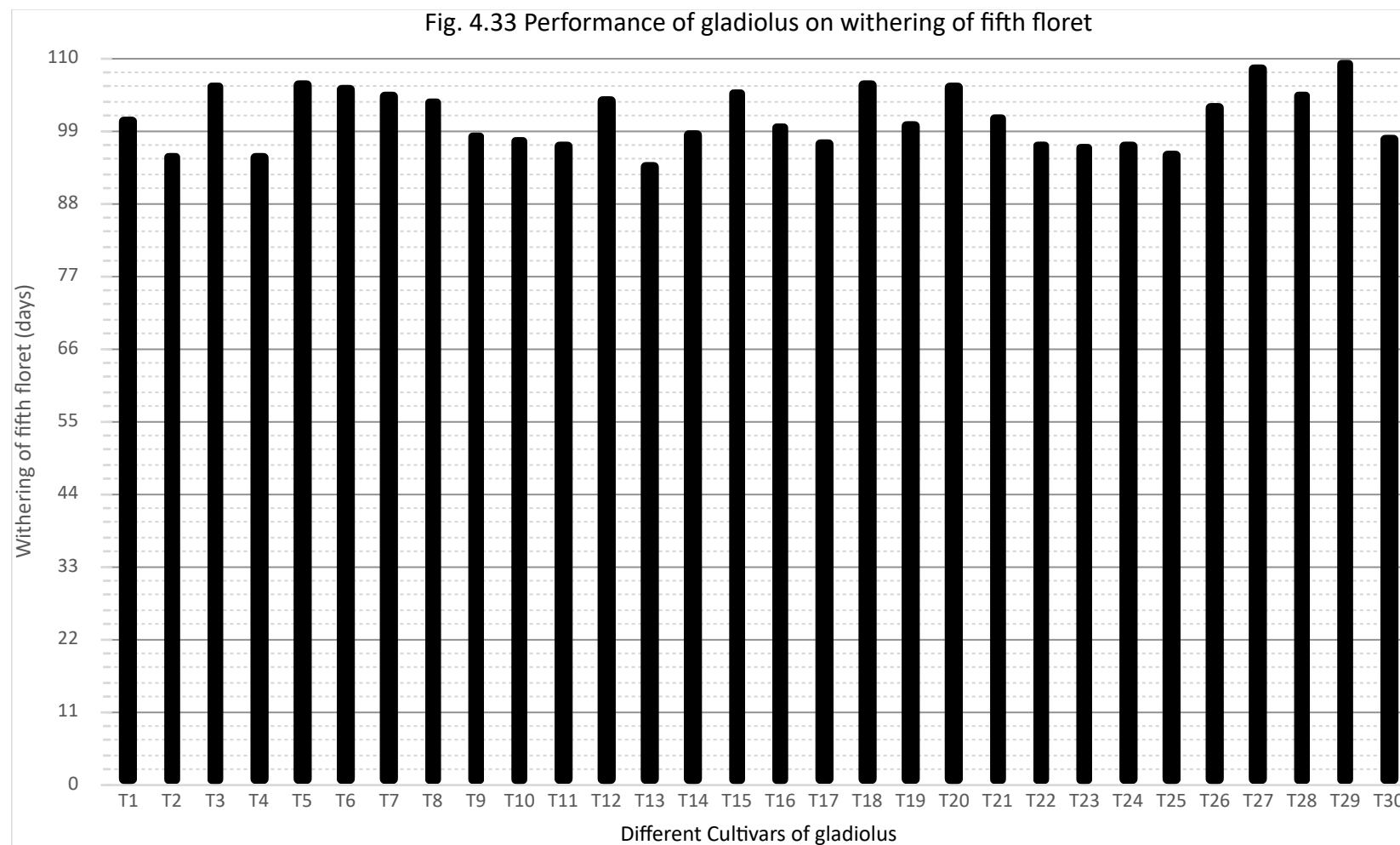


Table 4.34 Performance of gladiolus on diameter of fifth floret.

TREATMENTS	DIAMETER OF FIFTH FLORET (cm)
T1-Aldebaran	8.80
T2-American Beauty	10.17
T3-Arti	5.70
T4-Chandni	6.67
T5-Darshan	5.70
T6-Dhanvantri	7.93
T7-Friendship Pink	8.93
T8-Green Star	7.60
T9-Gulal	8.07
T10-Hunting Song	8.50
T11-IIHR	9.00
T12-Jester Yellow	7.27
T13-Jyostna	7.57
T14-Mohini	9.23
T15-Nova Lux	7.37
T16-Plum Tart	8.47
T17-Priscilla	8.77
T18-Punjab Dawn	7.07
T19-Punjab Morning	6.90
T20-Pusa Kiran	5.83
T21-Pusa Shubham	7.90
T22-Regency	6.17
T23-Snow Princess	6.13
T24-Subhangini	8.87
T25-Sunanya	8.67
T26-Surya Kiran	9.57
T27-Swarnima	7.40
T28-Tiger Flame	8.20
T29-True Love	7.88
T30-White Prosperity	8.77
C.D. at 5%	1.67

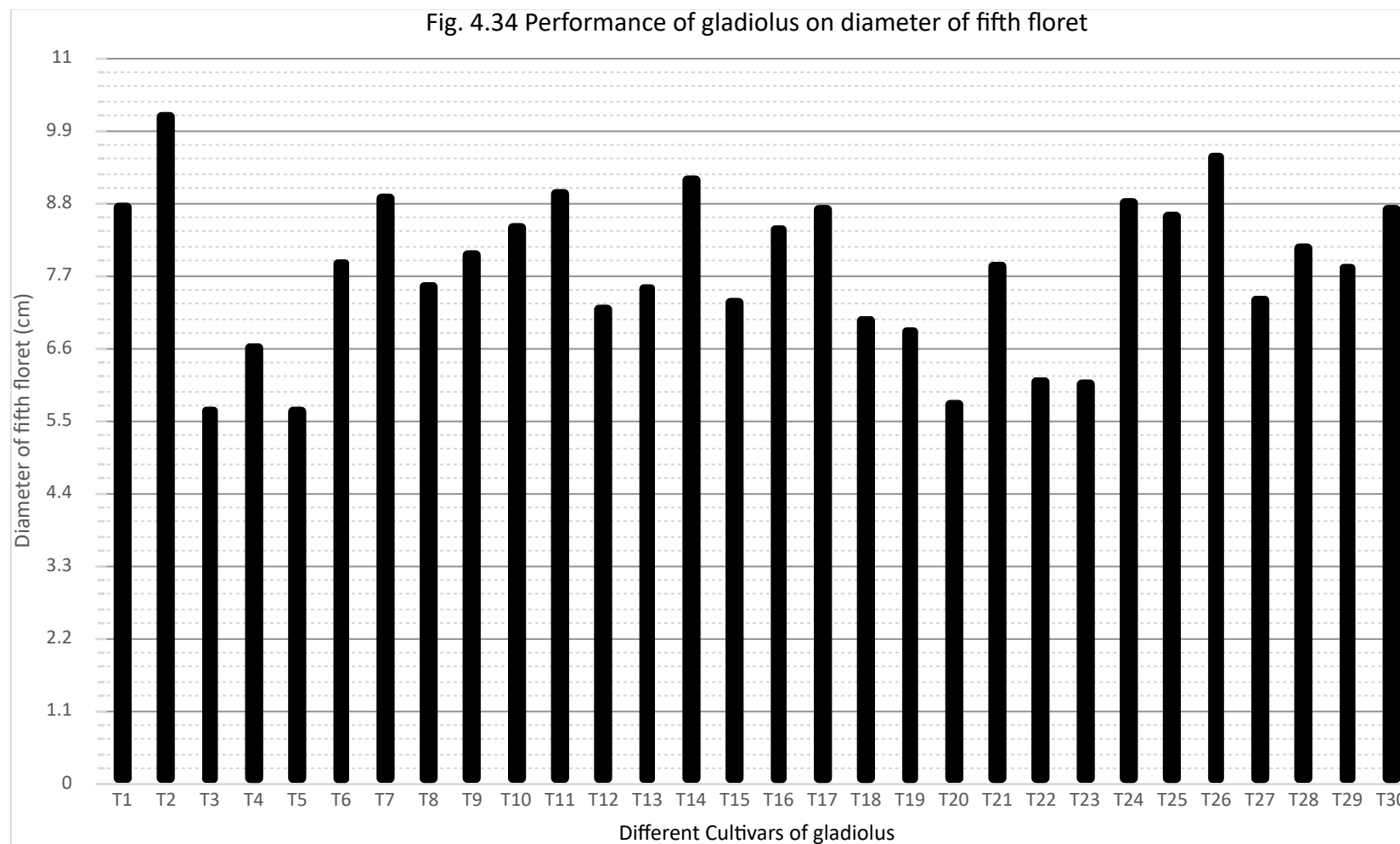


Table 4.35 Performance of gladiolus on length of fifth floret.

TREATMENTS	LENGTH OF FIFTH FLORET (cm)
T1-Aldebaran	8.83
T2-American Beauty	10.50
T3-Arti	9.13
T4-Chandni	8.57
T5-Darshan	7.70
T6-Dhanvantri	10.07
T7-Friendship Pink	10.17
T8-Green Star	8.83
T9-Gulal	9.80
T10-Hunting Song	10.03
T11-IIHR	10.13
T12-Jester Yellow	8.10
T13-Jyostna	9.53
T14-Mohini	9.63
T15-Nova Lux	8.23
T16-Plum Tart	9.33
T17-Priscilla	9.63
T18-Punjab Dawn	8.70
T19-Punjab Morning	8.77
T20-Pusa Kiran	8.80
T21-Pusa Shubham	9.80
T22-Regency	7.33
T23-Snow Princess	9.63
T24-Subhangini	9.52
T25-Sunanya	9.87
T26-Surya Kiran	9.27
T27-Swarnima	9.37
T28-Tiger Flame	9.33
T29-True Love	9.17
T30-White Prosperity	10.13
C.D. at 5%	0.87

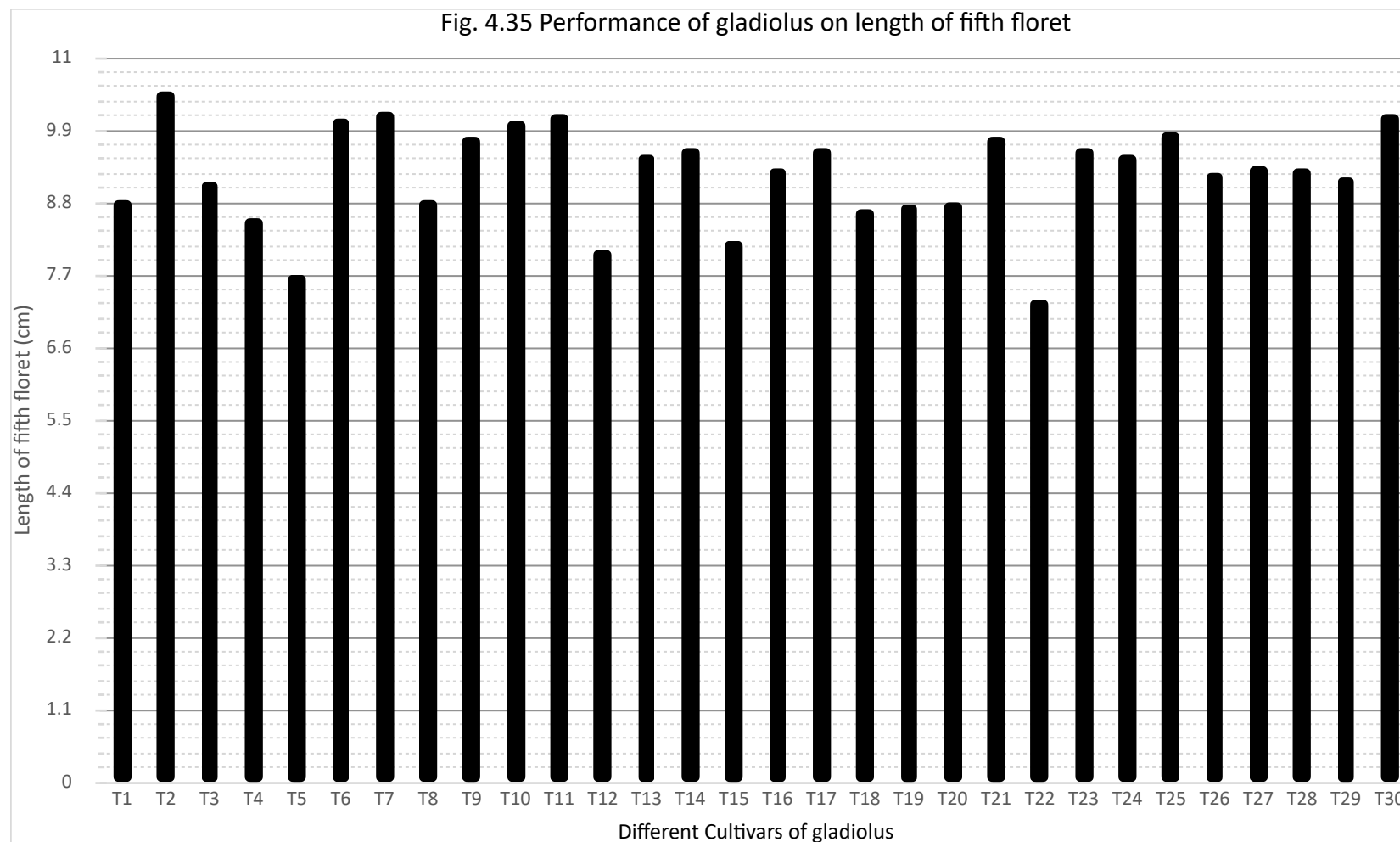


Table 4.36 Performance of gladiolus on no. of floret opened at a time.

TREATMENTS	NO. OF FLORET OPENED AT A TIME
T1-Aldebaran	4.57
T2-American Beauty	5.43
T3-Arti	3.57
T4-Chandni	5.80
T5-Darshan	4.00
T6-Dhanvantri	4.57
T7-Friendship Pink	5.00
T8-Green Star	6.00
T9-Gulal	5.33
T10-Hunting Song	5.00
T11-IIHR	5.43
T12-Jester Yellow	4.33
T13-Jyostna	5.17
T14-Mohini	6.37
T15-Nova Lux	4.67
T16-Plum Tart	5.23
T17-Priscilla	6.23
T18-Punjab Dawn	4.67
T19-Punjab Morning	5.67
T20-Pusa Kiran	5.00
T21-Pusa Shubham	4.10
T22-Regency	3.67
T23-Snow Princess	5.57
T24-Subhangini	5.43
T25-Sunanya	4.93
T26-Surya Kiran	4.00
T27-Swarnima	4.33
T28-Tiger Flame	4.53
T29-True Love	3.33
T30-White Prosperity	5.50
C.D. at 5%	0.78

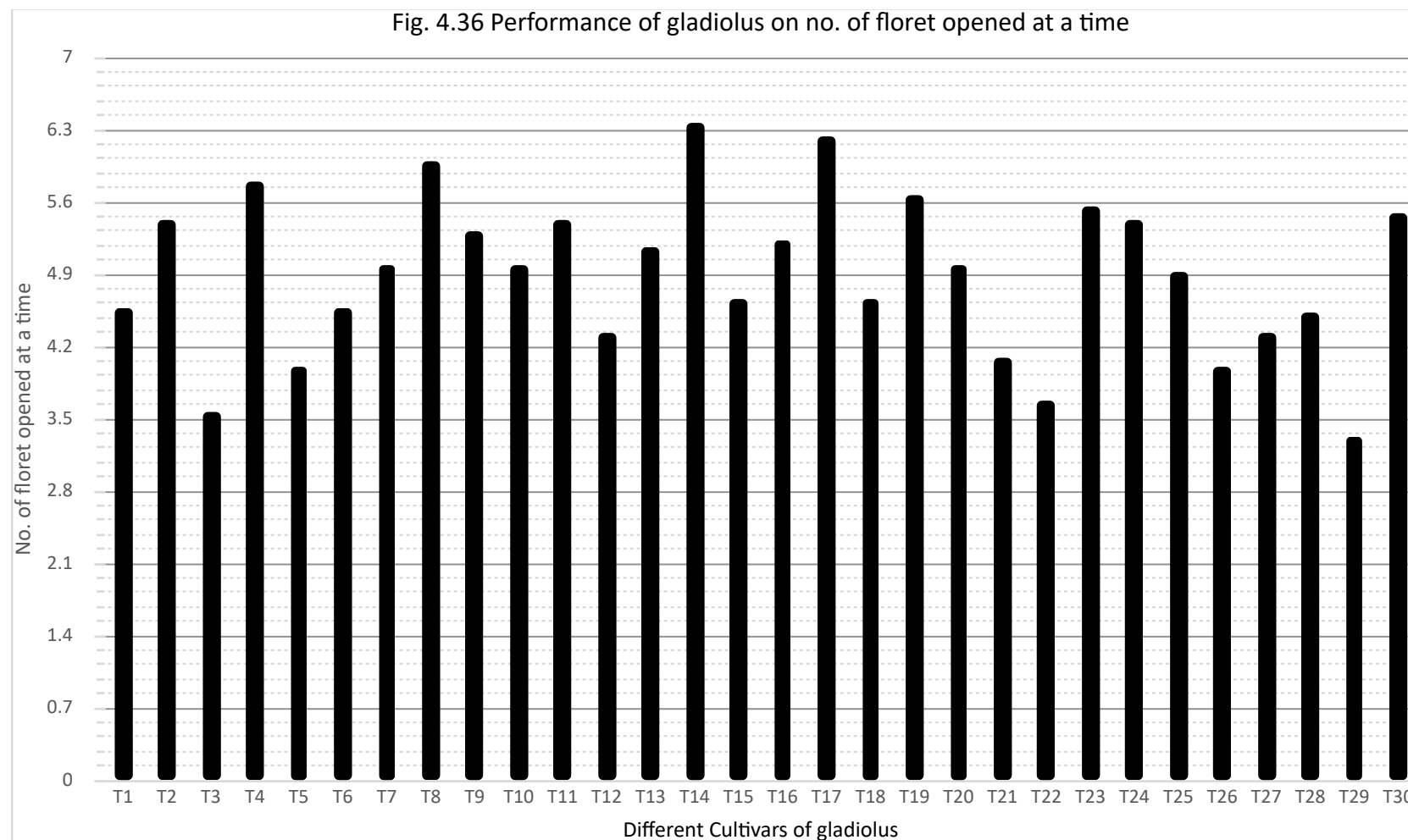


Table 4.37 Performance of gladiolus on no. of opened florets per spike.

TREATMENTS	NO. OF OPENED FLORETS/SPIKE
T1-Aldebaran	6.00
T2-American Beauty	10.00
T3-Arti	7.33
T4-Chandni	8.03
T5-Darshan	8.33
T6-Dhanvantri	11.33
T7-Friendship Pink	16.67
T8-Green Star	11.67
T9-Gulal	10.03
T10-Hunting Song	13.83
T11-IIHR	10.07
T12-Jester Yellow	11.67
T13-Jyostna	9.00
T14-Mohini	11.23
T15-Nova Lux	8.77
T16-Plum Tart	8.90
T17-Priscilla	10.10
T18-Punjab Dawn	8.83
T19-Punjab Morning	7.33
T20-Pusa Kiran	10.00
T21-Pusa Shubham	7.33
T22-Regency	11.67
T23-Snow Princess	11.33
T24-Subhangini	9.33
T25-Sunanya	8.53
T26-Surya Kiran	11.33
T27-Swarnima	9.83
T28-Tiger Flame	11.23
T29-True Love	17.00
T30-White Prosperity	9.67
C.D. at 5%	2.59

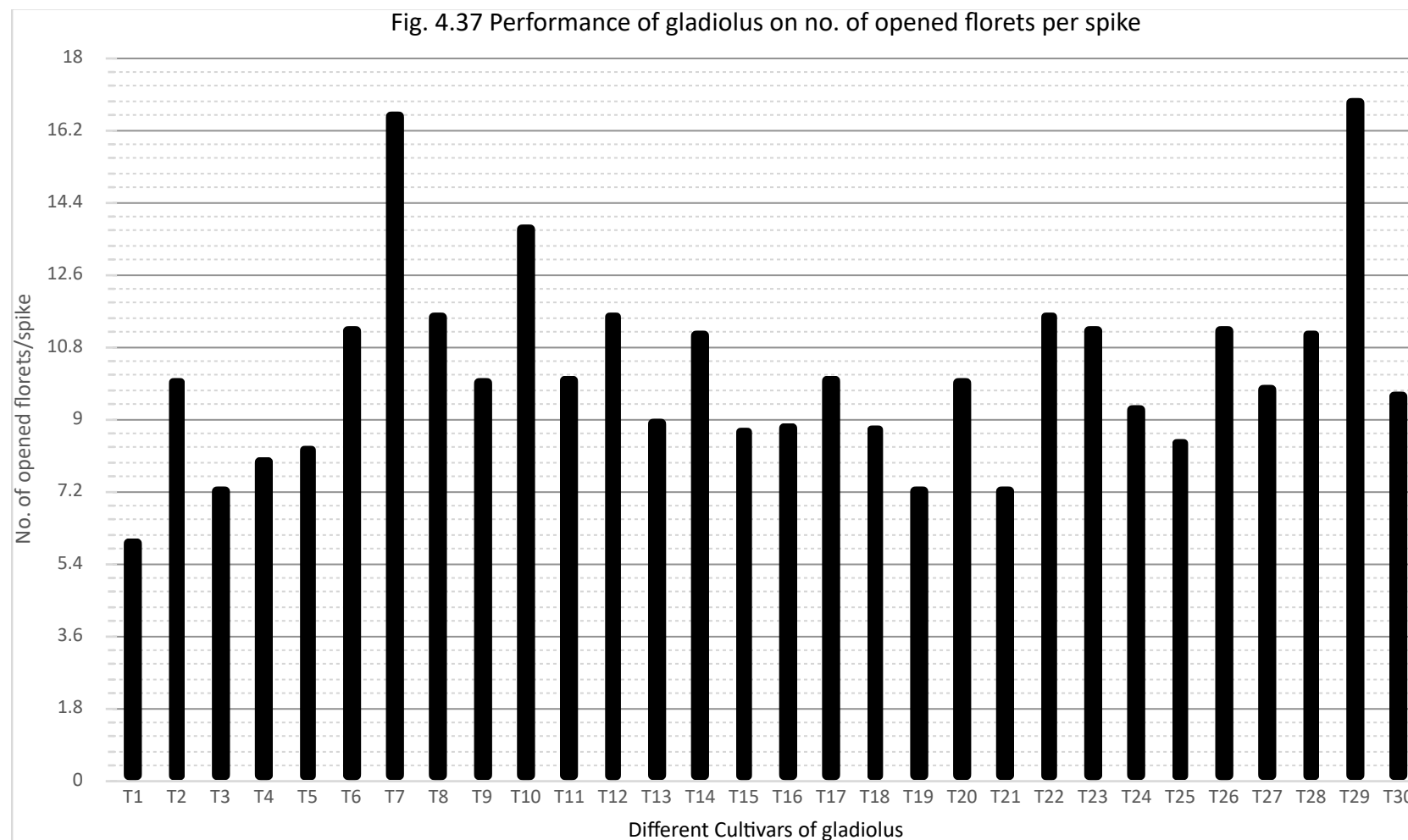


Table 4.38 Performance of gladiolus on no. of florets per spike.

TREATMENTS	NO. OF FLORETS/SPIKE
T1-Aldebaran	7.20
T2-American Beauty	11.33
T3-Arti	8.43
T4-Chandni	9.03
T5-Darshan	9.33
T6-Dhanvantri	12.33
T7-Friendship Pink	17.67
T8-Green Star	12.67
T9-Gulal	11.03
T10-Hunting Song	14.83
T11-IIHR	11.07
T12-Jester Yellow	12.67
T13-Jyostna	10.00
T14-Mohini	12.23
T15-Nova Lux	9.90
T16-Plum Tart	10.03
T17-Priscilla	11.10
T18-Punjab Dawn	9.83
T19-Punjab Morning	8.33
T20-Pusa Kiran	11.00
T21-Pusa Shubham	8.43
T22-Regency	12.67
T23-Snow Princess	12.43
T24-Subhangini	10.50
T25-Sunanya	9.57
T26-Surya Kiran	12.33
T27-Swarnima	10.83
T28-Tiger Flame	12.23
T29-True Love	18.00
T30-White Prosperity	10.67
C.D. at 5%	2.59

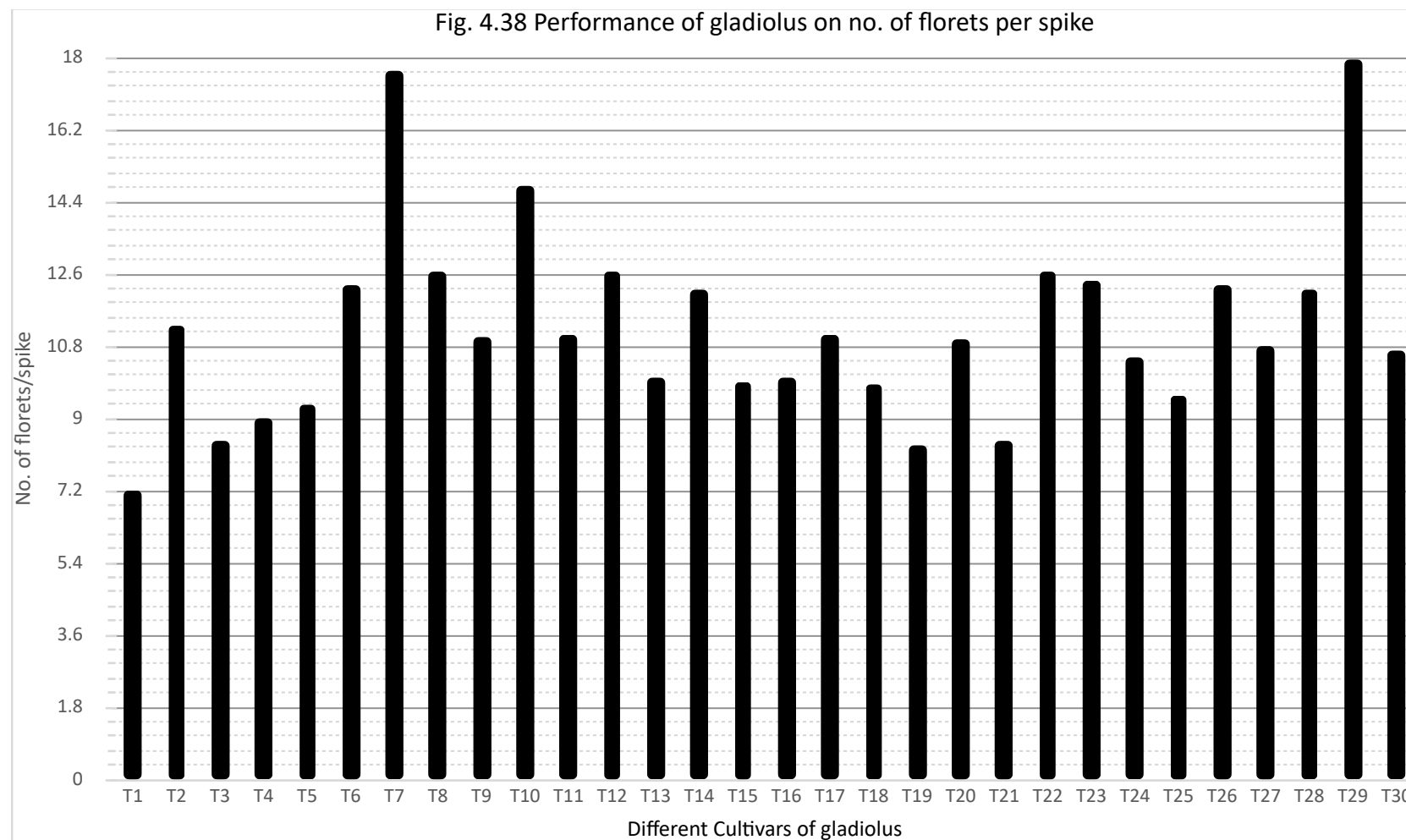


Table 4.39 Performance of gladiolus on percentage of opened florets per spike.

TREATMENTS	PERCENTAGE OF OPENED FLORETS/SPIKE
T1-Aldebaran	83.03
T2-American Beauty	88.43
T3-Arti	86.63
T4-Chandni	88.80
T5-Darshan	89.23
T6-Dhanvantri	91.90
T7-Friendship Pink	94.07
T8-Green Star	91.87
T9-Gulal	90.97
T10-Hunting Song	93.23
T11-IIHR	91.00
T12-Jester Yellow	92.10
T13-Jyostna	90.00
T14-Mohini	91.77
T15-Nova Lux	88.53
T16-Plum Tart	87.87
T17-Priscilla	90.80
T18-Punjab Dawn	89.83
T19-Punjab Morning	87.80
T20-Pusa Kiran	90.60
T21-Pusa Shubham	86.90
T22-Regency	91.97
T23-Snow Princess	90.93
T24-Subhangini	88.73
T25-Sunanya	89.23
T26-Surya Kiran	91.77
T27-Swarnima	90.70
T28-Tiger Flame	91.83
T29-True Love	94.40
T30-White Prosperity	90.47
C.D. at 5%	3.38

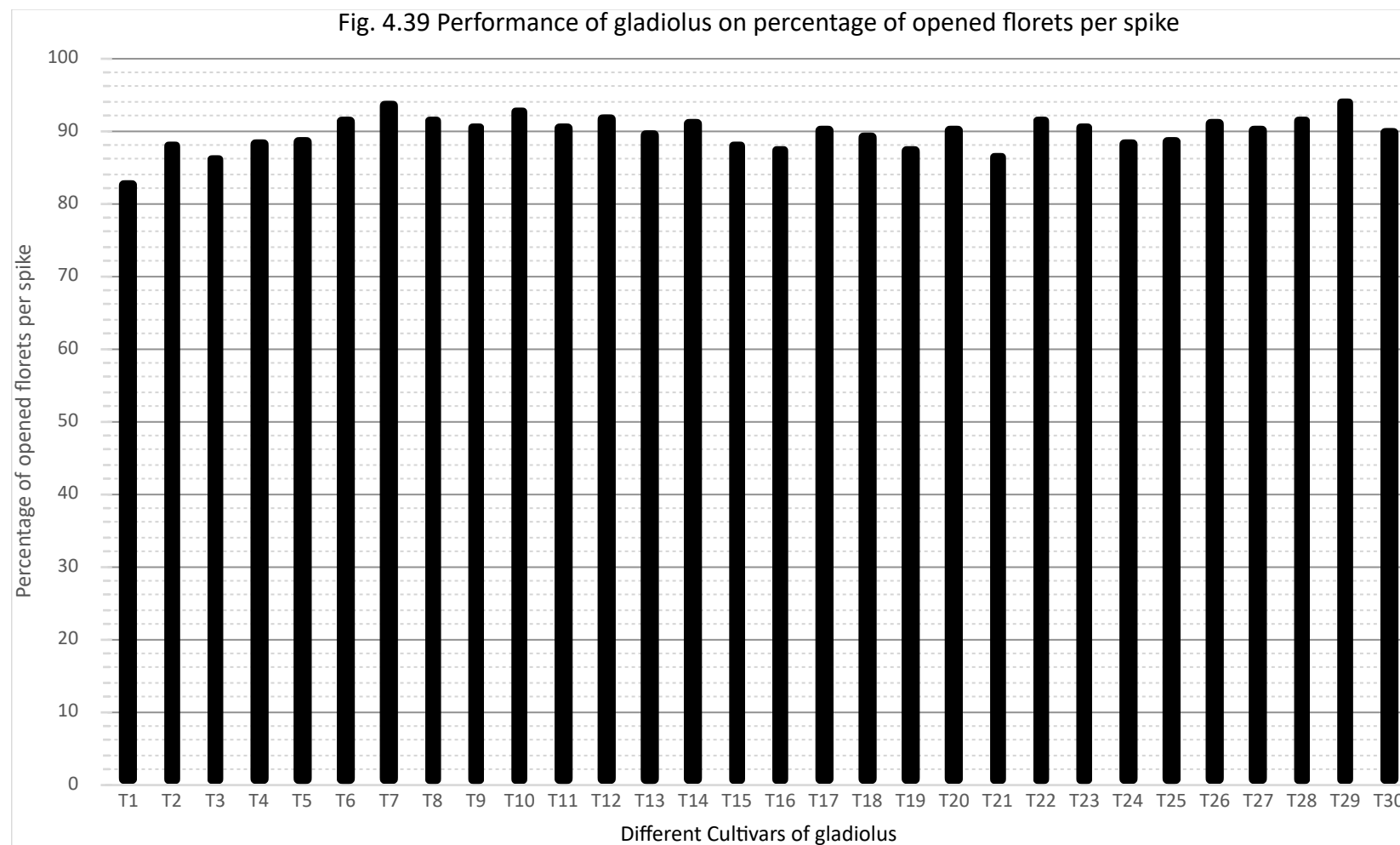


Table 4.40 Performance of gladiolus on initial spike length.

TREATMENTS	INITIAL SPIKE LENGTH (cm)
T1-Aldebaran	44.83
T2-American Beauty	57.57
T3-Arti	33.97
T4-Chandni	50.37
T5-Darshan	35.67
T6-Dhanvantri	65.93
T7-Friendship Pink	60.77
T8-Green Star	64.80
T9-Gulal	48.23
T10-Hunting Song	63.83
T11-IIHR	61.43
T12-Jester Yellow	59.10
T13-Jyostna	53.90
T14-Mohini	65.73
T15-Nova Lux	48.37
T16-Plum Tart	55.60
T17-Priscilla	58.40
T18-Punjab Dawn	47.03
T19-Punjab Morning	41.47
T20-Pusa Kiran	52.87
T21-Pusa Shubham	43.27
T22-Regency	59.50
T23-Snow Princess	62.47
T24-Subhangini	55.30
T25-Sunanya	55.77
T26-Surya Kiran	46.33
T27-Swarnima	53.90
T28-Tiger Flame	69.43
T29-True Love	78.00
T30-White Prosperity	56.53
C.D. at 5%	12.01

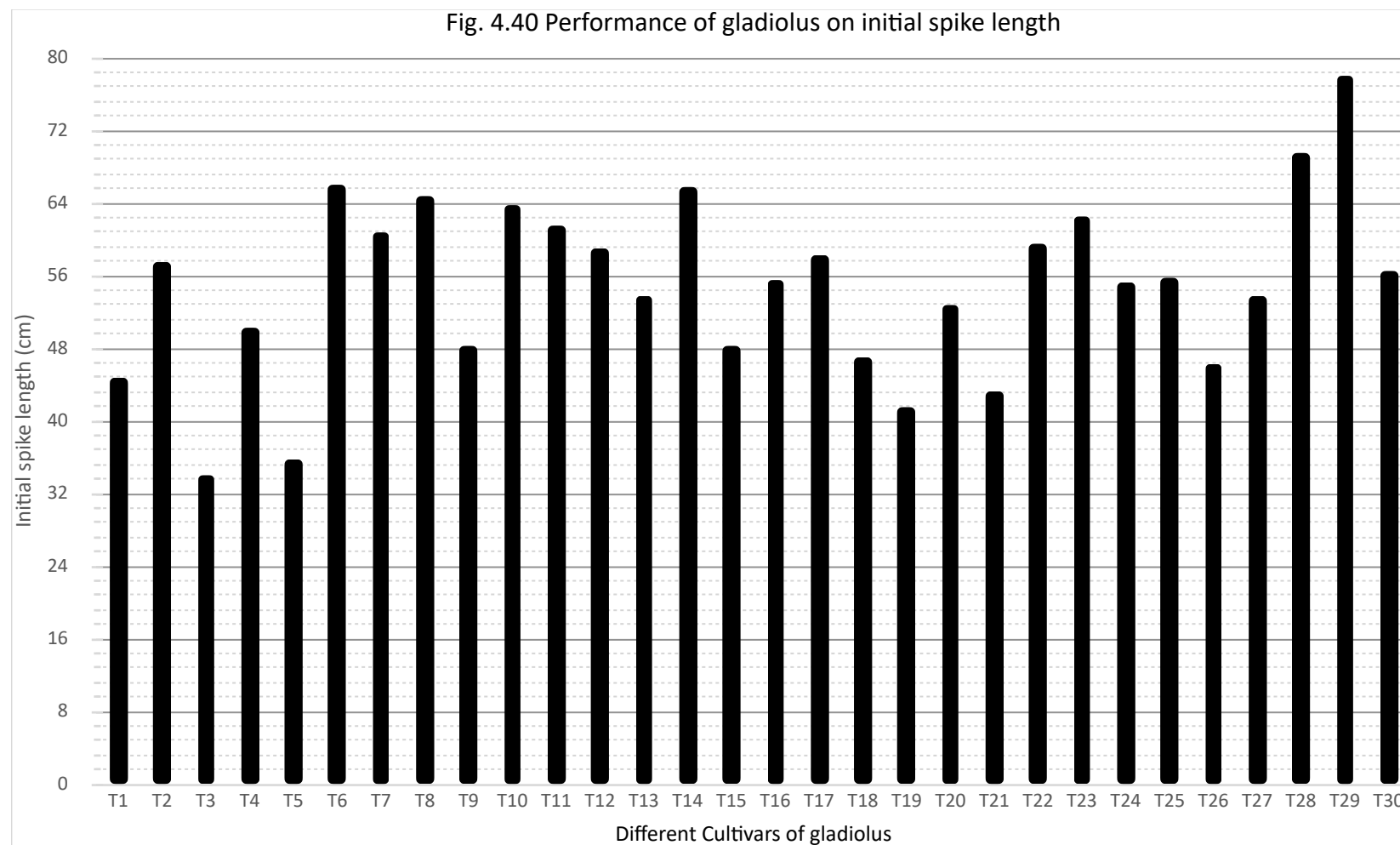


Table 4.41 Performance of gladiolus on final spike length.

TREATMENTS	FINAL SPIKE LENGTH (cm)
T1-Aldebaran	44.97
T2-American Beauty	59.53
T3-Arti	34.10
T4-Chandni	53.37
T5-Darshan	35.93
T6-Dhanvantri	66.73
T7-Friendship Pink	61.33
T8-Green Star	65.33
T9-Gulal	48.47
T10-Hunting Song	64.33
T11-IIHR	62.60
T12-Jester Yellow	59.67
T13-Jyostna	54.10
T14-Mohini	66.23
T15-Nova Lux	49.27
T16-Plum Tart	56.20
T17-Priscilla	60.27
T18-Punjab Dawn	46.60
T19-Punjab Morning	41.83
T20-Pusa Kiran	53.17
T21-Pusa Shubham	43.60
T22-Regency	59.80
T23-Snow Princess	63.07
T24-Subhangini	56.10
T25-Sunanya	56.03
T26-Surya Kiran	46.93
T27-Swarnima	54.50
T28-Tiger Flame	69.90
T29-True Love	78.50
T30-White Prosperity	56.87
C.D. at 5%	11.97

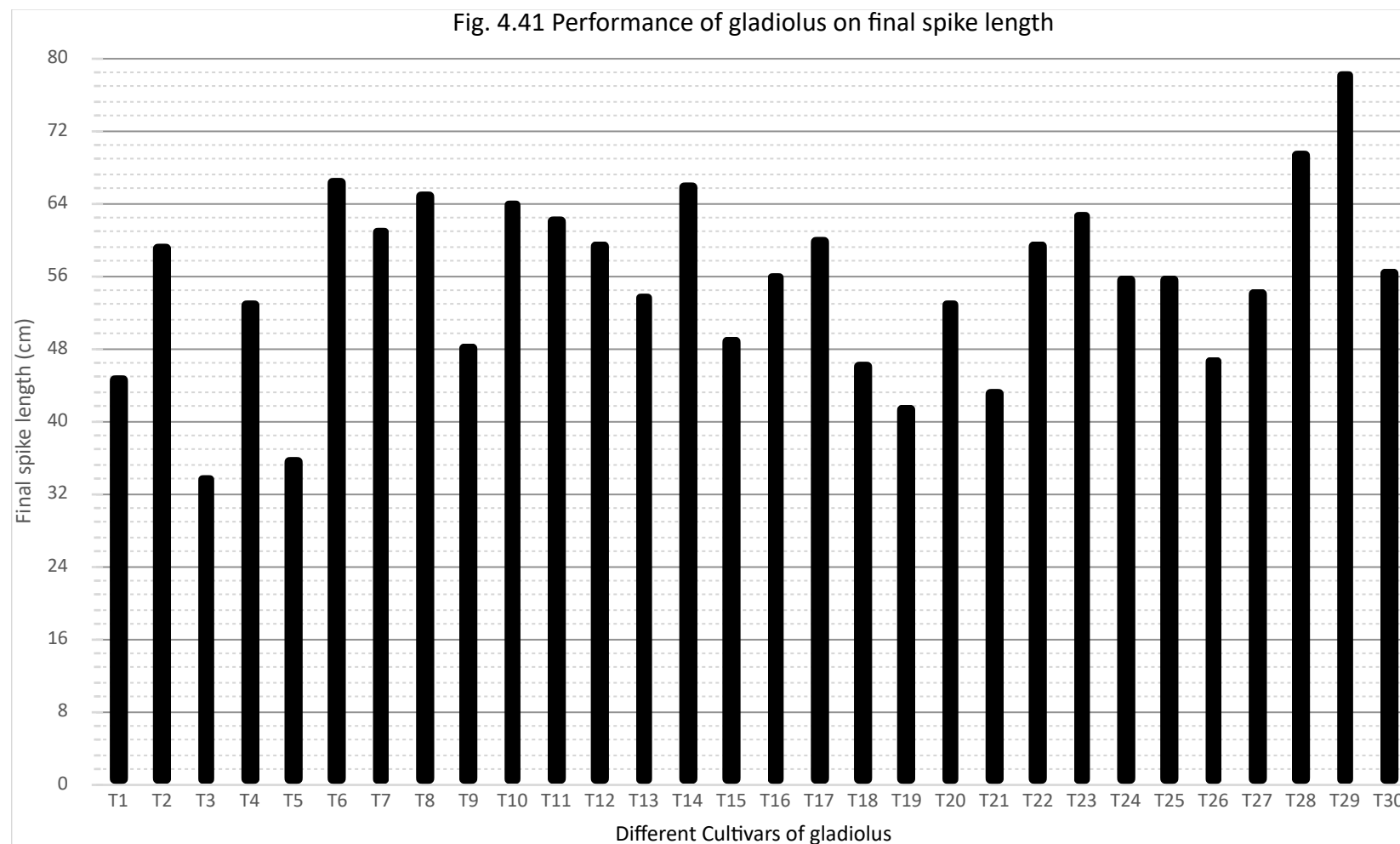


Table 4.42 Performance of gladiolus on initial rachis length.

TREATMENTS	INITIAL RACHIS LENGTH (cm)
T1-Aldebaran	24.67
T2-American Beauty	34.70
T3-Arti	22.90
T4-Chandni	23.90
T5-Darshan	21.73
T6-Dhanvantri	40.43
T7-Friendship Pink	37.17
T8-Green Star	38.47
T9-Gulal	31.87
T10-Hunting Song	44.30
T11-IIHR	37.50
T12-Jester Yellow	36.17
T13-Jyostna	28.17
T14-Mohini	39.30
T15-Nova Lux	27.13
T16-Plum Tart	34.27
T17-Priscilla	34.20
T18-Punjab Dawn	23.53
T19-Punjab Morning	19.63
T20-Pusa Kiran	33.53
T21-Pusa Shubham	24.43
T22-Regency	36.97
T23-Snow Princess	41.63
T24-Subhangini	35.20
T25-Sunanya	29.97
T26-Surya Kiran	29.47
T27-Swarnima	34.07
T28-Tiger Flame	44.77
T29-True Love	56.50
T30-White Prosperity	37.47
C.D. at 5%	9.45

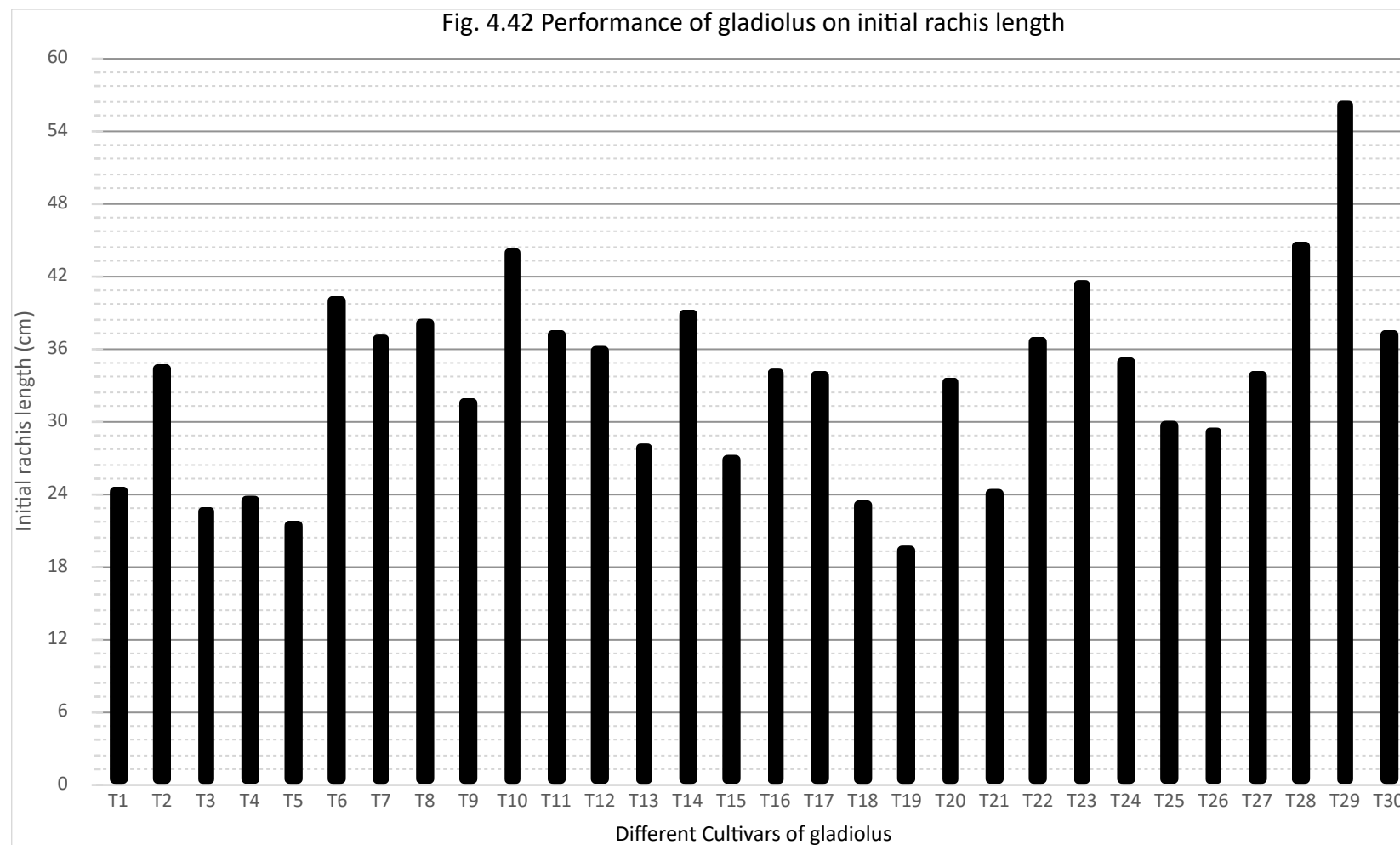


Table 4.43 Performance of gladiolus on final rachis length.

TREATMENTS	FINAL RACHIS LENGTH (cm)
T1-Aldebaran	24.80
T2-American Beauty	35.00
T3-Arti	23.03
T4-Chandni	24.17
T5-Darshan	22.47
T6-Dhanvantri	41.00
T7-Friendship Pink	37.67
T8-Green Star	38.67
T9-Gulal	32.03
T10-Hunting Song	44.83
T11-IIHR	38.27
T12-Jester Yellow	36.67
T13-Jyostna	28.50
T14-Mohini	39.87
T15-Nova Lux	27.90
T16-Plum Tart	34.77
T17-Priscilla	35.87
T18-Punjab Dawn	23.87
T19-Punjab Morning	20.10
T20-Pusa Kiran	34.00
T21-Pusa Shubham	24.93
T22-Regency	37.53
T23-Snow Princess	42.23
T24-Subhangini	36.13
T25-Sunanya	30.53
T26-Surya Kiran	30.10
T27-Swarnima	34.83
T28-Tiger Flame	45.03
T29-True Love	57.00
T30-White Prosperity	37.77
C.D. at 5%	9.43

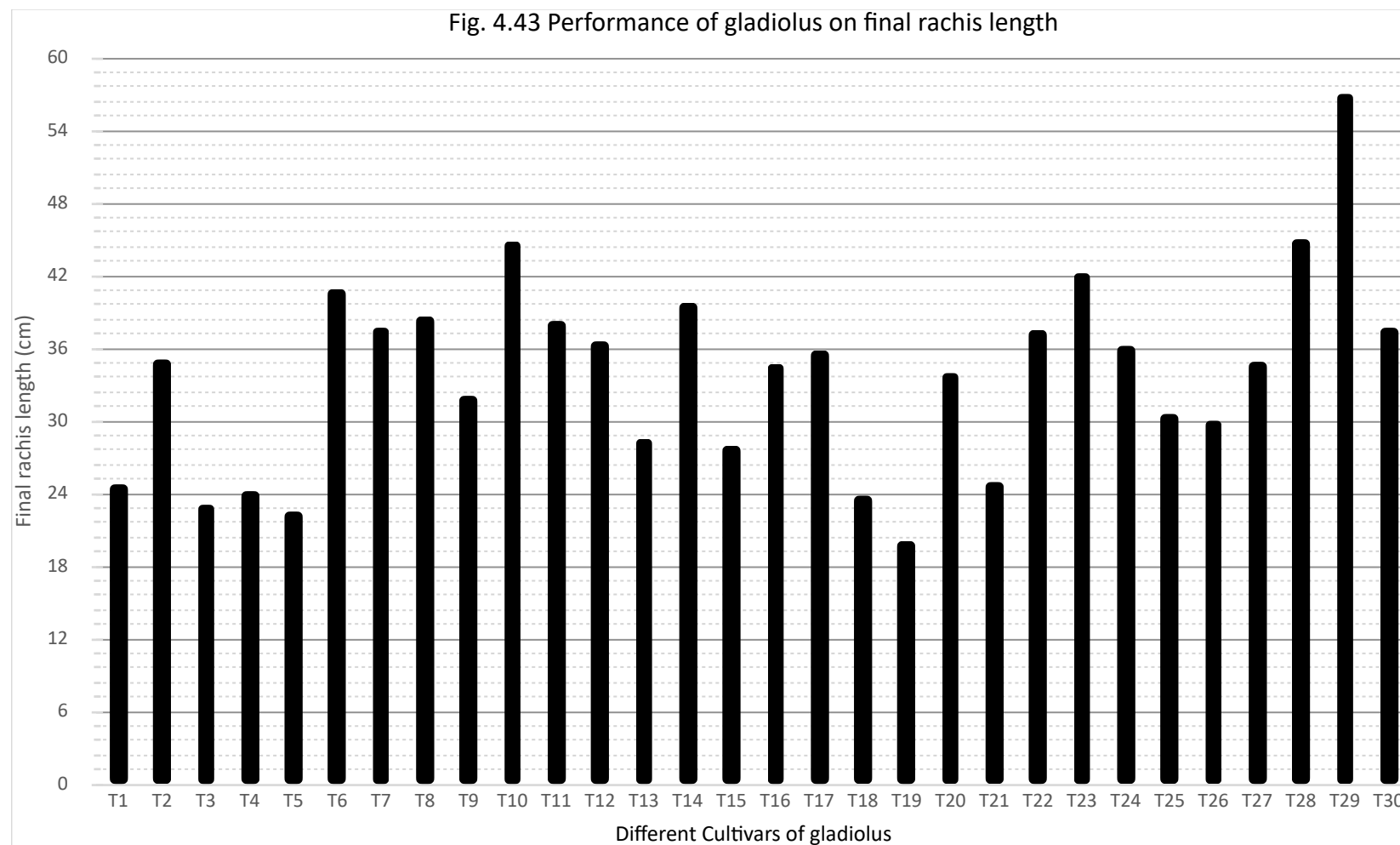


Table 4.44 Performance of gladiolus on internodal length.

TREATMENTS	INTERNODAL LENGTH (cm)
T1-Aldebaran	10.70
T2-American Beauty	13.13
T3-Arti	8.30
T4-Chandni	10.40
T5-Darshan	8.60
T6-Dhanvantri	11.00
T7-Friendship Pink	12.33
T8-Green Star	11.30
T9-Gulal	9.60
T10-Hunting Song	12.57
T11-IIHR	13.23
T12-Jester Yellow	13.40
T13-Jyostna	11.70
T14-Mohini	12.80
T15-Nova Lux	11.37
T16-Plum Tart	12.00
T17-Priscilla	11.53
T18-Punjab Dawn	10.10
T19-Punjab Morning	8.07
T20-Pusa Kiran	12.67
T21-Pusa Shubham	10.90
T22-Regency	12.10
T23-Snow Princess	11.93
T24-Subhangini	12.87
T25-Sunanya	12.43
T26-Surya Kiran	8.00
T27-Swarnima	10.18
T28-Tiger Flame	12.83
T29-True Love	13.83
T30-White Prosperity	12.94
C.D. at 5%	1.56

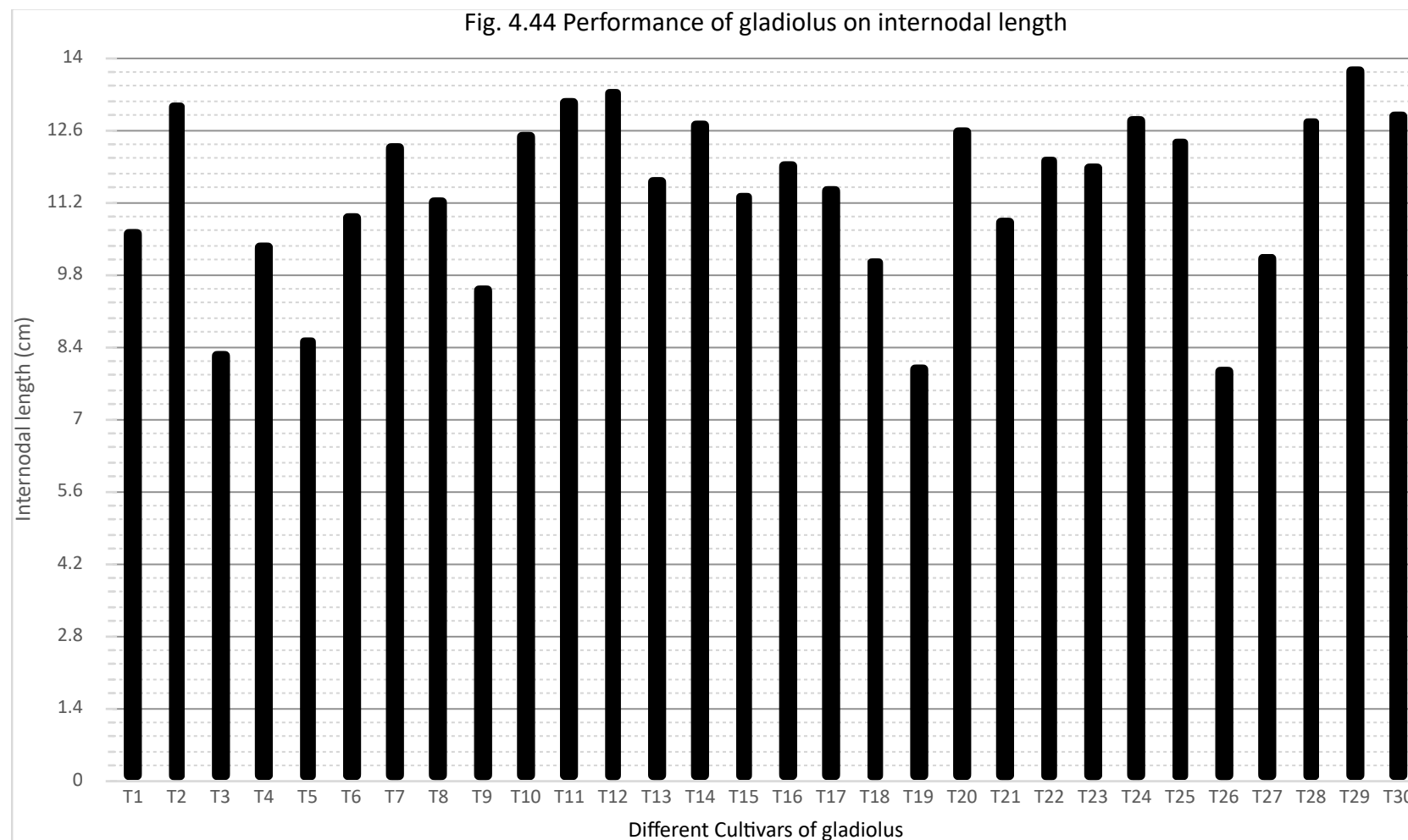


Table 4.45 Performance of gladiolus on withering of last floret.

TREATMENTS	WITHERING OF LAST FLORET (DAYS)
T1-Aldebaran	102.20
T2-American Beauty	99.00
T3-Arti	108.47
T4-Chandni	96.23
T5-Darshan	108.67
T6-Dhanvantri	109.87
T7-Friendship Pink	111.00
T8-Green Star	107.33
T9-Gulal	101.77
T10-Hunting Song	103.67
T11-IIHR	101.07
T12-Jester Yellow	110.67
T13-Jyostna	96.50
T14-Mohini	102.43
T15-Nova Lux	109.03
T16-Plum Tart	103.03
T17-Priscilla	100.10
T18-Punjab Dawn	110.50
T19-Punjab Morning	103.43
T20-Pusa Kiran	108.67
T21-Pusa Shubham	103.47
T22-Regency	98.00
T23-Snow Princess	101.67
T24-Subhangini	98.17
T25-Sunanya	98.23
T26-Surya Kiran	106.67
T27-Swarnima	112.00
T28-Tiger Flame	109.00
T29-True Love	114.00
T30-White Prosperity	101.13
C.D. at 5%	3.48

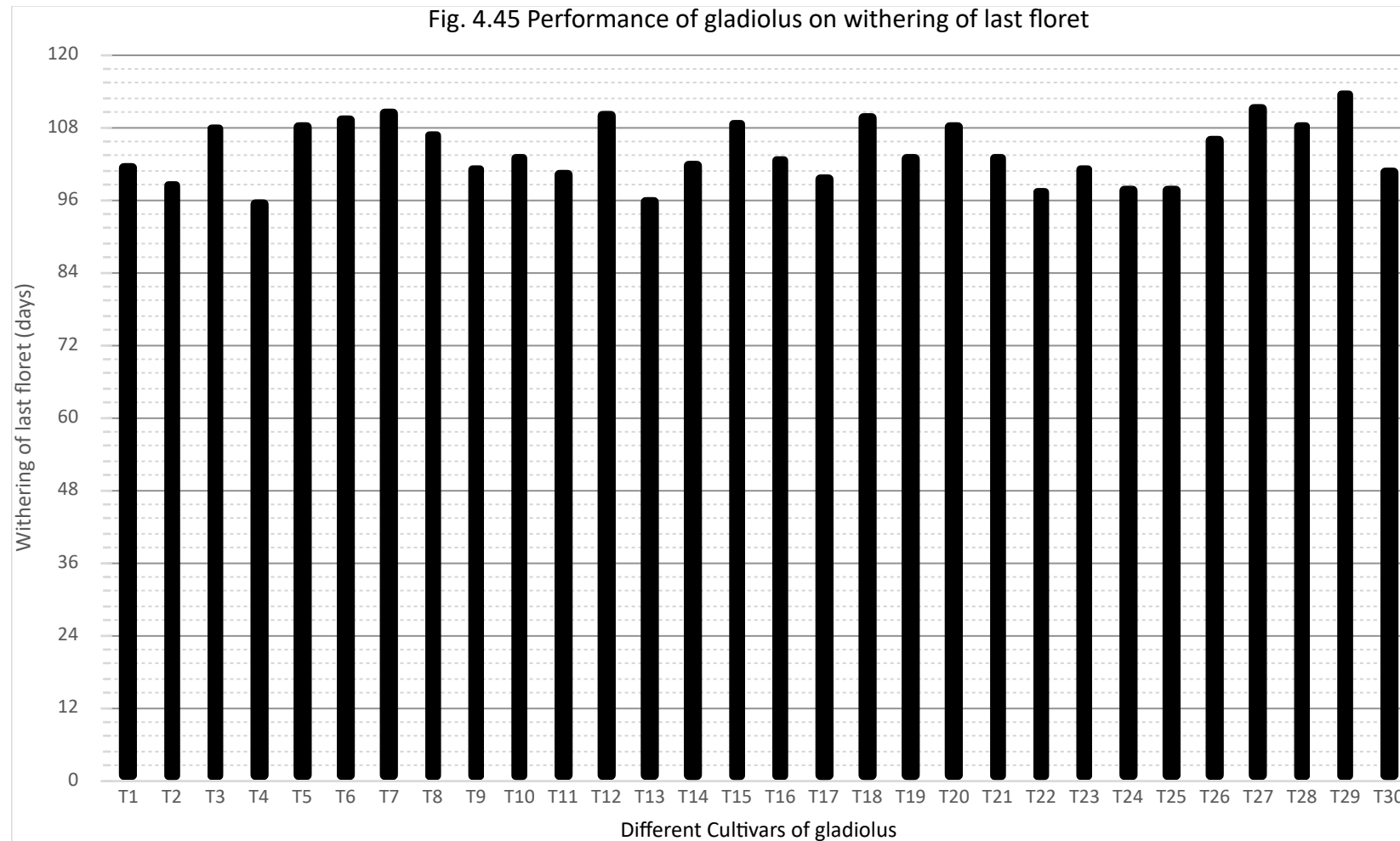
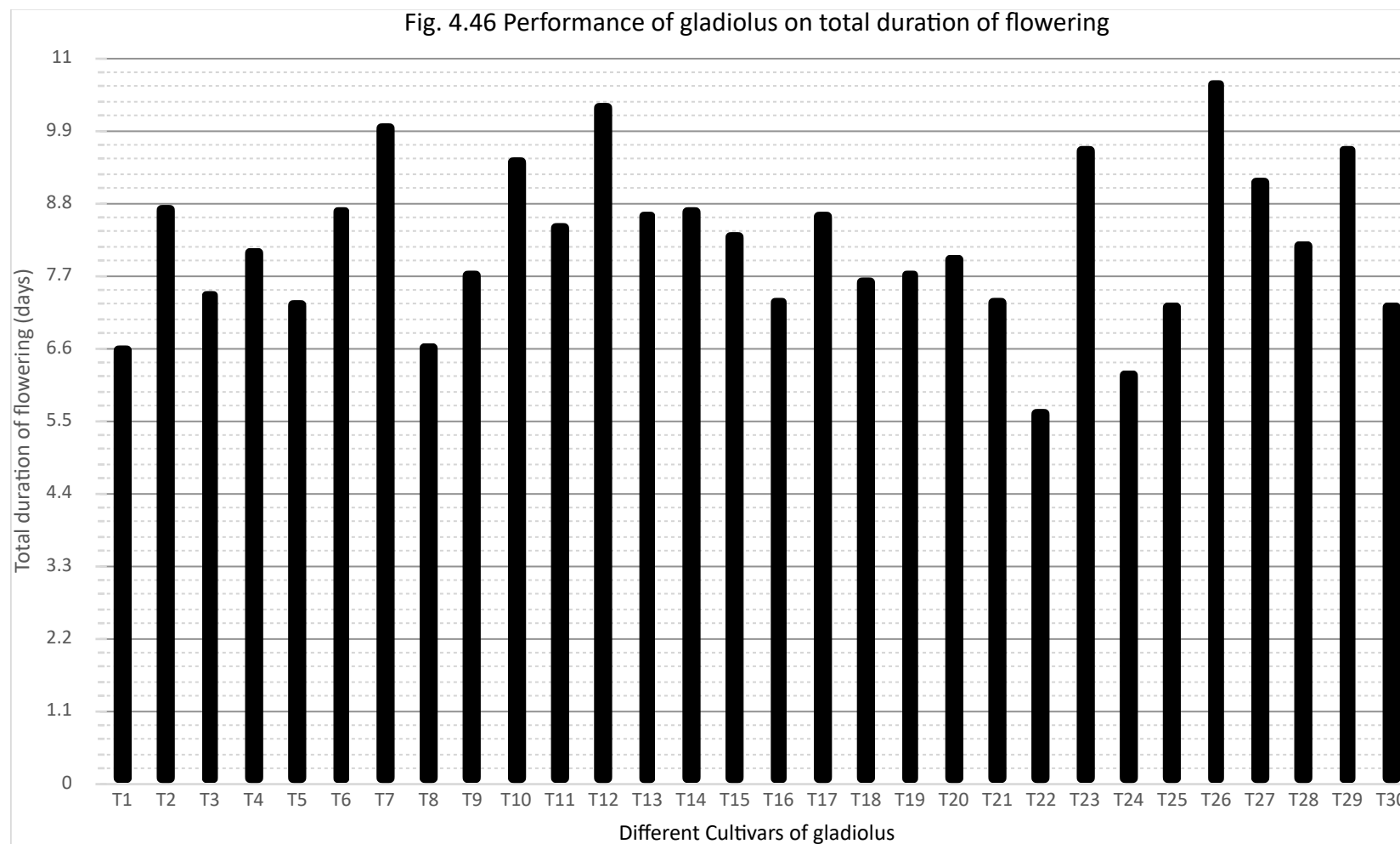


Table 4.46 Performance of gladiolus on total duration of flowering.

TREATMENTS	TOTAL DURATION OF FLOWERING (DAYS)
T1-Aldebaran	6.63
T2-American Beauty	8.77
T3-Arti	7.47
T4-Chandni	8.13
T5-Darshan	7.33
T6-Dhanvantri	8.73
T7-Friendship Pink	10.00
T8-Green Star	6.67
T9-Gulal	7.77
T10-Hunting Song	9.50
T11-IIHR	8.50
T12-Jester Yellow	10.33
T13-Jyostna	8.67
T14-Mohini	8.73
T15-Nova Lux	8.37
T16-Plum Tart	7.37
T17-Priscilla	8.67
T18-Punjab Dawn	7.67
T19-Punjab Morning	7.77
T20-Pusa Kiran	8.00
T21-Pusa Shubham	7.37
T22-Regency	5.67
T23-Snow Princess	9.67
T24-Subhangini	6.27
T25-Sunanya	7.30
T26-Surya Kiran	10.67
T27-Swarnima	9.17
T28-Tiger Flame	8.23
T29-True Love	9.67
T30-White Prosperity	7.30
C.D. at 5%	2.50



4.3 Postharvest parameters

Parameters recorded at postharvest phase in different cultivars of the experimental trail on gladiolus. Postharvest parameters such as opening, withering, diameters and length of 1st, 3rd and 5th florets, no. of florets opened at a time, no. of florets opened/spike, no. of florets/spike, percentage of florets opened/spike, spike length and rachis length at four phases, internodal length, withering of last floret and vase life has been analysed and discussed under following headings and graphically represented in form of bar graph.

4.3.1 First floret

No. of days to opening, withering, diameter and length of 1st floret of gladiolus is discussed in following sub headings.

4.3.1.1 Opening of first floret (days)

No. of days to opening of 1st floret in 30 cultivars of gladiolus is presented in Table 4.47 and graphically represented in Fig. 4.47.

The result showed that the maximum days to opening of first floret was found in cultivar Aldebaran (2 days) and was significant to all other cultivars except cultivars White Prosperity, Snow Princess and Pusa Shubham, which were statistically at par with cultivar Aldebaran.

The minimum no. of days to opening of first floret (1.00 days) were found in cultivars Arti, Darshan, Dhanvantri, Friendship Pink, Green Star, Gulal, Hunting Song, IIHR, Jester Yellow, Jyostna, Mohini, Nova Lux, Priscilla, Punjab Dawn, Punjab Morning, Pusa Kiran, Regency, Sunanya and True Love and was significant to very few cultivars. The cultivars American Beauty, Chandni, Plum Tart, Subhangini, Surya Kiran, Swarnima and Tiger Flame were statistically at par with cultivar earlier to open, as mentioned afore.

4.3.1.2 Withering of first floret (days)

No. of days to withering of 1st floret in 30 cultivars of gladiolus is presented in Table 4.48 and graphically represented in Fig. 4.48.

The result showed that the maximum no. of days to withering of first floret was found in cultivar Priscilla (4.33 days) and was significant to all other cultivars except cultivars Aldebaran, Chandni, IIHR, Jyostna, Snow Princess, Surya Kiran, American Beauty, Friendship Pink, Punjab Dawn, Pusa Shubham, Subhangini and Tiger Flame, which were statistically at par with cultivar Priscilla. The result was followed by cultivars Plum Tart, Punjab Morning and Sunanya.

The minimum no. of days to withering of first floret was found in cultivar Jester Yellow (2 days) and was significant to all other cultivars except cultivars True Love, Mohini, Hunting Song, Gulal and Darshan, which were statistically at par with cultivar Jester Yellow. The result was followed by cultivars White Prosperity, Swarnima, Regency, Pusa Kiran, Nova Lux, Green Star, Dhanvantri and Arti.

4.3.1.3 Diameter of first floret (cm)

Diameter of 1st floret in 30 cultivars of gladiolus is presented in Table 4.49 and graphically represented in Fig. 4.49.

The result showed that the maximum diameter of first floret was found in cultivar Mohini (9.53 cm) and was significantly larger than all other cultivars except American Beauty, Friendship Pink, Hunting Song, IIHR and Priscilla, which were statistically at par with cultivar Mohini. The result was followed by cultivars Dhanvantri, Sunanya, Punjab Morning, Plum Tart, Surya Kiran, Snow Princess, Pusa Kiran, Punjab Dawn, Subhangini, Chandni and Gulal.

The minimum diameter of first floret was found in cultivar Regency (4.93 cm) and was significant to all other cultivars except cultivars Pusa Shubham, Darshan, Swarnima, Aldebaran, True Love, White Prosperity, Tiger Flame, Jester Yellow, Arti

and Jyostna, which were statistically at par with cultivar Regency. The result was followed by cultivars Nova Lux and Green Star.

4.3.1.4 Length of first floret (cm)

Length of 1st floret in 30 cultivars of gladiolus is presented in Table 4.50 and graphically represented in Fig. 4.50.

The result showed that the maximum length of first floret was found in cultivar Friendship Pink (10.50 cm) and was significantly bigger than all other cultivars except Dhanvantri, Subhangini, Priscilla, Hunting Song, IIHR, American Beauty, White Prosperity, Mohini, Jester Yellow, True Love, Pusa Kiran and Sunanya, which were statistically at par with cultivar Friendship Pink. The result was followed by cultivars Punjab Dawn and Gulal.

The minimum length of first floret was found in cultivar Aldebaran (6.50 cm) and was significant to all other cultivars except cultivars Regency, Pusa Shubham and Jyostna, which was statistically at par with cultivar Aldebaran. The result was followed by cultivars Plum Tart, Green Star, Swarnima, Tiger Flame, Darshan, Chandni, Nova Lux, Snow Princess, Punjab Morning and Arti.

4.3.2 Third floret

No. of days to opening, withering, diameter and length of 3rd floret of gladiolus is discussed in following sub headings.

4.3.2.1 Opening of third floret (days)

No. of days to opening of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.51 and graphically represented in Fig. 4.51.

The result showed that the maximum no. of days to opening of third floret was found in cultivar IIHR (3.33 days) and was significant to all other cultivars except cultivars Jyostna, Chandni, Aldebaran, White Prosperity, True Love, Tiger Flame,

Swarnima, Subhangini, Snow Princess, Pusa Shubham, Priscilla and Darshan, which were statistically at par with cultivar IIHR.

The minimum no. of days to opening of third floret was found in cultivar Mohini (1.33 days) and was significant to all other cultivars except cultivars Friendship Pink, Sunanya, Green Star, Gulal, Hunting Song, Jester Yellow, Nova Lux, Pusa Kiran and Regency, which were statistically at par with cultivar Mohini. The result was followed by cultivars American Beauty, Arti, Dhanvantri, Plum Tart, Punjab Dawn, Punjab Morning and Surya Kiran.

4.3.2.2 Withering of third floret (days)

No. of days to withering of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.52 and graphically represented in Fig. 4.52.

The result showed that the maximum no. of days to wither third floret (5.33 days) were found in cultivar Chandni, IIHR and Priscilla and were significant to all other cultivars except cultivars Aldebaran, American Beauty, Punjab Dawn, Pusa Shubham, Snow Princess, Surya Kiran, Darshan, Green Star, Jyostna, Subhangini, Tiger Flame, White Prosperity, Arti, Friendship Pink, Plum Tart, Regency and Sunanya, which were statistically at par with cultivars Chandni, IIHR and Priscilla.

The minimum no. of days to wither third floret was found in cultivar Pusa Kiran (3 days) and was significant to all other cultivars except cultivars Hunting Song, True Love, Mohini, Gulal, Swarnima, Punjab Morning, Nova Lux, Jester Yellow and Dhanvantri, which were statistically at par with cultivar Pusa Kiran.

4.3.2.3 Diameter of third floret (cm)

Diameter of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.53 and graphically represented in Fig. 4.53.

The result showed that the maximum diameter of third floret was found in cultivar Friendship Pink (9.97 cm) and was significantly larger than all other cultivars except Surya Kiran, which was only one statistically at par with cultivar Friendship

Pink. The result was followed by cultivars American Beauty, Priscilla, Mohini, Snow Princess, Sunanya, Aldebaran, Dhanvantri, Plum Tart, Gulal, Hunting Song, IIHR and Punjab Dawn.

The minimum diameter of third floret was found in cultivar Darshan (4.37 cm) and was significant to all other cultivars except cultivars Arti, Chandni, True Love, Green Star and Jester Yellow, which were statistically at par with cultivar Darshan. The result was followed by cultivars Jyostna, Regency, Tiger Flame, Nova Lux, White Prosperity, Pusa Kiran, Pusa Shubham, Punjab Morning, Swarnima and Subhangini.

4.3.2.4 Length of third floret (cm)

Length of 3rd floret in 30 cultivars of gladiolus is presented in Table 4.54 and graphically represented in Fig. 4.54.

The result showed that the maximum length of third floret was found in cultivar Friendship Pink (10.37 cm) and was significant to all other cultivars except cultivars American Beauty, Hunting Song and Mohini, which were statistically at par with cultivar Friendship Pink. The result was followed by cultivars White Prosperity, Punjab Dawn, IIHR, Priscilla, Subhangini, Sunanya, Dhanvantri, Gulal, Jester Yellow, Snow Princess, Arti, Swarnima, Nova Lux and True Love.

The minimum length of third floret was found in cultivar Chandni (6.00 cm) and was significant to all other cultivars except cultivars Regency and Darshan, which were statistically at par with cultivar Chandni. The result was followed by cultivars Pusa Shubham, Green Star, Surya Kiran, Punjab Morning, Plum Tart, Jyostna, Aldebaran, Pusa Kiran and Tiger Flame.

4.3.3 Fifth floret

No. of days to opening, withering, diameter and length of 5th floret of gladiolus is discussed in following sub headings.

4.3.3.1 Opening of fifth floret (days)

No. of days to opening of 5th floret in 30 cultivars of gladiolus is presented in Table 4.55 and graphically represented in Fig. 4.55.

The result showed that the maximum no. of days to opening of fifth floret was found in cultivar Surya Kiran (4.67 days) and was significant to all other cultivars except cultivars Jyostna, White Prosperity, Swarnima, IIHR, Darshan, Snow Princess, Pusa Shubham, Pusa Kiran, Plum Tart, Chandni and American Beauty, which were statistically at par with cultivar Surya Kiran. The result was followed by cultivars Tiger Flame, Punjab Dawn, Priscilla, Dhanvantri and Aldebaran.

The minimum days to opening of fifth floret was found in cultivar Gulal (2.67 days) and was significant to all other cultivars except cultivars Friendship Pink, Green Star, Hunting Song, Jester Yellow, Mohini, Punjab Morning, Sunanya, True Love, Arti, Nova Lux, Regency and Subhangini, which were statistically at par with cultivar Gulal.

4.3.3.2 Withering of fifth floret (days)

No. of days to withering of 5th floret in 30 cultivars of gladiolus is presented in Table 4.56 and graphically represented in Fig. 4.56.

The result showed that the maximum no. of days to withering fifth floret (7.00 days) were found in cultivars Dhanvantri, Hunting Song, Sunanya and Chandni. They were significant to all other cultivars except cultivars True Love, Punjab Dawn, Jester Yellow, Surya Kiran, Plum Tart, Swarnima, Darshan, Pusa Kiran, IIHR, Jyostna, Punjab Morning, Mohini, White Prosperity, Subhangini, Regency and Snow Princess, which were statistically at par with cultivar Dhanvantri, Hunting Song, Sunanya and Chandni.

The minimum no. of days to withering fifth floret was found in cultivar American Beauty (4.00 days) and was significant to all other cultivars except cultivars Tiger Flame, Friendship Pink, Priscilla, Gulal and Aldebaran, which were statistically

at par with cultivar American Beauty. The result was followed by cultivars Green Star, Arti, Pusa Shubham and Nova Lux.

4.3.3.3 Diameter of fifth floret (cm)

Diameter of 5th floret in 30 cultivars of gladiolus is presented in Table 4.57 and graphically represented in Fig. 4.57.

The result showed that the maximum diameter of fifth floret was found in cultivar Friendship Pink (8.90 cm) and was significantly larger to all other cultivars except cultivar Surya Kiran, which was only one statistically at par with cultivar Friendship Pink. The result was followed by cultivars White Prosperity, American Beauty, Aldebaran, Priscilla, IIHR, Plum Tart, Subhangini, Dhanvantri, Snow Princess, Jyostna, Punjab Dawn, Gulal, Hunting Song, Mohini and Pusa Shubham.

The minimum diameter of fifth floret (4.70 cm) were found in cultivar Darshan and Chandni and were significant to all other cultivars except cultivars Jester Yellow, Arti, Pusa Kiran, Nova Lux, Tiger Flame, True Love and Swarnima, which were statistically at par with cultivars Darshan and Chandni. The result was followed by cultivars Regency, Sunanya, Punjab Morning and Green Star.

4.3.3.4 Length of fifth floret (cm)

Length of 5th floret in 30 cultivars of gladiolus is presented in Table 4.58 and graphically represented in Fig. 4.58.

The result showed that the maximum length of fifth floret was found in cultivar Snow Princess (9.27 cm) and was significant to all other cultivars except cultivars Dhanvantri, Surya Kiran, Friendship Pink, Subhangini, Hunting Song, IIHR, White Prosperity, Gulal, American Beauty, Jester Yellow and Sunanya, which were statistically at par with cultivar Snow Princess. The result was followed by cultivars Arti, Swarnima, Mohini and Pusa Shubham.

The minimum length of fifth floret was found in cultivar Chandni (5.33 cm) and was significantly smaller, with all other cultivars statistically non-significant. The

result was followed by cultivars Tiger Flame, Jyostna, Darshan, Green Star, Regency, Punjab Dawn, Plum Tart, Pusa Kiran, Punjab Morning, True Love, Aldebaran, Priscilla and Nova Lux.

4.3.4 No. of florets opened at a time

No. of florets opened at a time in gladiolus is discussed below and presented in Table 4.59 while graphically represented in Fig. 4.59.

The result showed that the maximum no. of florets opened at a time was found in cultivar Friendship Pink (5.67) and was significant to all other cultivars except cultivar Surya Kiran, which was only one statistically at par with cultivar Friendship Pink. The result was followed by cultivars American Beauty, Punjab Dawn, Subhangini, White Prosperity, Aldebaran, Hunting Song, Mohini, Sunanya, True Love, Chandni, Green Star, Nova Lux, Plum Tart, Priscilla, Punjab Morning, Pusa Kiran and Regency.

The minimum no. of florets opened at a time was found in cultivar Darshan (2) and was significant to all other cultivars except cultivar Swarnima, which was only one statistically at par with cultivar Darshan. The result was followed by cultivars Arti, Tiger Flame, Pusa Shubham, Dhanvantri, Snow Princess, Jyostna, Jester Yellow, IIHR and Gulal.

4.3.5 No. of opened florets/spike

Number of opened florets per spike of gladiolus is discussed below and presented in Table 4.60 while graphically represented in Fig. 4.60.

The result showed that the maximum number of opened florets per spike was found in cultivar Hunting Song (13.67) and was significantly greater to all other cultivars except cultivars Nova Lux and Surya Kiran, which were only statistically at par with cultivar Hunting Song. The result was followed by cultivars American Beauty, Mohini, True Love, Jyostna, Pusa Kiran, Tiger Flame, Subhangini, Priscilla, Dhanvantri, Friendship Pink, Punjab Morning and Darshan.

The minimum number of opened florets per spike was found in cultivar Pusa Shubham (6) and was significant to all other cultivars except Jester Yellow, Regency, Aldebaran, White Prosperity, Green Star, Chandni, Arti and Gulal, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Swarnima, Plum Tart, Sunanya, Snow Princess, Punjab Dawn and IIHR.

4.3.6 No. of florets/spike

Number of florets per spike of gladiolus is discussed below and presented in Table 4.61 while graphically represented in Fig. 4.61.

The result showed that the maximum number of florets per spike was found in cultivar Friendship Pink (18.33) and was significantly greater to all other cultivars except cultivars Subhangini, Hunting Song, Nova Lux and True Love, which were only statistically at par with cultivar True Love. The result was followed by cultivars Surya Kiran, Regency, Punjab Dawn, Pusa Kiran, American Beauty, Priscilla, Tiger Flame, Jyostna, Mohini and Snow Princess.

The minimum number of florets per spike was found in cultivar Pusa Shubham (8) and was significant to all other cultivars except Jester Yellow, Green Star, Chandni, Plum Tart, Arti, Aldebaran, Sunanya and IIHR, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Gulal, Swarnima, Darshan, Dhanvantri, White Prosperity and Punjab Morning.

4.3.7 Percentage of opened florets/spike

Percentage of opened florets per spike of gladiolus is discussed below and presented in Table 4.62 while graphically represented in Fig. 4.62.

The result showed that the maximum percentage of opened florets per spike was found in cultivar IIHR (90.30 %) and was significant to all other cultivars except cultivars Mohini, Dhanvantri, Darshan, Jyostna, Hunting Song, Sunanya, Plum Tart, Jester Yellow, Green Star, American Beauty, Punjab Morning, Tiger Flame, Nova Lux

and Chandni, which were statistically at par with cultivar IIHR. The result was followed by cultivars Arti, Surya Kiran and Swarnima.

The minimum percentage of opened florets per spike was found in cultivar Regency (47.06%) and was significantly fewer than all other cultivars except cultivar Friendship Pink, which was only statistically at par with cultivar Regency. The result was followed by cultivars Punjab Dawn, White Prosperity, Subhangini, Snow Princess, True Love, Aldebaran, Priscilla, Gulal, Pusa Shubham and Pusa Kiran.

4.3.8 Spike length on 1st, 3rd, 6th and 9th day (cm)

Spike length on first, third, sixth and ninth day of gladiolus spike was cut is discussed in following subheadings.

4.3.8.1 Spike length on first day

Spike length on 1st day in 30 cultivars in gladiolus is presented in Table 4.63 and graphically represented in Fig. 4.63.

The result showed that the maximum spike length on first day was found in cultivar Hunting Song (76.50 cm) and was significant to all other cultivars except cultivars Dhanvantri, True Love, Mohini and IIHR, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Snow Princess, Surya Kiran, Tiger Flame, Friendship Pink, Pusa Kiran, Priscilla, Subhangini, Plum Tart, American Beauty and Sunanya.

The minimum spike length on first day was found in cultivar Pusa Shubham (37.17 cm) and was significantly smaller to all other cultivars except cultivars Darshan and Arti, which were only statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Chandni, Aldebaran, Green Star, Punjab Morning, Punjab Dawn, Gulal, Nova Lux, Jester Yellow, Jyostna, White Prosperity, Regency and Swarnima.

4.3.8.2 Spike length on third day

Spike length on 3rd day in 30 cultivars of gladiolus is presented in Table 4.64 and graphically represented in Fig. 4.64.

The result showed that the maximum spike length on third day was found in cultivar Hunting Song (77.23 cm) and was significant to all other cultivars except cultivars Dhanvantri, True Love, IIHR, Mohini and Snow Princess, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Surya Kiran, Friendship Pink, Tiger Flame, Pusa Kiran, Subhangini, Priscilla, American Beauty, Plum Tart and Sunanya.

The minimum spike length on third day was found in cultivar Pusa Shubham (37.20 cm) and was significantly smaller to all other cultivars except cultivars Darshan and Arti, which were only statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Chandni, Aldebaran, Green Star, Punjab Morning, Gulal, Jester Yellow, Nova Lux, Punjab Dawn, Jyostna, Regency, White Prosperity and Swarnima.

4.3.8.3 Spike length on sixth day

Spike length on 6th day in 30 cultivars of gladiolus is presented in Table 4.65 and graphically represented in Fig. 4.65.

The result showed that the maximum spike length on sixth day was found in cultivar Hunting Song (78.10 cm) and was significant to all other cultivars except cultivars Dhanvantri, True Love and IIHR, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Mohini, Snow Princess, Surya Kiran, Friendship Pink, Tiger Flame, Pusa Kiran, Subhangini, Priscilla, American Beauty, Plum Tart and Sunanya.

The minimum spike length on sixth day was found in cultivar Pusa Shubham (37.20 cm) and was significantly smaller to all other cultivars except cultivars Darshan and Arti, which were only statistically at par with cultivar Pusa Shubham.

The result was followed by cultivars Chandni, Aldebaran, Green Star, Punjab Morning, Gulal, Jester Yellow, Punjab Dawn, Nova Lux, Jyostna, Regency, Swarnima and White Prosperity.

4.3.8.4 Spike length on ninth day

Spike length on 9th day in 30 cultivars of gladiolus is presented in Table 4.66 and graphically represented in Fig. 4.66.

The result showed that the maximum spike length on ninth day was found in cultivar Hunting Song (78.87 cm) and was significant to all other cultivars except cultivars Dhanvantri and True Love, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Mohini, Snow Princess, IIHR, Surya Kiran, Friendship Pink, Tiger Flame, Pusa Kiran, Subhangini, Priscilla, Plum Tart, American Beauty and Sunanya.

The minimum spike length on ninth day was found in cultivar Pusa Shubham (37.03 cm) and was significantly smaller to all other cultivars except cultivars Darshan and Arti, which were only statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Aldebaran, Green Star, Chandni, Punjab Morning, Gulal, Punjab Dawn, Jester Yellow, Nova Lux, Jyostna, Regency, White Prosperity and Swarnima.

4.3.9 Rachis length on 1st, 3rd, 6th and 9th day(cm)

Rachis length on first, third, sixth and ninth day of gladiolus spike was cut is discussed in following subheadings.

4.3.9.1 Rachis length on first day

Rachis length on 1st day in 30 cultivars of gladiolus is presented in Table 4.67 and graphically represented in Fig. 4.67.

The result showed that the maximum rachis length on first day was found in cultivar Hunting Song (50.33 cm) and was significant to all other cultivars except

cultivars Surya Kiran, True Love, Snow Princess, Subhangini, Friendship Pink and Tiger Flame, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Dhanvantri, American Beauty, IIHR, Priscilla, Nova Lux, Mohini, Pusa Kiran, White Prosperity, Regency and Swarnima.

The minimum length of the rachis on first day was found in cultivar Pusa Shubham (23.20 cm) and was significant to all other cultivars except cultivars Jester Yellow, Chandni, Darshan, Green Star, Arti and Punjab Morning, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Gulal, Aldebaran, Jyostna, Punjab Dawn, Sunanya and Plum Tart.

4.3.9.2 Rachis length on third day

Rachis length on 3rd day in 30 cultivars of gladiolu is presented in Table 4.68 and graphically represented in Fig. 4.68.

The result showed that the maximum rachis length on third day was found in cultivar Subhangini (51.10 cm) and was significant to all other cultivars except cultivars Hunting Song, Surya Kiran, True Love, Snow Princess and Friendship Pink, which were statistically at par with cultivar Subhangini. The result was followed by cultivars Dhanvantri, Priscilla, American Beauty, Mohini, Nova Lux, IIHR, White Prosperity, Pusa Kiran, Swarnima and Tiger Flame.

The minimum rachis length on third day was found in cultivar Pusa Shubham (23.37 cm) and was significant to all other cultivars except cultivars Jester Yellow, Chandni, Darshan, Green Star, Arti, Punjab Morning and Gulal, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Aldebaran, Jyostna, Punjab Dawn, Plum Tart, Sunanya and Regency.

4.3.9.3 Rachis length on sixth day

Rachis length on 6th day in 30 cultivars of gladiolus is presented in Table 4.69 and graphically represented in Fig. 4.69.

The result showed that the maximum rachis length on sixth day was found in cultivar Hunting Song (51.90 cm) and was significant to all other cultivars except cultivars Surya Kiran, True Love, Subhangini, Snow Princess and Tiger Flame, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Friendship Pink, Dhanvantri, Priscilla, American Beauty, Nova Lux, IIHR, Mohini, Pusa Kiran and White Prosperity.

The minimum rachis length on sixth day was found in cultivar Pusa Shubham (23.37 cm) and was significant to all other cultivars except cultivars Jester Yellow, Chandni, Darshan, Green Star, Arti and Punjab Morning, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Gulal, Aldebaran, Jyostna, Punjab Dawn, Sunanya, Plum Tart, Regency and Swarnima.

4.3.9.4 Rachis length on ninth day

Rachis Length on 9th day in 30 cultivars of gladiolus is presented in Table 4.70 and graphically represented in Fig. 4.70.

The result showed that the maximum rachis length on ninth day was found in cultivar Hunting Song (52.80 cm) and was significantly longer to all other cultivars except cultivars True Love and Subhangini, which were statistically at par with cultivar Hunting Song. The result was followed by cultivars Snow Princess, Tiger Flame, Surya Kiran, Friendship Pink, Dhanvantri, Priscilla, American Beauty, Nova Lux, Mohini, IIHR, White Prosperity, Pusa Kiran and Swarnima.

The minimum rachis length on ninth day was found in cultivar Pusa Shubham (22.97 cm) and was significant to all other cultivars except cultivars Chandni, Jester Yellow, Darshan, Green Star, Punjab Morning and Arti, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Gulal, Aldebaran, Jyostna, Punjab Dawn, Sunanya, Plum Tart and Regency.

4.3.10 Weight of spike on 1st, 3rd, 6th and 9th day (g)

Weight of spike on first, third, sixth and ninth day of gladiolus spike was cut is discussed in following subheadings.

4.3.10.1 Weight of spike on first day

Weight of spike on 1st day in 30 cultivars of gladiolus is presented in Table 4.71 and graphically represented in Fig. 4.71.

The result showed that the maximum weight of spike on first day was found in cultivar Friendship Pink (69.85 g) and was significantly heavier, with all other cultivars statistically non-significant. The result was followed by cultivars Mohini, American Beauty, Surya Kiran, Priscilla, Subhangini, Snow Princess, Hunting Song, Nova Lux, Regency, True Love, Gulal, Plum Tart and Tiger Flame.

The minimum spike weight of spike on first day was found in cultivar Chandni (18.70 g) and was significant to all other cultivars except cultivars Pusa Shubham, Darshan, Arti, Swarnima and Green Star, which were statistically at par with cultivar Chandni. The result was followed by cultivars Punjab Morning, Sunanya, Jyostna, Punjab Dawn, Aldebaran, IIHR, Jester Yellow, Dhanvantri, Pusa Kiran and White Prosperity.

4.3.10.2 Weight of spike on third day

Weight of spike on 3rd day in 30 cultivars of gladiolus is presented in Table 4.72 and graphically represented in Fig. 4.72.

The result showed that the maximum weight of spike on third day was found in cultivar Friendship Pink (70.93 g) and was significantly heavier, to all the cultivars of the experimental trial. The result was followed by cultivars Mohini, American Beauty, Subhangini, Priscilla, Surya Kiran, Nova Lux, Snow Princess, Hunting Song, True Love, Regency and IIHR.

The minimum weight of spike on third day was found in cultivar Pusa Shubham (18.63 g) and was significant to all other cultivars except cultivars Chandni, Arti, Darshan, Green Star and Swarnima, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Plum Tart, Punjab Morning, Pusa Kiran, Punjab Dawn, Aldebaran, Gulal, Tiger Flame, Jyostna, White Prosperity, Jester Yellow, Dhanvantri and Sunanya.

4.3.10.3 Weight of spike on sixth day

Weight of spike on 6th day in 30 cultivars of gladiolus is presented in Table 4.73 and graphically represented in Fig. 4.73.

The result showed that the maximum weight of spike on sixth day was found in cultivar Friendship Pink (67.45 g) and was significantly heavier, to all the cultivars of the experimental trial. The result was followed by cultivars Mohini, American Beauty, Subhangini, Surya Kiran, Priscilla, Snow Princess, True Love, Nova Lux, Jester Yellow, Hunting Song, White Prosperity and Gulal.

The minimum weight of spike on sixth day was found in cultivar Pusa Shubham (14.73 g) and was significant to all other cultivars except cultivars Chandni, Arti, Darshan, Green Star, Swarnima and Punjab Morning, which were statistically at par with cultivar Pusa Shubham. The result was followed by cultivars Plum Tart, Pusa Kiran, Aldebaran, Tiger Flame, Jyostna, Punjab Dawn, IIHR, Dhanvantri, Regency and Sunanya.

4.3.10.4 Weight of spike on ninth day

Weight of spike on 9th day in 30 cultivars of gladiolus is presented in Table 4.74 and graphically represented in Fig. 4.74.

The result showed that the maximum weight of spike on ninth day was found in cultivar Friendship Pink (46.27 g) and was significant to all the cultivars except cultivars Mohini, True Love, American Beauty and Surya Kiran, which were statistically at par with cultivar Friendship Pink. The result was followed by cultivars

Subhangini, Hunting Song, Nova Lux, Priscilla, Jester Yellow, White Prosperity, Punjab Dawn and Dhanvantri.

The minimum weight of spike on ninth day was found in cultivar Chandni (10.30 g) and was significant to all other cultivars except cultivars Pusa Shubham, Arti, Darshan, Green Star, Swarnima and Pusa Kiran, which were statistically at par with cultivar Chandni. The result was followed by cultivars Punjab Morning, Jyostna, Aldebaran, Tiger Flame, Plum Tart, IIHR, Sunanya, Regency and Gulal.

4.3.11 Volume of solution uptake on 3rd, 6th and 9th day (ml)

Volume of solution uptake on first, third, sixth and ninth day of gladiolus spike was cut is discussed in following subheadings.

4.3.11.1 Volume of solution uptake on third day

Volume of solution uptake on 3rd day in 30 cultivars of gladiolus is presented in Table 4.75 and graphically represented in Fig. 4.75.

The result showed that the maximum volume of solution uptake on 3rd day was found in cultivar Subhangini (19.67 ml) and was significant to all the cultivars except cultivars Hunting Song, Sunanya, Mohini, Friendship Pink, American Beauty, Surya Kiran, Priscilla and Snow Princess, which were statistically at par with cultivar Subhangini. The result was followed by cultivars Dhanvantri, True Love, Nova Lux, White Prosperity and Punjab Dawn.

The minimum volume of solution uptake 3rd day was found in cultivar Jester Yellow (4 ml) and was significant to all other cultivars except cultivars Arti, Pusa Shubham, Aldebaran, Green Star, Swarnima, Pusa Kiran, Punjab Morning and Tiger Flame, which were statistically at par with cultivar Jester Yellow. The result was followed by cultivars Chandni, Regency, Jyostna, IIHR, Gulal and Plum Tart.

4.3.11.2 Volume of solution uptake on sixth day

Volume of solution uptake on 6th day in 30 cultivars of gladiolus is presented in Table 4.76 and graphically represented in Fig. 4.76.

The result showed that the maximum volume of solution uptake on 6th day was found in cultivar Subhangini (23 ml) and was significant to all the cultivars except cultivars American Beauty, Mohini, Friendship Pink, Hunting Song, Sunanya and Priscilla, which were statistically at par with cultivar Subhangini. The result was followed by cultivars Surya Kiran, Dhanvantri, White Prosperity, Snow Princess, True Love, Punjab Dawn, IIHR and Nova Lux.

The minimum volume of solution uptake on 6th day was found in cultivar Arti (6 ml) and was significant to all other cultivars except cultivars Jester Yellow, Aldebaran, Pusa Shubham, Pusa Kiran, Darshan, Green Star, Swarnima, Chandni, Punjab Morning, an Tiger Flame, which were statistically at par with cultivar Arti. The result was followed by cultivars Chandni, Regency, Jyostna, IIHR, Gulal and Plum Tart.

4.3.11.3 Volume of solution uptake on ninth day

Volume of solution uptake on 9th day in 30 cultivars of gladiolus is presented in Table 4.77 and graphically represented in Fig. 4.77.

The result showed that the maximum volume of solution uptake on ninth day was found in cultivar American Beauty (24.33 ml) and was significant to all the cultivars except cultivars Subhangini, Mohini, Priscilla, Friendship Pink, Hunting Song and Sunanya, which were statistically at par with cultivar American Beauty. The result was followed by cultivars Surya Kiran, Dhanvantri, Snow Princess, IIHR, Punjab Dawn, True Love, White Prosperity, Nova Lux, Plum Tart and Jyostna.

The minimum volume of solution uptake on ninth day was found in cultivar Arti (6.67 ml) and was significant to all other cultivars except cultivars Aldebaran, Jester Yellow, Pusa Shubham, Pusa Kiran, Green Star, Punjab Morning, Darshan, Tiger Flame, Swarnima and Chandni, which were statistically at par with cultivar Arti. The result was followed by cultivars Regency and Gulal.

4.3.12 Withering of last floret (days)

Number of days to withering of last floret 30 cultivars of gladiolus is discussed below and presented in Table 4.78 while graphically represented in Fig. 4.78.

The result showed that the maximum no. of days to withering of last floret was found in cultivar American Beauty (15.33 days) and was significant to all other cultivars except cultivars Priscilla and Punjab Dawn, which were statistically at par with cultivar American Beauty. The result was followed by cultivars IIHR, Punjab Morning, Surya Kiran, Dhanvantri, Pusa Kiran, Snow Princess, Subhangini, Friendship Pink, Sunanya, Aldebaran, Hunting Song and Tiger Flame.

The minimum no. of days to withering of last floret was found in cultivar Regency (6.33 days) and was significant to all other cultivars except cultivars Jester Yellow, True Love, Gulal, Plum Tart and Green Star, which were statistically at par with cultivar Regency. The result was followed by cultivars White Prosperity, Pusa Shubham, Darshan, Chandni, Arti, Swarnima, Nova Lux, Mohini and Jyostna.

4.3.13 Vase life (days)

Vase life in 30 cultivars of gladiolus is discussed below and presented in Table 4.79 while graphically represented in Fig. 4.79.

The result showed that the maximum vase life was found in cultivar American Beauty (14 days) and was significant to all other cultivars except cultivars Priscilla, Punjab Dawn, IIHR and Punjab Morning, which were statistically at par with cultivar American Beauty. The result was followed by cultivars Dhanvantri, Pusa Kiran, Surya Kiran, Friendship Pink, Subhangini, Sunanya, Snow Princess and Hunting Song.

The minimum vase life was found in cultivar Regency (5.37 days) and was significant to all other cultivars except cultivars Jester Yellow, True Love, Gulal, Plum Tart and Green Star, which were statistically at par with cultivar Regency. The result was followed by cultivars White Prosperity, Pusa Shubham, Chandni, Darshan, Swarnima, Arti, Aldebaran, Tiger Flame, Nova Lux, Mohini and Jyostna.

Table 4.47 Performance of gladiolus on opening of first floret in vase.

TREATMENTS	OPENING OF FIRST FLORET (DAYS)
T1-Aldebaran	2.00
T2-American Beauty	1.33
T3-Arti	1.00
T4-Chandni	1.33
T5-Darshan	1.00
T6-Dhanvantri	1.00
T7-Friendship Pink	1.00
T8-Green Star	1.00
T9-Gulal	1.00
T10-Hunting Song	1.00
T11-IIHR	1.00
T12-Jester Yellow	1.00
T13-Jyostna	1.00
T14-Mohini	1.00
T15-Nova Lux	1.00
T16-Plum Tart	1.33
T17-Priscilla	1.00
T18-Punjab Dawn	1.00
T19-Punjab Morning	1.00
T20-Pusa Kiran	1.00
T21-Pusa Shubham	1.67
T22-Regency	1.00
T23-Snow Princess	1.67
T24-Subhangini	1.33
T25-Sunanya	1.00
T26-Surya Kiran	1.33
T27-Swarnima	1.33
T28-Tiger Flame	1.33
T29-True Love	1.00
T30-White Prosperity	1.67
C.D. at 5%	0.55

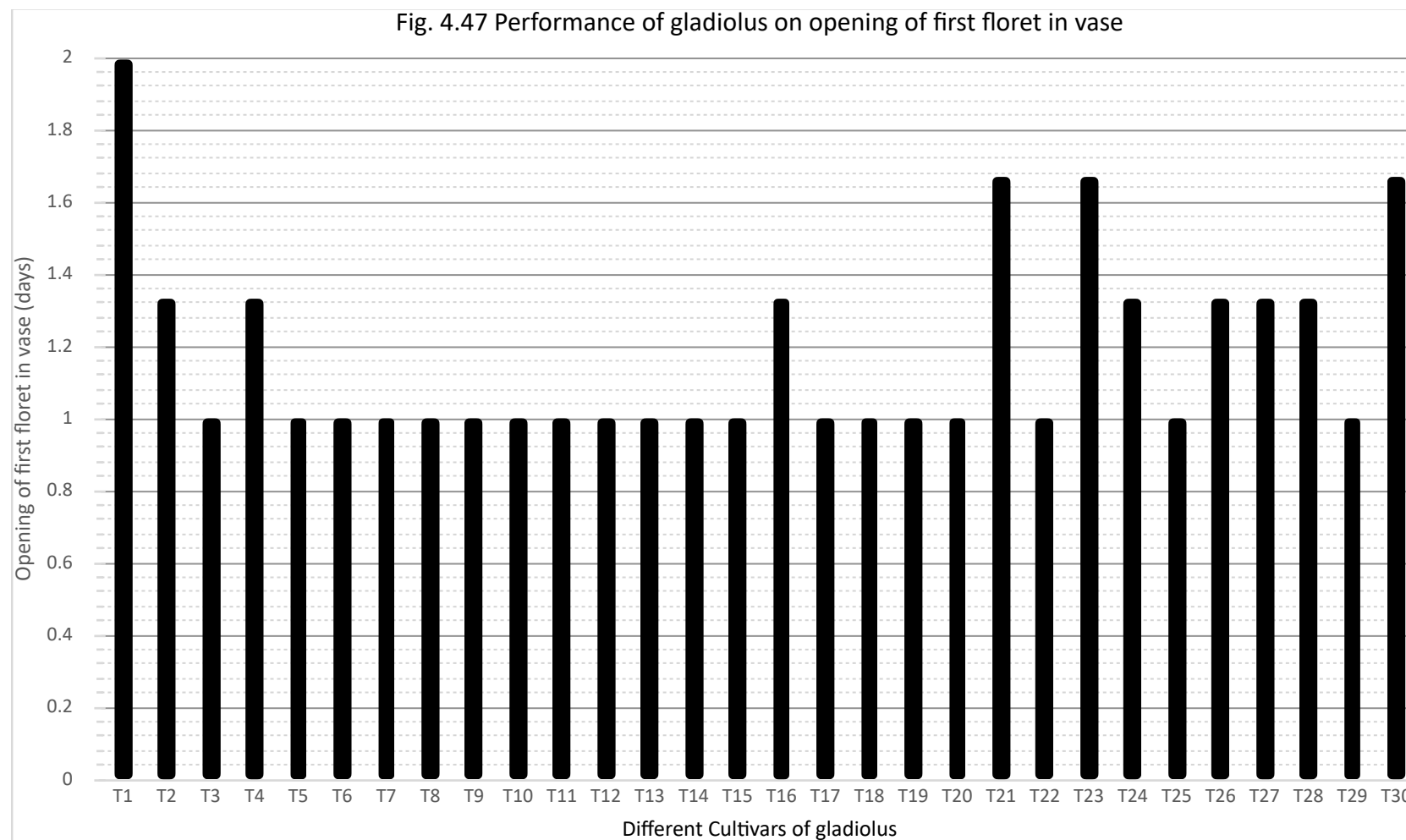


Table 4.48 Performance of gladiolus on withering of first floret in vase.

TREATMENTS	WITHERING OF FIRST FLORET (DAYS)
T1-Aldebaran	4.00
T2-American Beauty	3.67
T3-Arti	3.00
T4-Chandni	4.00
T5-Darshan	2.67
T6-Dhanvantri	3.00
T7-Friendship Pink	3.67
T8-Green Star	3.00
T9-Gulal	2.67
T10-Hunting Song	2.67
T11-IIHR	4.00
T12-Jester Yellow	2.00
T13-Jyostna	4.00
T14-Mohini	2.67
T15-Nova Lux	3.00
T16-Plum Tart	3.33
T17-Priscilla	4.33
T18-Punjab Dawn	3.67
T19-Punjab Morning	3.33
T20-Pusa Kiran	3.00
T21-Pusa Shubham	3.67
T22-Regency	3.00
T23-Snow Princess	4.00
T24-Subhangini	3.67
T25-Sunanya	3.33
T26-Surya Kiran	4.00
T27-Swarnima	3.00
T28-Tiger Flame	3.67
T29-True Love	2.67
T30-White Prosperity	3.00
C.D. at 5%	0.85

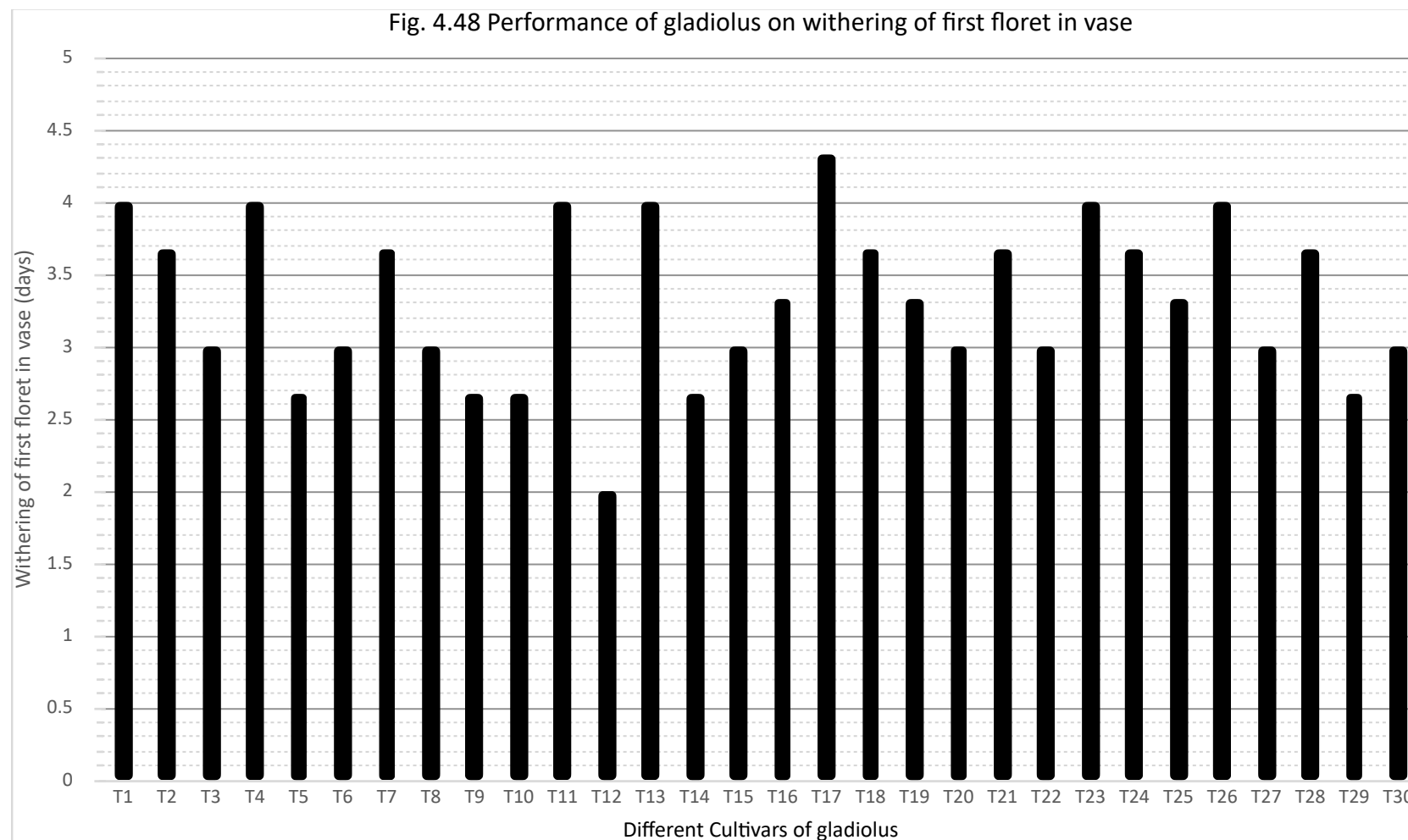


Table 4.49 Performance of gladiolus on diameter of first floret in vase.

TREATMENTS	DIAMETER OF FIRST FLORET (cm)
T1-Aldebaran	5.83
T2-American Beauty	9.10
T3-Arti	6.20
T4-Chandni	7.13
T5-Darshan	5.20
T6-Dhanvantri	7.93
T7-Friendship Pink	8.97
T8-Green Star	6.73
T9-Gulal	7.10
T10-Hunting Song	8.47
T11-IIHR	8.43
T12-Jester Yellow	6.15
T13-Jyostna	6.47
T14-Mohini	9.53
T15-Nova Lux	6.60
T16-Plum Tart	7.57
T17-Priscilla	8.33
T18-Punjab Dawn	7.43
T19-Punjab Morning	7.63
T20-Pusa Kiran	7.47
T21-Pusa Shubham	5.10
T22-Regency	4.93
T23-Snow Princess	7.50
T24-Subhangini	7.33
T25-Sunanya	7.93
T26-Surya Kiran	7.57
T27-Swarnima	5.70
T28-Tiger Flame	5.97
T29-True Love	5.87
T30-White Prosperity	5.93
C.D. at 5%	1.57

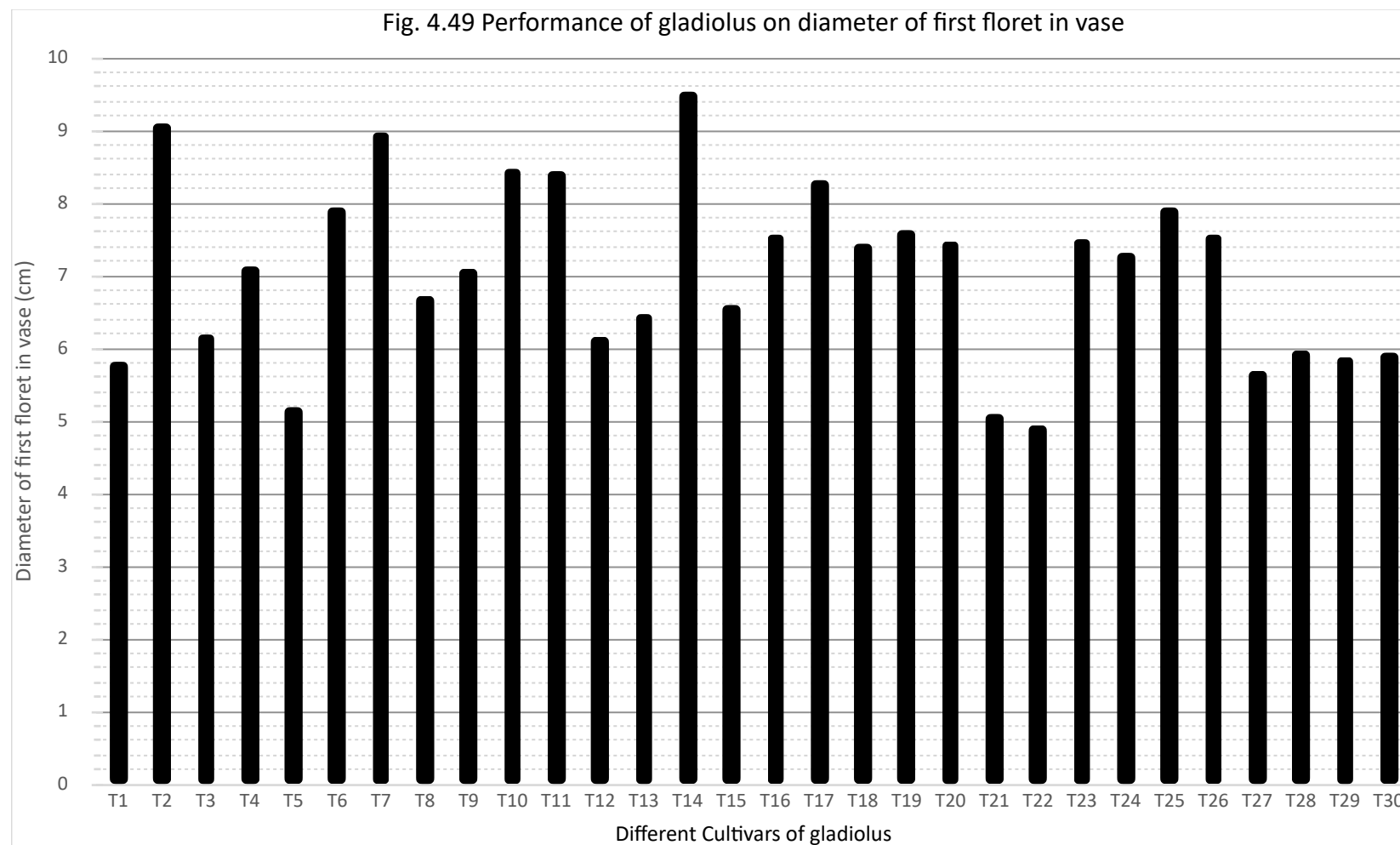


Table 4.50 Performance of gladiolus on length of first floret in vase.

TREATMENTS	LENGTH OF FIRST FLORET (cm)
T1-Aldebaran	6.50
T2-American Beauty	9.83
T3-Arti	8.77
T4-Chandni	8.27
T5-Darshan	8.23
T6-Dhanvantri	10.10
T7-Friendship Pink	10.50
T8-Green Star	8.07
T9-Gulal	8.93
T10-Hunting Song	9.90
T11-IIHR	9.87
T12-Jester Yellow	9.50
T13-Jyostna	7.77
T14-Mohini	9.53
T15-Nova Lux	8.57
T16-Plum Tart	8.00
T17-Priscilla	9.93
T18-Punjab Dawn	8.97
T19-Punjab Morning	8.67
T20-Pusa Kiran	9.40
T21-Pusa Shubham	7.53
T22-Regency	7.00
T23-Snow Princess	8.67
T24-Subhangini	10.00
T25-Sunanya	9.23
T26-Surya Kiran	9.00
T27-Swarnima	8.10
T28-Tiger Flame	8.23
T29-True Love	9.50
T30-White Prosperity	9.83
C.D. at 5%	1.30

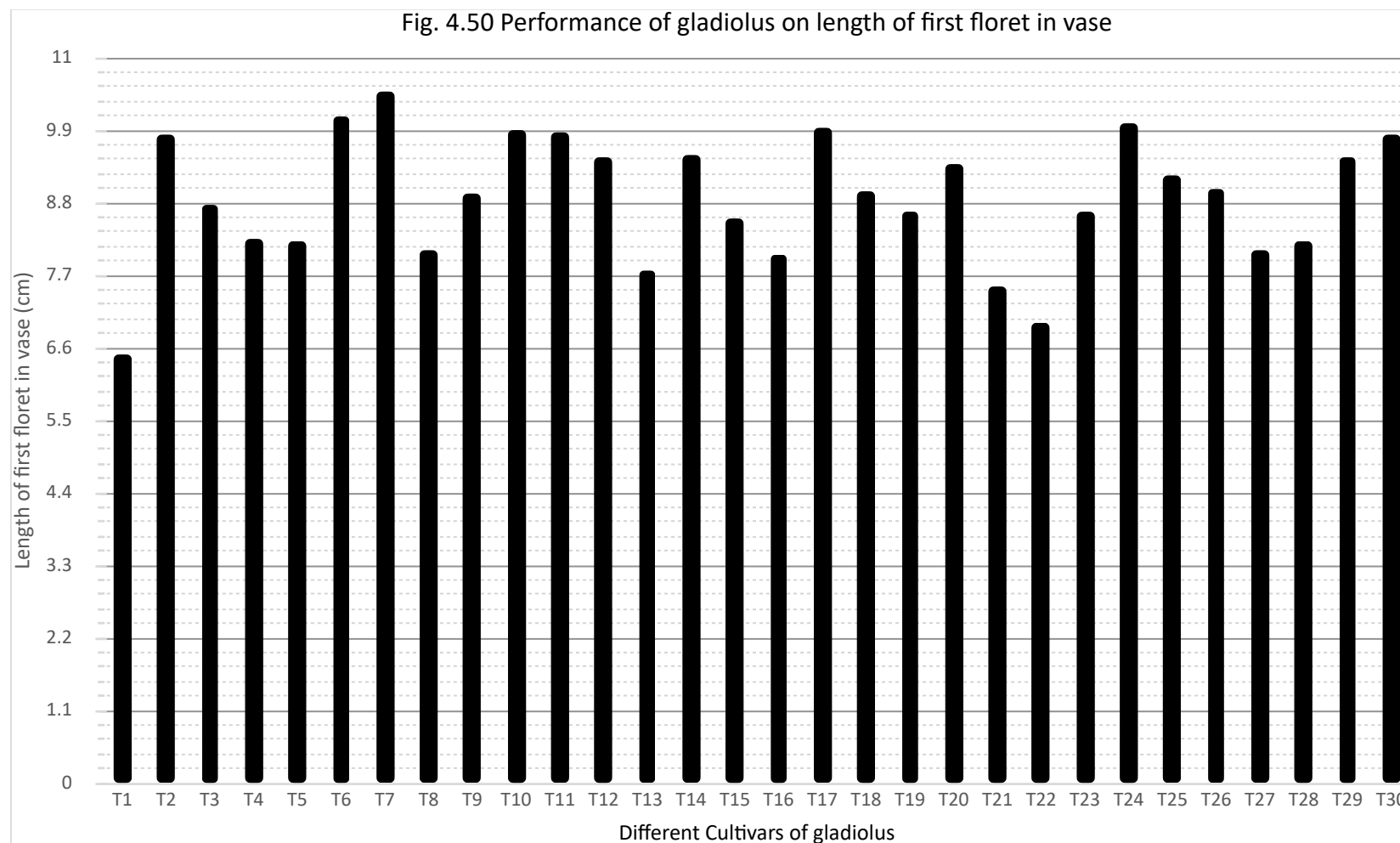


Table 4.51 Performance of gladiolus on opening of third floret in vase.

TREATMENTS	OPENING OF THIRD FLORET (DAYS)
T1-Aldebaran	3.00
T2-American Beauty	2.33
T3-Arti	2.33
T4-Chandni	3.00
T5-Darshan	2.67
T6-Dhanvantri	2.33
T7-Friendship Pink	1.67
T8-Green Star	2.00
T9-Gulal	2.00
T10-Hunting Song	2.00
T11-IIHR	3.33
T12-Jester Yellow	2.00
T13-Jyostna	3.00
T14-Mohini	1.33
T15-Nova Lux	2.00
T16-Plum Tart	2.33
T17-Priscilla	2.67
T18-Punjab Dawn	2.33
T19-Punjab Morning	2.33
T20-Pusa Kiran	2.00
T21-Pusa Shubham	2.67
T22-Regency	2.00
T23-Snow Princess	2.67
T24-Subhangini	2.67
T25-Sunanya	1.67
T26-Surya Kiran	2.33
T27-Swarnima	2.67
T28-Tiger Flame	2.67
T29-True Love	2.67
T30-White Prosperity	2.67
C.D. at 5%	0.84

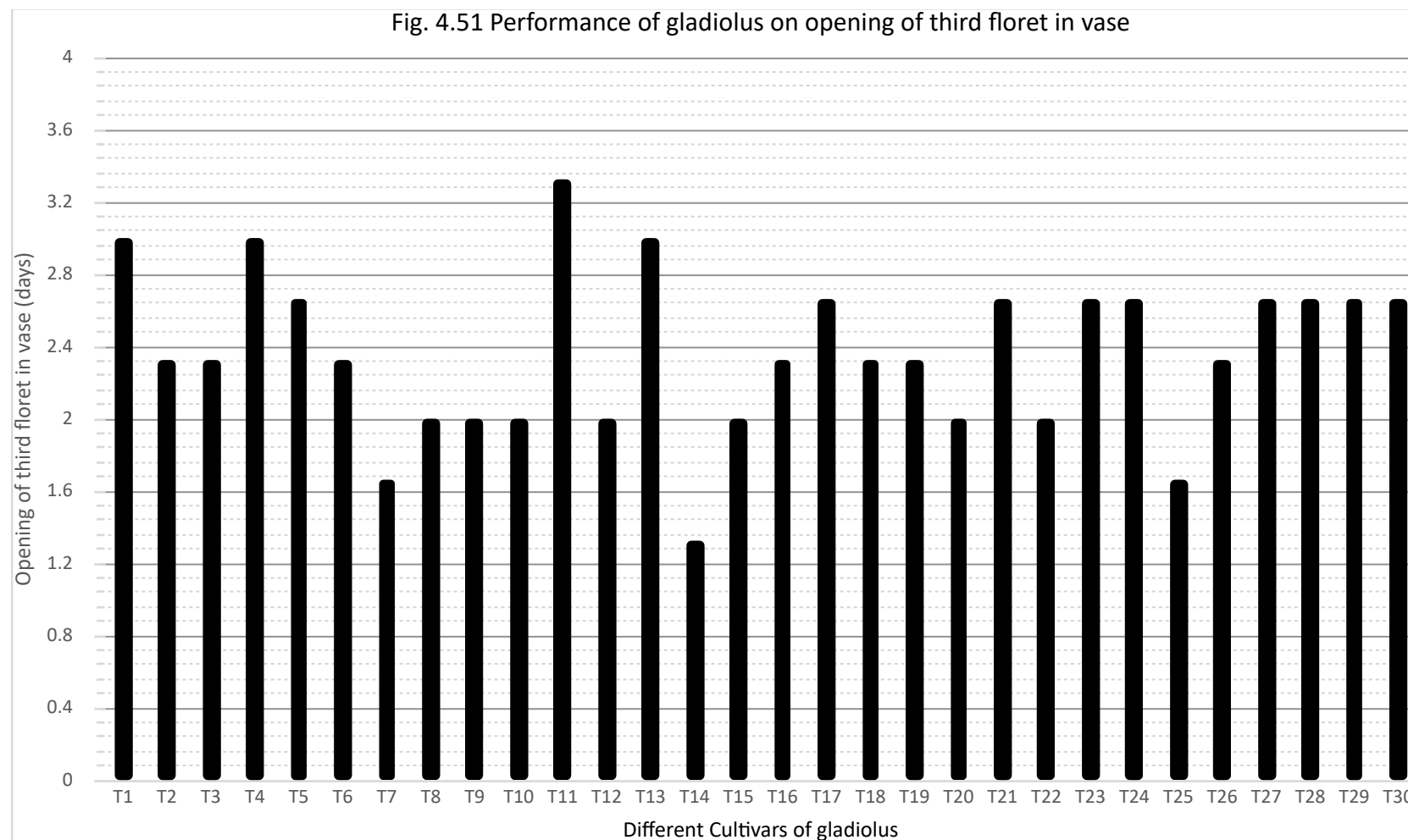


Table 4.52 Performance of gladiolus on withering of third floret in vase.

TREATMENTS	WITHERING OF THIRD FLORET (DAYS)
T1-Aldebaran	5.00
T2-American Beauty	5.00
T3-Arti	4.33
T4-Chandni	5.33
T5-Darshan	4.67
T6-Dhanvantri	4.00
T7-Friendship Pink	4.33
T8-Green Star	4.67
T9-Gulal	3.67
T10-Hunting Song	3.33
T11-IIHR	5.33
T12-Jester Yellow	4.00
T13-Jyostna	4.67
T14-Mohini	3.67
T15-Nova Lux	4.00
T16-Plum Tart	4.33
T17-Priscilla	5.33
T18-Punjab Dawn	5.00
T19-Punjab Morning	4.00
T20-Pusa Kiran	3.00
T21-Pusa Shubham	5.00
T22-Regency	4.33
T23-Snow Princess	5.00
T24-Subhangini	4.67
T25-Sunanya	4.33
T26-Surya Kiran	5.00
T27-Swarnima	4.00
T28-Tiger Flame	4.67
T29-True Love	3.67
T30-White Prosperity	4.67
C.D. at 5%	1.12

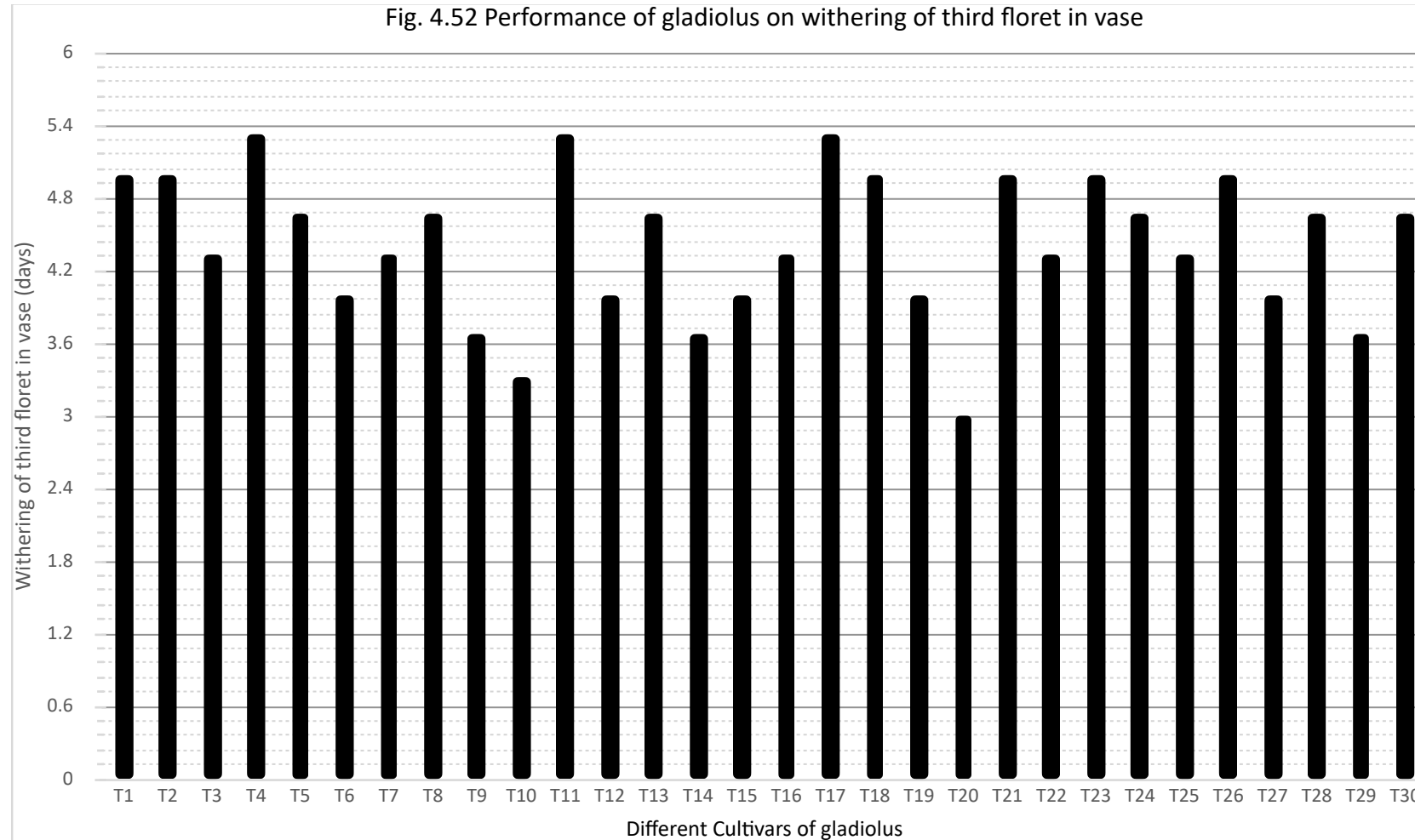


Table 4.53 Performance of gladiolus on diameter of third floret in vase.

TREATMENTS	DIAMETER OF THIRD FLORET (cm)
T1-Aldebaran	7.60
T2-American Beauty	8.33
T3-Arti	5.10
T4-Chandni	5.67
T5-Darshan	4.37
T6-Dhanvantri	7.33
T7-Friendship Pink	9.97
T8-Green Star	5.73
T9-Gulal	6.97
T10-Hunting Song	6.97
T11-IIHR	6.90
T12-Jester Yellow	5.77
T13-Jyostna	6.00
T14-Mohini	7.87
T15-Nova Lux	6.17
T16-Plum Tart	7.10
T17-Priscilla	8.10
T18-Punjab Dawn	6.80
T19-Punjab Morning	6.57
T20-Pusa Kiran	6.27
T21-Pusa Shubham	6.40
T22-Regency	6.03
T23-Snow Princess	7.77
T24-Subhangini	6.70
T25-Sunanya	7.67
T26-Surya Kiran	8.80
T27-Swarnima	6.60
T28-Tiger Flame	6.13
T29-True Love	5.70
T30-White Prosperity	6.20
C.D. at 5%	1.44

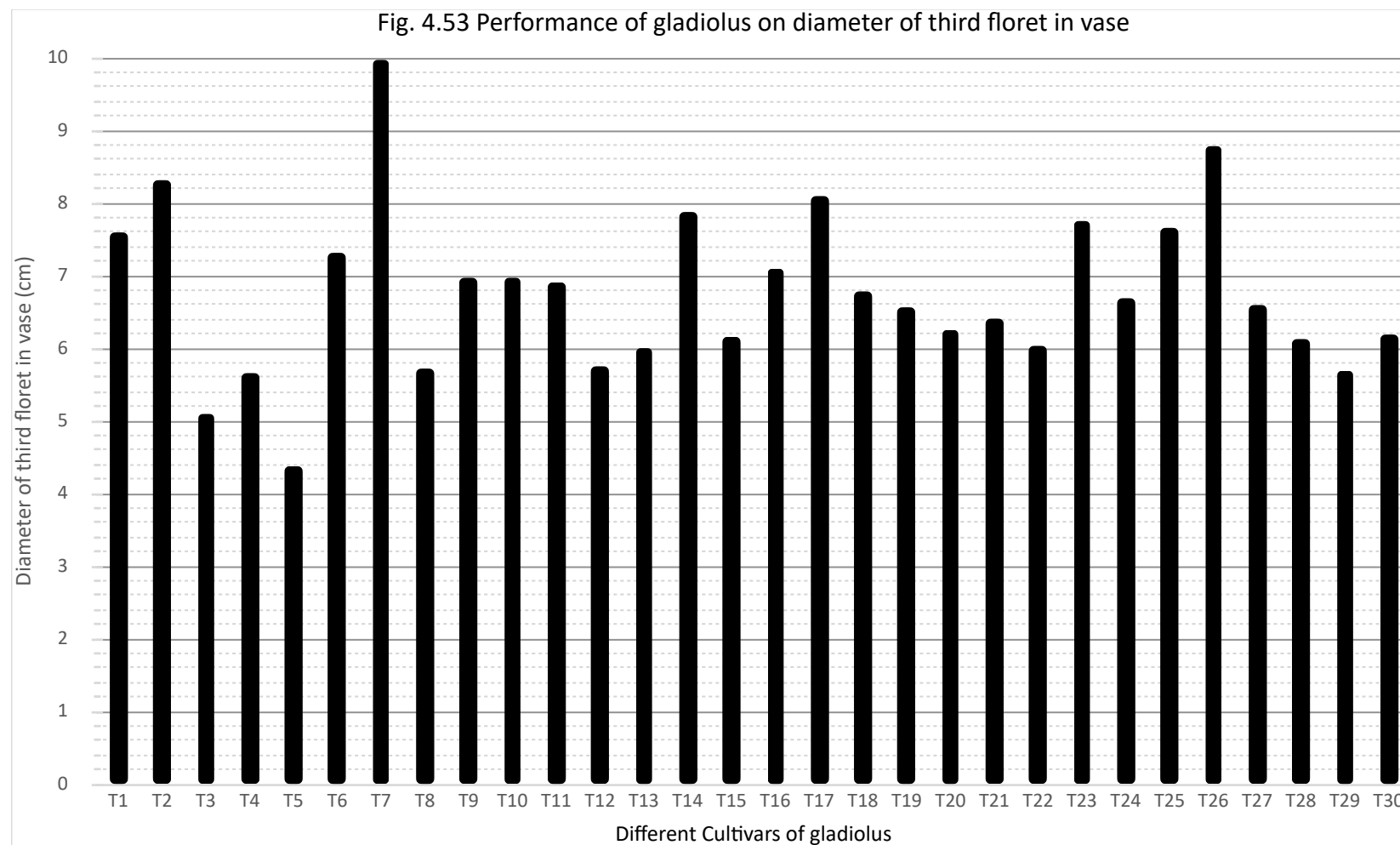


Table 4.54 Performance of gladiolus on length of third floret in vase.

TREATMENTS	LENGTH OF THIRD FLORET (cm)
T1-Aldebaran	8.00
T2-American Beauty	9.17
T3-Arti	8.37
T4-Chandni	6.00
T5-Darshan	7.10
T6-Dhanvantri	8.50
T7-Friendship Pink	10.37
T8-Green Star	7.43
T9-Gulal	8.50
T10-Hunting Song	9.17
T11-IIHR	8.73
T12-Jester Yellow	8.50
T13-Jyostna	8.00
T14-Mohini	9.17
T15-Nova Lux	8.33
T16-Plum Tart	7.90
T17-Priscilla	8.73
T18-Punjab Dawn	8.80
T19-Punjab Morning	7.83
T20-Pusa Kiran	8.07
T21-Pusa Shubham	7.33
T22-Regency	7.10
T23-Snow Princess	8.47
T24-Subhangini	8.67
T25-Sunanya	8.57
T26-Surya Kiran	7.80
T27-Swarnima	8.37
T28-Tiger Flame	8.27
T29-True Love	8.33
T30-White Prosperity	8.83
C.D. at 5%	1.23

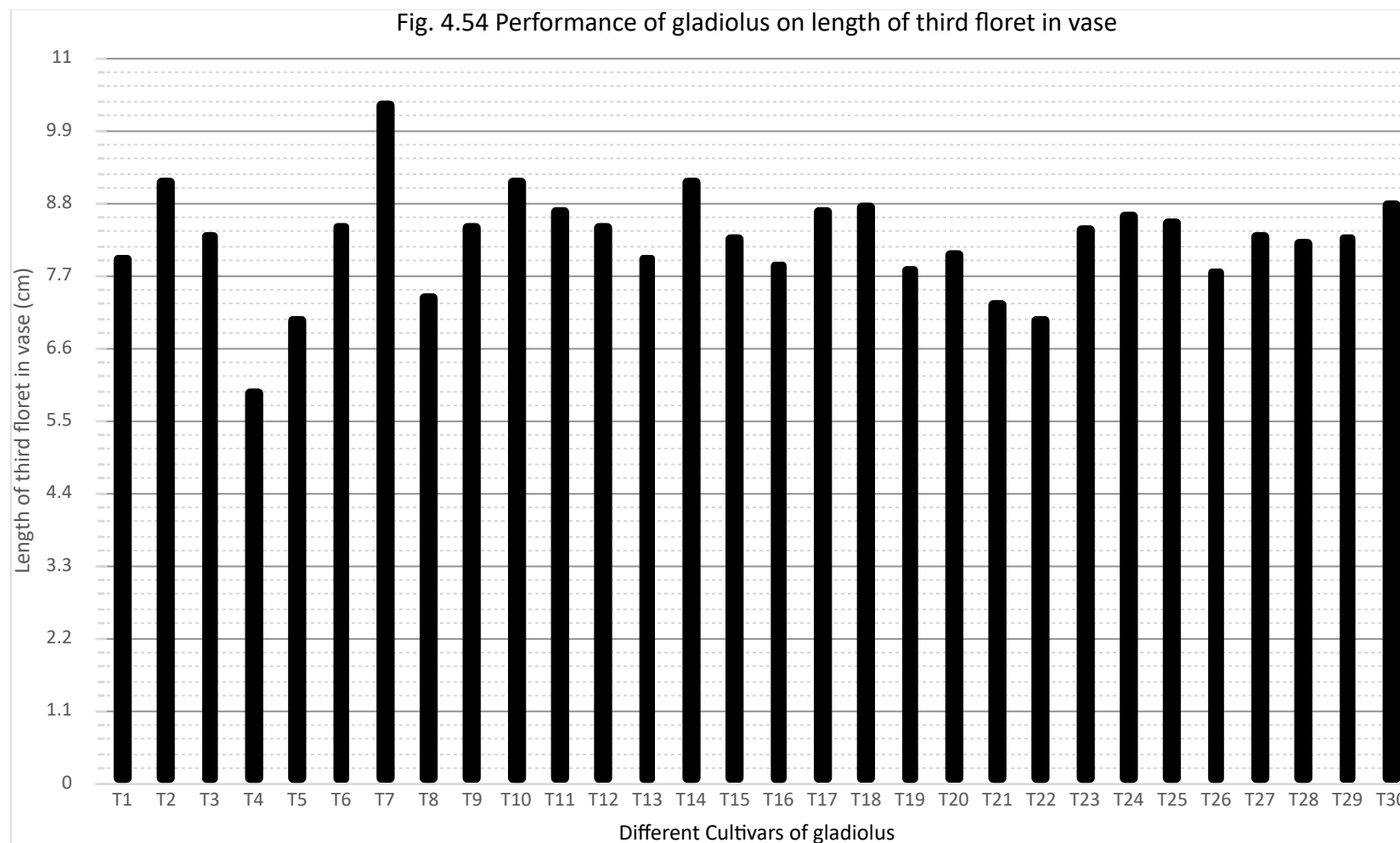


Table 4.55 Performance of gladiolus on opening of fifth floret in vase.

TREATMENTS	OPENING OF FIFTH FLORET (DAYS)
T1-Aldebaran	3.67
T2-American Beauty	4.00
T3-Arti	3.33
T4-Chandni	4.00
T5-Darshan	4.33
T6-Dhanvantri	3.67
T7-Friendship Pink	3.00
T8-Green Star	3.00
T9-Gulal	2.67
T10-Hunting Song	3.00
T11-IIHR	4.33
T12-Jester Yellow	3.00
T13-Jyostna	4.67
T14-Mohini	3.00
T15-Nova Lux	3.33
T16-Plum Tart	4.00
T17-Priscilla	3.67
T18-Punjab Dawn	3.67
T19-Punjab Morning	3.00
T20-Pusa Kiran	4.00
T21-Pusa Shubham	4.00
T22-Regency	3.33
T23-Snow Princess	4.00
T24-Subhangini	3.33
T25-Sunanya	3.00
T26-Surya Kiran	4.67
T27-Swarnima	4.33
T28-Tiger Flame	3.67
T29-True Love	3.00
T30-White Prosperity	4.33
C.D. at 5%	0.87

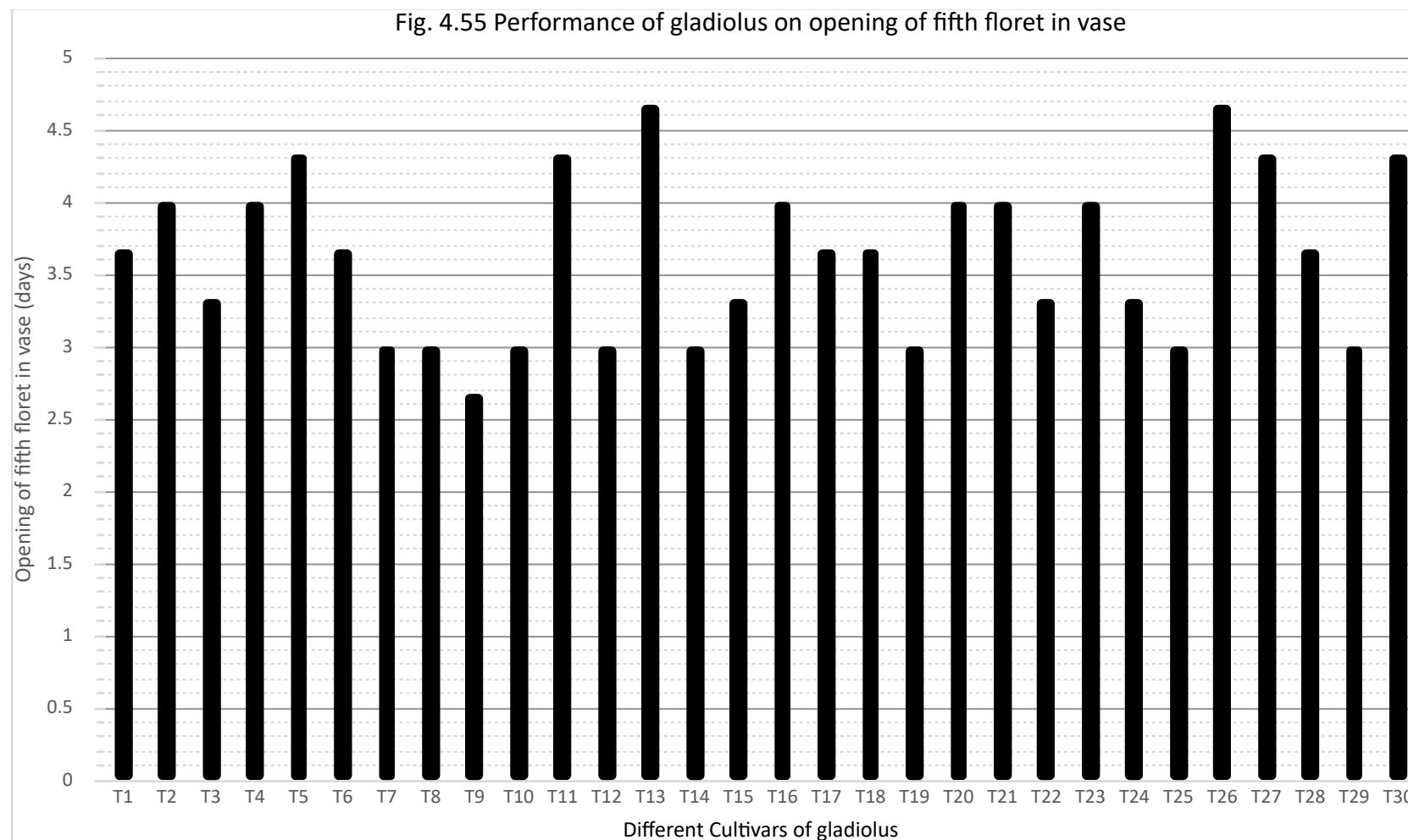


Table 4.56 Performance of gladiolus on withering of fifth floret in vase.

TREATMENTS	WITHERING OF FIFTH FLORET (DAYS)
T1-Aldebaran	6.67
T2-American Beauty	6.33
T3-Arti	6.33
T4-Chandni	6.67
T5-Darshan	6.33
T6-Dhanvantri	5.33
T7-Friendship Pink	7.00
T8-Green Star	5.67
T9-Gulal	4.67
T10-Hunting Song	4.67
T11-IIHR	6.67
T12-Jester Yellow	5.33
T13-Jyostna	6.67
T14-Mohini	5.67
T15-Nova Lux	5.00
T16-Plum Tart	6.00
T17-Priscilla	6.67
T18-Punjab Dawn	6.00
T19-Punjab Morning	5.00
T20-Pusa Kiran	6.00
T21-Pusa Shubham	7.00
T22-Regency	5.00
T23-Snow Princess	6.00
T24-Subhangini	6.00
T25-Sunanya	6.33
T26-Surya Kiran	6.00
T27-Swarnima	7.00
T28-Tiger Flame	7.00
T29-True Love	4.00
T30-White Prosperity	6.33
C.D. at 5%	1.02

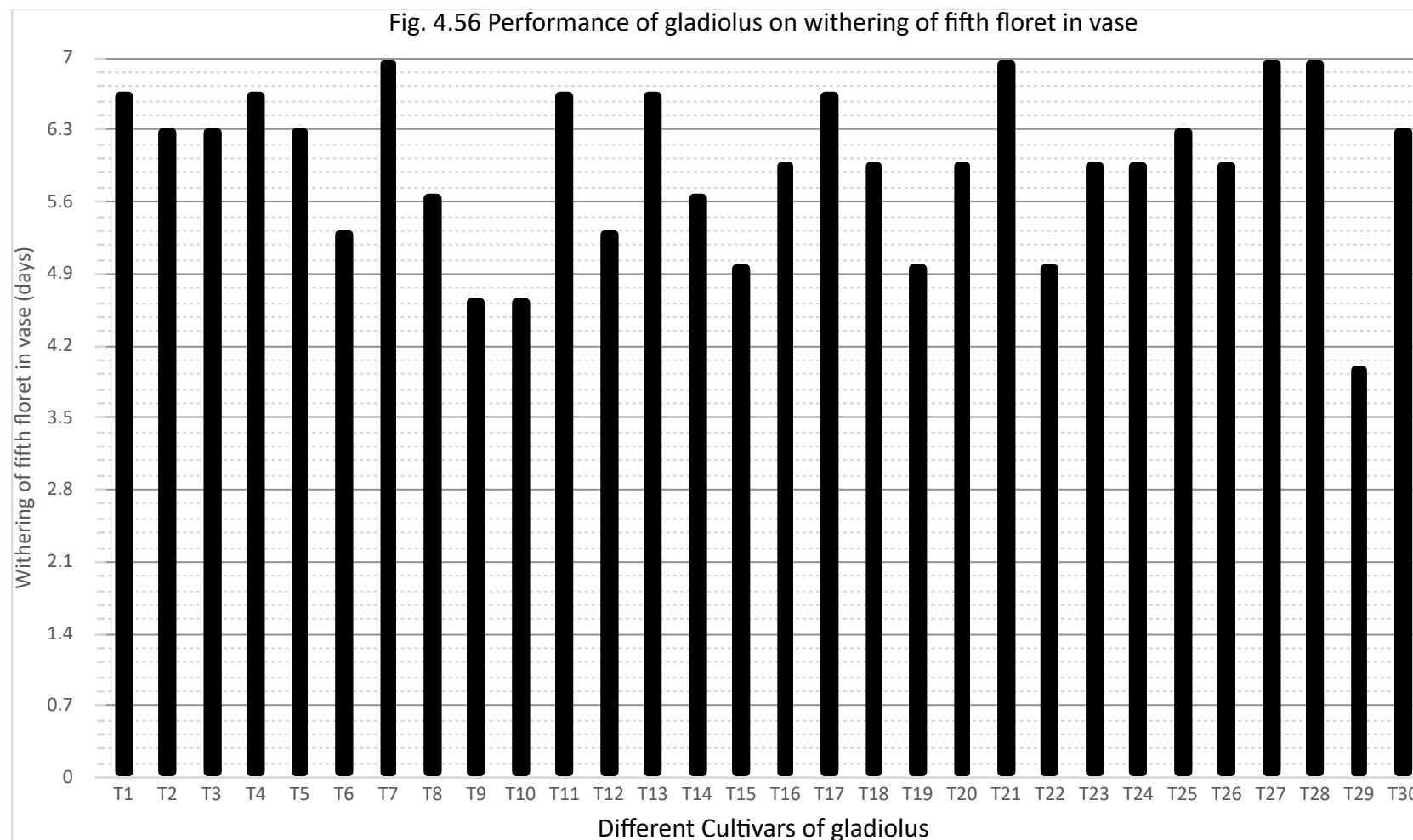


Table 4.57 Performance of gladiolus on diameter of fifth floret in vase.

TREATMENTS	DIAMETER OF FIFTH FLORET (cm)
T1-Aldebaran	7.37
T2-American Beauty	7.40
T3-Arti	5.13
T4-Chandni	4.70
T5-Darshan	4.70
T6-Dhanvantri	7.20
T7-Friendship Pink	8.90
T8-Green Star	6.57
T9-Gulal	6.80
T10-Hunting Song	6.77
T11-IIHR	7.33
T12-Jester Yellow	5.13
T13-Jyostna	6.97
T14-Mohini	6.77
T15-Nova Lux	5.63
T16-Plum Tart	7.23
T17-Priscilla	7.37
T18-Punjab Dawn	6.82
T19-Punjab Morning	6.43
T20-Pusa Kiran	5.60
T21-Pusa Shubham	6.63
T22-Regency	6.03
T23-Snow Princess	7.13
T24-Subhangini	7.23
T25-Sunanya	6.43
T26-Surya Kiran	7.77
T27-Swarnima	6.03
T28-Tiger Flame	5.77
T29-True Love	5.93
T30-White Prosperity	7.50
C.D. at 5%	1.33

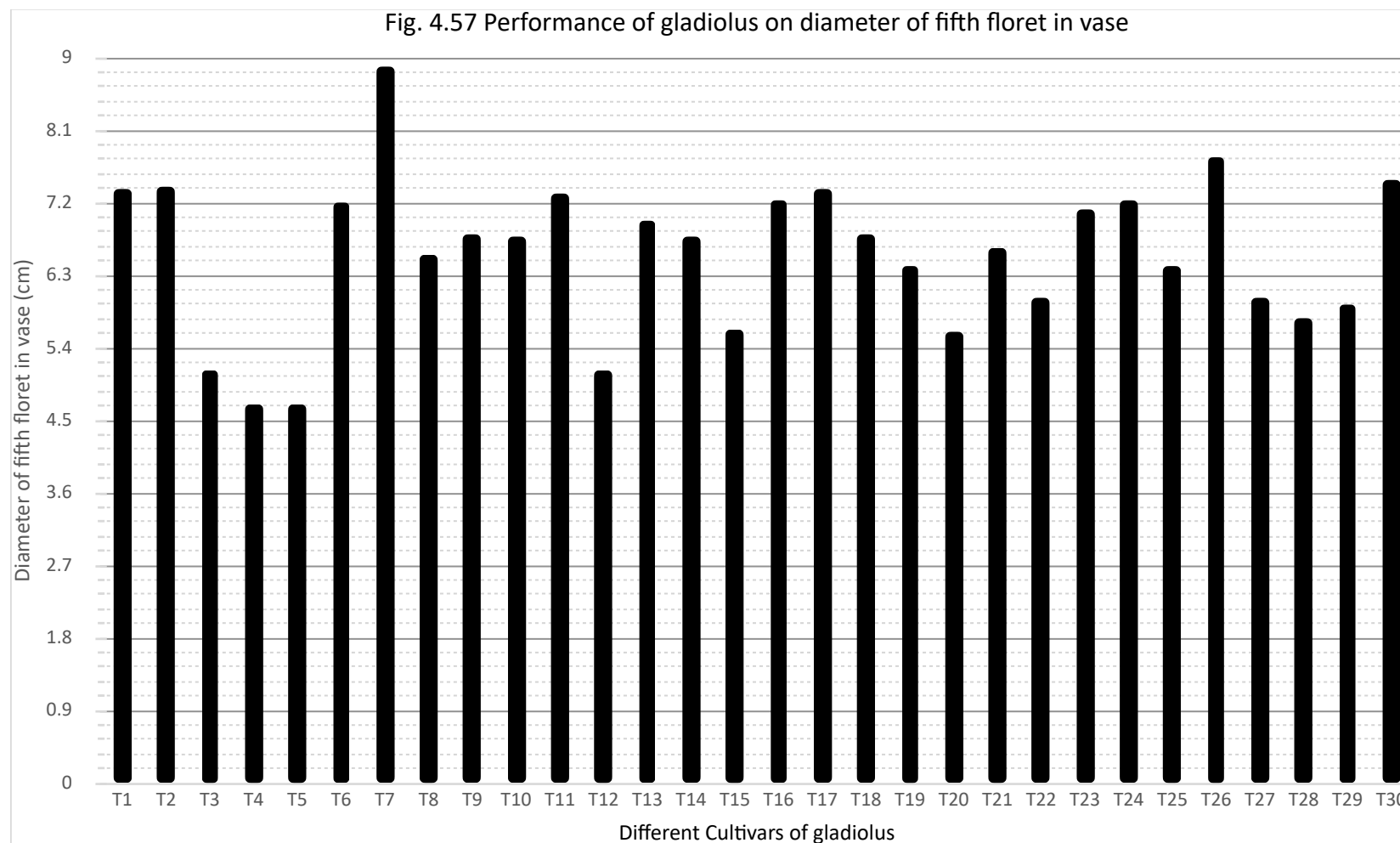


Table 4.58 Performance of gladiolus on length of fifth floret in vase.

TREATMENTS	LENGTH OF FIFTH FLORET (cm)
T1-Aldebaran	7.87
T2-American Beauty	8.37
T3-Arti	8.20
T4-Chandni	5.33
T5-Darshan	7.03
T6-Dhanvantri	9.23
T7-Friendship Pink	8.93
T8-Green Star	7.10
T9-Gulal	8.40
T10-Hunting Song	8.67
T11-IIHR	8.60
T12-Jester Yellow	8.33
T13-Jyostna	7.00
T14-Mohini	8.17
T15-Nova Lux	7.93
T16-Plum Tart	7.47
T17-Priscilla	7.90
T18-Punjab Dawn	7.47
T19-Punjab Morning	7.57
T20-Pusa Kiran	7.53
T21-Pusa Shubham	8.13
T22-Regency	7.17
T23-Snow Princess	9.27
T24-Subhangini	8.90
T25-Sunanya	8.23
T26-Surya Kiran	9.00
T27-Swarnima	8.20
T28-Tiger Flame	6.83
T29-True Love	7.83
T30-White Prosperity	8.43
C.D. at 5%	1.05

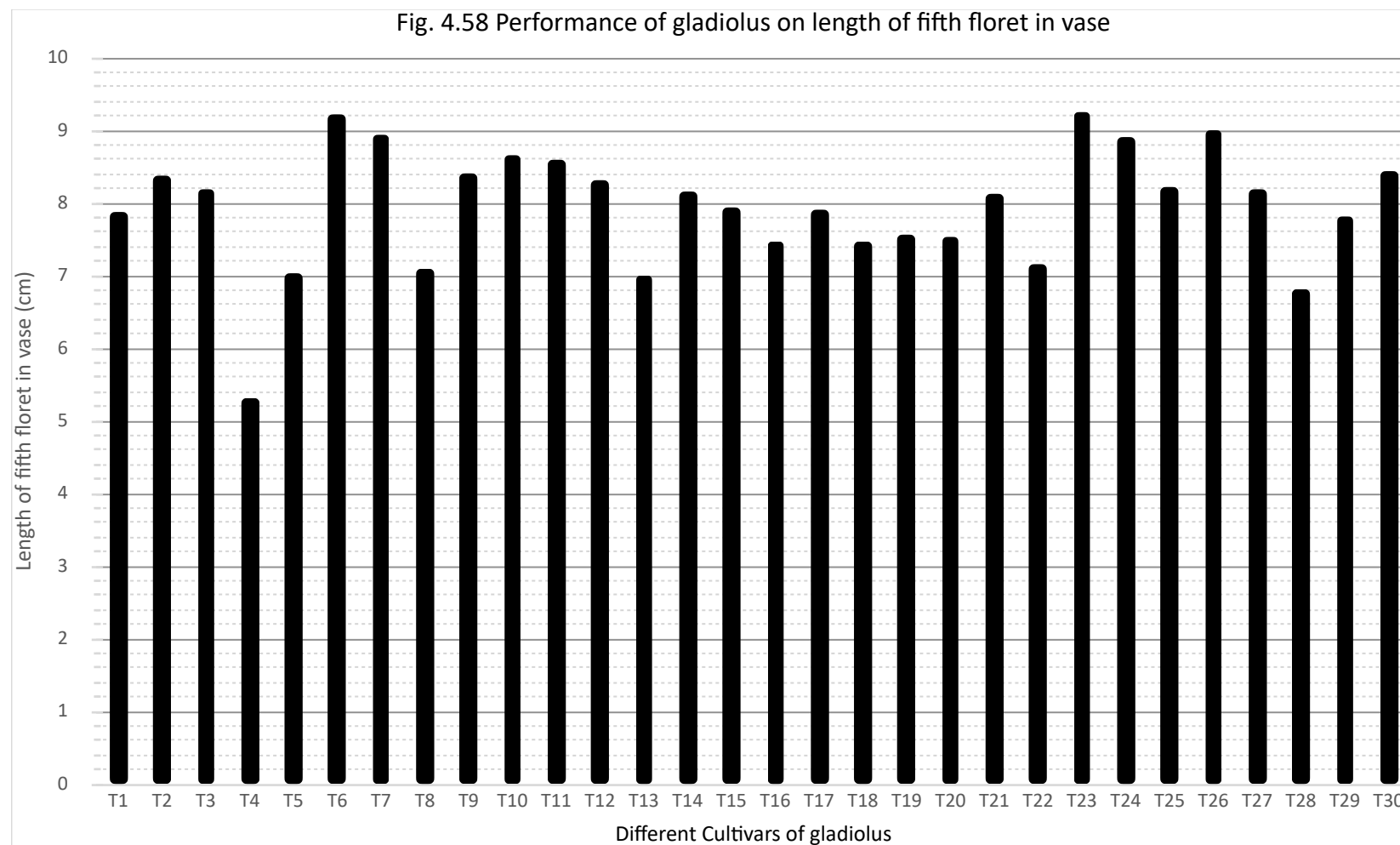


Table 4.59 Performance of gladiolus on no. of floret opened at a time in vase.

TREATMENTS	NO. OF FLORET OPENED AT A TIME
T1-Aldebaran	4.33
T2-American Beauty	4.67
T3-Arti	3.00
T4-Chandni	4.00
T5-Darshan	2.00
T6-Dhanvantri	3.33
T7-Friendship Pink	5.67
T8-Green Star	4.00
T9-Gulal	3.67
T10-Hunting Song	4.33
T11-IIHR	3.67
T12-Jester Yellow	3.67
T13-Jyostna	3.67
T14-Mohini	4.33
T15-Nova Lux	4.00
T16-Plum Tart	4.00
T17-Priscilla	4.00
T18-Punjab Dawn	4.67
T19-Punjab Morning	4.00
T20-Pusa Kiran	4.00
T21-Pusa Shubham	3.33
T22-Regency	4.00
T23-Snow Princess	3.67
T24-Subhangini	4.67
T25-Sunanya	4.33
T26-Surya Kiran	5.33
T27-Swarnima	2.67
T28-Tiger Flame	3.33
T29-True Love	4.33
T30-White Prosperity	4.67
C.D. at 5%	0.78

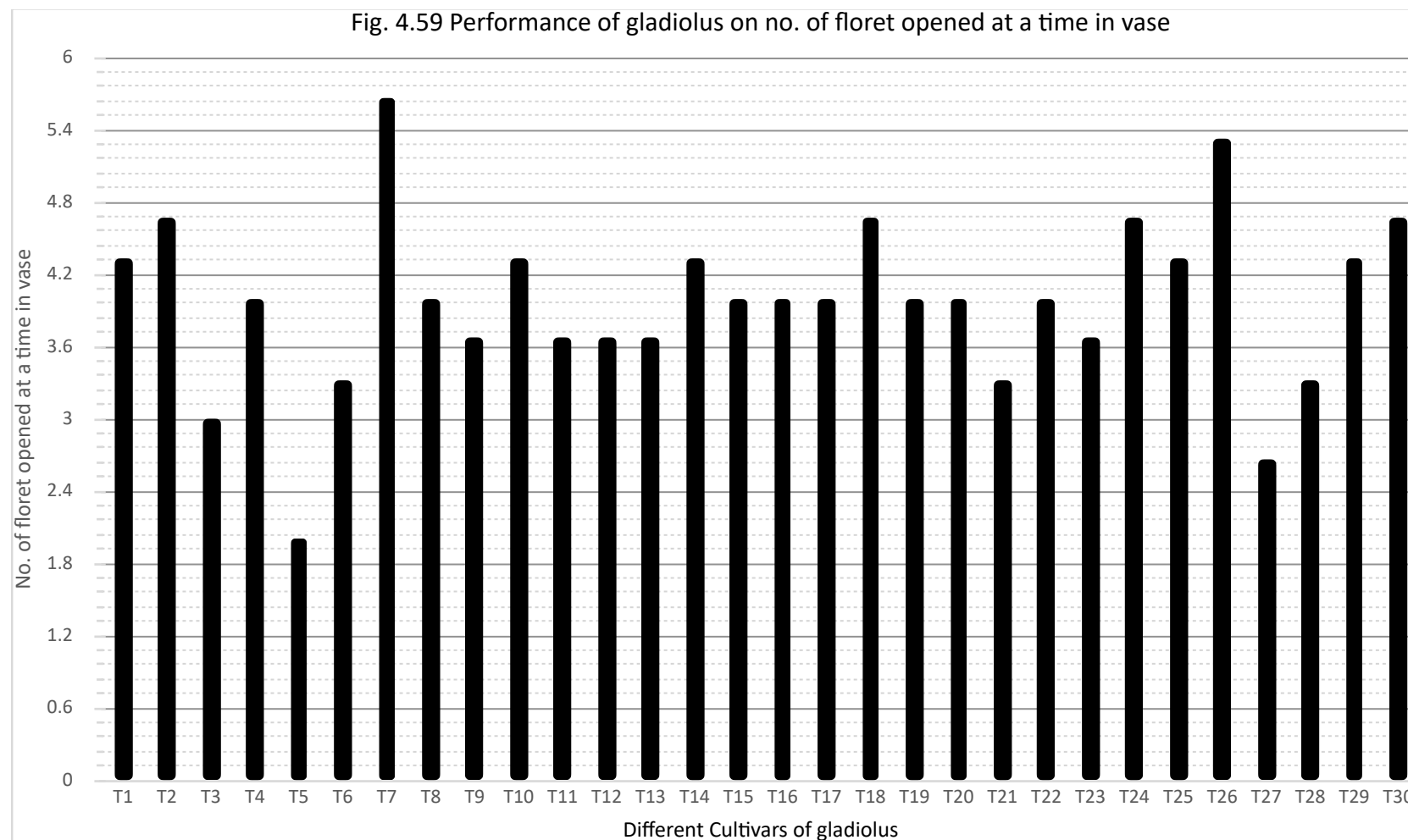


Table 4.60 Performance of gladiolus on no. of opened florets per spike in vase.

TREATMENTS	NO. OF OPENED FLORET/SPIKE
T1-Aldebaran	7.00
T2-American Beauty	11.33
T3-Arti	7.67
T4-Chandni	7.33
T5-Darshan	9.67
T6-Dhanvantri	10.00
T7-Friendship Pink	10.00
T8-Green Star	7.33
T9-Gulal	8.00
T10-Hunting Song	13.67
T11-IIHR	9.33
T12-Jester Yellow	6.67
T13-Jyostna	11.00
T14-Mohini	11.33
T15-Nova Lux	13.00
T16-Plum Tart	8.33
T17-Priscilla	10.33
T18-Punjab Dawn	8.67
T19-Punjab Morning	10.00
T20-Pusa Kiran	11.00
T21-Pusa Shubham	6.00
T22-Regency	7.00
T23-Snow Princess	8.67
T24-Subhangini	10.67
T25-Sunanya	8.67
T26-Surya Kiran	12.00
T27-Swarnima	8.33
T28-Tiger Flame	11.00
T29-True Love	11.33
T30-White Prosperity	7.33
C.D. at 5%	2.05

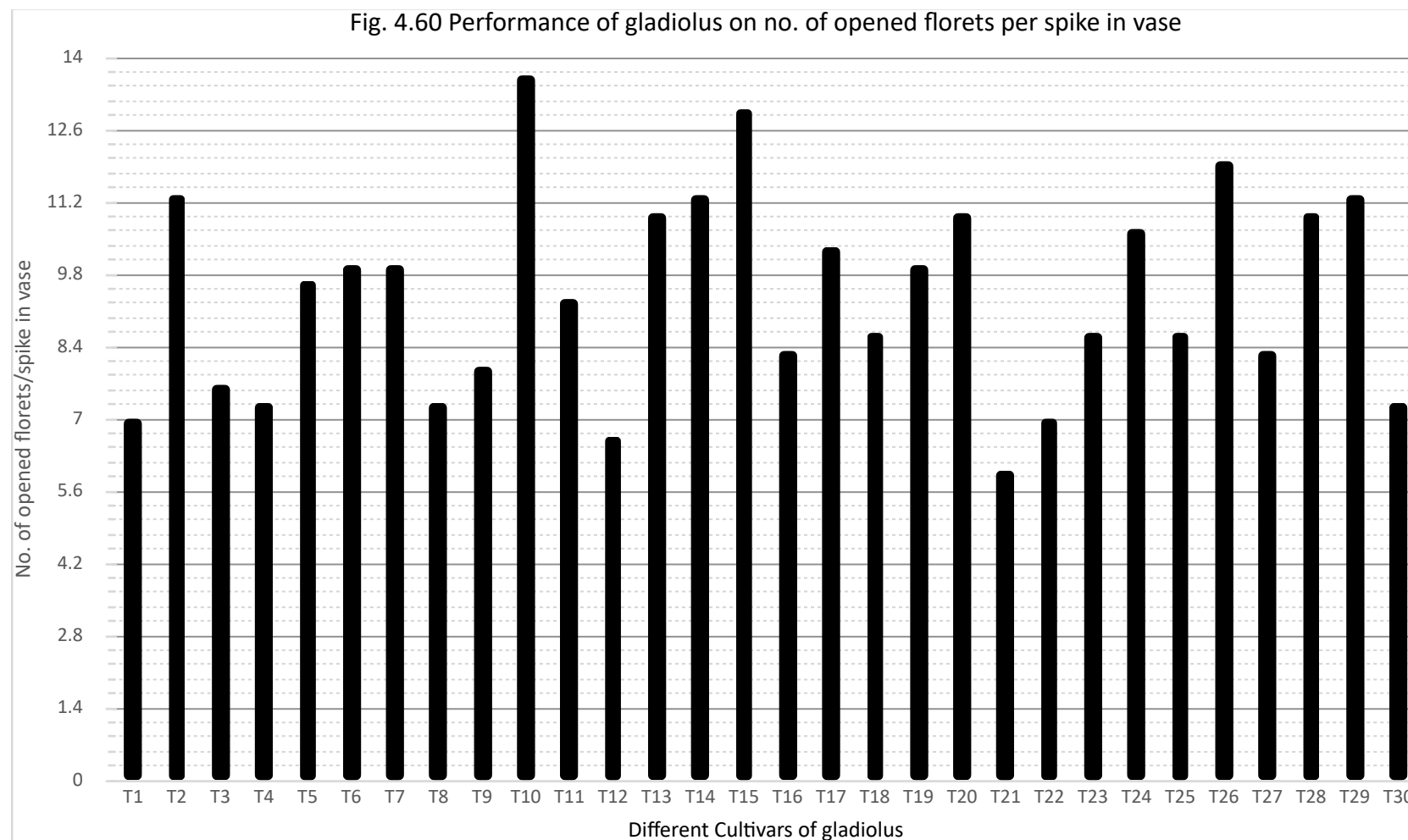


Table 4.61 Performance of gladiolus on no. of florets per spike in vase.

TREATMENTS	NO. OF FLORETS/SPIKE
T1-Aldebaran	10.00
T2-American Beauty	14.00
T3-Arti	10.00
T4-Chandni	9.33
T5-Darshan	11.00
T6-Dhanvantri	11.33
T7-Friendship Pink	18.33
T8-Green Star	9.00
T9-Gulal	10.67
T10-Hunting Song	16.33
T11-IIHR	10.33
T12-Jester Yellow	8.00
T13-Jyostna	13.00
T14-Mohini	12.67
T15-Nova Lux	16.33
T16-Plum Tart	10.00
T17-Priscilla	14.00
T18-Punjab Dawn	14.67
T19-Punjab Morning	12.33
T20-Pusa Kiran	14.67
T21-Pusa Shubham	8.00
T22-Regency	15.00
T23-Snow Princess	12.67
T24-Subhangini	17.00
T25-Sunanya	10.33
T26-Surya Kiran	15.67
T27-Swarnima	11.00
T28-Tiger Flame	13.67
T29-True Love	16.33
T30-White Prosperity	12.00
C.D. at 5%	2.39

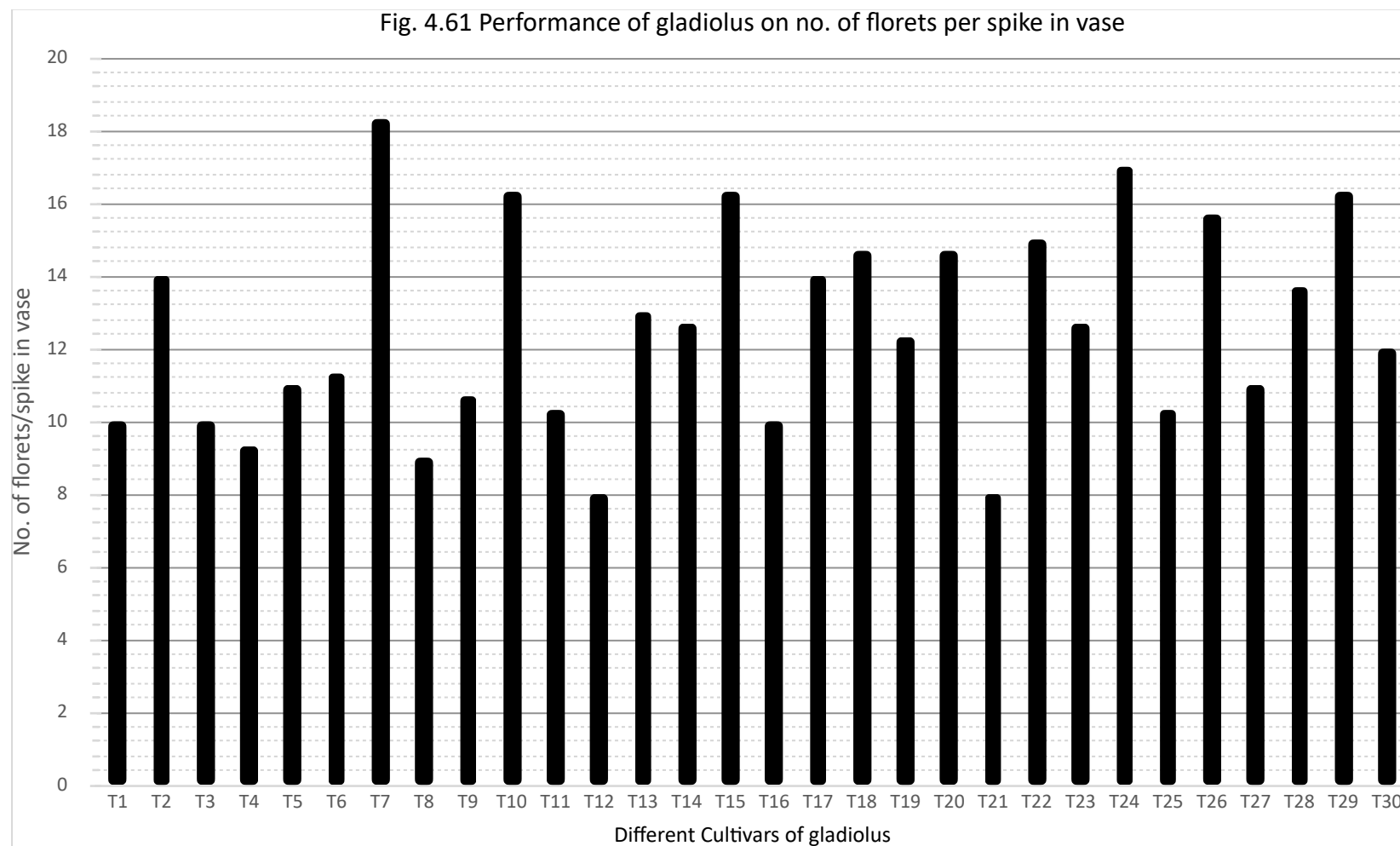


Table 4.62 Performance of gladiolus on percentage of opened florets per spike in

TREATMENTS	OPENED FLORETS/SPIKE (%)
T1-Aldebaran	70.77
T2-American Beauty	81.06
T3-Arti	77.51
T4-Chandni	78.89
T5-Darshan	87.04
T6-Dhanvantri	88.33
T7-Friendship Pink	53.89
T8-Green Star	81.76
T9-Gulal	74.85
T10-Hunting Song	83.79
T11-IIHR	90.30
T12-Jester Yellow	82.61
T13-Jyostna	84.55
T14-Mohini	89.53
T15-Nova Lux	79.68
T16-Plum Tart	82.90
T17-Priscilla	74.21
T18-Punjab Dawn	59.60
T19-Punjab Morning	81.06
T20-Pusa Kiran	75.36
T21-Pusa Shubham	75.00
T22-Regency	47.06
T23-Snow Princess	68.38
T24-Subhangini	63.38
T25-Sunanya	83.76
T26-Surya Kiran	76.80
T27-Swarnima	76.40
T28-Tiger Flame	80.40
T29-True Love	69.36
T30-White Prosperity	61.47
C.D. at 5%	11.92

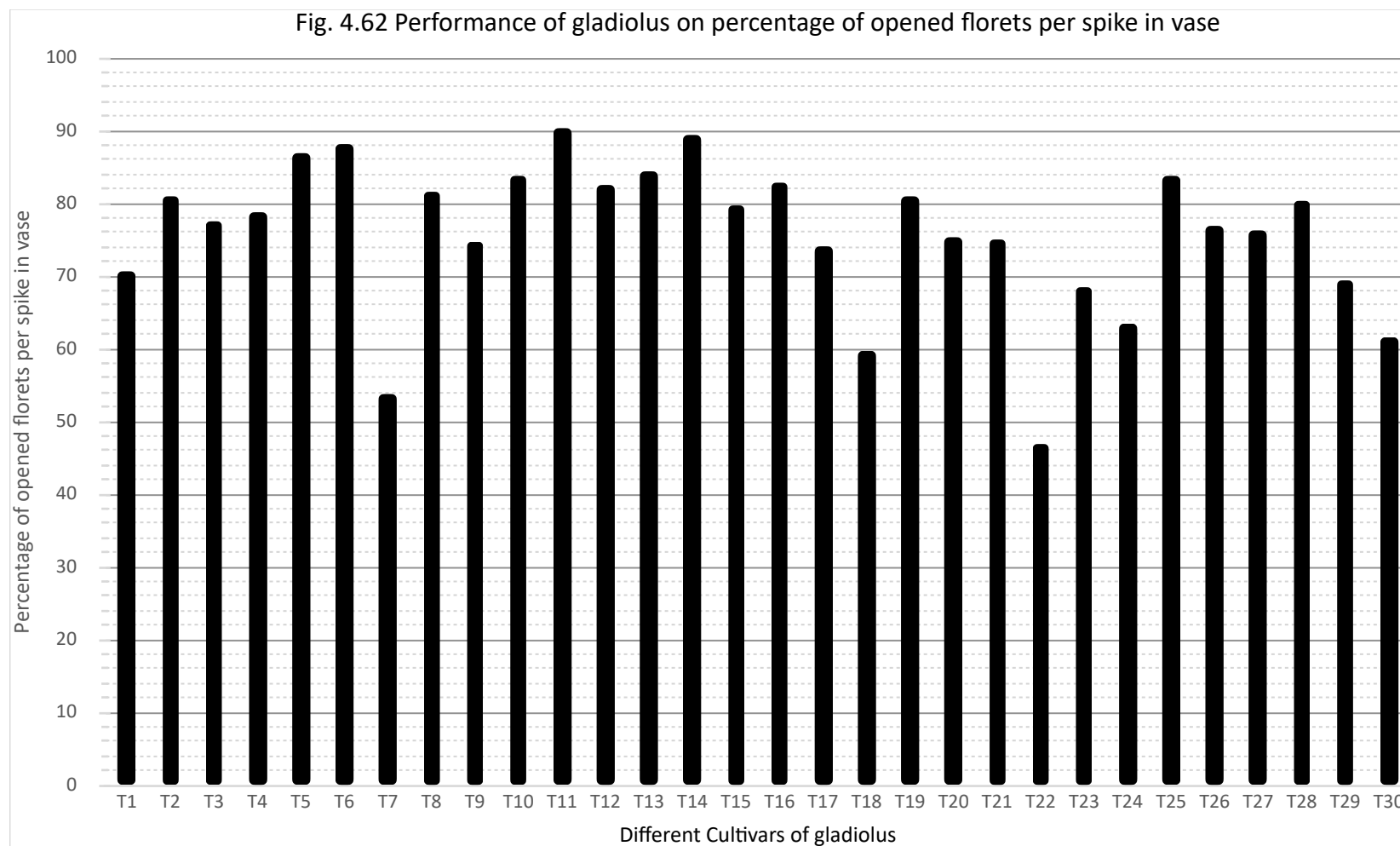


Table 4.63 Performance of gladiolus on spike length on fist day in vase.

TREATMENTS	SPIKE LENGTH ON 1 st DAY (cm)
T1-Aldebaran	48.87
T2-American Beauty	61.50
T3-Arti	45.40
T4-Chandni	46.47
T5-Darshan	41.27
T6-Dhanvantri	76.33
T7-Friendship Pink	65.40
T8-Green Star	49.17
T9-Gulal	52.77
T10-Hunting Song	76.50
T11-IIHR	69.33
T12-Jester Yellow	54.17
T13-Jyostna	54.20
T14-Mohini	70.47
T15-Nova Lux	53.57
T16-Plum Tart	61.67
T17-Priscilla	61.97
T18-Punjab Dawn	52.47
T19-Punjab Morning	51.97
T20-Pusa Kiran	63.97
T21-Pusa Shubham	37.17
T22-Regency	57.77
T23-Snow Princess	68.07
T24-Subhangini	61.80
T25-Sunanya	59.20
T26-Surya Kiran	67.00
T27-Swarnima	58.00
T28-Tiger Flame	65.63
T29-True Love	72.50
T30-White Prosperity	56.57
C.D. at 5%	8.36

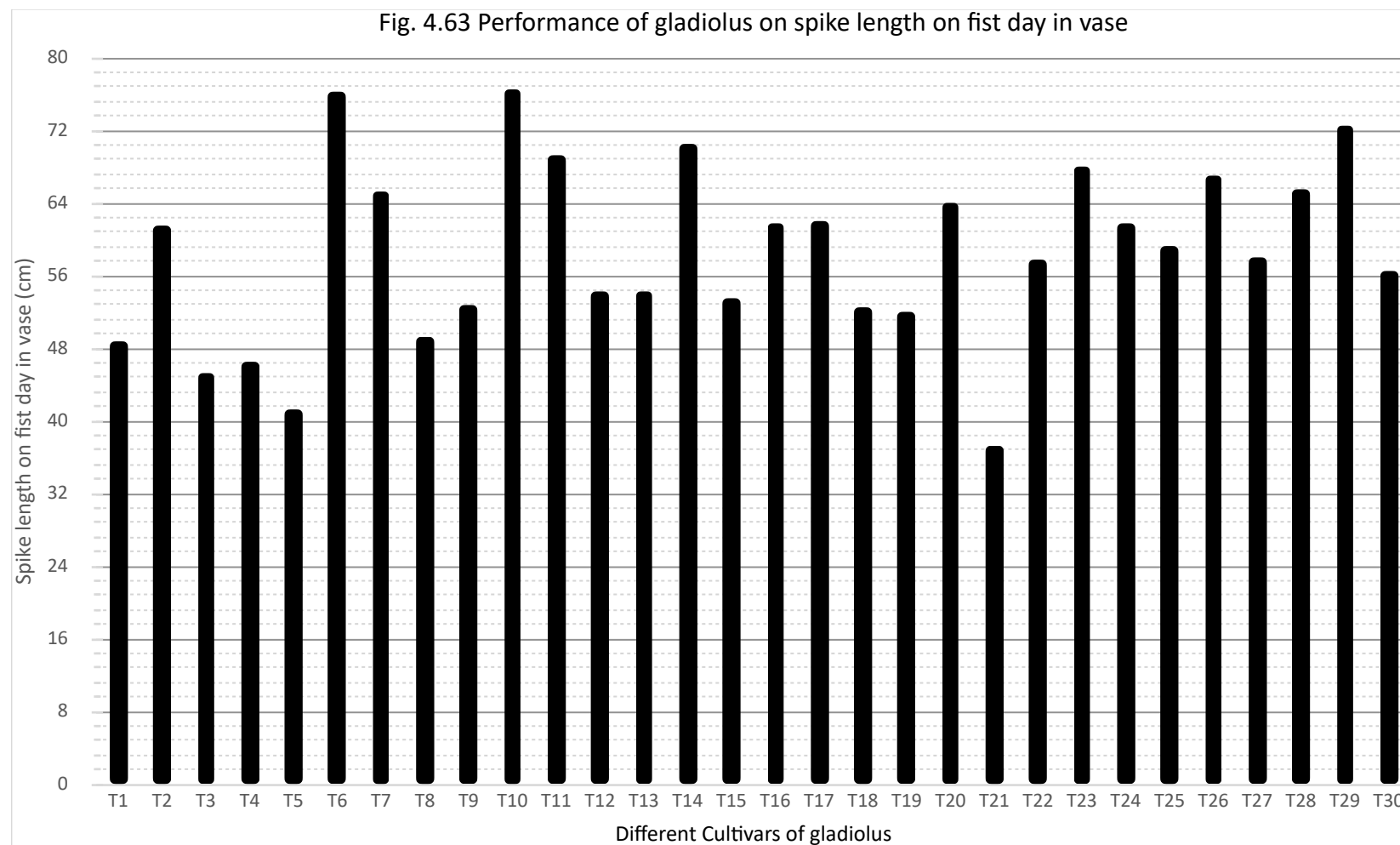


Table 4.64 Performance of gladiolus on spike length on third day in vase.

TREATMENTS	SPIKE LENGTH ON 3 rd DAY (cm)
T1-Aldebaran	48.07
T2-American Beauty	62.03
T3-Arti	45.67
T4-Chandni	46.70
T5-Darshan	41.70
T6-Dhanvantri	76.70
T7-Friendship Pink	66.33
T8-Green Star	49.13
T9-Gulal	52.53
T10-Hunting Song	77.23
T11-IIHR	69.33
T12-Jester Yellow	53.87
T13-Jyostna	55.37
T14-Mohini	69.07
T15-Nova Lux	54.17
T16-Plum Tart	61.83
T17-Priscilla	63.17
T18-Punjab Dawn	54.50
T19-Punjab Morning	51.57
T20-Pusa Kiran	63.97
T21-Pusa Shubham	37.20
T22-Regency	56.67
T23-Snow Princess	68.63
T24-Subhangini	63.80
T25-Sunanya	59.77
T26-Surya Kiran	66.97
T27-Swarnima	57.20
T28-Tiger Flame	66.13
T29-True Love	72.77
T30-White Prosperity	56.90
C.D. at 5%	8.63

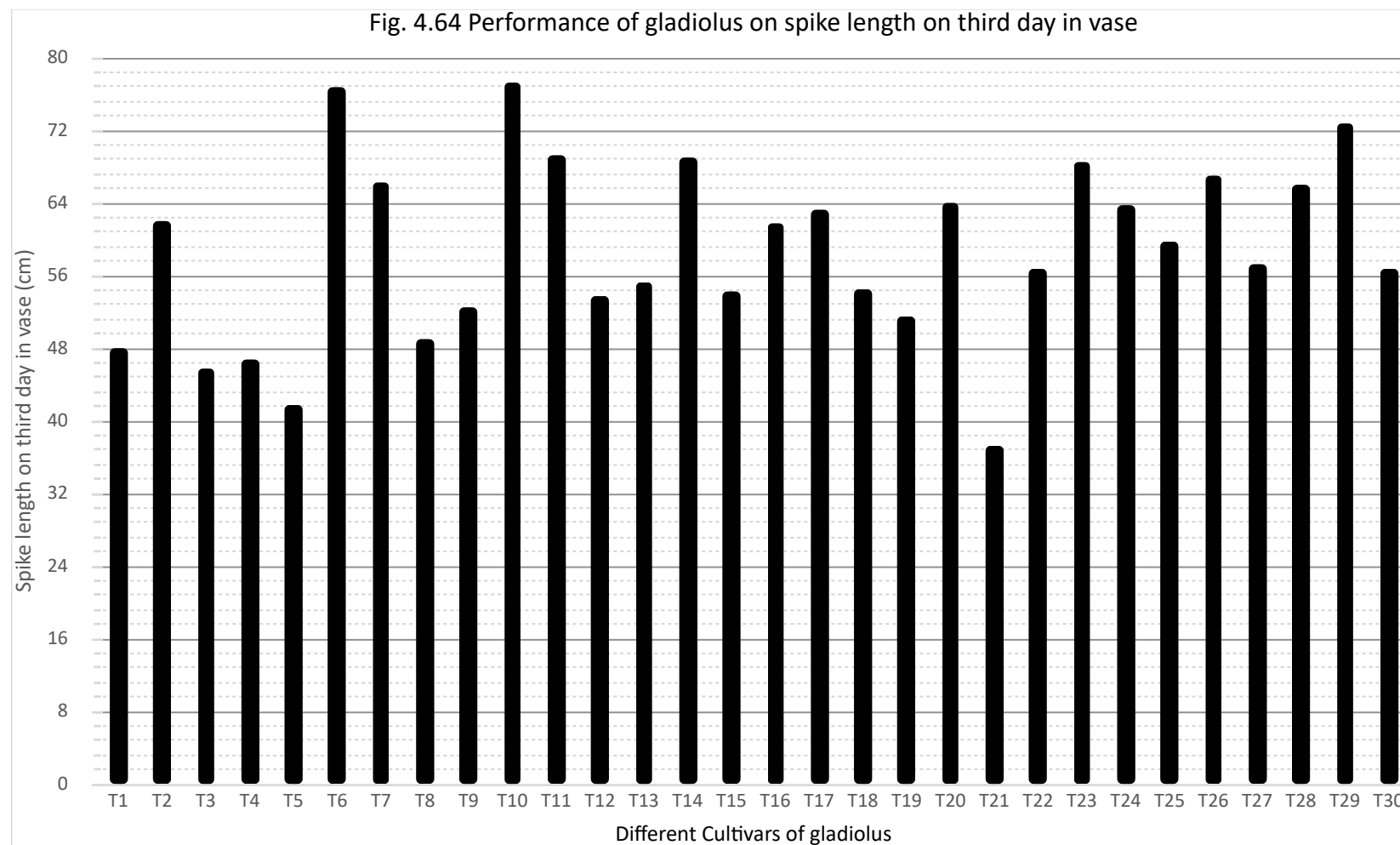


Table 4.65 Performance of gladiolus on spike length on sixth day in vase.

TREATMENTS	SPIKE LENGTH ON 6 th DAY (cm)
T1-Aldebaran	48.17
T2-American Beauty	62.07
T3-Arti	45.70
T4-Chandni	46.93
T5-Darshan	41.80
T6-Dhanvantri	76.90
T7-Friendship Pink	66.43
T8-Green Star	49.10
T9-Gulal	52.95
T10-Hunting Song	78.10
T11-IIHR	69.40
T12-Jester Yellow	53.83
T13-Jyostna	55.40
T14-Mohini	69.27
T15-Nova Lux	54.80
T16-Plum Tart	62.07
T17-Priscilla	63.27
T18-Punjab Dawn	54.07
T19-Punjab Morning	52.37
T20-Pusa Kiran	64.17
T21-Pusa Shubham	37.20
T22-Regency	57.00
T23-Snow Princess	68.83
T24-Subhangini	63.87
T25-Sunanya	59.43
T26-Surya Kiran	67.10
T27-Swarnima	57.10
T28-Tiger Flame	65.87
T29-True Love	72.63
T30-White Prosperity	57.23
C.D. at 5%	8.79

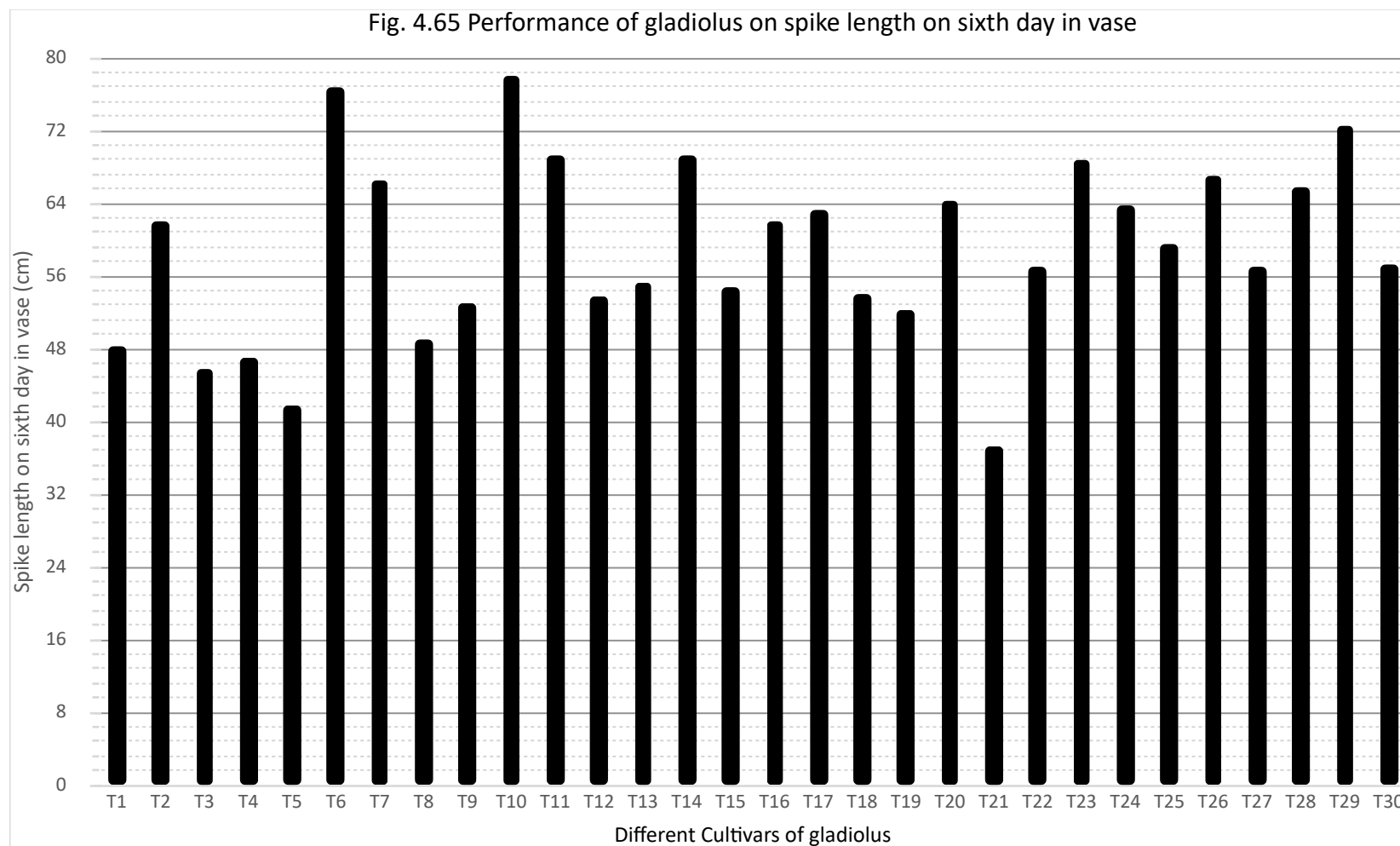


Table 4.66 Performance of gladiolus on spike length on ninth day in vase.

TREATMENTS	SPIKE LENGTH ON 9 th DAY (cm)
T1-Aldebaran	48.93
T2-American Beauty	62.43
T3-Arti	45.47
T4-Chandni	49.07
T5-Darshan	41.60
T6-Dhanvantri	76.83
T7-Friendship Pink	66.50
T8-Green Star	49.00
T9-Gulal	52.70
T10-Hunting Song	78.87
T11-IIHR	68.27
T12-Jester Yellow	53.83
T13-Jyostna	55.40
T14-Mohini	69.07
T15-Nova Lux	54.03
T16-Plum Tart	62.67
T17-Priscilla	62.77
T18-Punjab Dawn	53.17
T19-Punjab Morning	52.50
T20-Pusa Kiran	64.33
T21-Pusa Shubham	37.03
T22-Regency	56.97
T23-Snow Princess	68.43
T24-Subhangini	63.90
T25-Sunanya	59.40
T26-Surya Kiran	67.10
T27-Swarnima	57.30
T28-Tiger Flame	66.13
T29-True Love	72.67
T30-White Prosperity	57.30
C.D. at 5%	9.06

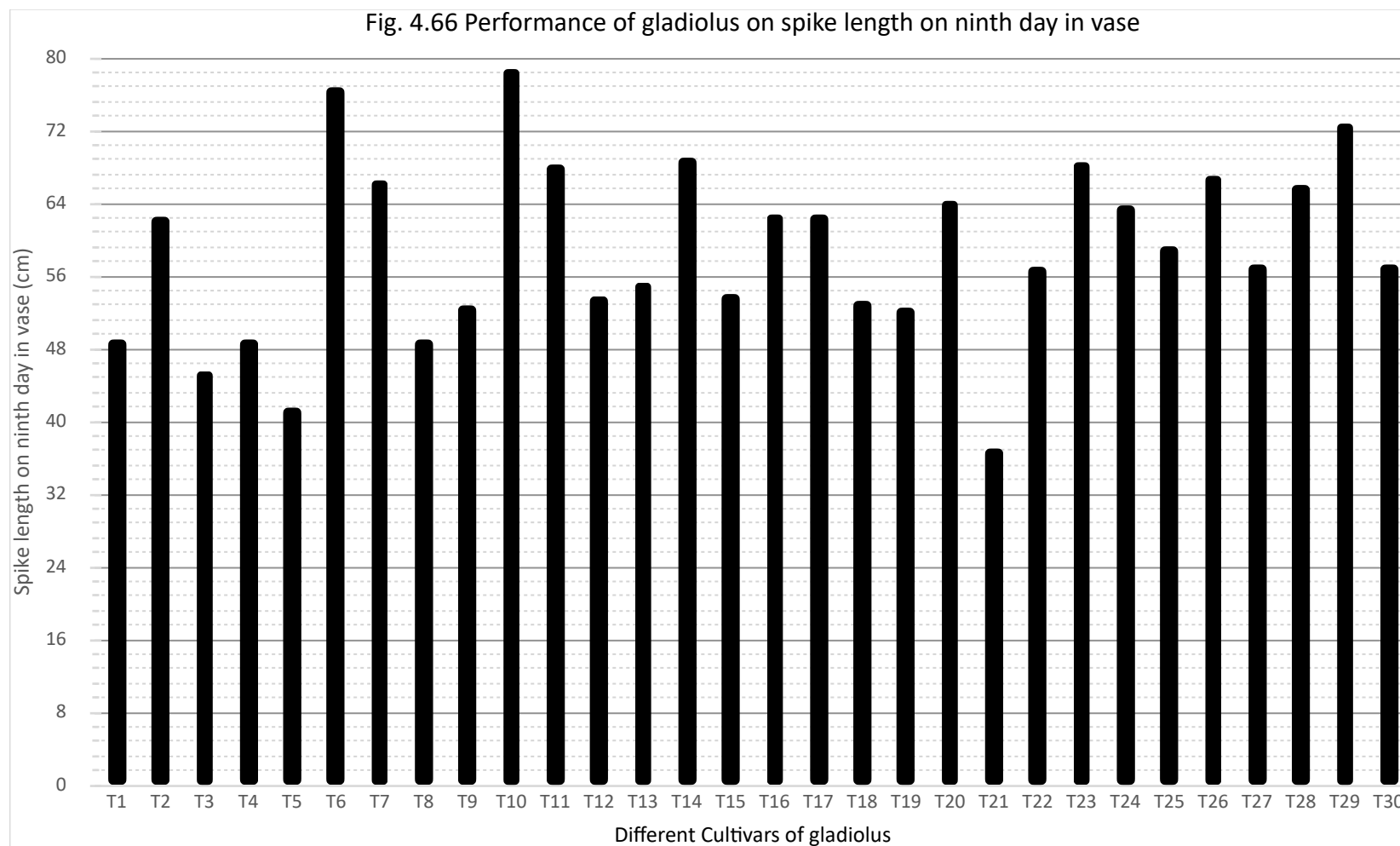


Table 4.67 Performance of gladiolus on rachis length on fist day in vase.

TREATMENTS	RACHIS LENGTH ON 1 st DAY (cm)
T1-Aldebaran	31.23
T2-American Beauty	40.00
T3-Arti	28.73
T4-Chandni	24.00
T5-Darshan	26.77
T6-Dhanvantri	42.37
T7-Friendship Pink	45.47
T8-Green Star	27.37
T9-Gulal	31.03
T10-Hunting Song	50.33
T11-IIHR	39.80
T12-Jester Yellow	23.83
T13-Jyostna	31.67
T14-Mohini	39.23
T15-Nova Lux	39.60
T16-Plum Tart	34.27
T17-Priscilla	39.77
T18-Punjab Dawn	32.53
T19-Punjab Morning	29.53
T20-Pusa Kiran	38.10
T21-Pusa Shubham	23.20
T22-Regency	37.13
T23-Snow Princess	47.40
T24-Subhangini	45.83
T25-Sunanya	33.43
T26-Surya Kiran	49.07
T27-Swarnima	37.03
T28-Tiger Flame	44.70
T29-True Love	47.83
T30-White Prosperity	37.60
C.D. at 5%	6.99

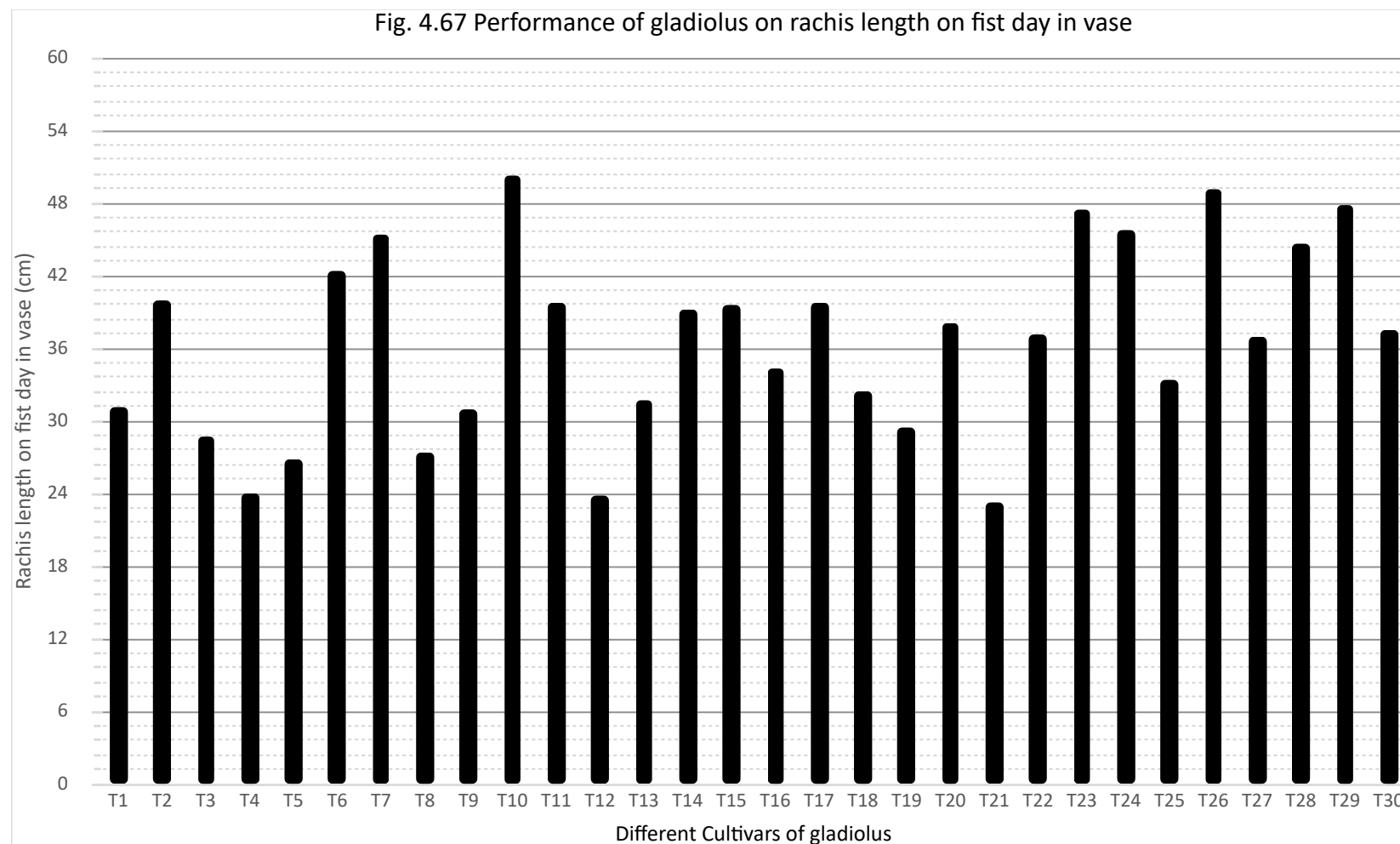


Table 4.68 Performance of gladiolus on rachis length on third day in vase.

TREATMENTS	RACHIS LENGTH ON 3 rd DAY (cm)
T1-Aldebaran	30.63
T2-American Beauty	40.23
T3-Arti	28.97
T4-Chandni	24.20
T5-Darshan	25.20
T6-Dhanvantri	42.53
T7-Friendship Pink	46.23
T8-Green Star	26.97
T9-Gulal	30.43
T10-Hunting Song	50.97
T11-IIHR	39.27
T12-Jester Yellow	23.63
T13-Jyostna	32.50
T14-Mohini	39.87
T15-Nova Lux	39.77
T16-Plum Tart	34.17
T17-Priscilla	41.07
T18-Punjab Dawn	32.70
T19-Punjab Morning	29.53
T20-Pusa Kiran	37.90
T21-Pusa Shubham	23.37
T22-Regency	35.73
T23-Snow Princess	47.57
T24-Subhangini	51.10
T25-Sunanya	34.20
T26-Surya Kiran	49.27
T27-Swarnima	36.87
T28-Tiger Flame	36.87
T29-True Love	48.03
T30-White Prosperity	37.97
C.D. at 5%	7.19

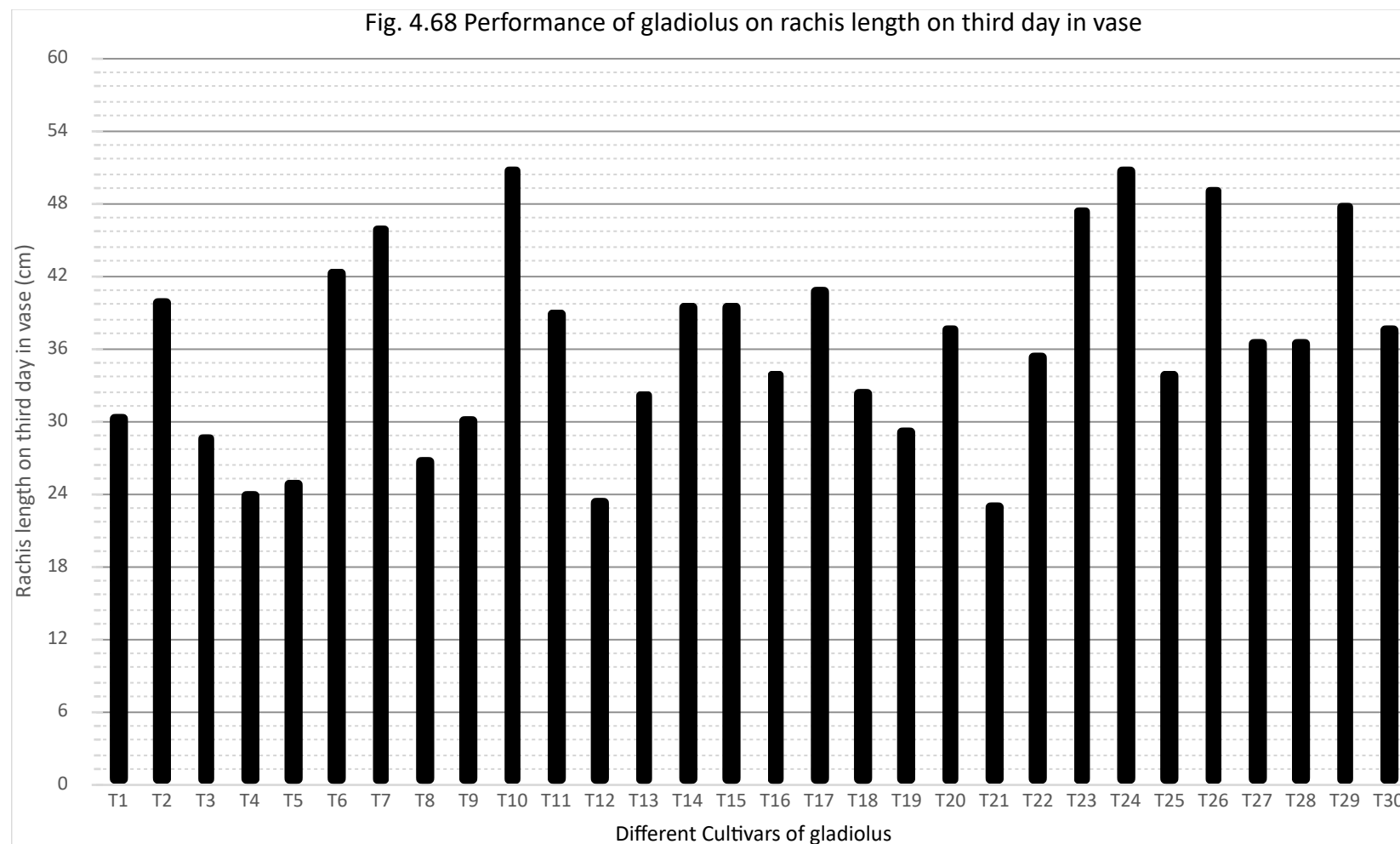


Table 4.69 Performance of gladiolus on rachis length on sixth day in vase.

TREATMENTS	RACHIS LENGTH ON 6 th DAY (cm)
T1-Aldebaran	30.67
T2-American Beauty	40.43
T3-Arti	28.87
T4-Chandni	24.80
T5-Darshan	25.40
T6-Dhanvantri	42.53
T7-Friendship Pink	44.83
T8-Green Star	27.10
T9-Gulal	30.67
T10-Hunting Song	51.90
T11-IIHR	39.47
T12-Jester Yellow	23.87
T13-Jyostna	32.63
T14-Mohini	39.47
T15-Nova Lux	39.87
T16-Plum Tart	34.17
T17-Priscilla	41.10
T18-Punjab Dawn	33.20
T19-Punjab Morning	29.40
T20-Pusa Kiran	37.87
T21-Pusa Shubham	23.37
T22-Regency	35.83
T23-Snow Princess	46.00
T24-Subhangini	47.83
T25-Sunanya	33.93
T26-Surya Kiran	49.57
T27-Swarnima	36.70
T28-Tiger Flame	44.97
T29-True Love	48.37
T30-White Prosperity	37.87
C.D. at 5%	6.94

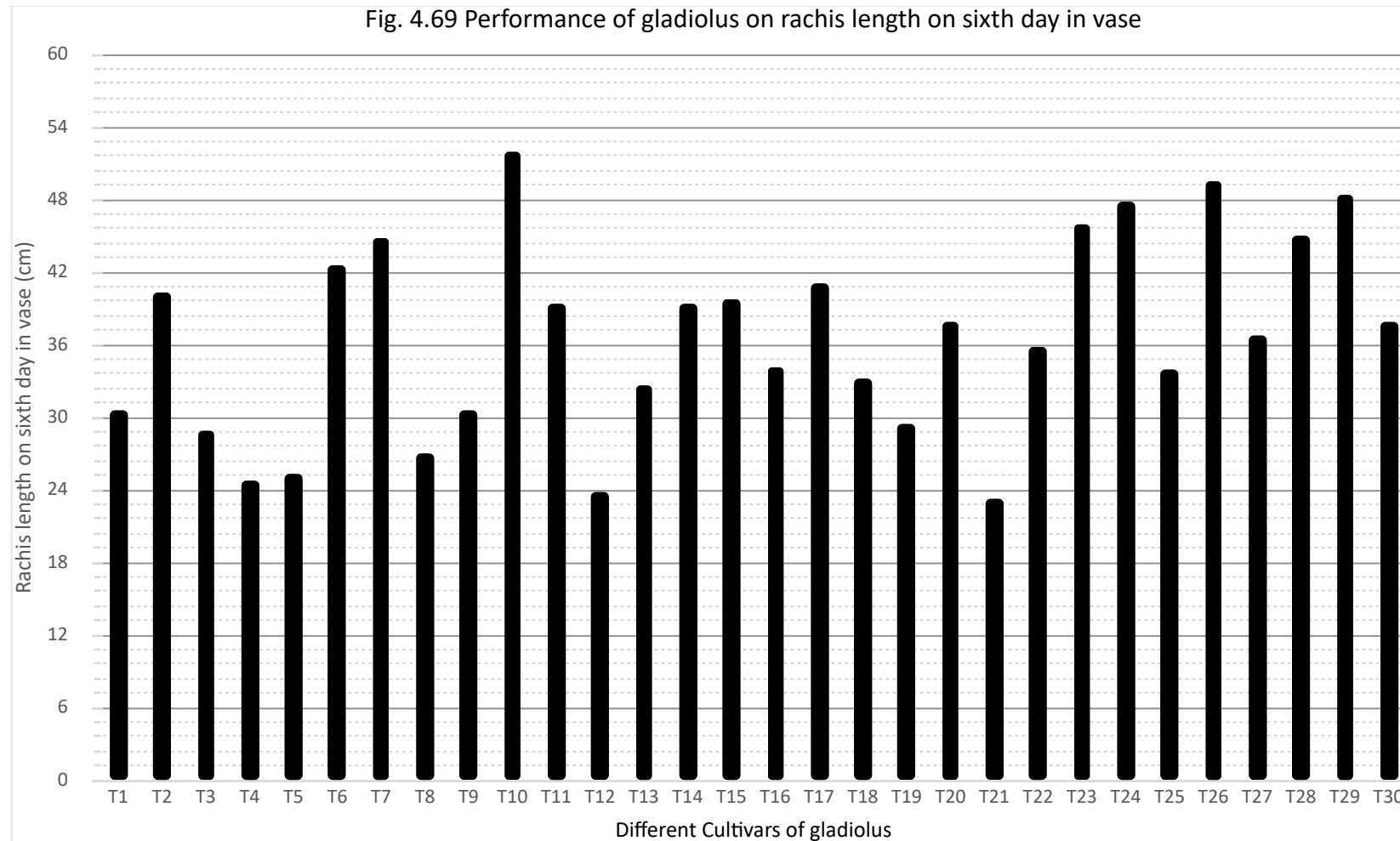


Table 4.70 Performance of gladiolus on rachis length on ninth day in vase.

TREATMENTS	RACHIS LENGTH ON 9 th DAY (cm)
T1-Aldebaran	31.47
T2-American Beauty	40.27
T3-Arti	28.63
T4-Chandni	23.60
T5-Darshan	24.93
T6-Dhanvantri	42.63
T7-Friendship Pink	42.87
T8-Green Star	27.10
T9-Gulal	30.70
T10-Hunting Song	52.80
T11-IIHR	38.50
T12-Jester Yellow	23.90
T13-Jyostna	32.63
T14-Mohini	39.17
T15-Nova Lux	39.77
T16-Plum Tart	34.93
T17-Priscilla	40.90
T18-Punjab Dawn	33.00
T19-Punjab Morning	27.87
T20-Pusa Kiran	37.97
T21-Pusa Shubham	22.97
T22-Regency	35.87
T23-Snow Princess	45.83
T24-Subhangini	48.17
T25-Sunanya	33.47
T26-Surya Kiran	44.80
T27-Swarnima	37.17
T28-Tiger Flame	45.00
T29-True Love	48.40
T30-White Prosperity	38.07
C.D. at 5%	6.76

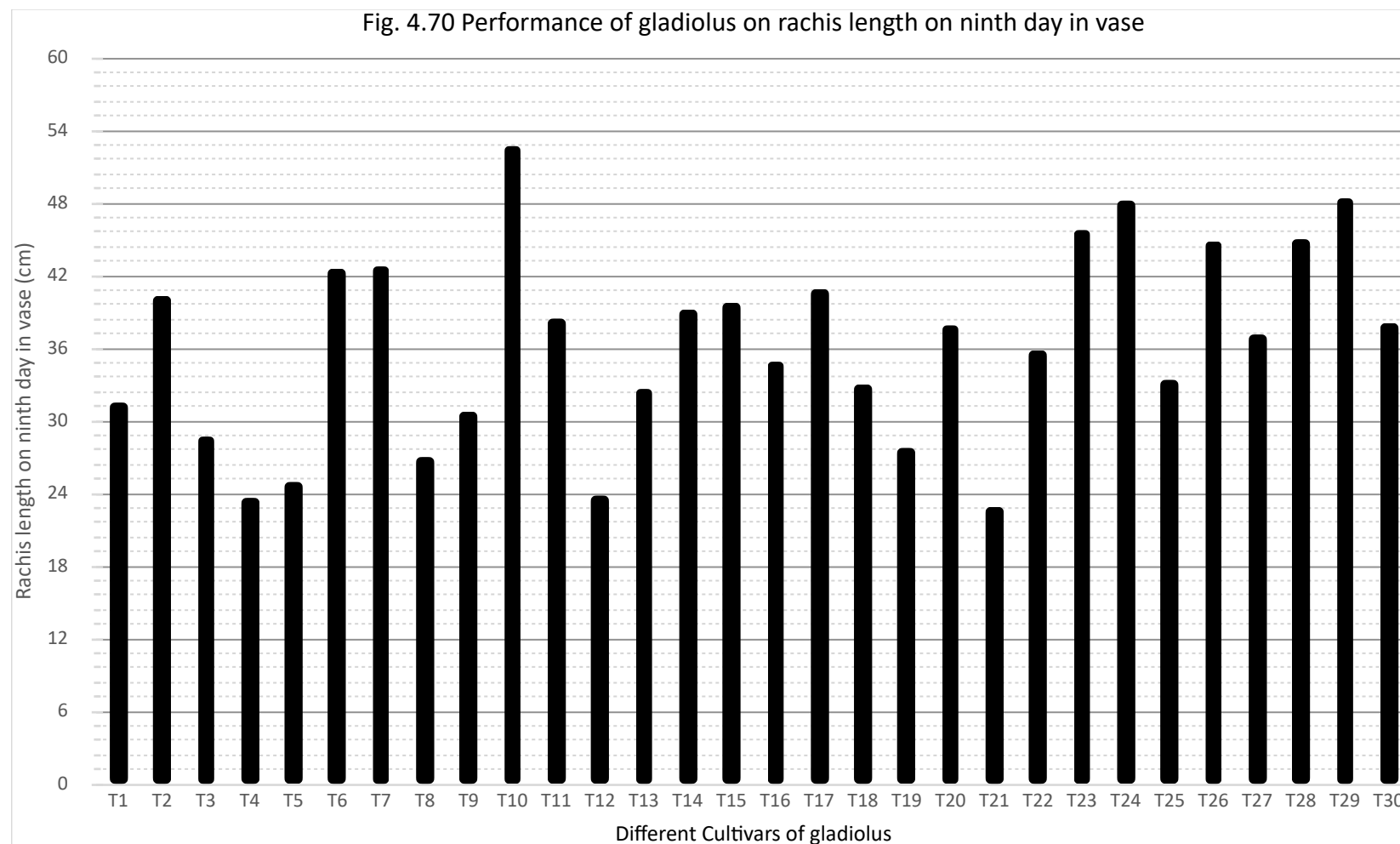


Table 4.71 Performance of gladiolus on weight of spike on first day in vase.

TREATMENTS	WEIGHT OF SPIKE ON 1 st DAY (g)
T1-Aldebaran	35.83
T2-American Beauty	54.73
T3-Arti	24.10
T4-Chandni	18.70
T5-Darshan	22.50
T6-Dhanvantri	37.60
T7-Friendship Pink	69.85
T8-Green Star	29.90
T9-Gulal	42.03
T10-Hunting Song	47.13
T11-IIHR	37.10
T12-Jester Yellow	37.16
T13-Jyostna	35.00
T14-Mohini	56.33
T15-Nova Lux	46.89
T16-Plum Tart	40.67
T17-Priscilla	50.99
T18-Punjab Dawn	35.08
T19-Punjab Morning	31.87
T20-Pusa Kiran	37.90
T21-Pusa Shubham	19.27
T22-Regency	44.51
T23-Snow Princess	47.85
T24-Subhangini	50.87
T25-Sunanya	34.67
T26-Surya Kiran	51.47
T27-Swarnima	29.63
T28-Tiger Flame	40.30
T29-True Love	43.73
T30-White Prosperity	38.50
C.D. at 5%	13.04

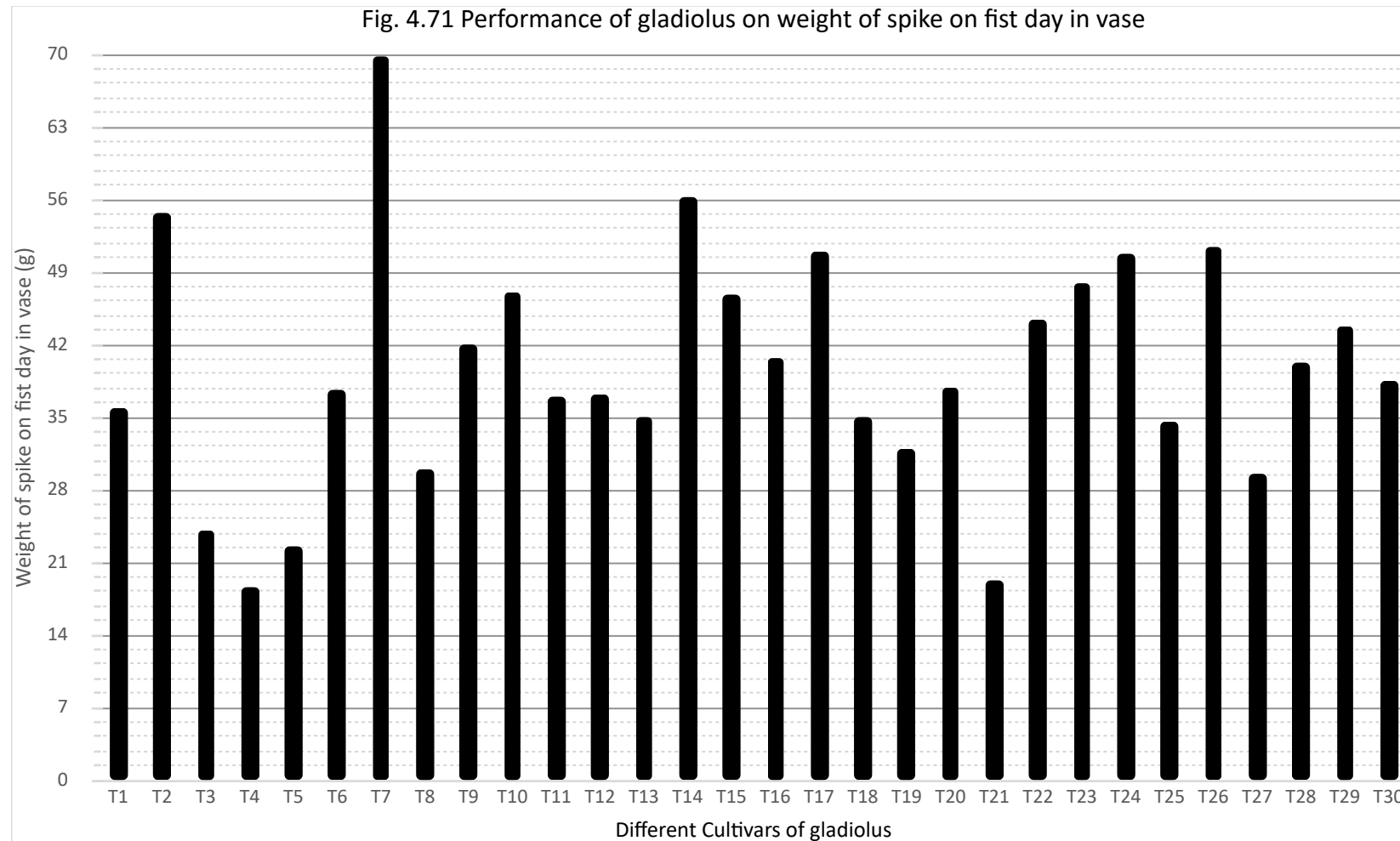


Table 4.72 Performance of gladiolus on weight of spike on third day in vase.

TREATMENTS	WEIGHT OF SPIKE ON 3 rd DAY (g)
T1-Aldebaran	33.07
T2-American Beauty	56.87
T3-Arti	20.47
T4-Chandni	19.07
T5-Darshan	20.77
T6-Dhanvantri	36.93
T7-Friendship Pink	70.93
T8-Green Star	25.77
T9-Gulal	34.00
T10-Hunting Song	41.17
T11-IIHR	37.87
T12-Jester Yellow	36.60
T13-Jyostna	35.14
T14-Mohini	59.60
T15-Nova Lux	46.25
T16-Plum Tart	31.03
T17-Priscilla	50.04
T18-Punjab Dawn	32.82
T19-Punjab Morning	31.23
T20-Pusa Kiran	31.96
T21-Pusa Shubham	18.63
T22-Regency	38.47
T23-Snow Princess	44.92
T24-Subhangini	56.10
T25-Sunanya	37.33
T26-Surya Kiran	47.67
T27-Swarnima	27.03
T28-Tiger Flame	34.70
T29-True Love	40.27
T30-White Prosperity	36.30
C.D. at 5%	11.08

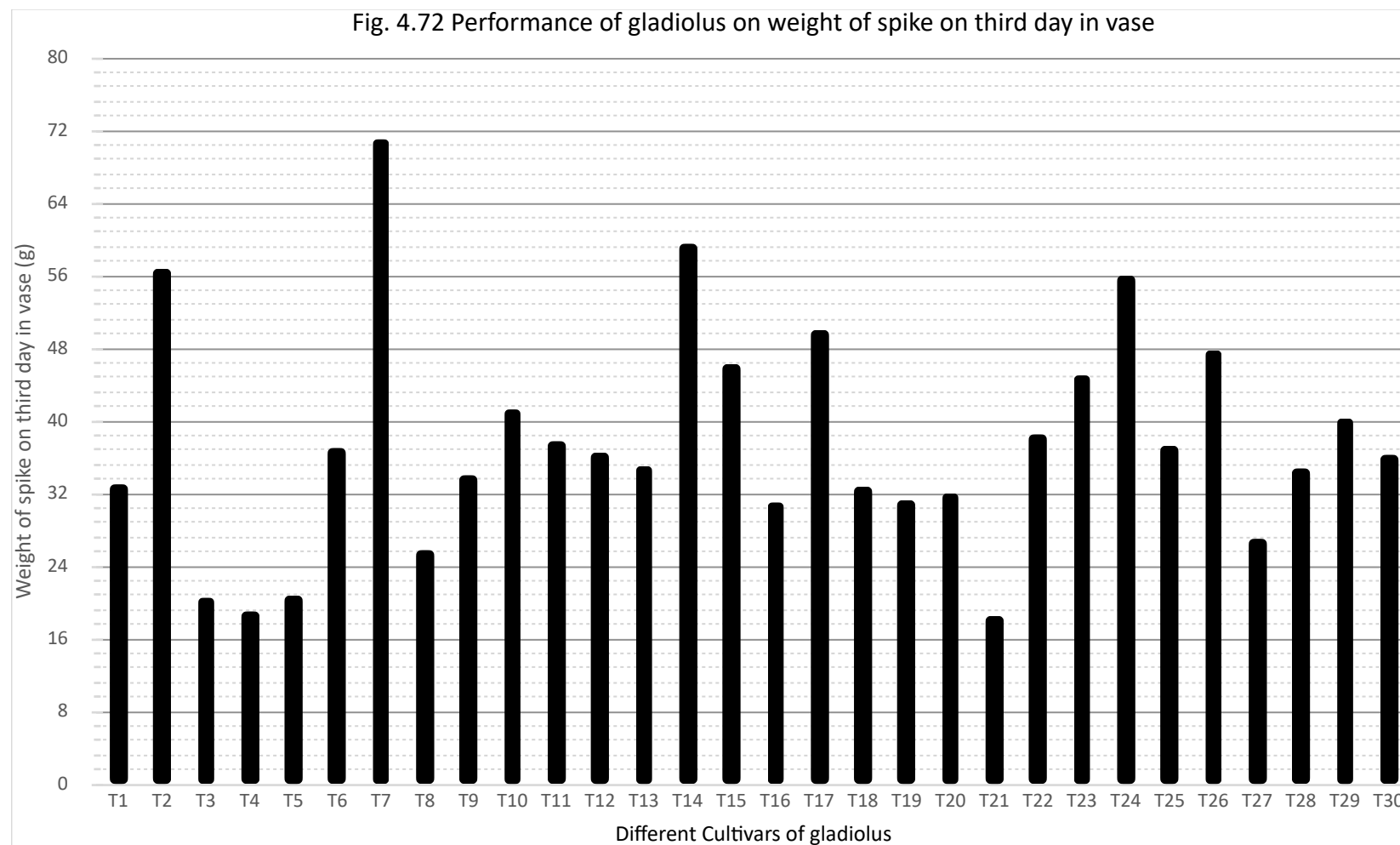


Table 4.73 Performance of gladiolus on weight of spike on sixth day in vase.

TREATMENTS	WEIGHT OF SPIKE ON 6 th DAY (g)
T1-Aldebaran	27.17
T2-American Beauty	48.70
T3-Arti	16.67
T4-Chandni	14.80
T5-Darshan	16.90
T6-Dhanvantri	31.33
T7-Friendship Pink	67.45
T8-Green Star	20.70
T9-Gulal	32.80
T10-Hunting Song	35.30
T11-IIHR	29.93
T12-Jester Yellow	35.62
T13-Jyostna	29.46
T14-Mohini	49.70
T15-Nova Lux	36.47
T16-Plum Tart	26.27
T17-Priscilla	40.93
T18-Punjab Dawn	29.84
T19-Punjab Morning	23.80
T20-Pusa Kiran	26.39
T21-Pusa Shubham	14.73
T22-Regency	31.80
T23-Snow Princess	38.78
T24-Subhangini	46.27
T25-Sunanya	31.80
T26-Surya Kiran	45.00
T27-Swarnima	23.30
T28-Tiger Flame	28.67
T29-True Love	38.37
T30-White Prosperity	33.10
C.D. at 5%	9.87

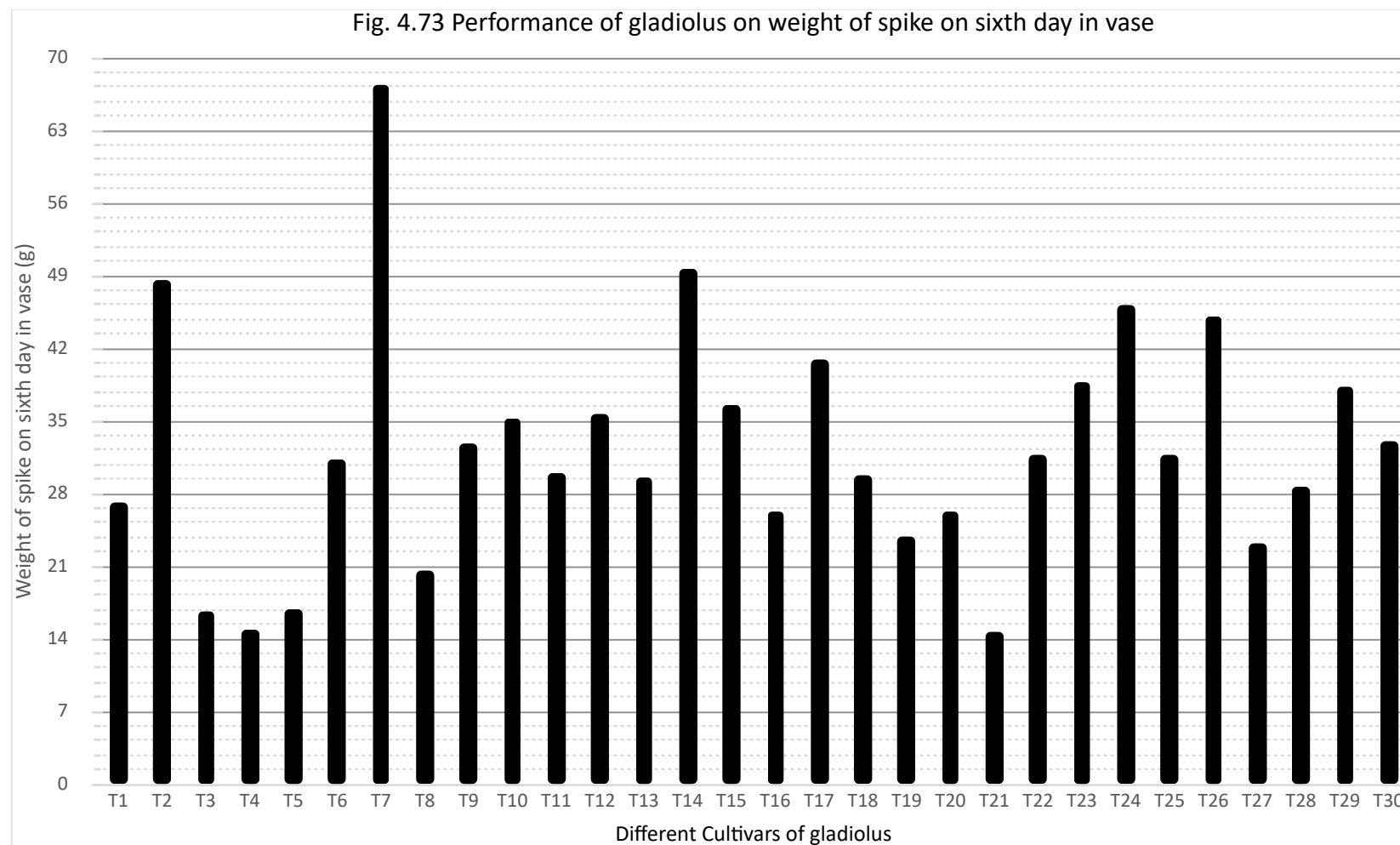


Table 4.74 Performance of gladiolus on weight of spike on ninth day in vase.

TREATMENTS	WEIGHT OF SPIKE ON 9 th DAY (g)
T1-Aldebaran	21.93
T2-American Beauty	37.47
T3-Arti	11.53
T4-Chandni	10.30
T5-Darshan	12.47
T6-Dhanvantri	25.67
T7-Friendship Pink	46.27
T8-Green Star	14.83
T9-Gulal	24.13
T10-Hunting Song	30.73
T11-IIHR	22.60
T12-Jester Yellow	28.59
T13-Jyostna	21.08
T14-Mohini	44.30
T15-Nova Lux	30.54
T16-Plum Tart	22.10
T17-Priscilla	30.20
T18-Punjab Dawn	26.06
T19-Punjab Morning	20.50
T20-Pusa Kiran	19.16
T21-Pusa Shubham	10.37
T22-Regency	23.06
T23-Snow Princess	33.90
T24-Subhangini	34.70
T25-Sunanya	23.03
T26-Surya Kiran	36.67
T27-Swarnima	18.80
T28-Tiger Flame	22.03
T29-True Love	38.33
T30-White Prosperity	26.50
C.D. at 5%	9.64

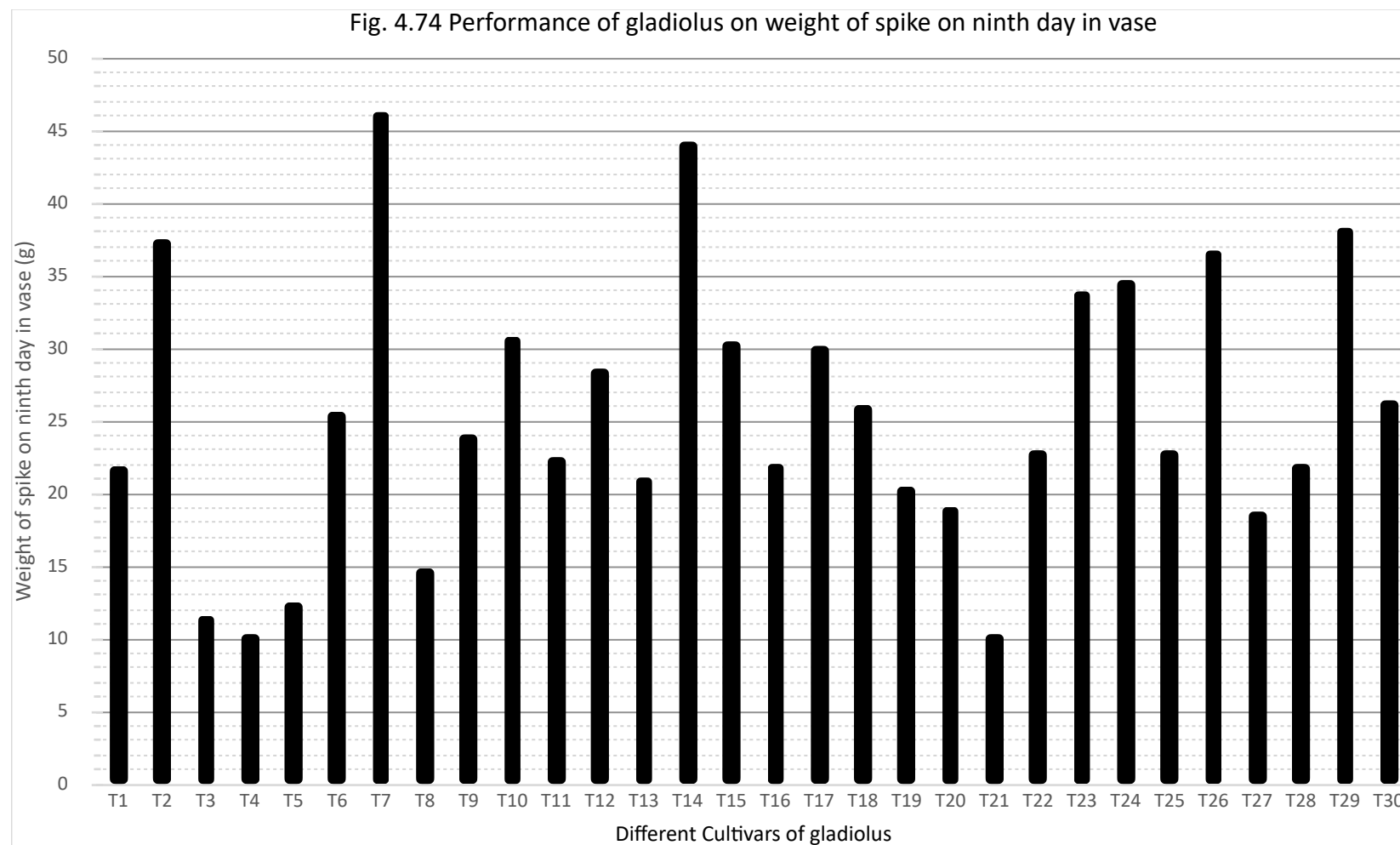


Table 4.75 Performance of gladiolus on vol. of sol. uptake on 3rd day in vase.

TREATMENTS	SOLUTION UPTAKE ON 3 rd DAY (ml)
T1-Aldebaran	5.00
T2-American Beauty	15.67
T3-Arti	4.67
T4-Chandni	9.00
T5-Darshan	7.67
T6-Dhanvantri	13.67
T7-Friendship Pink	16.33
T8-Green Star	6.67
T9-Gulal	11.00
T10-Hunting Song	18.33
T11-IIHR	11.00
T12-Jester Yellow	4.00
T13-Jyostna	11.00
T14-Mohini	17.67
T15-Nova Lux	12.67
T16-Plum Tart	11.33
T17-Priscilla	15.00
T18-Punjab Dawn	11.67
T19-Punjab Morning	7.67
T20-Pusa Kiran	7.33
T21-Pusa Shubham	5.00
T22-Regency	9.33
T23-Snow Princess	14.00
T24-Subhangini	19.67
T25-Sunanya	18.33
T26-Surya Kiran	15.33
T27-Swarnima	7.33
T28-Tiger Flame	8.33
T29-True Love	13.33
T30-White Prosperity	12.33
C.D. at 5%	4.95

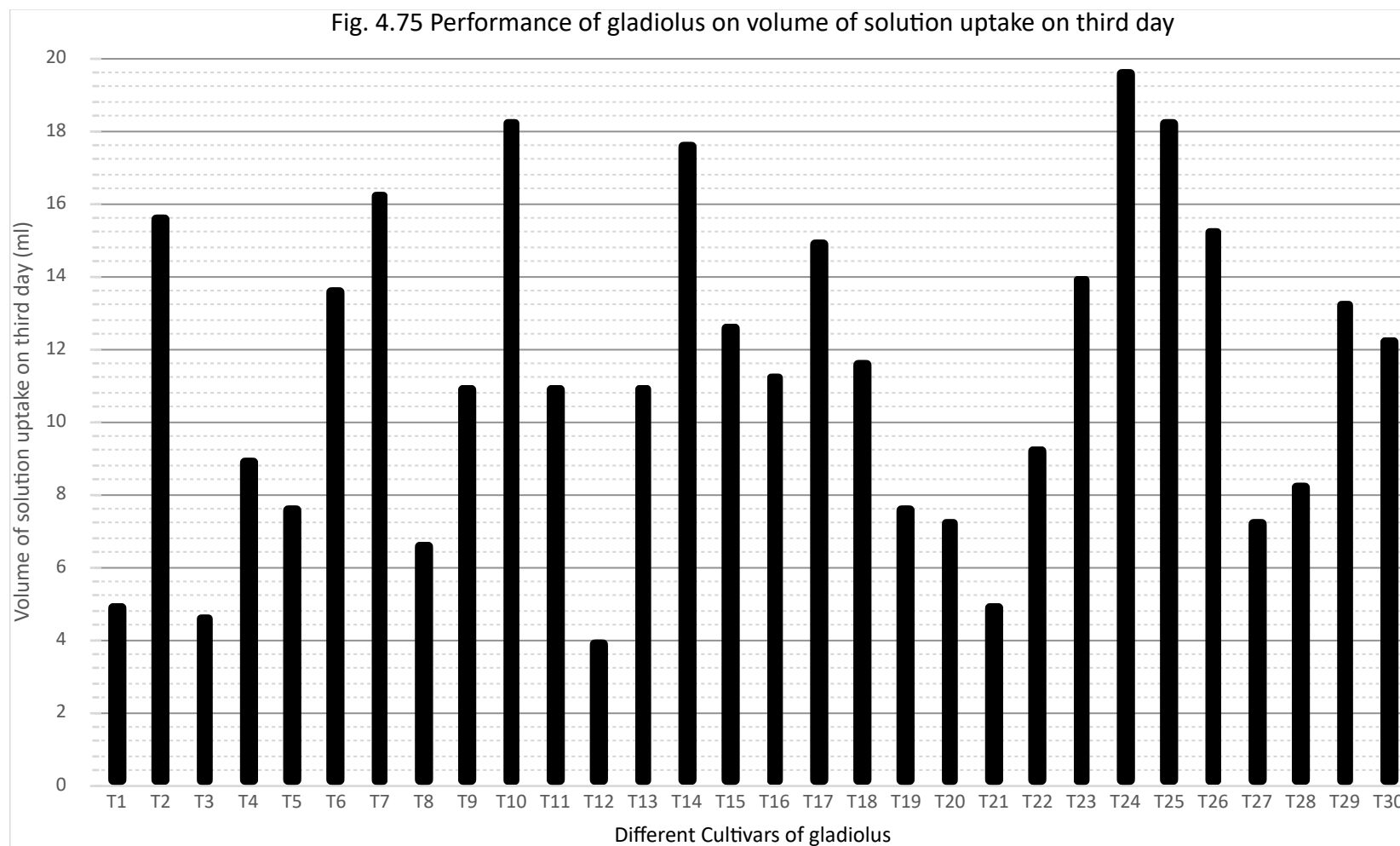


Table 4.76 Performance of gladiolus on vol. of sol. uptake on 6th day in vase.

TREATMENTS	SOLUTION UPTAKE ON 6 th DAY (ml)
T1-Aldebaran	7.00
T2-American Beauty	21.33
T3-Arti	6.00
T4-Chandni	9.67
T5-Darshan	8.33
T6-Dhanvantri	15.67
T7-Friendship Pink	19.00
T8-Green Star	8.67
T9-Gulal	13.33
T10-Hunting Song	19.00
T11-IIHR	14.33
T12-Jester Yellow	7.00
T13-Jyostna	13.00
T14-Mohini	21.33
T15-Nova Lux	14.33
T16-Plum Tart	13.33
T17-Priscilla	18.67
T18-Punjab Dawn	15.00
T19-Punjab Morning	10.00
T20-Pusa Kiran	7.67
T21-Pusa Shubham	7.67
T22-Regency	11.00
T23-Snow Princess	15.33
T24-Subhangini	23.00
T25-Sunanya	19.00
T26-Surya Kiran	17.33
T27-Swarnima	9.00
T28-Tiger Flame	10.67
T29-True Love	15.33
T30-White Prosperity	15.67
C.D. at 5%	4.93

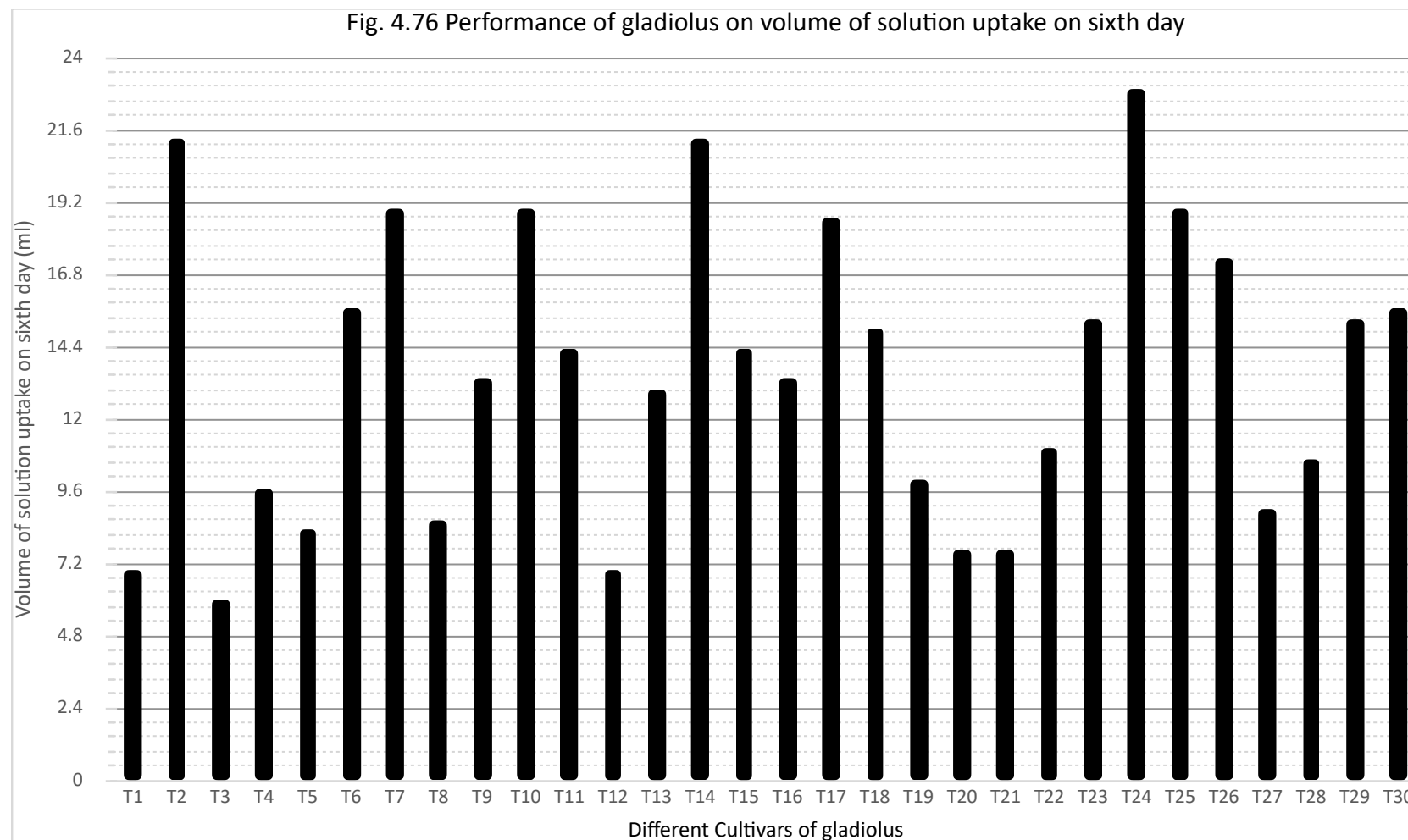


Table 4.77 Performance of gladiolus on vol. of sol. uptake on 9th day in vase.

TREATMENTS	SOLUTION UPTAKE ON 9 th DAY (ml)
T1-Aldebaran	7.33
T2-American Beauty	24.33
T3-Arti	6.67
T4-Chandni	10.67
T5-Darshan	10.33
T6-Dhanvantri	17.67
T7-Friendship Pink	21.33
T8-Green Star	8.67
T9-Gulal	14.67
T10-Hunting Song	21.33
T11-IIHR	17.00
T12-Jester Yellow	7.67
T13-Jyostna	15.00
T14-Mohini	22.33
T15-Nova Lux	15.67
T16-Plum Tart	15.33
T17-Priscilla	22.00
T18-Punjab Dawn	16.67
T19-Punjab Morning	10.00
T20-Pusa Kiran	8.33
T21-Pusa Shubham	8.33
T22-Regency	12.33
T23-Snow Princess	17.67
T24-Subhangini	24.00
T25-Sunanya	20.33
T26-Surya Kiran	19.00
T27-Swarnima	10.67
T28-Tiger Flame	10.67
T29-True Love	16.33
T30-White Prosperity	16.00
C.D. at 5%	5.07

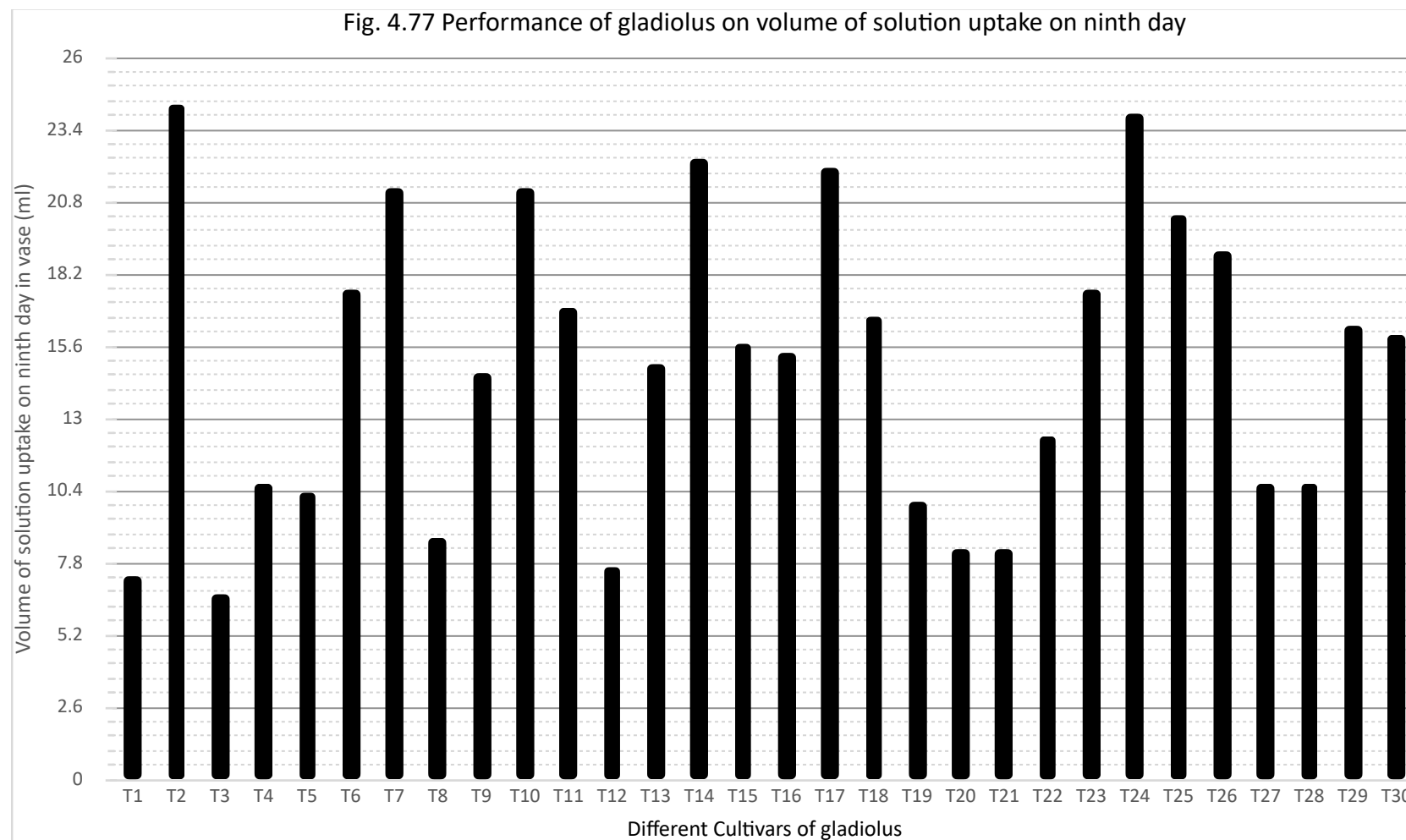


Table 4.78 Performance of gladiolus on withering of last floret in vase.

TREATMENTS	WITHERING OF LAST FLORET (DAYS)
T1-Aldebaran	11.00
T2-American Beauty	15.33
T3-Arti	9.67
T4-Chandni	9.33
T5-Darshan	9.33
T6-Dhanvantri	12.67
T7-Friendship Pink	11.67
T8-Green Star	8.00
T9-Gulal	7.33
T10-Hunting Song	11.00
T11-IIHR	13.00
T12-Jester Yellow	7.00
T13-Jyostna	10.33
T14-Mohini	10.33
T15-Nova Lux	10.33
T16-Plum Tart	8.00
T17-Priscilla	14.00
T18-Punjab Dawn	13.67
T19-Punjab Morning	13.00
T20-Pusa Kiran	12.67
T21-Pusa Shubham	9.33
T22-Regency	6.33
T23-Snow Princess	12.00
T24-Subhangini	12.00
T25-Sunanya	11.67
T26-Surya Kiran	13.00
T27-Swarnima	10.00
T28-Tiger Flame	10.67
T29-True Love	7.33
T30-White Prosperity	9.33
C.D. at 5%	1.94

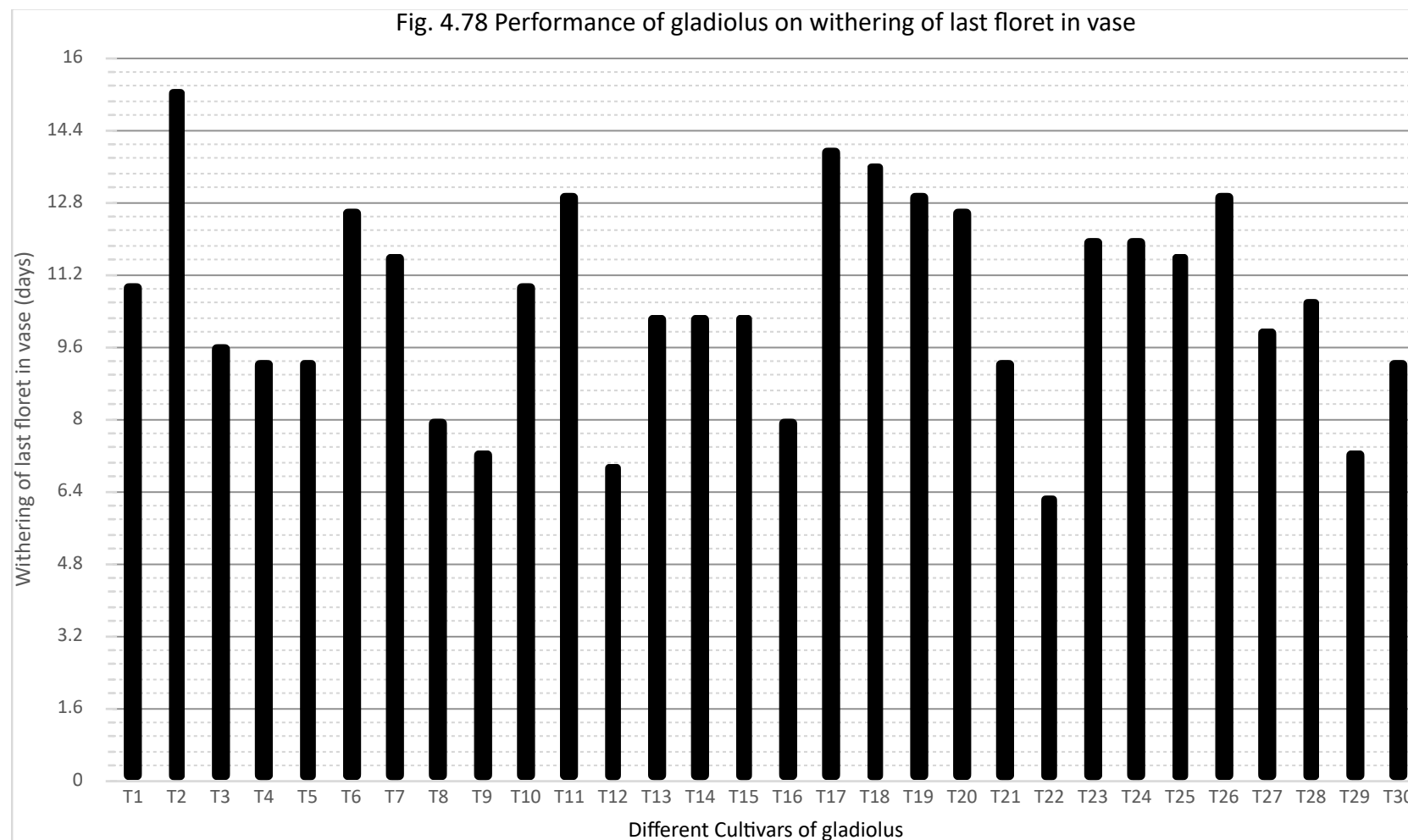
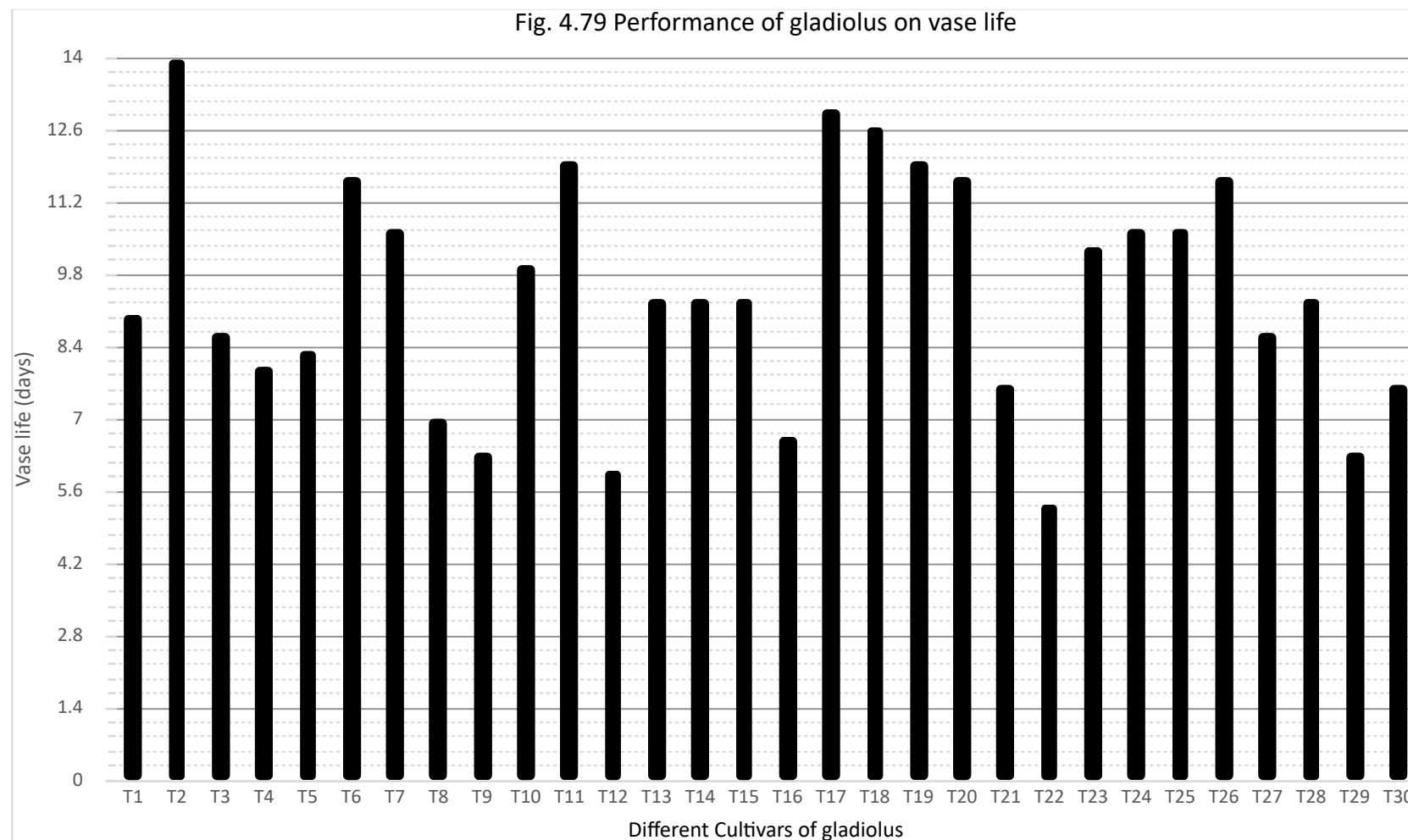


Table 4.79 Performance of gladiolus on vase life.

TREATMENTS	VASE LIFE (DAYS)
T1-Aldebaran	9.00
T2-American Beauty	14.00
T3-Arti	8.67
T4-Chandni	8.00
T5-Darshan	8.33
T6-Dhanvantri	11.67
T7-Friendship Pink	10.67
T8-Green Star	7.00
T9-Gulal	6.33
T10-Hunting Song	10.00
T11-IIHR	12.00
T12-Jester Yellow	6.00
T13-Jyostna	9.33
T14-Mohini	9.33
T15-Nova Lux	9.33
T16-Plum Tart	6.67
T17-Priscilla	13.00
T18-Punjab Dawn	12.67
T19-Punjab Morning	12.00
T20-Pusa Kiran	11.67
T21-Pusa Shubham	7.67
T22-Regency	5.33
T23-Snow Princess	10.33
T24-Subhangini	10.67
T25-Sunanya	10.67
T26-Surya Kiran	11.67
T27-Swarnima	8.67
T28-Tiger Flame	9.33
T29-True Love	6.33
T30-White Prosperity	7.67
C.D. at 5%	2.00



Chapter 5

DISCUSSION

In this chapter, all possible reason behind the result of the findings of previous chapter w.r.t. parameters of growth, flowering and postharvest life conducted in experiment entitled “Performance of 30 Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest life” have been discussed below.

The result of F-test at probability level of 5% as in the analysis of variance due to treatment showed a significant variation for all the parameters studied with exception in a postharvest parameter ‘opening of first floret’ that showed early to opening of first floret in vase in a day for many of treatments and was significant to only very few. This significant variation in the characters in the cultivars may be either or both due to genetic make-up of treatments used in experiment and environmental conditions during experiment. Climatic conditions have a strong influence on growth and yield (flowering and postharvest) performance of gladiolus (Lu *et al.*, 1996). Al-Humaid (2004) also reported that besides genetic make-up, environmental conditions are important factors determining growth and development of gladiolus under specific agro-climatic conditions. The presence of such variability in characters influenced by genotype and climate, selection of cultivars recommended based on their performance for particular climatic region becomes important.

5.1 Growth parameters

In the present experimental study on various growth parameters such as number of days to 50%, 75% and 90% sprouting, number of plants/hill at 30, 45 and 60 DAP, number of leaves/hill at 30, 45 and 60 DAP, plant height at 30, 45 and 60 DAP, leaf length at 30, 45 and 60 DAP, width of scape at 30, 45 and 60 DAP and leaf width at 30, 45 and 60 DAP were significantly influenced in 30 different cultivars of gladiolus. The discussion of all the above mentioned growth parameters are as below.

Cultivars Aldebaran and Regency were early to 50% sprouting. The modified underground stems (Corms in gladiolus) are primarily for reserving food, that eventually serves for new plant (Van Der Plas, 1987). Reserve quantity is size of the corms. Cultivar Regency and Aldebaran have bigger corm and so could be early to sprouting. Cultivar Aldebaran, Arti and Regency were early to 75% sprouting. Thompson (1934) in *Allium cepa*, Jenkins and Miller (1931) in shallot and and Rees (1968) in *Polianthes tuberosa* is in compliance with finding because of size of bulb. Cultivars Aldebaran, Regency, and Arti have corm with large reserve unlike Punjab Dawn, which was found minimum diameter by Kaur and Bajpay (2019) and pertains the character to genetic makeup and hormonal balance viz. gibberellins and abscisic acid that controls dormancy in corms (Kumar *et al.*, 2015 and Nair and Shiva, 2003). Cultivar Regency was early in days to 90% sprouting. Variations in number of days to sprouting was reported similar result by Kaur and Bajpay (2019), Nalage *et al.* (2019), Singh and Dakho (2017) in *Polianthes tuberosa* L., Kujur *et al.* (2016), Sarkar *et al.* (2016), Momin *et al.* (2015), Chaurasiya and Mishra (2015), Kadam *et al.* (2014) and Shaikat *et al.* (2013) in gladiolus.

Cultivar Pusa Kiran had maximum plants/hill at 30 and 45 DAS while cultivar Pusa Subham had maximum plants/hill at 60 DAS and was significant to other cultivar and Pusa Kiran was only statistically at par with the maximum. Similar variations in plants/hill were also found in a study of gladiolus cultivars by Kujur *et al.* (2016) and Chaurasiya and Mishra (2015). Cultivar Pusa Subham had maximum no. of leaves/plant at 30 DAP, cultivar IIHR had maximum no. of leaves/plant at 45 and 60 DAP. The intrinsic genotype composition may be reason behind IIHR having such large count of leaves/hill. Thompson (1934) in *A. cepa*, Jenkins and Miller (1931) in *A. cepa* var. aggregatum and and Rees (1968) in *P. tuberosa* reported size of the bulb reason for greater no. of leaves. As greater larger food reserve nourishes growing leaves, hence greater count of number leaves/hill (Adjei-Twum, 1980). Thus, corm size has significant influence on no. of leaves/hill. Similar variations in number of leaves/hill was reported by Tomer *et al.* (2019), Safeena and Thangam (2019), Geeta *et al.* (2014), Saleem *et al.* (2013), Susila (2013) and Kumar *et al.* (2007).

Cultivar Dhanvantri had maximum plant height at 30, 45 and 60 DAP. Apparently, height is in ornamental groups, as result shown in studies by Azimi (2020) that longer plant height have bigger flowering parts. However, height has been repulsive factor in transportation in export and during marketing long plant height invites postharvest disorders like toppling in spikes. ‘Miniature’ hybrids, are small height categories that are trends in recent also ‘Orchidiolas’ is recently developed by Israel for the same reason. Cultivars Nova Lux at 30 DAP while Pusa Kiran had minimum plant height at 45 and 60 DAP. Plant height range found in the study was largely varying (25 cm- 56 cm at 30 DAS, 33cm - 67 cm at 45 DAS and 35 cm- 70 cm at 60 DAS). This variation in height might be for receiving more light, moisture, nutrition, space and access to free air movement (Dole and Wilkens, 2004; Karavadia and Dhaduk, 2002). The present discussion are in compliance with Azimi (2020), Swaroop (2020), Singh *et al.* (2020), Kaur and Bajpay (2019), Tomer *et al.* (2019), Safeena and Thangam (2019), Tomiozzo *et al.* (2018), Islam *et al.* (2017), Chaurasiya and Mishra (2015), Momin *et al.* (2015), Rao and Sushma (2015), Bhatta *et al.* (2015), Kadam *et al.* (2014), Geeta *et al.* (2014), Shaukat *et al.* (2013), Sushila (2013), Prakash and Kumar (2009), Kumar *et al.* (2007), Rao and Jankiram (2006), Kumar and Yadav (2005) in gladiolus.

Cultivar Dhanvantri had longest leaf length at 30, 45 and 60 DAP. Cultivars American Beauty, Mohini and Friendships pink had broadest width of scape at 30, 45 and 60 DAP respectively. Cultivar Sunanya had broadest leaf width at 30, 45 and 60 DAP. Leaves parameters are less varied genetically with definite sword shaped, medium, green and upright leaf morphology. However, variation shown in leaf length, leaf width and scape width of leaf might be due to genotype with external influence of prevailing environmental conditions. The present findings are in compliance with Tomer *et al.* (2019), Safeena and Thangam (2019), Momin *et al.* (2015), Ramachandrudu and Thangam (2008), Kumar *et al.* (2007) and Kumar and Yadav (2005) in gladiolus.

5.2 Flowering parameters

In the present experimental study on various flowering parameters such as days to spike emergence, days to colour show, opening, withering, diameter and length of 1st floret, opening, withering, diameter and length of 3rd floret, opening, withering, diameter and length of 5th floret, no. of florets opened at a time, no. of florets opened/spike, no. of florets/spike, percentage of florets opened/spike, withering of last floret and total duration of flowering were significantly influenced in 30 different cultivars of gladiolus. The discussion of all the above mentioned flowering parameters are as below.

Early days to spike emergence and days to colour show was observed in the cultivars Chandni and Jyostna respectively while late days to spike emergence and days to colour show in cultivar Swarnima and True Love respectively. Early days to spike emergence and early days to colour show are most important parameters of any cultivars commercially as it fetch more than average rates. Early, mid and late cultivars could be planned for staggered planting for commercial gain in off season as well as also avoids glut in market during the peak season. The present findings are in compliance with Kadam *et al.* (2014) and Cantor *et al.* (2010) in gladiolus.

Cultivar Jyotsna was early to opening of first, third and fifth florets while delay to withering of first, third and fifth florets was observed in cultivar True Love. This may be due to either of both intrinsic capacity to reproductive development (Kaur and Bajpay, 2019) and external factor such as better nutrition uptake and light absorption (Thakur *et al.*, 2015).

Diameter of 1st, 3rd and 5th floret was maximum in cultivar American Beauty while length of 1st floret was maximum in cultivar IIHR. However, length of 3rd and 5th floret was maximum in cultivar American Beauty. The result is in compliance with Singh and Dakho (2017) in *Polianthes tuberosa*, Kadam *et al.* (2014), Pandey *et al.* (2012), Swain *et al.* (2008), Padma and Kumar (2004) and Nagaraju and Parthasarathy (2001) in gladiolus.

No. of floret opened at a time was maximum in cultivar Mohini, number of florets opened floret/spike, number of florets/spike and percentage of florets opened/spike were maximum in cultivar True Love. These might be either or both intrinsic factor genotype of cultivars and influence of prevailing environmental conditions.

Initial and final spike length, initial and final rachis length and internodal length were maximum in cultivar True Love. This significant variation in the spike length range from 34 cm- 78 cm and rachis length range from 20 cm-57 cm while internodal length range from 8 cm - 14 cm. Longer spike length, rachis length and internode length are excellent for flower arrangement and exhibition purpose. Thus, cultivar with longer spike length, rachis length and internode length fetch better rates, and have better vase life (Kadam *et al.*, 2020). Either of both of intrinsic factors *i. e.* genetic make up (Singh *et al.*, 2017a) and influences of prevailing environmental conditions could be cause of such variations in spike length, rachis length and internode length. This finding is in compliance with Cantor *et al.* (2010), Rani and Singh (2005), Kumar (2009), Pragya *et al.* (2010), Choudhury *et al.* (2011), Pandey *et al.* (2012), Shaukat *et al.* (2012), Susila (2013), Chourasia *et al.* (2015), Sarkar and Chakroborty (2014) and Sindhu *et al.* (2014) and Swaroop *et al.* (2017).

Withering of last floret and total duration of flowering looks similar and related but the result showed that cultivar True Love had maximum days to withering of last floret while cultivar Surya Kiran had maximum total duration of flowering. This is because cultivar True Love took more days to opening of first floret. Total duration of flowering is important as breeding programme of any crop requires optimal flowering period in order to maximise number of crossing and may coincide the time of pollen and stigma maturity (Azani, 1994). Total duration of flowering plants is also important as the purpose of decoration in landscape in gardening or pot culture is significantly enhanced if flowering duration is increased. These variations may be attributed to different genotypes of cultivars or environmental conditions. Cosmulescu *et al.* (2010) stated that "flowering time or duration" is a feature which is influenced by climatic factor as well as intrinsic genetic factor too.

5.3 Postharvest parameters

In the present experimental study on various postharvest parameters such as opening, withering, diameter and length of 1st floret, opening, withering, diameter and length of 3rd floret, opening, withering, diameter and length of 5th floret, no. of florets opened at a time, no. of florets opened/spike, no. of florets/spike, percentage of florets opened/spike, withering of last floret and vase life. The discussion of all the above mentioned post harvest parameters are as below.

Opening of 1st floret was early in most of cultivar under study *i.e.* cultivars Arti, Darshan, Dhanvantri, Friendship Pink, Green Star, Gulal, Hunting Song, IIHR, Jester Yellow, Jyostna, Mohini, Nova Lux, Priscilla, Punjab Dawn, Punjab Morning, Pusa Kiran, Regency, Sunanya and True Love while cultivar Priscilla was observed early to withering of 1st floret. Opening of 3rd and 5th was in cultivars Mohini and American Beauty respectively while delay to withering of 3rd and 5th floret was in cultivars Chandni and Dhanvantri.

Diameter of 1st floret was maximum in cultivars Mohini while diameter of 3rd and 5th floret was maximum in Friendship pink. Length of 1st and 3rd floret was maximum in cultivar Friendship Pink while length of fifth floret maximum was in cultivar Snow Princess. No. of opened florets at a time was maximum in cultivar Friendship Pink, no. of opened florets/spike was maximum in cultivar Hunting Song, no. of florets/spike was maximum in cultivar Friendship Pink and percentage of opened florets/spike was maximum in cultivar IIHR. Intrinsic factor genetics of cultivar along with the influence of prevailing environment could be reason behind such variation in cultivars of gladiolus.

Spike length on 1st , 3rd , 6th and 9th day and rachis length on 1st , 6th and 9th day were recorded maximum in cultivar Hunting song, however, rachis length on 3rd , day was recorded maximum in cultivar Subhangini. The variation in spike length range from 37 cm- 79 cm and rachis length range from 23 cm-53 cm. As mentioned afore, longer spike and rachis length is florist choice as well as consumer particularly using for flower arrangement and exhibition purpose.

The weight of spike on 1st, 3rd, 6th and 9th day was maximum in cultivar Friendship Pink. Weight of spike is also important parameter for any cultivars as sturdiness against geotropic bending and toppling of spike is influenced by weight of spike and plays crucial importance in handling of spikes of cut flower, its packing and transportation. While exporting, freight charges are quite high under Indian conditions (Mahato and Gantait, 2016). Thus, weight of spike has been repulsive factor in export as variation in weight range from 19 g to 70 g that is recorded in experimental study of gladiolus entitled “Performance of Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life.”. This pertains freight charges may be due to 2 to 3 times. These variations in spike weights might be due to their genetic makeup as suitable growth and vigour was necessary for optimum photosynthesis to supply enough carbohydrates for higher yield (Azani, 1994) of spikes. Cultivar Chandni which had minimum spike weight on 1st and 9th day while cultivar Pusa Subham had minimum weight of spike on 3rd and 6th day having low weight of spike could be preferential choice for export purpose far distant.

Cultivar Jester Yellow which recorded minimum volume of solution uptake on 3rd day, cultivar Arti on 6th day and 9th day, however, maximum volume of solution uptake was in cultivar Subhangini on 3rd and 6th day while cultivar American Beauty on 9th day. These variations might be the influence of cultivation conditions and their transference conditions after spike was cut or intrinsic genetic factor of cultivar may have role too.

Withering of last floret and vase life, contrary to flowering in field conditions, has correlation in post harvest conditions and result showed that cultivar American Beauty had maximum no. of days to withering of last floret and maximum vase life. The result is in compliance with Dwivedi *et al.* (2016) who reported early to opening of florets and late to withering along with bigger spike length and no. of florets/spike will provide extensive vase life. This might be also due to the intrinsic genetic factor or combination of extrinsic environmental conditions.



Chapter 6

SUMMARY AND CONCLUSION

Gladiolus is herbaceous plant with fascinating spikes bearing a large number of florets, which exhibit exhaustive range of colour, sizes, shades and forms with smooth, ruffled or deeply crinkled tepals (Singh, 2017a) making it the most attractive important bulbous cut flower crops. Also attractiveness of spike having huge form of florets with dazzling colour and longer keeping quality suits for decorative purposes and bouquet preparation. It is useful for flower beddings in gardens, pot crops, rockeries *etc* (Abbasi *et al.*, 2005) make it a package for all. It is florist demand ornamental.

Horticulture Research Farm and Post-harvest Laboratory of department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, India was the site for studies of growth, flowering and postharvest life parameters. The period of experiment was winter season of 2019-20 with the objectives below.

1. To see the performance of different cultivars of gladiolus for plant growth in environmental conditions of Varanasi.
2. To find out suitable cultivars for flowering parameters in gladiolus.
3. To evaluate the best of indigenous and exotic cultivars of gladiolus for postharvest life.

The treatment comprised of 30 different indigenous and exotic cultivars of Gladiolus. The treatments were replicated thrice (3) in a RBD. The total number of experimental plots was 90. The summary of parameters on growth, flowering and post harvest life of different cultivars of gladiolus studied in the experiment entitled “Performance of Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life” is presented in serial manner within their respective headings below.

6.1 Growth parameters

Growth parameters such as sprouting of corms, no. of plants/hill, no. of leaves/hill, plant height, leaf length, width of scape and leaf width are summarised below.

1. Maximum days to 50% sprouting of mother corms (20 days) was found in treatment T18-Punjab Dawn while minimum to 50% sprouting mother corms (8 days) were found in treatment T1-Aldebaran and T22-Regency. The results were significant.
2. Maximum days to 75% sprouting of mother corms (24 days) were found in T15-Nova Lux and T18-Punjab Dawn while minimum days to 75% sprouting mother corms (10 days) were found in treatment T1-Aldebaran, T3-Arti and T22-Regency. The results were significant.
3. Maximum days to 90% sprouting of mother corms (30 days) was found in T14-Mohini while minimum days to 90% sprouting mother corms (11 days) was found in treatment T22-Regency. The results were significant.
4. Maximum no. of plants/hills at 30 DAP (2.67) was found in T20-Pusa Kiran while minimum no. of plants/hills at 30 DAP (1.00) were found in T12-Jester Yellow and T18-Punjab Dawn.. The results were significant.
5. Maximum no. of plants/hills at 45 DAP (3.33) was found in T20-Pusa Kiran while minimum no. of plants/hills at 45 DAP (1.17) were found in T18-Punjab Dawn. The results were significant.
6. Maximum no. of plants/hills at 60 DAP (3.37) was found in T21-Pusa Shubham while minimum no. of plants/hills at 60 DAP (1.20) were found in T2-American Beauty. The results were significant.
7. Maximum no. of leaves/hills at 30 DAP (3.77) was found in T21-Pusa Shubham while minimum no. of leaves/hills at 30 DAP (1.67) was found in T12-Jester Yellow. The results were significant.

8. Maximum no. of leaves/hills at 45 DAP (4.87) was found in T11-IIHR while minimum no. of leaves/hills at 45 DAP (2.50) was found in T18-Punjab Dawn. The results were significant.
9. Maximum no. of leaves/hills at 60 DAP (7.20) was found in T11-IIHR while minimum no. of leaves/hills at 60 DAP (4) was found with the T7-Friendship Pink. The results were significant.
10. Maximum plant height at 30 DAP (56.60 cm) was found in T6-Dhanvantri while minimum plant height at 30 DAP (25.27 cm) was found in T15-Nova Lux. The results were significant.
11. Maximum plant height at 45 DAP (67.40 cm) was found in T6-Dhanvantri while minimum plant height at 45 DAP (33.27 cm) was found in T20-Pusa Kiran. The results were significant.
12. Maximum plant height at 60 DAP (70.33 cm) was found in T6-Dhanvantri while minimum plant height at 60 DAP (34.70 cm) was found in T20-Pusa Kiran. The results were significant.
13. Maximum leaf length at 30 DAP (45.83 cm) was found in T6-Dhanvantri while minimum leaf length at 30 DAP (21.07 cm) was found in T7-Friendship Pink. The results were significant.
14. Maximum leaf length at 45 DAP (52.10 cm) was found in T6-Dhanvantri while minimum leaf length at 45 DAP (25.23 cm) was found in T20-Pusa Kiran. The results were significant.
15. Maximum leaf length at 60 DAP (55.01 cm) was found in T6-Dhanvantri while minimum leaf length at 60 DAP (28.00 cm) was found in T20-Pusa Kiran. The results were significant.
16. Maximum width of scape at 30 DAP (1.78 cm) was found in T2-American Beauty while minimum width of scape at 30 DAP (0.57 cm) was found in T18-Punjab Dawn. The results were significant.

17. Maximum width of scape at 45 DAP (2.01 cm) was found in T14-Mohini while minimum width of scape at 45 DAP (0.82 cm) was found in T18-Punjab Dawn. The results were significant.
18. Maximum width of scape at 60 DAP (2.13 cm) was found in T7-Friendship Pink while minimum width of scape at 60 DAP (0.87 cm) was found in T19-Punjab Morning. The results were significant.
19. Maximum leaf width at 30 DAP (3.58 cm) were found in T25-Sunanya and T23-Snow Princess while minimum leaf width at 30 DAP (1.08 cm) was found in T18-Punjab Dawn. The results were significant.
20. Maximum leaf width at 45 DAP (3.88 cm) was found in T25-Sunanya while minimum leaf width at 45 DAP (1.53 cm) was found in T18-Punjab Dawn. The results were significant.
21. Maximum leaf width at 60 DAP (3.92 cm) were found in T25-Sunanya and T23-Snow Princess while minimum leaf width at 60 DAP (1.53 cm) was found in T18-Punjab Dawn. The results were significant.

6.2 Flowering parameters

Flowering parameters such as days to spike emergence, days to colour show, opening, withering, diameter and length of 1st floret, opening, withering, diameter and length of 3rd floret, opening, withering, diameter and length of 5th floret, no. of florets opened at a time, no. of florets opened/spike, no. of florets/spike, percentage of florets opened/spike, withering of last floret and total duration of flowering are summarised below.

22. Maximum days to spike emergence (87.50 days) was found in T27-Swarnima while minimum days to spike emergence (69.77 days) was found in T4-Chandni. The results were significant.

23. Maximum days to colour show (99 days) was found in T29-True Love while minimum days to colour show (79.83 days) was found in T13-Jyostna. The results were significant.
24. Maximum days to opening of first floret (104.33 days) was found in T29-True Love while minimum days to opening of first floret (87.83 days) was found in T13-Jyostna. The results were significant.
25. Maximum days to withering of first floret (106.67 days) was found in T29-True Love while minimum days to withering of first floret (90.83 days) was found in T13-Jyostna. The results were significant.
26. Maximum diameter of first floret (11.17 cm) was found in T2-American Beauty while minimum diameter of first floret (90.83 days) was found in T20-Pusa Kiran. The results were significant.
27. Maximum length of first floret (11.50 cm) was found in T11-IIHR while minimum length of first floret (7.77 cm) was found in T22-Regency. The results were significant.
28. Maximum days to opening of third floret (105.67 days) was found in T29-True Love while minimum days to opening of third floret (89.17 days) was found in T13-Jyostna. The results were significant.
29. Maximum days to withering of third floret (108.33 days) was found in T29-True Love while minimum days to withering of third floret (92.67 days) was found in T13-Jyostna. The results were significant.
30. Maximum diameter of third floret (10.67 cm) was found in T2-American Beauty while minimum diameter of third floret (5.63 cm) was found in T20-Pusa Kiran. The results were significant.
31. Maximum length of third floret (10.87 cm) was found in T2-American Beauty while minimum length of third floret (7.57 cm) was found in T22-Regency. The results were significant.

32. Maximum days to opening of fifth floret (107.0 days) was found in T29-True Love while minimum days to opening of fifth floret (91.0 days) was found in T13-Jyostna. The results were significant.
33. Maximum days to withering of fifth floret (109.67 days) was found in T29-True Love while minimum days to withering of fifth floret (94.19 days) was found in T13-Jyostna. The results were significant.
34. Maximum diameter of third floret (10.17 cm) was found in T2-American Beauty while minimum diameter of fifth floret (5.70 cm) were found in T5-Darshan and T3-Arti. The results were significant.
35. Maximum length of fifth floret (10.50 cm) was found in T2-American Beauty while minimum length of fifth floret (7.33 cm) was found in T22-Regency. The results were significant.
36. Maximum no. of opened florets at a time (6.37) was found in T14-Mohini while minimum no. of opened florets at a time (3.33) was found in T29-True Love. The results were significant.
37. Maximum no. of opened florets/spike (17) was found in T29-True Love while minimum no. of opened florets/spike (6) was found in T1-Aldebaran. The results were significant.
38. Maximum no. of florets/spike (18) was found in T29-True Love while minimum no. of florets/spike (7.20) was found in T1-Aldebaran. The results were significant.
39. Maximum percentage of opened florets/spike (94.40 %) was found in T29-True Love while minimum percentage of opened florets/spike (83.03%) was found in T1-Aldebaran. The results were significant.
40. Maximum initial spike length (78 cm) was found in T29-True Love while minimum initial spike length (33.97 cm) was found in T3-Arti. The results were significant.

41. Maximum final spike length (78.50 cm) was found in T29-True Love while minimum final spike length (34.10 cm) was found in T3-Arti. The results were significant.
42. Maximum initial rachis length (56.50 cm) was found in T29-True Love while minimum initial rachis length (19.63 cm) was found in T19-Punjab Morning. The results were significant.
43. Maximum final rachis length (57 cm) was found in T29-True Love while minimum final rachis length (20.10 cm) was found in T19-Punjab Morning. The results were significant.
44. Maximum internodal length (13.83 cm) was found in T29-True Love while minimum internodal length (8 cm) was found in T26-Surya Kiran. The results were significant.
45. Maximum days to withering of last floret (114 days) was found in T29-True Love while minimum days to withering of last floret (5.67 days) was found in T4-Chandni. The results were significant.
46. Maximum total duration of flowering (10.67 days) was found in T26-Surya Kiran while minimum total duration of flowering (96.23 days) was found in T22-Regency. The results were significant

6.3 Postharvest parameters

Postharvest parameters such as opening of first floret, withering of first floret, diameter of first floret, length of first floret, opening of third floret, withering of third floret, diameter of third floret, length of third floret, opening of fifth floret, withering of fifth floret, diameter of fifth floret, length of fifth floret, number of florets opening at a time, total open florets, florets/spike, percentage of florets opened, length of spike, length of rachis, spike weight, volume of solution uptake, withering of last floret and vase life is summarised below.

47. Maximum days to opening of first floret (2 days) was found in T1-Aldebaran while minimum days to opening of first floret (1 days) were found in many of treatments *viz.* T3-Arti, T5-Darshan, T6-Dhanvantri, T7-Friendship Pink, T8-Green Star, T9-Gulal, T10-Hunting Song, T11-IIHR, T12-Jester Yellow, T13-Jyostna, T14-Mohini, T15-Nova Lux, T17-Priscilla, T18-Punjab Dawn, T19-Punjab Morning, T20-Pusa Kiran, T22-Regency, T25-Sunanya and T29-True Love. The results were significant.
48. Maximum days to withering of first floret (4.33 days) was found in T17-Priscilla while minimum days to withering of first floret (2 days) was found in T12-Jester Yellow. The results were significant.
49. Maximum diameter of first floret (9.53 cm) was found in T14-Mohini while minimum diameter of first floret (4.93 cm) was found in T22-Regency. The results were significant.
50. Maximum length of first floret (10.50 cm) was found in T7-Friendship Pink while minimum length of first floret (6.50 cm) was found in T1-Aldebaran. The results were significant.
51. Maximum days to opening of third floret (3.33 days) was found in T11-IIHR while minimum days to opening of third floret (1.33 days) was found in T14-Mohini. The results were significant.
52. Maximum days to withering of third floret (5.33 days) were found in T4-Chandni, T11-IIHR and T17-Priscilla while minimum days to withering of third floret (3 days) was found in T20-Pusa Kiran. The results were significant.
53. Maximum diameter of third floret (9.97 cm) was found in T7-Friendship Pink while minimum diameter of third floret (4.37 cm) was found in T5-Darshan. The results were significant.

54. Maximum length of third floret (10.37 cm) was found in T7-Friendship Pink while minimum length of third floret (6.00 cm) was found in T4-Chandni. The results were significant.
55. Maximum days to opening of fifth floret (4.67 days) was found in T26-Surya Kiran while minimum days to opening of fifth floret (2.67 days) was found in T9-Gulal. The results were significant.
56. Maximum days to withering of fifth floret (7.00 days) were found in T6-Dhanvantri, T10-Hunting Song, T25-Sunanya and T4-Chandni while minimum days to withering of fifth floret (4.00 days) was found in T2-American Beauty. The results were significant.
57. Maximum diameter of third floret (8.90 cm) was found in T2-American Beauty while minimum diameter of fifth floret (4.70 cm) were found in T5-Darshan and T4-Chandni. The results were significant.
58. Maximum length of fifth floret (9.27 cm) was found in T23-Snow Princess while minimum length of fifth floret (45.33 days) was found in T4-Chandni. The results were significant.
59. Maximum no. of opened florets at a time (5.67) was found in T7-Friendship Pin while minimum no. of opened florets at a time (2) was found in T5-Darshan. The results were significant.
60. Maximum no. of opened florets/spike (13.67) was found in T10-Hunting Song while minimum no. of opened florets/spike (6) was found in T21-Pusa Subham. The results were significant.
61. Maximum no. of florets/spike (18.33) was found in T7-Friendship Pink while minimum no. of florets/spike (8) was found in T21-Pusa Subham. The results were significant.

62. Maximum percentage of opened florets/spike (90.30 %) was found in T11-IIHR while minimum percentage of opened florets/spike (47.06%) was found in T22-Regency. The results were significant.
63. Maximum spike length on 1st day (76.50 cm) was found in T10-Hunting Song while minimum spike length on 1st day (37.17 cm) was found in T21-Pusa Shubham. The results were significant.
64. Maximum spike length on 3rd day (77.23 cm) was found in T10-Hunting Song while minimum spike length on 3rd day (37.17 cm) was found in T21-Pusa Shubham. The results were significant.
65. Maximum spike length on 6th day (78.10 cm) was found in T10-Hunting Song while minimum spike length on 6th day (37.20 cm) was found in T21-Pusa Shubham. The results were significant.
66. Maximum spike length on 9th day (78.87 cm) was found in T10-Hunting Song while minimum spike length on 9th day (37.03 cm) was found in T21-Pusa Shubham. The results were significant.
67. Maximum rachis length on 1st day (50.33 cm) was found in T10-Hunting Song while minimum rachis length on 1st day (23.20 cm) was found in T21-Pusa Shubham. The results were significant.
68. Maximum rachis length on 3rd day (51.10 cm) was found in T24-Subhangini while minimum rachis length on 3rd day (23.37 cm) was found in T21-Pusa Shubham. The results were significant.
69. Maximum rachis length on 6th day (51.90 cm) was found in T10-Hunting Song while minimum rachis length on 6th day (23.37 cm) was found in T21-Pusa Shubham. The results were significant.
70. Maximum rachis length on 9th day (52.80 cm) was found in T10-Hunting Song while minimum rachis length on 9th day (22.97 cm) was found in T21-Pusa Shubham. The results were significant.

71. Maximum weight of spike on 1st day (69.85 g) was found in T7-Friendship Pink while minimum weight of spike on 1st day (18.70 g) was found in T4-Chandni Shubham. The results were significant.
72. Maximum weight of spike on 3rd day (70.93 g) was found in T7-Friendship Pink while minimum weight of spike on 3rd day (18.63 g) was found in T21-Pusa Shubham. The results were significant.
73. Maximum weight of spike on 6th day (67.45 g) was found in T7-Friendship Pink while minimum weight of spike on 6th day (14.73 g) was found in T21-Pusa Shubham. The results were significant.
74. Maximum weight of spike on 9th day (46.27 g) was found in T7-Friendship Pink while minimum weight of spike on 9th day (10.30 cm) was found in T4-Chandni. The results were significant.
75. Maximum volume of solution uptake on 3rd day (19.67 ml) was found in T24-Subhangini while minimum volume of solution uptake on 6th day (4 ml) was found in T12-Jester Yellow. The results were significant.
76. Maximum volume of solution uptake on 6th day (23 ml) was found in T24-Subhangini while minimum volume of solution uptake on 3rd day (6 ml) was found in T3-Arti. The results were significant.
77. Maximum volume of solution uptake on 9th day (24.33 ml) was found in T2-American Beauty while minimum volume of solution uptake on 9th day (6.67 cm) was found in T3-Arti. The results were significant.
78. Maximum no. of days to withering of last floret (15.33 days) was found in T2-American Beauty while no. of days to withering of last floret (6.33 days) was found in T22-Regency. The results were significant.
79. Maximum vase life (14 days) was found in T2-American Beauty while minimum vase life (5.37 days) was found in T22-Regency. The results were significant.

6.4 Conclusion

From the findings of present investigation entitled “Performance of Indigenous and Exotic Cultivars of Gladiolus for Growth, Flowering and Postharvest Life”, it can be concluded based on performance of cultivars on flowering parameters in gladiolus, the cultivars suitable for Varanasi conditions are American Beauty, Chandni, Jyostna, Mohini, Surya Kiran and True Love.



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