Gladiolus is one of the most important bulbous plants valued in gardens for its beautiful flower spikes available in different colours with attractive shape and excellent keeping quality. Production of quality gladiolus spikes is still a problem in many countries as the commercial cultivation aimed at export standard spikes are governed by the quality of propagation materials. Economic yield is more important than total biological yield, which is the result of many physiological processes that is directly or indirectly controlled by environment under which the crop is grown. Therefore, crop management practices like growth regulation and application of organic inputs for the production of marketable spikes and quality planting material need to be evolved. In line with the above facts the present study has been carried out in four different experiments with the objectives of optimizing the crop management practices like plant spacing, corm size, time of planting, application of growth regulators and biofertilizer to bring this cut flower crop under commercial scale cultivation in coastal Tamilnadu condition. The highlights of results of the above experiments are summarized hereunder.

1. In the first experiment the growth, flowering, corm and cormel characters were significantly influenced by the per se and interaction effects of different planting seasons and varieties of gladiolus.

2. Among the interaction treatments the highest values of the growth attributes like plant height, number of leaves, leaf width, leaf length, leaf area and dry
matter production were recorded in the interaction treatment of White Friendship planted during December season \((V_1 \times S_3)\). In this treatment combination the highest plant height of 72.31 cm, number of leaves plant\(^{-1}\) of 5.60, leaf length of 40.11 cm and dry matter production of 43.53 g plant\(^{-1}\) were recorded.

3. The sprouting was significantly delayed in cooler seasons at December planting \((S_3)\) and February planting \((S_4)\), the sprouting percentage was significantly increased in these seasons. The highest sprouting of 78.03 percent was recorded in February planting \((S_3)\). The earliest sprouting at 24.72 days was observed in July planting \((S_1)\). Among the interactions, the earliest sprouting of corms at 21.02 days was recorded in the variety \(V_1\) (White Friendship) at season \(S_1\).

4. Among the varieties, White Friendship \((V_1)\) produced the highest number of marketable spikes \((99332 \text{ spikes ha}^{-1})\) and with in different seasons December planting \((S_3)\) performed better with a mean of 97994 spikes ha\(^{-1}\). Among the interaction treatments compared White Friendship planted during December season \((V_1 \times S_3)\) produced 109332 spikes ha\(^{-1}\).

5. The results of the correlation between the mean value of growth parameters in different seasons and weather parameters exhibited that the plant height, sprouting percentage, spike characters and corm characters were negatively correlated with temperature (within a range of 29.9°C-35.02°C) minimum temperature (within a range of 22.12°C -25.70°C) and bright sunshine hours (within a range of 6.25-8.85 hrs). However, days taken for sprouting was positively correlated with these weather parameters.
6. By considering performance of gladiolus plants in terms of their growth, flowering, corm and cormel characters, it was decided that planting of during first week of December as the best season to grow gladiolus in Tamilnadu condition and White Friendship as the best suitable variety.

7. The experiment conducted to study the *per se* and interaction effects of different corms sizes and spacing evinced that the growth, flowering and corm yield parameters of gladiolus cv. White Friendship were significantly influenced by both the corm size and spacing individually and in combination. The *per se* effects of corm size and spacing on the growth parameters were in leaner trend.

8. The growth in terms of plant height, number of leaves per plant, leaf height, leaf with, leaf area and dry matter production, early emergence of spike, the flowering parameters *viz.*, spike length, number of florets per spike, diameter of floret, length of floret and rachis length were significantly higher with the bigger sized corms of >5.50cm when compared to smaller corms. Mean of these growth and flower parameters were the highest in wider spacing of 30x30 cm when compared to closer spacing. The interaction effect of corm size and spacing was significantly superior in the treatment combination C₃ x S₃ (corm size of >5.50 cm and spacing of 30x30 cm) which recorded the highest values in these characters.

9. The flowering parameters *viz.*, spike length, number of florets per spike, diameter of floret, length of floret and rachis length were significantly higher with the larger corms of >5.50 cm in diameter and wider spacing of 30x30 cm when compared to smaller corms and closer spacing respectively. Interaction
effect of corm size and spacing was significantly superior in the treatment combination of corm size >5.50 cm and spacing of 30x30 cm (C₃ x S₃) which recorded the highest spike length (65.59 cm), number of florets per spike (10.52), diameter of floret (8.64 cm), length of floret (6.58 cm) and rachis length (10.52 cm) followed by the next best treatment combination of corm size of >5.50 cm and spacing of 25x30cm (C₃ x S₂).

10. The number of marketable spikes produced are also significantly influenced by the per se and interaction effects of corm sizes and spacing. The corm size of >5.5 cm (C₃) recorded significantly higher mean number of marketable spikes (0.82 spike plant⁻¹ and 110677 spikes ha⁻¹).

11. Among the interaction treatments, though the combination of corm size >5.50 cm and spacing of 30x30 cm (C₃ x S₃) recorded the highest number of 0.87 marketable spike plant⁻¹, the marketable spike yield ha⁻¹ was recorded the highest in interaction of corm size >5.50 cm and spacing of 25x30cm (C₃xS₂) which recorded 115969 spike ha⁻¹.

12. These results opined that the corm size of >5.50 cm in diameter and spacing of 25x30cm (C₃ x S₂) as the best to get higher spike, corm and cormel yield in Tamilnadu condition.

13. The third experiment conducted to find out the effective growth regulator treatment to achieve higher spike yield, good quality spikes and corm production evinced that the plant height, number of leaves, length of leaves, leaf width, leaf area and dry matter production were significantly increased due to the application of GA3 and NAA application. However, application of
CCC and MH significantly reduced these parameters when compared with control.

14. The quality parameters of flowers viz., spike length, length of rachis, number of florets spike$^{-1}$, diameter of floret and length of floret were significantly increased by the application of NAA, GA3 and CCC.

15. Significantly higher number of corms (1.58 plant$^{-1}$), number of cormels (26.00 plant$^{-1}$), weight of corms (39.21 g plant$^{-1}$) and weight of cormels (5.72 g plant$^{-1}$) were noticed in CCC@ 500 ppm among all other treatments.

16. Application of GA3@100 ppm recorded the highest number of marketable spikes (0.95 Plant$^{-1}$ and 126565 ha$^{-1}$) followed by GA3@150 ppm, NAA@100 ppm and CCC@500 ppm.

17. The fourth experiment conducted to find the best combination of growth regulators and organic sources nutrients evinced that the highest values of growth parameters viz., plant height (85.57 cm), number of leaves (7.22), length of leaves (49.52 cm), leaf area (116.32 cm$^2$) and dry matter production (52.03 g plant$^{-1}$) were recorded in the treatment combination of HA @ 2% + AM fungi @ 4 Kg ha$^{-1}$ + Azospirillum @ 4 Kg ha$^{-1}$ with GA3 @ 100 ppm (T7).

18. The early spike emergence (75.11 days) observed in the treatment combination of GA3 (100 ppm) + HA @ 2% + AM fungi @ 4 Kg ha$^{-1}$ + Azospirillum @ 4 Kg ha$^{-1}$ (T7) was on par with GA3 (100 ppm) + HA @ 2% + AM fungi @ 4 Kg ha$^{-1}$ (T4).
19. The highest values of quality parameters viz., spike length (73.58 cm), number of florets per spike (12.19), diameter of the floret (8.85 cm), length of the floret (7.39 cm) and length of the rachis (34.01 cm) were observed in T7.

20. The maximum number of daughter corms plant\(^{-1}\) (3.11), weight of the daughter corms (39.23g plant\(^{-1}\)), number of cormels plant\(^{-1}\) (38.14) and weight of the cormels (6.25 plant\(^{-1}\)), were observed in T14 with the application of CCC 500ppm + Humic acid @ 2 percent + AM fungi 4kg/ha + Azospirillum 4kg/ha @4kg/ha.

21. The highest marketable spike yield (0.99 spikes plant\(^{-1}\), 53.19 spikes plot\(^{-1}\) and 131918 spikes ha\(^{-1}\)) was also recorded in the treatment combination (T7).

22. The economic analysis clearly indicated that the treatment combination of GA\(_3\) (100 ppm) + HA @ 2% + AM fungi @ 4 Kg ha\(^{-1}\) + Azospirillum @ 4 Kg ha\(^{-1}\) (T7) as the best due to the highest cost benefit ratio (3.78) obtained from this treatment.

23. Under the climatic conditions of Tamilnadu, the Gladiolus variety White Friendship can be successfully cultivated in December planting season with spacing of 25x30 cm and corm size of >5.50 cm in diameter. The highest number of marketable spikes, good quality daughter corms and cormels can be produced by the application of GA\(_3\) (100 ppm) in combination with organic source of nutrients viz., HA @ 2% as foliar spray, basal application of AM fungi @ 4 Kg ha\(^{-1}\) and Azospirillum @ 4 Kg ha\(^{-1}\).