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## 5- SUMMARY AND CONCLUSION

This study was carried out during 2012 season at two different locations (Maamoura and Montaza), Department of Floriculture, Ornamental Horticulture and Landscape Gardening, Agricultural Research Center, Ministry of Agriculture, Alexandria Governorate. The aim of the present study was a tray to improve the properties of the calcareous soil by using two natural soil conditioners, i.e., compost and sand with different rations to grow both *Gazania* and *Lantana* plants with high quality. Calcareous soil was brought from the Northern Western Coast, while compost and sand were brought from a commercial nursery for ornamental plants and a storehouse in Alexandria city, respectively.

Six growing media were used i.e., 1) 100% calcareous soil, 2) 75% calcareous soil + 25% compost, 3) 50% calcareous soil + 50% compost, 4) 75% calcareous + 25% sand, 5) 50% calcareous + 50% sand, and 6) 33.33% calcareous soil + 33.33% compost + 33.33% sand.

The final planting date for the two used plants was done on 15 march 2012 in clay pots of 25 cm diameter filled with the different growing media at a one plant for each pot. The plants were left for 45 day to grow vegetatively by early removing all the formed flower buds . After that the plants where arranged in the experiment and continued for other 7 months (from May to November).

Two separate experiments were carried out in randomized complete block design in four replicates one for each plant. Each replicate contained 6 treatments (6 growing media) and each treatment was represented by 4 pots as a plot.

**The main results of this study in the two locations can be summarized in the following:**

### **1- Vegetative growth characteristics:**

- 1- Using calcareous soil alone led to decrease most of the vegetative growth parameters (tillers number, plant diameter, number of leaves, leaves dry weight, and plant dry weight) compared with the other media.
- 2- Adding compost at 25% or 50% to the calcareous soil led to significant increase of most of vegetative growth parameters (leaf number, leaves fresh and dry weight, leaf area and plant dry weight), compared with calcareous soil.
- 3- Adding sand at 25% or 50% to the calcareous soil had no significant effect on all the vegetative growth parameters, compared with calcareous soil, with exceptions of leaves and plant fresh weights of *Gazania* plant.
- 4- Adding the three materials together (33.33% calcareous soil + 33.33% compost + 33.33% sand) did not have any significant effect on most of the vegetative growth parameters, compared with the calcareous soil, with one exception of *Gazania* leaf area.

## **2- Flower characteristics:**

- 1- Using calcareous soil alone gave the lowest values of most of the flower characteristics for the two used plants (total number of inflorescences per plant, pedicel length, inflorescence duration and inflorescence fresh weight), compared with the other growing media.
- 2- Adding compost at 25% or 50% to the calcareous soil led to significant increases of most of the flower characteristics (diameter and total number of the inflorescences for the two plants and pedicel length, inflorescences fresh weight and duration for *Gazania* plant) compared with the calcareous soil.
- 3- Adding sand at 25% or 50% to the calcareous soil had significant increases on some of the flower characteristics of *Gazania* plant, compared with calcareous soil.
- 4- Adding an equal mixture of the three materials (calcareous soil, compost and sand) together gave significant increases on some of the studied flower characteristics of *Gazania* plant in the two locations.

## **3- Root characteristics:**

- 1- Generally, using calcareous soil alone gave the lowest values of root fresh and dry weights and root volume for *Gazania* plant only, compared with the other media.
- 2- Adding compost at 25% or 50% to the calcareous soil gave the highest values for root characteristics, compared with using calcareous soil alone.
- 3- Adding sand to the calcareous soil at 25% or 50% gave small improvements in all root characteristics, compared with calcareous soil.
- 4- Adding an equal mixture of the three materials together (calcareous, compost and sand) gave a significant increase of the root fresh weight of *Gazania* plant only, compared with calcareous soil.

## **4- Chemical analysis:**

### **A- Chlorophyll content:**

- 1- Using calcareous soil alone gave the lowest values of chlorophyll content in the leaves of the two plants, compared with the other media.
- 2- Adding compost at 25% or 50% to the calcareous soil gave the highest significant values of chlorophyll in the leaves of two plants, compared with calcareous soil.
- 3- Adding sand at 25% or 50% to the calcareous soil had no significant effect on chlorophyll content in the leaves of the two used plant, compared with calcareous soil, with one exception of *Lantana* in one location.
- 4- Adding an equal mixture of the three materials (calcareous soil, compost and sand) together gave a significant effect on chlorophyll content in the leaves of the two used plant, compared with calcareous soil, with one exception of *Gazania* plant in one location (Maamoura).

### **B- Mineral content:**

- 1- Using calcareous soil alone led to significant reduce in the values of N, P, K, Mn and Zn in the leaves of the two used plants, compared with the other used media.
- 2- Adding compost at 25% or 50% to the calcareous soil gave the highest significant values of all the studies elements in the leaves of the two plants, compared with the calcareous soil with one exception of iron for *Gazania* plant.
- 3- Adding sand at 25% or 50 to the calcareous soil led to significant increases in the values of N, P, K, and Zn in the leaves of the two plants, compared with using calcareous soil alone.
- 4- Adding an equal mixture of the three material together (calcareous soil, compost and sand) gave significant increases in the values of N, P, K and Zn in the leaves of the used plants, compared with calcareous soil alone.

### **Recommendation:**

From the previous results and under a similar conditions it is recommended to add compost to the calcareous soil at 25% which led to increase the vegetative growth parameters with an average value of 30.18% for *Gazania* and 32.32% for *Lantana*. As for the flowering characteristics the increase was 28.60% for *Gazania* and 24.32% for *Lantana*, comparing with using calcareous soil alone.