SUMMARY & CONCLUSION

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This study was carried out on the Research Station Faculty of Agriculture Moshtohor, Zagazig Univ. Benha Branch, during 1996/1997 and 1997/1998. This study aimed to evaluate the effect of shading and growth regulators substances on growth, flowering and chemical composition with 4 ages (3, 5, 7 and 8 years in the first season and 4, 6, 8 and 9 years old in the second one) of ***Strelitzia reginae*** Ait plants which chosen were uniformely in shape and height as possible.

Therefore, for investigating possibility of accomplishing the abovemontioned goal, two main parts were studied as follows.

V.1. Part.1- Experiments dealing with sun light, shade levels and growth regulators treatments :

The main purpose of this part of this study aimed to improve vegetative growth and flowering growth. In this regard the plant were covered with one layered – green P.V.C. plastic net at on 69% level of full sun light and one layered-black P. V.C. Plastic net at on 59% level of full sun light and the plants were exposed to full sun light as control.

Growth regulator treatments consisted of a double application of GA_3 (100ppm) applied as spray, active dry yeast extract(200 ml/L) was applied as spray Dikegulac sodium (1000 ppm) applied as spray and spray with tap water (control) Tween

20 (poly oxyethylene sorbitan monolaurate) as a surfactant at 0.1% was applied to all treatments.

Foliar applications were made to every individual plants by directing the spray to the whole plant leaves and vegetative and flowering buds in both seasons of the experiment.

In this regard factorial experiment in a split-plot design was conducted.

V.2- Part–2- Experiments dealing with growth regulators:

This part of studies aimed to study the effect of 3 different growth regulator i.e. GA_3, 100 and 200 ppm. applied as spray, active dry yeast extract at 200 and 400 ml/L. applied as spray, Dikegulac sodium, 1000 and 2000 ppm. were applied as spray and spray with tap water (control) Tween 20 (poly oxyethylene sorbitan monolaurate) as a surfactant at 0.1% was applied to all treatments.

Data obtained during both season could be summarized as follows:

Part (1)

A- 3 and 4 years old plants:

Vegetative growth measurements:

Data obtained declared that:

- The highest value of plant height was obtained by treated the plants with GA_3 under green shade net, while, GA_3 under black shade net gave the next values in this concern.

- The greatest value of number of offsets per plant was obtained by treated the plants with GA_3 under black shade net while, yeast under black shade net gave the next values in this concern.
- The highest value of number of leaves per plant was obtained by treated the plants with GA_3 under black shade net while GA_3 under green shade net was the next values in this concern.
- The greatest value of leaf area was obtained by treated the plants with GA_3 under green shade net while, GA_3 under black shade net was the next values in this concern.
- The heaviest fresh and dry weight of leaves were obtained by using GA_3 under black shade net, while yeast under black shade net gave the second values in this concern.

Flowering growth measurements:

Data obtained declared that:

- Data obtained revealed obviously that number of flowers/plant were responded specifically to green shade net and Dikegulac-sodium.

Interaction effect:

- It is quite evident that the differences between the combinations of all treatments (growth regulators X sun light and two levels of shade) were so small to be significant. Dikegulac-sodium under green shade produced the best results.

- The highest value of spathe length was obtained by treated the plants with GA_3 under green shade net while, GA_3 under full sun light was the next values in this concern.
- The greatest value of flower stalk length was obtained by treated the plants with GA_3 under black shade net while, the lowest value of flower height was obtained by treated the plants with Dikegulac- sodium under full sun light.
- The heaviest fresh and dry weight of flower was obtained by using GA_3 under black shade net while, GA_3 under green shade net was the next value in this concern.

Chemical composition measurements:

- Treated plants with GA_3 under black shade net produced the height leaf nitrogen content followed by using GA_3 at full sun light.
- Treated plants with GA_3 under green seran produced the best results for leaf phosphorus content.
- Treated plants with Atrimmec under green seran produced the height leaf potassium content.
- Using GA_3 under full sun light gave the highest leaf carbohydrates content, followed by using yeast under full sun light.

B- 5 and 6 years old plants:

*** Vegetative growth measurements:**

- The Tallest plant and the greatest value of leaf area were achieved by using GA_3 under green shade net.

- The greatest number of offsets, number of leaves, the heaviest fresh and dry weight were obtained by treated the plants with GA_3 under black shade net.

*** Flowering growth measurements:**

- Data obtained during both seasons of study revealed obviously that number of flowers/plant were responded specifically to Dikegulac-sodium at 1000 ppm and green shade net, but the interaction effect cleared that there are no significant differences between the combination. Dikegulac-sodium at 1000 ppm under green shade produced the highest value of number of flowers per plant.
- The highest value of spathe length was obtained by treated the plants with GA_3 under green shade net.
- The tallest flower per plant, the heaviest fresh and dry weights were achieved by using GA_3 under black shade net while, Dikegulac-sodium under full sun light produced the lowest values of flower stalk length.

*** Chemical composition measurements:**

- Treated plants with GA_3 under black shade net produced the height leaf nitrogen content.
- Treated plants with GA_3 under green seran produced the best results for leaf phosphorus content.
- Treated plants with Atrimmec under green seran produced the height leaf potassium content.
- Using GA_3 under full sun light gave the highest leaf carbohydrates content, followed by using yeast under green shade.

C- 7 and 8 years old plants:

* Vegetative growth measurements:

- The greatest value of plant height and the highest value of leaf area were obtained by treated the plants with GA_3 under green shade net while, the same treatment under black shade net produced the highest value of number of offsets / plant and the largest number of leaves / plant.
- The heaviest fresh and dry weights of leaf were obtained by using GA_3 under black shade net. While, yeast under black shade net gave the same results of GA_3 under black shade net for dry weights of leaf in the first season.

* Flowering growth measurements:

- Data obtained during both seasons of study revealed obviously that number of flowers per plant were responded specifically to Dikegulac-sodium and green shade net, but the interaction effect cleared that there no significant differences between the combinations in the first season and it showed a significant differences in the second season.
- The highest value of spathe length was obtained by treated the plants with GA_3 under full sun light in the first and second seasons, while, treated the plants with GA_3 under green shade net was the best in the second season.
- The tallest flower per plant, heaviest fresh and dry weights of flower were obtained by using GA_3 under black shade net.

*** Chemical composition measurements:**

- Treated plants with GA_3 under black shade net produced the height leaf nitrogen content followed by using yeast under black shade.
- Treated plants with GA_3 under green seran produced the best results for leaf phosphorus content followed by yeast under green shade net and GA_3 under black shade net.
- Treated plants with Atrimmec under green seran produced the highest leaf potassium content.
- Using GA_3 under full sun light gave the highest leaf carbohydrate content, followed by using GA_3 under green shade net.

D- 8 and 9 years old plant:

*** Vegetative growth measurements:**

- Data showed that, the tallest plants was achieved by using GA_3 under green shade net while, Dikegulac-sodium under full sun light produced the lowest values of plant height.
- The greatest number of offsets/plant and number of leaves were obtained by treated the plants with GA_3 under black shade net.
- The obtained results showed that GA_3 under black shade net produced the largest number of leaves/plant.
- The highest value of leaf area was obtained by treated the plants with GA_3 under green shade net.
- The heaviest fresh and dry weights of leaf were obtained by using GA_3 under black shade net, but results showed

unsignificant differences for fresh weight in the first season and for dry weight in the second one.

***Flowering growth measurements:**

- Treated plants with atrimmec produced the best results for increasing the number of flowers under green shade net, also GA_3 under full sun light produced the highly significant for spathe length in the first season but were non significant in the second one.
- Data showed that the best increasing for stalk flower length, fresh and dry weight of flower were obtained by using GA_3 under black shade.

*** Chemical composition measurements:**

- Obtained results showed that, the highest leaf nitrogen content was obtained by using GA_3 under black shade followed by using yeast under black shade.
- The best obtained results concerning leaf phosphorus content was achieved by using GA_3 under green shade followed by yeast under the same green shade.
- Treated plants with atrimmec under green shade produced the highest potassium leaf content.
- Treated plants with GA_3 and yeast under full sun light increased carbohydrates leaf content followed by GA_3 under green shade.

Part (2)

*** Vegetative growth measurements:**

- Data showed that the best value of plant height, number of offsets, number of leaves, leaf area, fresh and dry weight were obtained by treated plants with GA_3 at 200 ppm, also results showed that the second best leaf area was obtained by using GA_3 at 100 ppm in all ages under study.
- Using yeast at concentration of 400 ml/L produced the second best results for plant height and produced the highest number of offsets, number of leaves, fresh and dry weights of leaves.
- Treated plants with atrimmec produced the shortest plant compared to control, also increased the number of offsets, number of leaves and leaf area compared with control, but were less than the results of GA_3 and yeast which took the third position after GA_3 and yeast.

*** Flowering growth measurements:**

- Treated plants with atrimmec at 2000 ppm produced the greatest number of flower stalk.
- Also, treated plants with atrimmec produced significant differences for shortening the flower stalk.
- Treated plants with GA_3 at 200 ppm produced the second greatest number of flower, tallest spathe flower and tallest flower stalk, also the same treatment increased the fresh and dry weights of flowers.

- Treated plants with yeast at concentration of 400 ml/L produced the second best results of spathe length, flower stalk length, fresh and dry weights of flowers.

*** Chemical composition measurements:**

- Treated plants with GA_3 at 200 ppm increased leaf nitrogen content followed by yeast at 400 ml/L.
- Treated plants with yeast at 400 ml / L produced the second best results concerning spathe length, flower stalk length, fresh and dry weights of flowers.
- The highest leaf potassium content was obtained by treated plants with atrimmec by 2000 ppm followed by GA_3 at 200 ppm.
- The highest leaf carbohydrates content were achieved by using GA_3 at 200 ppm, GA_3 at 100 ppm followed by yeast at 400 ml / L.

*** We can be safely recommended that :**

- Shading all different ages of ***Strelitzia reginae*** by using black seran and using GA_3 produced the best vegetative growth, greatest number of offsets, number of leaves, fresh and dry weights of vegetative and flowering measurements.
- Using atrimmec and shading plants with green seran for produce the greatest number of short flower stalk.
- Regarding to plants in full sun light it can be recommended by using GA_3 at 200 ppm for improvement all vegetative and flowering measurements.
- Finally using atrimmec at 2000 ppm for produce the greatest number of flowers.