

Physiological studies on *Strelitzia reginae* plant

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The study was carried out in two seasons of 1990/1991 and 1991/1992 on *Strelitzia reginae* plant. The research aimed to study the effect of growth factors on seed germination and growth of seedlings. Germination of Seeds. 1. In the first season by soaking for 24 hours in GA₃ and NAA at 5, 10 and 20 ppm. 2. In the second season by soaking seeds in : GA₃ at 2 and 5 ppm for 24 hours. NAA at 20 and 30 ppm for 24 hours. Combination of GAs and NAA at different concentrations for 24 hours. Enzyme for 12, 24 and 48 hours. Peat moss for 10 days. Germination of seeds resulted in significant increase in germination percentage, germination rate (days) and both length of seedling and the mean number of leaves through the germination periods. The best results were obtained by using NAA alone at 20 ppm. Growth Regulators. I. The present experiment was conducted to study the effect of some growth regulators on seedlings one and two years old by using : GA₃ at 100 and 200 ppm. NAA at 25 and 50 ppm Paclobutrazol at 50 and 100 ppm. Foliar applications of the tested growth substances were applied twice with two weeks interval. Results were significant in different growth factors as plant height, mean number of leaves, leaf area, the mean number, volume and length of roots, the fresh and dry weight leaves, petioles, stem and roots. The highest result was obtained by using BA₃ at 200 ppm in both ages. While seedling of one year age gave more response. III. Nutrients. I. The first part of experiment by supplying essential macro-elements (N-P-K) beginning with 5:3:1 (0.5 + 0.3 + 0.1 g/seedling) and its double rates with and without micro elements. The second is repetition of the first experiment. The results were obtained significant in different growth factors. The best nutrients rates were 10:3:2, 11.0 + 0.3 + 0.2 g/seedling), 10:6:1, (1.0 + 0.6 + 0.1 g/seedling) followed by 10:6:2 (1.0 + 0.6 + 0.2 g/seedling) > 1NPK > alone. VI. Flower Production: The present experiment was conducted to study the effect of some growth regulators on the production of inflorescence and its quality in plants two years old : GA₃ 50 ppm. NAA 500 ppm. NAA 50 ppm. The best results were obtained by used GA₃ followed by NAA and CCC. The important effect. of both growth regulators and nutrients on chemical composition were : 1. Total carbohydrates increased with increasing plant age. Both of growth regulators and nutrient application increased the accumulations of total carbohydrates in plant tissues over the control one. 2. Nitrogen content also increased than control in all treatments of GAs, NAA, PP333 and nutrients rates. 3. Both the phosphorus and potassium contents increased by growth regulators and nutrients treatments. 4. Total Chlorophyll addition of GAs, NAA and PP333 at different concentration caused an increase in chlorophyll A, B and carotenoid content in both seasons through the periods of growth comparing with control. On the other hand, using nutrients increased chlorophyll A, B and carotenoid. The results of the present research show that to get good of both seed germination and characters with *Strelitzia reginae*. it is practice the following : 1. Treating with soaking of seeds in sulphuric acid at 10% to 10 minutes before soaking by naphthaleneacetic acid at 20 ppm for 24 hours that resulted in good germinated percentages and germination rate (days). 2. Using spraying seedlings of *Strelitzia reginae* by gibberellic acid at 200 ppm twice with two weeks intervals was more effective on vegetative growth. 3. Supplying plants with nutrients at 10:6:1 (1.0 + 0.6 + 0.1 g) 1 seedling alone which consists of Ammonium nitrate super phosphate ... potassium sulphate to *Strelitzia reginae* seedlings gave the best vegetative growth parameters. 4. Spraying plants of *Strelitzia reginae* by gibberellic acid at 50 ppm twice with two weeks interval as more and effective on production of inflorescence its quality.