





ثبكة المعلومات الجامعية





جامعة عين شمس

التوثيق الالكتروني والميكروفيلم



نقسم بللله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأفلام قد اعدت دون آية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15-20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of 15-25c and relative humidity 20-40 %



ثبكة المعلومات الجامعية







STUDIES ON SALINITY TOLERANCE OF SOME ORNAMENTAL PALMS **PLANTS**

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Approval Sheet

STUDIES ON SALINITY TOLERANCE OF SOME ORNAMENTAL PALMS PLANTS

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INTRODUCTION

INTRODUCTION

The comprehensive civilization development in Egypt extended in many districts and began to invade deserts and sea coasts, along Northern coast, Sinai and Red Sea, in which tourist villages and towns spread. Predominating environmental conditions as temperature, humidity, soil and water are different from those of the Delta and Old Valley. So, there is a keen need for ornamentation with plants suitable for such conditions especially the soil, as well as, the saline water used for irrigation in these regions.

Plant ornamentation in these areas favours palm trees (Family: Palmaceae) among all other plants as palm is one of the most distinguished plants in such areas. A columnar stem, crowned with giant leaves is the perfect idea, popular or philosophic, of what a plant should be, as it suffers no attrition through ramification. In all the warmer parts of the earth, this form stamps itself in grand simplicity on the landscape. As exotic and inextricably related to pleasure as this mystique may be, it belies the gracefulness and beauty of these plants that Linnaeus called "Principes", the princess of the plant kingdom. They also privilege with their slender, tall stems which do not hide the beautiful scenes predominating the sea coast in such districts. So, trials to detect ornamental palm trees adapting to such conditions of salinity at different areas of Egypt are of a great importance.

The dominant anions in these areas are Cl⁻, SO₄⁻ and HCO₃⁻, while those of cations are Na⁺, Ca⁺⁺ and Mg⁺⁺. To avoid salinity damages we must use great amounts of suitable irrigation water continuously to leach these salts, this is impossible with regard to deficit of irrigation water sources in these regions.

Although several studies have been done to evaluate the response of various ornamental plants to salinity, there is a keen need for such studies on ornamental palms.

So, the present study was performed to detect the effect of soil salinity on some young ornamental palms (2 year-old) common in Egypt. The chosen ones for this study were:

- 1- Chamaerops humilis, L., known as "European palms". This hardy fan palm occurs throughout the Mediterranean region (Williamson, 1981).
 Chamaerops is used as specimen plant, shrub and container plant.
- 2- *Phoenix canariensis*, Hort., known as "Canary Island date palm". It is highly prized for its formal aspect in the landscape which complements Mediterranean style architecture.
- 3- Ptychosperma elegans, R. Br., (formerly Seaforthia elegans, R.Br.) called as "Alexander palm" (Bailey and Bailey, 1976) or "Solitaire palm" (McCurrach, 1959). It is one of the most common palms for tropical landscaping used as specimen tree and interior scape.
- 4- Roystonea regia, O.F. Cook., known as "Royal palm". It is planted for the beauty of its white trunks, used as specimen tree, street trees, and border.

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REVIEW OF LITERATURE

Mechanism of salinity effects on growth:

Salinity of water or soil markedly affect plant growth. Some plants can tolerate high levels of salinity, but others can not, i.e. salt sensitive plants. Several investigators suggested various views to explain salt effects on the growth and development of plants. They presented various schools of thought.

One school advocated that most adverse effects of salinity might be brought about by increase in the osmotic potential of the saline growth media. Growth decreased linearly with the increase in osmotic potential of a balanced nutrition solution (Hayward and Long, 1941; Eaton, 1942; Hayward et al., 1946; Bernstein and Hayward, 1958; Bernstein, 1961; Laurd and El-Lakany, 1984 and Kazim, 1988). Osmotic adjustment of plant species was principally accounted for by anions in shoots. Turgor pressure was not lost until plants were close to death. Plants were more sensitive to osmotic shock than to a gradual increase in salinity (Laurd and El-Lakany, 1984). This view was supported by the fact that the decrease in growth occurred without obvious signs of injury such as chlorosis, necrosis or wilting (Bernstein and Hayward, 1958).

The second school showed that the inhibitory effect of salinity on plant growth and development might be a result of ion toxicity specially Na⁺, Mg⁺⁺, K⁺, Ca⁺⁺, S⁻⁻ or Cl⁻ (Eaton, 1942 and Ahmed, 1987).

The ability of plants to tolerate saline media had been correlated with the ability to exclude chloride and/or sodium ions from the shoots (Greenway, 1973).

Gauch (1972) and Levitt (1972) suggested that some of the effects of salinity would be due to ion induced nutrient deficiency, where high