

# The effect of afforestation with local plants in preserving the genetic origins of those desert plants in the Riyadh region

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## Abstract

The Kingdom of Saudi Arabia is working hard to reduce the phenomenon of desertification, and work to encourage environmentally friendly practices, by motivating society with all its institutions and entities to grow desert plants to increase green spaces in order to preserve the environment, and this should not be limited to desert areas, but rather bring and cultivate desert environment plants Within cities, which keeps their genetic assets from extinction. And support projects that preserve the origins of those plants, such as the seed bank.

## Research Questions

The Riyadh region is located in the center of the Kingdom of Saudi Arabia, and its area is 412 thousand square kilometers, which is approximately 22% of the area of the Kingdom. It is the second largest region in the Kingdom in terms of area and population density. The Riyadh region includes many governorates, industrial cities, airports, and roads. Thus, this human activity led to the occupation of most of the land. This was negatively reflected in the disappearance of many desert plants that lived in those lands.

The researcher wonders: Is it possible to restore these plants to their original environments through the process of afforestation of all facilities with these types of plants, thus preserving their genetic assets and not becoming extinct?

## Introduction

Many stakeholders have noticed the disappearance of some plant species from their natural sites as a result of desertification, urban expansion and urban activities.

An example of this is that the area of Riyadh in 1950 did not exceed 13 square kilometers, and in 2021 it amounted to more than 5,961 square kilometers.

Dr. Al-Sugair is a board member of the National Center for Research and Development of Sustainable Agriculture. He stressed that the harsh desert environment prevailing in most parts of the Kingdom requires dealing more seriously with the issue of afforestation. Taking into account the environmental aspect and presenting it in terms of aesthetics. So that plants that used to live in the same place are selected. This contributes to the survival of indigenous species in their environments and not disappearing and extinction.

## Research Methods

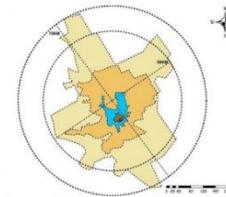
The Riyadh region occupies a privileged location in the center of the Kingdom of Saudi Arabia, with an area of about 375,000 square kilometers and includes within its scope (47) cities and (1383) population centers that include many centers and villages. The Riyadh region is located between 4200 and 4817 degrees east longitude and 1900 and 2745 degrees north latitude. Altitude above sea level: 600 m. The population of the Riyadh region exceeds 10 million people, the weather: a continental climate that is very dry in summer, cold in winter, characterized by low humidity throughout the year, and a great discrepancy between the temperature of the night and the temperature of the day, where we find that the maximum temperature in summer exceeds 49 degrees Celsius, While the temperature at night drops to less than 21 degrees Celsius. In winter we find a daytime temperature of 28°C, while the night temperature drops to -1°C. Annual precipitation varies between 11.5 and 14.9 cm and varies from year to year.



## Results

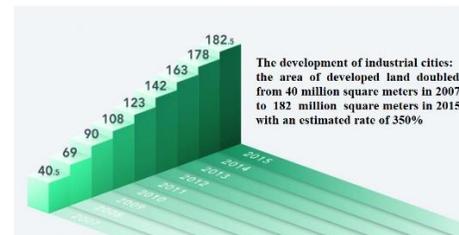
Plants are one of the most important components of an ecosystem. It is more important in desert areas with scarce vegetation cover and fragile ecosystems. One of the most important functions of the vegetation cover is to protect the soil from erosion and erosion. According to what was reported by the Ministry of Environment, Water and Agriculture in the Kingdom of Saudi Arabia on its official website, 80% of the natural vegetation cover has deteriorated during the past 40 years. Because of several factors, the most important of which are unorganized grazing, mining activities, logging, urban expansion and other human activities. Dr. Abdulaziz Abu Zinada, consultant and member of the board of directors of the Khalid Bin Sultan Foundation for the Preservation of Life in the Oceans. He indicated that during the last half century, more than (23) species of plants became extinct from the environment of the Kingdom of Saudi Arabia.

- The city of Riyadh in 1910 ■
  - The city of Riyadh in 1950 ■
  - The city of Riyadh in 1970 ■
  - The city of Riyadh in 1990 ■
  - Urban Growth Boundaries ■
- The total urban area is 1785 km<sup>2</sup> and the borders of Greater Riyadh cover a circle with a diameter of 75 km and an area of 4419 km<sup>2</sup>



## Stages of urban growth in the city of Riyadh since 1910 AD

Human activity is the most important factor that leads to the disappearance of many plant species, as we find that the city of Riyadh, which is the largest city in the Riyadh region and the capital of the Kingdom of Saudi Arabia, occupies an area estimated at 1973 km<sup>2</sup> and this area includes residential buildings, industrial cities and airports. With the passage of time, we find that This area is growing in response to human growth and development requirements at the expense of the environments of those plants.



## Discussion

In one of the studies recently conducted by the High Authority for the Development of Riyadh, in Al-Thumama Wildlife Park. More than 195 species of plants have been recorded.

through this work. The importance of efforts to reduce the negative effects of human activity represented by urban and industrial expansion and other development requirements is evident, as those concerned with the environment seek to invest in afforestation of all facilities and encourage the population to grow desert plants that lived in this region and thus preserve their genetic assets and work to prevent their extinction.

## Conclusions

Finally. We agree that human activity in all its forms should not cause harm to the ecosystem. Where we find that many desert plants were present in abundance. It flourishes in the rainy season in the search area (Riyadh region). It has greatly diminished or disappeared due to the burial of its environments under residential buildings, industrial facilities, or the numerous roads whose area increases with time.

Aware of the gravity of the situation. The government of the Kingdom of Saudi Arabia has adopted several initiatives, including the "Green Riyadh" program, which aims to plant more than 7.5 million trees. Focusing on the local plants that used to live in the area, thus enhancing their presence, preserving their genetic assets and protecting them from extinction

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