

## Soil characteristics and their effect on the quality of the fruits of the Saudi palm plant

Adeeb Abdullah Al-Toraiqi  
Prince Sultan Intermediate School

### Abstract

Study comparing soil characteristics and their impact on the growth quality of the fruits of the Saudi palm plant. My research aims to study a comparison between the characteristics of two types of soil and their impact on the growth quality of the fruits of the Saudi palm plant and I asked the following question: What is the impact of soil characteristics (acidity, salinity and conductivity). To answer this question, I decided to study the characteristics of two types of soil on the growth quality of the fruits of the Saudi palm plant, where this crop is frequently grown at this time of year. Based on the results, the researcher recommends that the farmers need to know the characteristics of the soil before planting any crop, in order to modify its properties in proportion to the appropriate conditions for the growth of the crop to obtain abundant and good production.

### Research Questions

What effect does the characteristics of the soil (acidity, salinity and conductivity) have on the growth quality of the fruits of the Saudi palm plant?

### Introduction

The date palm plant is one of the important agricultural crops that farmers in the city of Zulfi are interested in cultivating. The palm tree receives care most days of the year, from January to September, when organic fertilizer is added to the soil in gradual quantities, starting from March to August. The plant's need for water increases in the months of June and July in order to obtain good dates and thus an abundant crop. The date fruit is an important source of carbohydrates and many vitamins and nutrients. It is also an excellent source of income for many families due to the high demand both inside and outside the Kingdom of Saudi Arabia. The size of the date fruit depends on many factors such as the amount of light, the abundance of water at the right time, and the characteristics of the soil

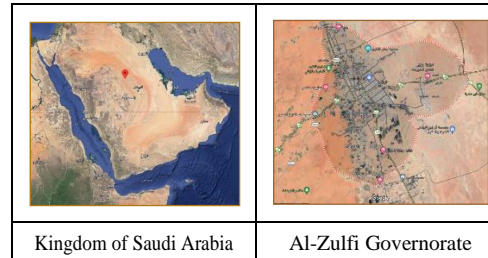
### Research Methods

#### Research plan:

- 1-Collect information on the subject of the research from the books available in the Learning Resource Center and from the internet. 2-Develop a search plan.
- 3-Set a timetable for the implementation of the research plan. 4-Adoption of experimental research to study the effect of soil properties on the growth quality of the fruits of the Saudi palm plant. 5-Determine the protocols needed to perform the research. 6-Determine the equipment and tools necessary to perform the work (ph meter and the instrument of measuring salinity and conductivity). 7-Collect data and organize them in tables. 8- Insert data in the program website. 9-Data analysis and representation. 10-Conclusions and recommendations.

#### Survey location

Kingdom of Saudi Arabia - Riyadh Region - Al-Zulfi Governorate Farms (Latitude: 26.285643 , Longitude: 44.797267 ).The climate of Al-Zulfi Governorate is characterized by a semi-arid to dry desert climate with hot days and cold nights, and a sharp decrease in precipitation. The maximum temperature ranges during the winter season from December to February (20-30) degrees Celsius, while during the spring season from March to May (30-40) degrees Celsius, while during the summer from June to August (35-45) degrees Celsius, and during the fall season from September to November (25-35) degrees Celsius. Water and land cover protocols used.



### Data collection and analysis

The research question will be answered as follows:  
Using the soil protocol to determine the acidity of the soil (pH) by using a device (pH meter), a salinity and conductivity meter to measure salinity and conductivity of the soil, a ground cover protocol to observe on the quality of palm fruits, and a water protocol to measure the acidity, salinity and conductivity of the water source used for soil irrigation.



### Results

First: Water properties data ( fluorescence water ) using GLOBE devices	Characteristics	Value
	Acidity (pH)	8.7
	Salinity (ppm)	354
	Conductivity (µs/cm)	487

Second: Soil Characteristics data in the two regions:		Area	
		1	2
Characteristics	Acidity (pH)	7.3	9.1
	Salinity (ppm)	619	495
	Conductivity (µs/cm)	910	723

Tree number	Area 1	Area 2
	Date fruit diameter (mm)	number of dates per raceme
	Date fruit diameter (mm)	number of dates per raceme
	Date fruit diameter (mm)	number of dates per raceme
	Date fruit diameter (mm)	number of dates per raceme
	Date fruit diameter (mm)	number of dates per raceme
Average	8.7    17	7.1    12

Third: Describe the date palm plant in each area (farm) in terms of appearance after the observation period that lasted (10) months.

Area	( 1 )	( 2 )
Date size And shape in date palm plant	The date is large and the crust is not wrinkled	Dates are smaller in size and the crust appears wrinkled
Photo		

### Result analysis

According to the data collected. We noticed the following:

The quality of date palm fruits is affected by the characteristics of the soil in which the plant grows, as the data in Table No. (2) indicate an increase in the pH value of the soil of site (2), as it reached (9.1) which is the degree that negatively affected the quality of the fruits. This appeared in the small size and the increase in wrinkles in the date skin, as the diameter of the date reached (6.9), and this can be explained by the increase in the pH, which reduces the process of water absorption and thus a decrease in the amount of plant nutrients that enter dissolved with water, and this is due to the increase in the concentration of salts in Soil There may be other factors not discussed in this study.

### Recommendations

The farmer should also be instructed on ways to improve the quality of the fruits by taking care of the soil and what is the appropriate way to take care of it and work on its sustainability through (adding organic or chemical fertilizer at the appropriate time and quantity, using appropriate irrigation networks, choosing a good plant suitable for the type of soil, consulting agricultural offices and laboratories And directing them to take soil and water samples for analysis and to identify suitable plants for cultivation).

### Bibliography

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