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The importance of magnetizing irrigation water for Deglet Nour date palms in sandy soils.

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I. Introduction

The date palm (Phoenix dactylifera L.) is an essential element of the ecological balance of the oases and it is so important in the economic fields **(OUCIF K. M. T ,2017),** Water is a limiting factor for the development of oasis agriculture. Water use efficiency needs to be improved by searching for different strategies irrigation**.(Ahmed Sabri and *al)*** , Due to soil salinization and water salinity in the Oued Souf region, we conducted an experiment using magnetized water with the aim of reducing the effects of soil and water salinity, improving water and nutrient absorption, reducing salt accumulation in the root zone (rhizosphere), and enhancing both the quantity and quality of dates.

II. Méthodologie

For this research, we selected a homogeneous group of Deglet Nour date palms, randomly chosen from the El-Dhaouia agricultural farm located in the Oued Souf province. The palms were divided into two groups: a control group and another group irrigated with magnetized water using the Delta Water device. We monitored morphological measurements and physicochemical analyses during the different phenological stages of the palms in both groups the one irrigated with magnetized water and the control group.

Start of the experiment: 01/06/2024

Sample collection at each stage:
June 10–12, 2024 / July 9, 2024 / August 15, 2024 / September 23, 2024 / October 28, 2024

Storage at room temperature + 4°C

Morphological and Biometric Analysis

- **Weight**
- **Dimensions**

Physicochemical Analyses

- **Moisture content**
- **Ash content**
- **pH**
- **Electrical conductivity**

III. Résultats et Discussion

1/ Morphological measurements of dates:
- Total weight of the date:

Stages	XIN -XCN	t-statistic	Two-tailed P(T≤t)
1	-0,608	1,72	0,094
2	0,032	-0,14	0,89
3	-0,824	1,84	0,07
4	-0,188	0,67	0,5
5	0,49	-2,26	0,03

Table 01: Total weight of the date (g)

- Length of the date

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Stages	XIN -XCN	t-statistic	Two-tailed P(T≤t)
1	-0,618	1,83	0,08
2	0,134	-0,24	0,81
3	-5,28	1,99	0,054
4	-0,224	0,44	0,66
5	1,066	-2,06	0,048

Table 02: Length of the date (mm)

- Width of the date

stages	XIN -XCN	t-statistic	Two-tailed P(T≤t)
1	-0,234	1,13	0,27
2	0,114	-0,54	0,59
3	-4,424	2	0,053
4	0,352	-1,22	0,23
5	1,324	-6,24	0,0000003

Table 0 3:Width of the date (mm)

- Pulp weight (g)

stages	XIN -XCN	t-statistic	Two-tailed P(T≤t)
1	-0,214	0,96	0,34
2	0,084	-0,42	0,68
3	-0,828	1,68	0,1
4	0,172	-0,7	0,49
5	0,592	-2,85	0,0069

Table 0 4:Pulp weight (g)

The results showed that morphological measurements were better in the control group at all phenological stages except at harvest time, when the group irrigated with magnetized water had better morphological results by 6.65% compared to the control group. The physicochemical analysis results varied between the two groups during the early phenological stages, while in the final two stages,

2/Physicochemical Analyses

- Moisture content of dates ,dry matter and Organic matter and ash content: stage 5:

Groupe	H%	MS%	MO%	CND%
CN	76,12	23,88	90,29	9,71
IN	79,61	20,39	88,49	11,51

Table 5 : Moisture content of dates ,dry matter and Organic matter and ash content: stage 5

Moisture content is a fundamental parameter for determining and rationally managing harvesting, storage, or preservation operations. The highest moisture value was recorded for group IN.

3/Ph and electrical conductivity

Groupe	PH	CE (ms)
CN	5,13	2,16
IN	5,12	2,21

Table 6 : Ph and electrical conductivity

The pH value is equal in both groups, whereas a slight variation in conductivity is observed between the two groups.

IV. Conclusion

The physicochemical analysis results varied between the two groups during the early phenological stages, while in the final two stages, the best results were observed in the group irrigated with magnetized water. These results may be attributed to the prolonged salinization of the soil and the use of the Delta Water device as a first-time irrigation method for these palms.

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Références

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