

# Effect of irrigation on the rooting of one year old cladodes of cactus pear

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# Introduction

Cactus pear is used as main component in the system of development of arid and semi arid regions of Morocco

Important operations of plantation are carried out by the agricultural establishments of development In the framework of the agricultural development of these regions.

But plantation of cactus pear in arid areas poses still some problems regarding plant material and the availability of water during the period of plantation.

In the other hand, data on the effect of water on the rooting of cactus pear are scarce.

The aim of this work was to contribute to the focusing of the techniques of multiplication of cactus pear in Morocco by studying the effect of irrigation on the rooting of one year old cladodes

And this, by using a moderate amount of water in order to approach to the natural conditions of the medium of the experiments.

## Material and methods

The experiment: carried out in a complete randomized block  
Factor to study: Irrigation :

2 levels: A0 = without irrigation (pilot)  
and A1= pre-irrigation + 1 irrigation one month  
after plantation.

Pads used : one-year old; taken at the beginning of January  
on *Opuntia ficus indica* (L.) Mill. cv "Moussa"

They were dehydrated for 2 weeks in shade in order to be well  
healed.

Distance of plantation : 0.4m between plants  
and 0.4m between rows  
(it was conceived that the experiment will be  
destroyed once observations are made)

Pads are planted in normal position, until the half of their  
length.

An experimental unit is composed of 16 pads

Irrigation was made by gravitating system, and the amount of  
water given in order to bring back the ground to field capacity

Plantation was done at the end of January

Observations done : 4 : 1/ 2 weeks since the date of  
plantation

Parameters observed :

- x number of emitted roots/pad
- x length of emitted roots/pad
- x the fresh weight of pads: measure  
done before (to determine the initial  
weight of pads) and at each  
observation
- x the fresh weight of roots : measure  
on place

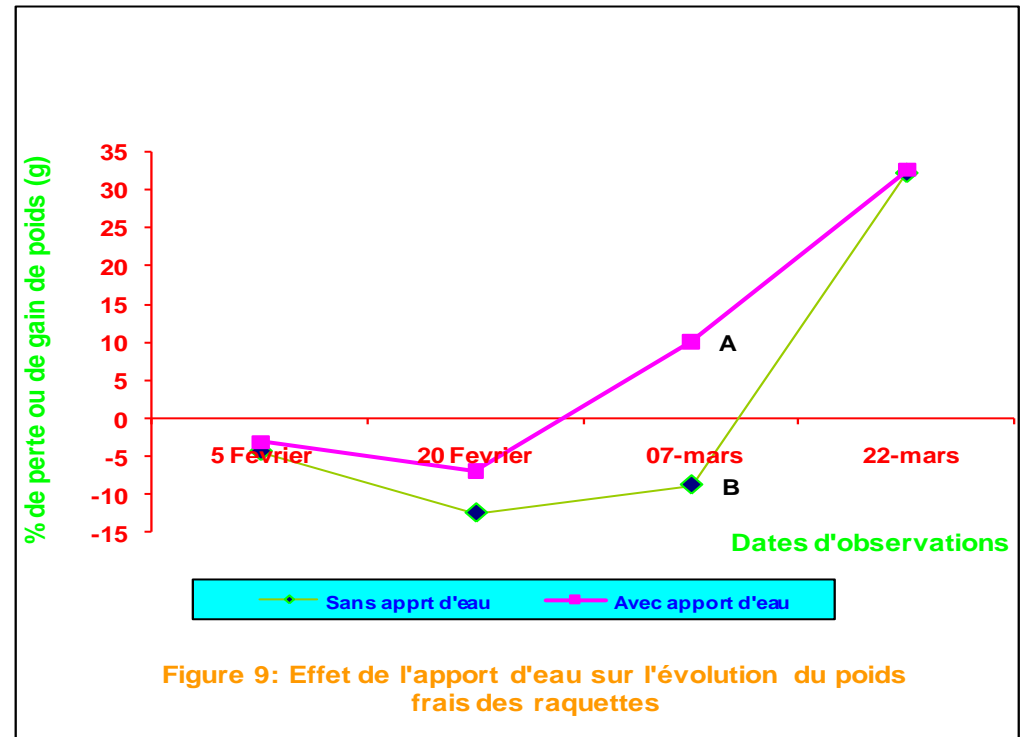
# Results and discussion

## 1. Fresh weight of pads :

For A0 and A1 :  $\searrow$  progressively during the 2 first observations  
and  $\nearrow$  rapidly during the 2 last observations

Little difference between A0  
and A1 during O1 and O2  
and no difference in O4

→ Irrigation has no  
significant effect on the fresh  
weight of pads



Reduction in weight of pads when they are in air or in soil  
(at O1 and O2 when roots are not yet emitted)

is due to loss of water in pads due to difference in the pressure of water between the inside and the outside of pads.



## 2. Number of emitted roots/pad (NR) :

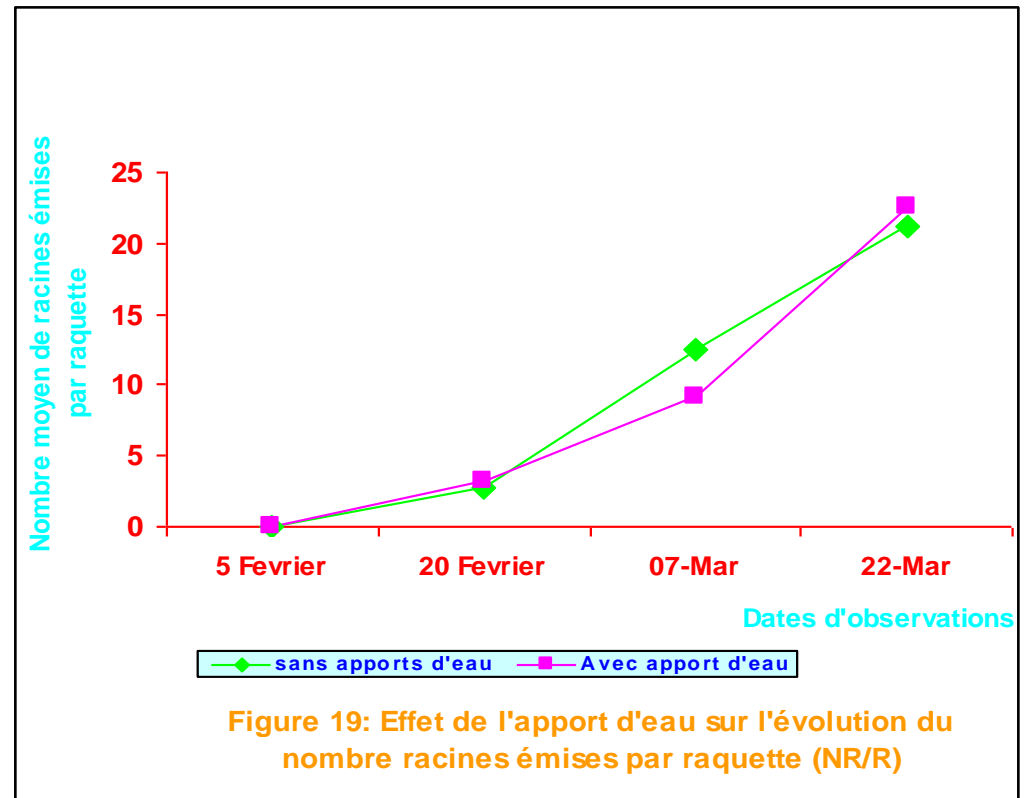
Emission of roots started at the 2<sup>nd</sup> observation (1 month after plantation)

For A0 and A1 : NR evolved in the same way

it ↗ slowly during the 2 first observations

and ↗ rapidly during the 2 last observations

→ irrigation has no significant effect on the NR



For NR and other studied parameters,

there was an improvement for A0 and A1 due to climatic conditions which are favorable (rainfall in particular) during the last fortnight of the observations.

### 3. Length of emitted roots/pad :

It has the same evolution for A0 and A1

The graphic of evolution is like that of NR :

It ↗ slowly during the 2 first observations : A1: 3.16 and A0:  
2:82, at O2

and ↗ rapidly during the 2 last observations : A1: 22:50 and  
A0: 21.13, at O4

→ there is no significant difference between A0  
and A1

#### 4. The fresh weight of emitted roots/pad :

It has almost the same evolution of that of the length of emitted roots/pad :

a slow ↗ until the 3<sup>rd</sup> observation : A1: 1.48g and A0:  
1.30 at 03

and a fast ↗ during the last fortnight : A1: 4.13g and A0:  
4.31 at 04

→ there is no significant difference between the  
2 Traetments.

## Conclusion

Irrigation did not influence the rooting of pads regarding its effect which was mitigated by important precipitations during the last fifteen of the observations.

Fresh weight of pads was supported by precipitations since fresh weight of non irrigated pads was also important during the last fortnight.

The reaction of pads of cv "Moussa" to water contribution seems to be in conformity with the results of Mulas (1991) and Mulas et al. (1992) :

they showed that pads which are subjected to high level of water stress during a year which is relatively dry, root better than those which are well irrigated during a rainy year.

To confirm these data, other experiments on different periods of plantation and other climatic zones are needed.

**Thank you**