

# **Moroccan contribution**

## **Deficit irrigation on peach tree**

**Work package 3** : Improvements of water and N management techniques according to their ability to maintain high quality of fruit production and reducing aphid infestations on Apple and Peach.

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# Why it is useful to use deficit irrigation in Morocco

Use of deficit irrigation is justified by:

- Since 1980, the average annual rainfall decreased by 151 mm in the region of Meknes
- The semi-arid climate
- Farmers use much water for irrigation without taking in consideration the real needs of plants.

# First experimentation

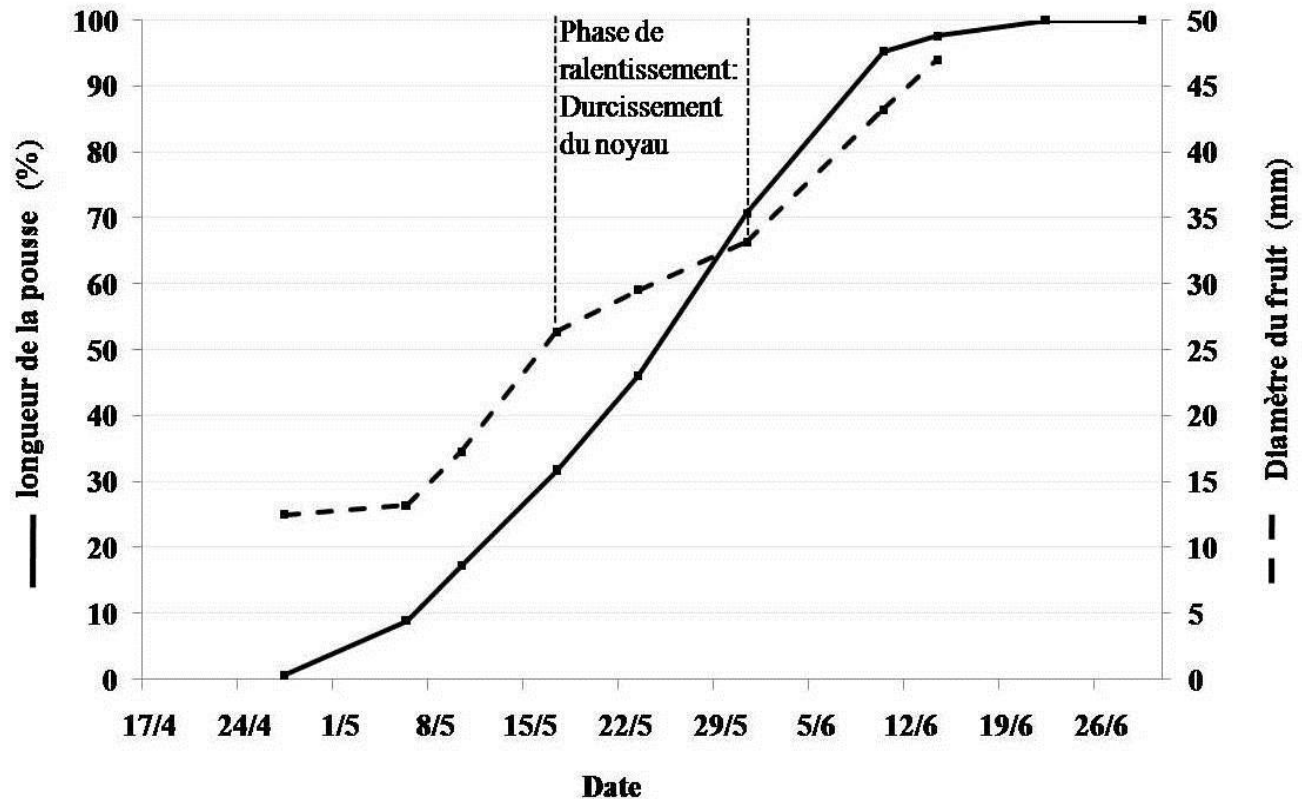
## Case of **Peach tree**

- Test on a farm of reasoned deficit irrigation on peach
- Irrigation doses calculated using ETC

## Slowdown periods of fruit growth :

### Peach

- ✓ Slowdown in growth of the fruit at stage II, over 15 days, from May 16 to June 01



In case of regulated deficit irrigation only during the slowdown period of fruit growth, the amount of:

- 75% ETc: 82 m<sup>3</sup>/ha
- 50% ETc: 163 m<sup>3</sup>/ha

## Fruit quality:

		°Brix (%)		
		2012	2013	2014
Peach	T100	12.2 <sup>b</sup>	13.6 <sup>b</sup>	14.4 <sup>c</sup>
	T75	13.5 <sup>a</sup>	15.1 <sup>b</sup>	15.6 <sup>b</sup>
	T50	13.6 <sup>a</sup>	15.2 <sup>a</sup>	17.6 <sup>a</sup>
		**	**	**

Significant increase of fruit quality

# Second experiment

## Case of **Apple tree**

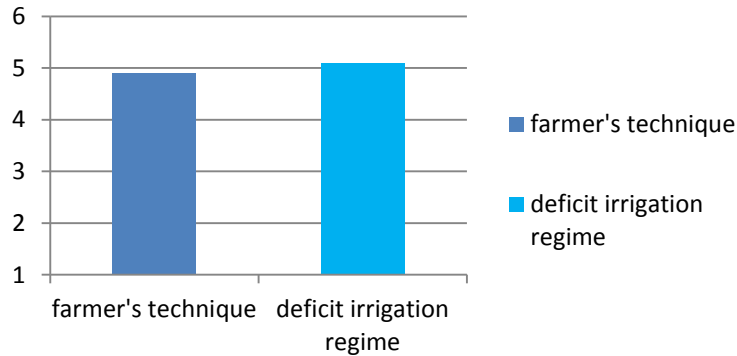
- Extension of the experiment at different farmers in plains and mountain areas
  - Application of a deficit throughout the growth cycle irrigation.
  - Dose calculated from Etc.

# Effect on yield

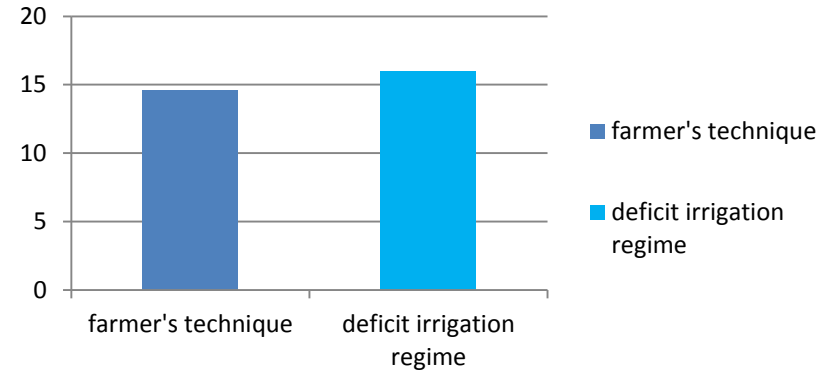
Age of trees	Number of farmers	Water regime	Yield	Decrease in %	Decrease T/ha
4	3	Irrig.agric.	16	-	
		DI	15.8	1.3	<b>-0.2</b>
5	2	Irrig.agric.	24.5	-	
		DI	24.3	0.8	<b>-0.2</b>
12	3	Irri.Agric.	81.5	-	
		DI	81.2	0.4	<b>-0,3</b>
15	2	Irrig.agric.	96.4	-	
		DI	95.5	0.9	<b>-0.9</b>
17	2	Irrig.agric.	134.4	-	
		DI	133.6	0.6	<b>-0.8</b>

# Effect on apple fruit quality

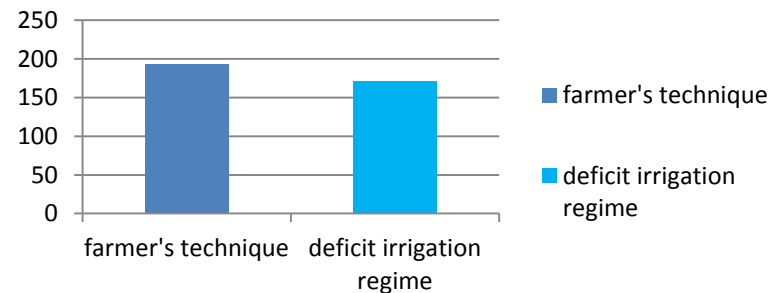
## acidity



## sugar content



## weight



- Increased sugar levels by 9% (average of three years)
- Non significant decrease in yield



# Conclusion

Deficit irrigation allowed:

- To improve fruit quality
- To reduce water supply without negatively affect the orchard commercial revenues



This is particularly important in this country, as growers are entitled to cultivate **more land** if able to save water.