Effect of restricted irrigation and potassium nutrition on Apricot (*P. armeniaca L.*)

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Introduction

- In Tunisia, water scarcity is the major problem for agriculture production
- less than 7% of total agriculture area could be irrigated and in most cases with bad water quality

- Potassium is centrally involved in the up-regulation of turgor-driven stomatal opening.

➔ A better use of potassium fertilization could be an interesting idea in decreasing the effect of water deficit.

Introduction

- Apricot in Tunisia represent an important fruit tree production with 12000ha, 65% of them irrigated.

- It's mainly located in the center and north of the country with an important number of local cultivars.

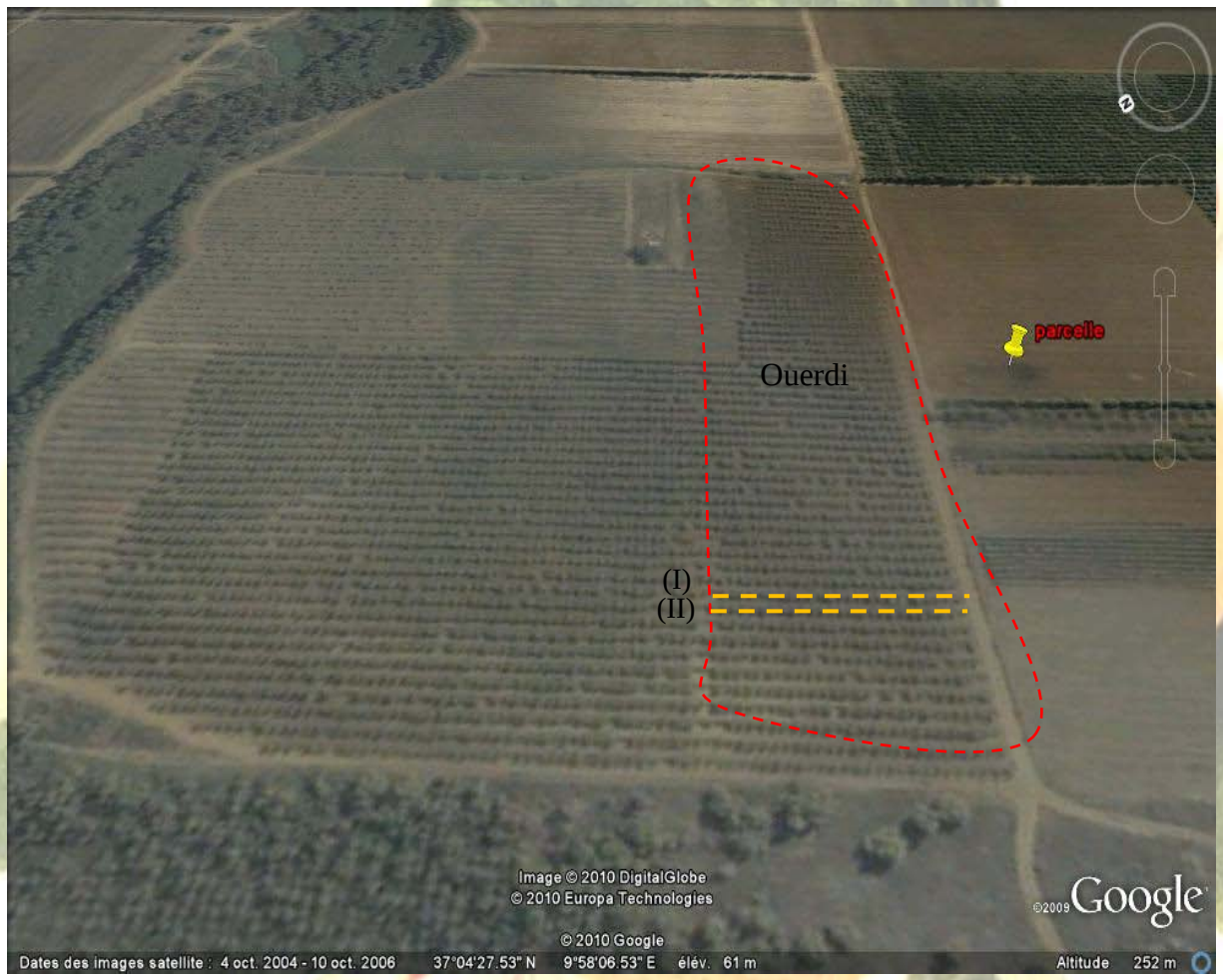
➔The aim of the present work is to study the effect of different combinations between potassium fertilisation and irrigation treatments.

Material and method

- Experiment started on 2010 on a commercial orchard of Ouardi apricot cultivar at Utique region (35 km north of Tunis)
- The zone is characterized by a sub humid climate with annual precipitation of 550 mm
- The soil has a clay loamy texture with high organic matter content and moderate content of potassium.

Material and method

- Twelve years old trees, 5 * 3 m density grafted on mechmech (*P. armeniaca*) rootstocks
- Fertigation with one line of drip irrigation
- 6 treatments
  - 2 irrigation treatments (100% and 50%)
  - 3 fertilization treatments (50%, 100% and 200% of K)


parcelle
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(I)
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Image © 2010 DigitalGlobe
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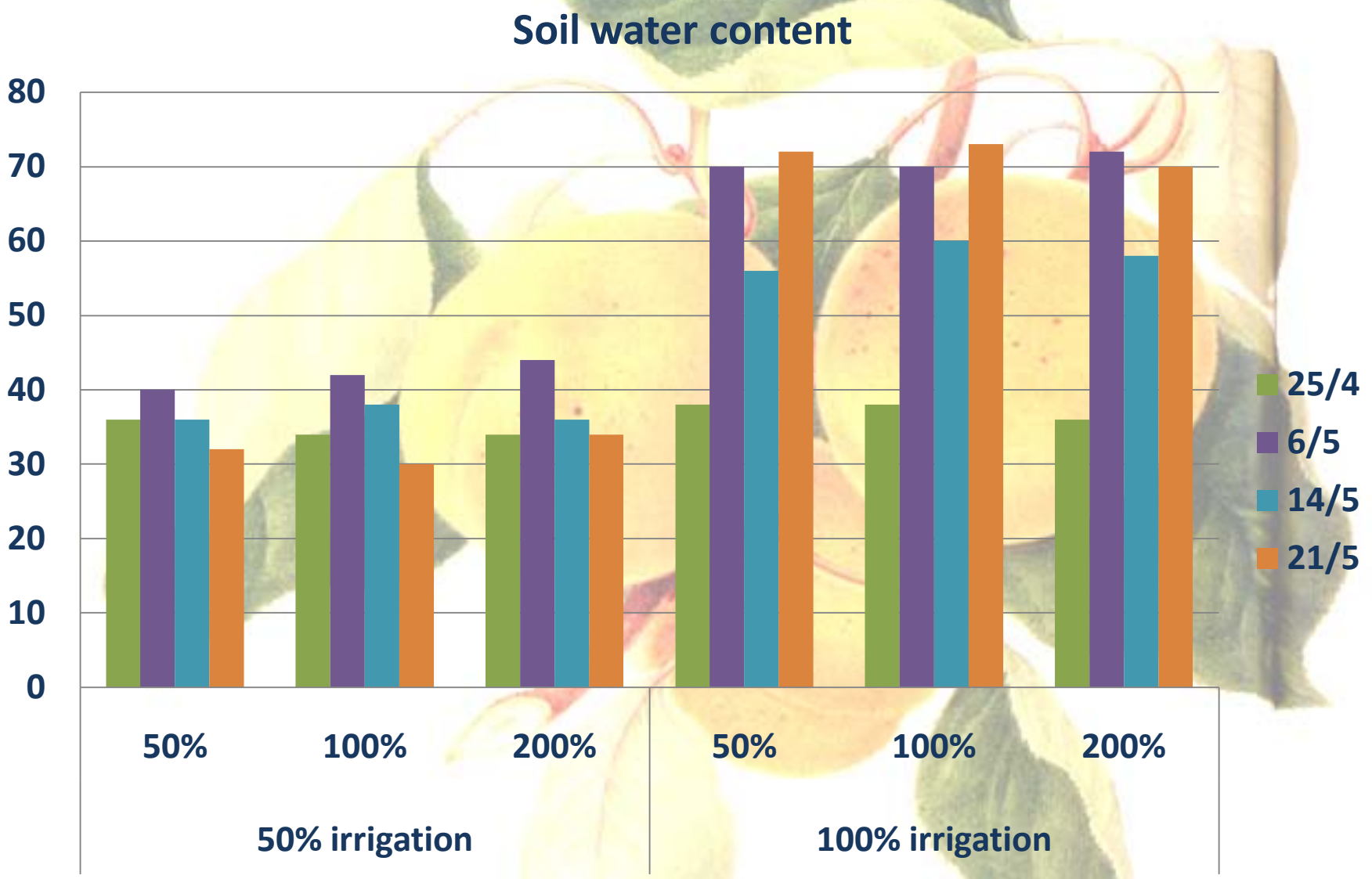
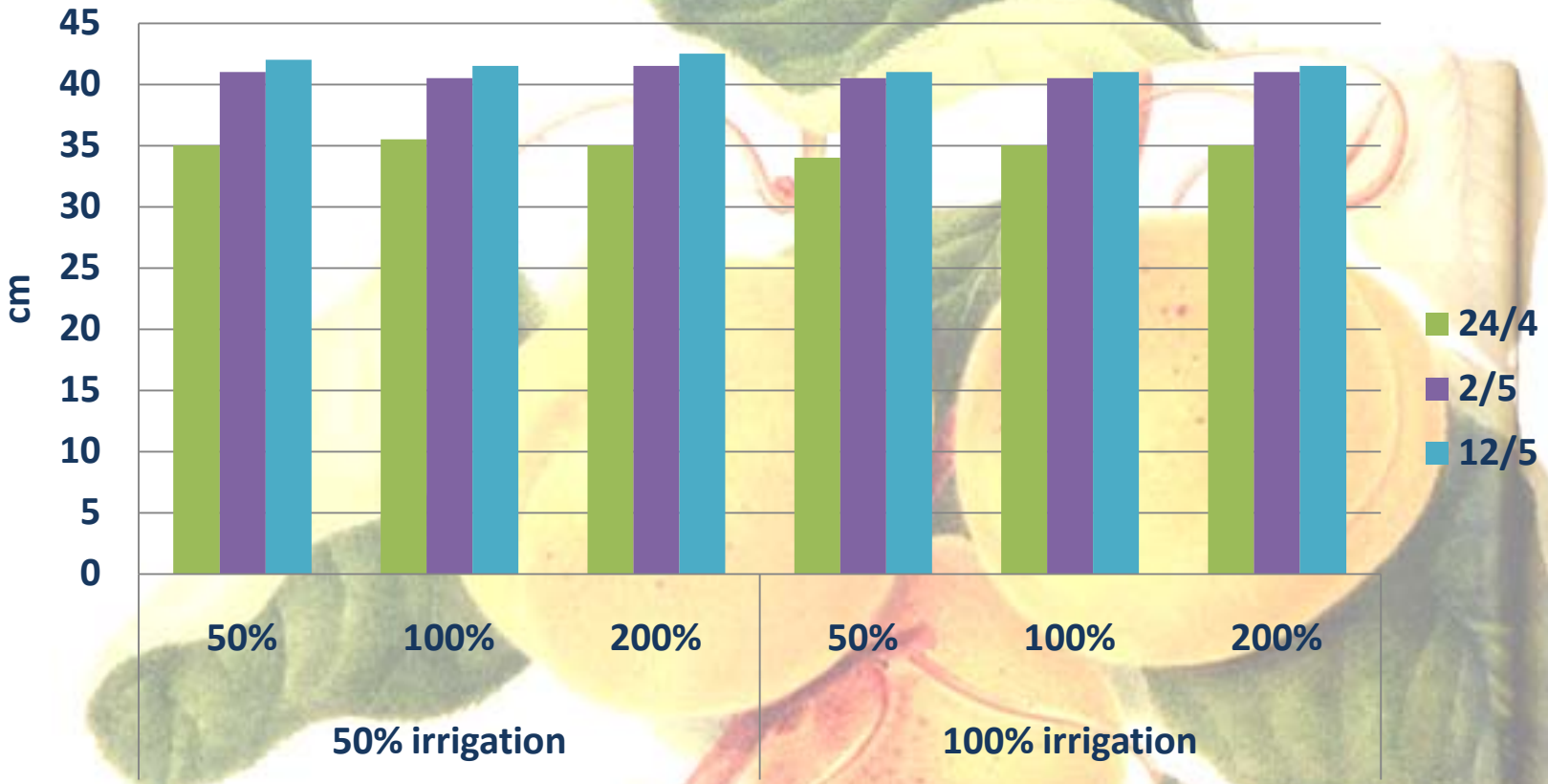
Dates des images satellite : 4 oct. 2004 - 10 oct. 2006
37°04'27.53" N
9°58'06.53" E
élév. 61 m
Altitude 252 m

Results

Soil water content

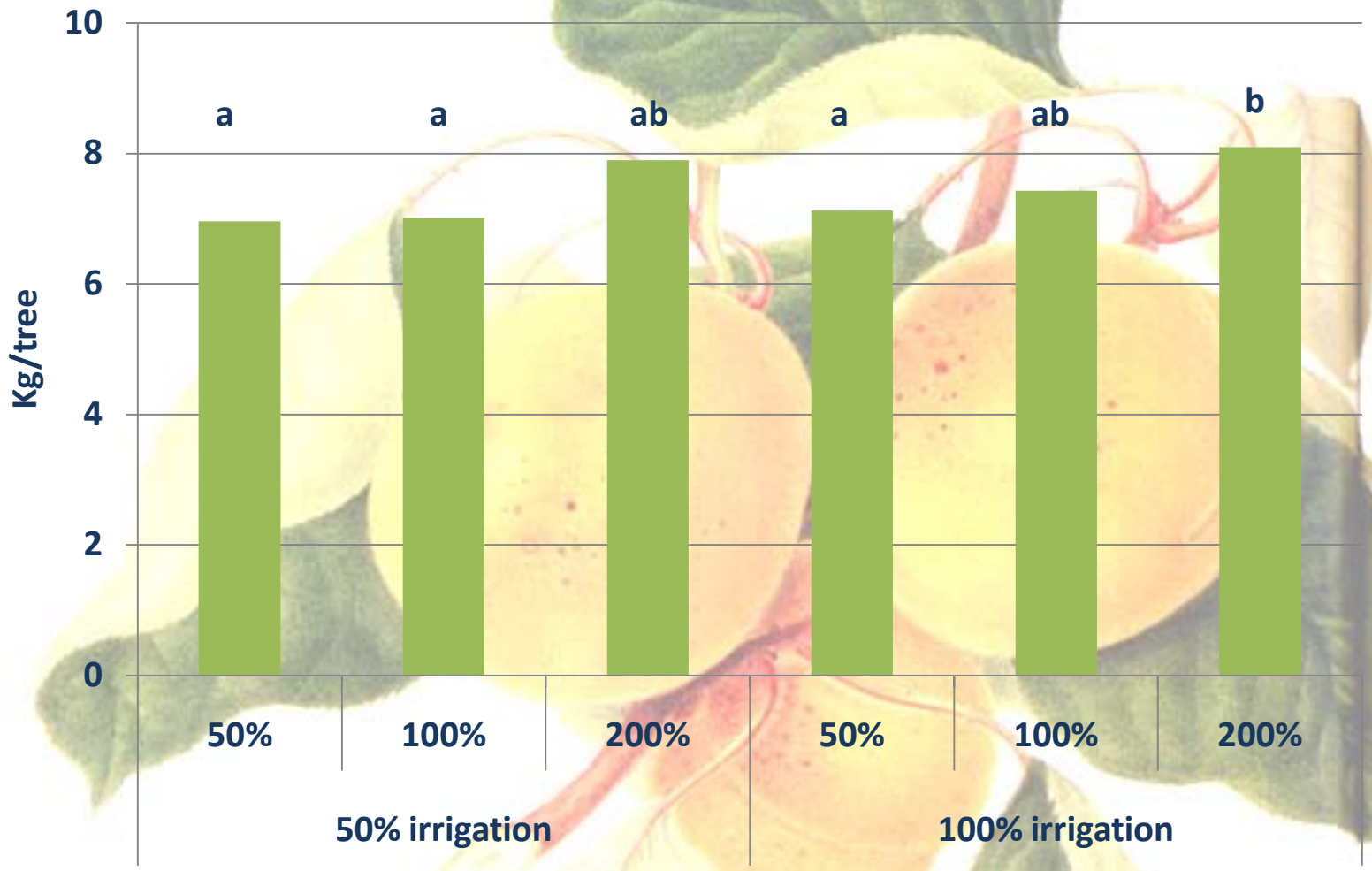


Vegetative growth



- No effect on vegetative growth

Yield



- a significant higher yield with full irrigation and 200% K_2O

Fruit weight

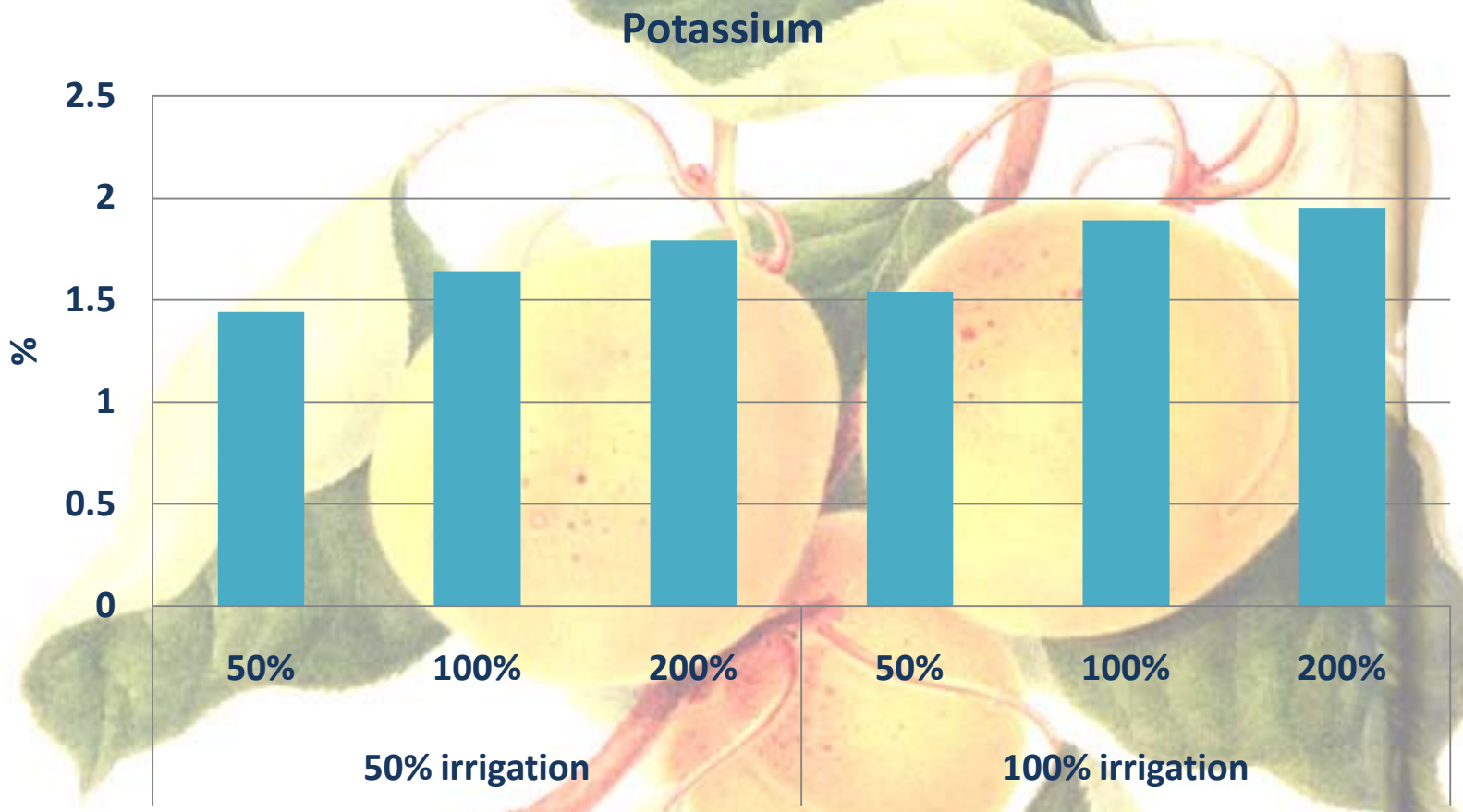
- **No irrigation effect but significant effect of potassium fertilization.**

Fruit Quality

irrigation	50% irrigation			100% irrigation		
% K_2O	50%	100%	200%	50%	100%	200%
°Brix	12,56 ab	12,90 b	13,09 b	12,01 a	12,64 b	13,00 b
Titratable Acidity	0,23 ab	0,21 a	0,20 a	0,26 b	0,22 ab	0,21 a

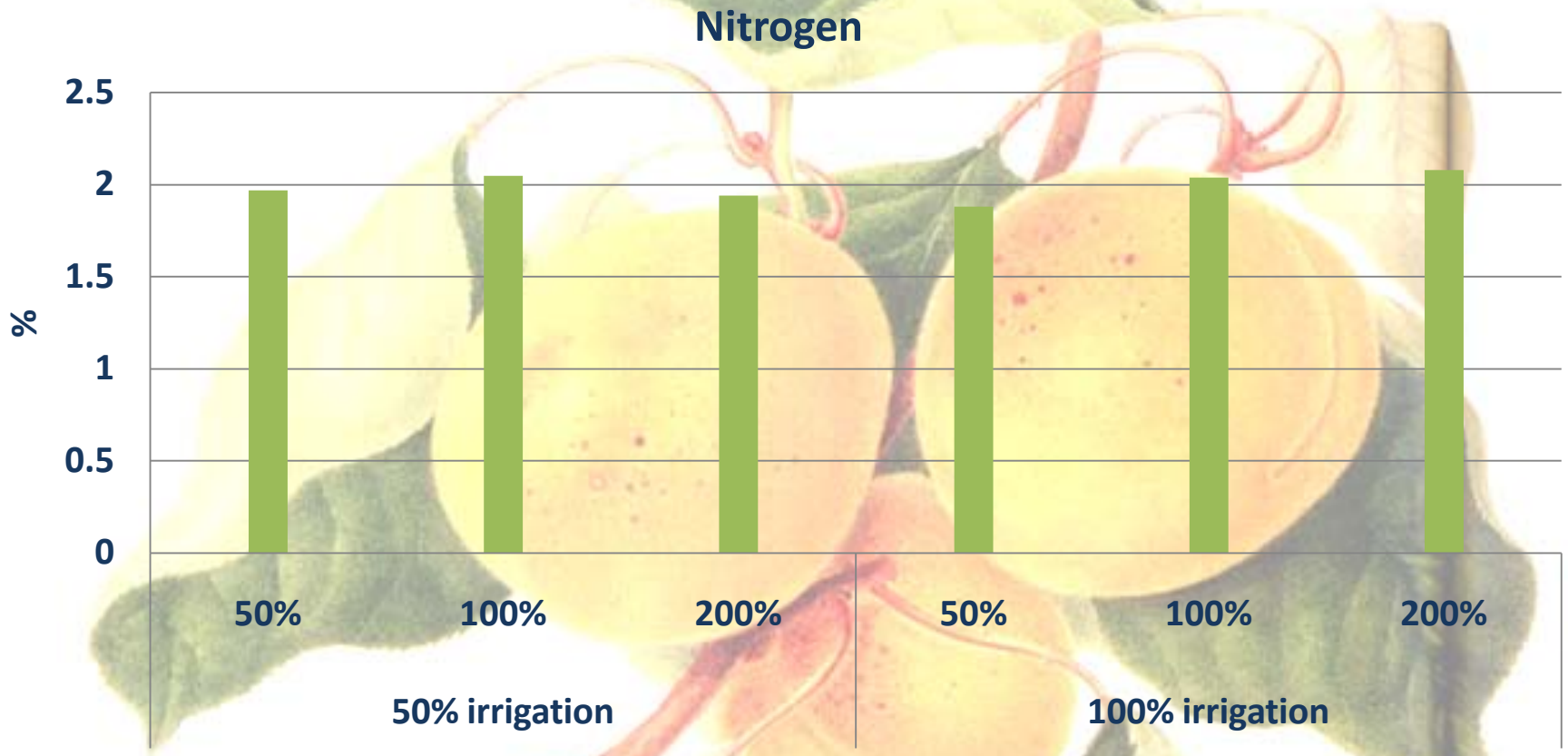
- K effect on °Brix
- Fruit with restricted irrigation seemed to earlier.

Leaves mineral analysis



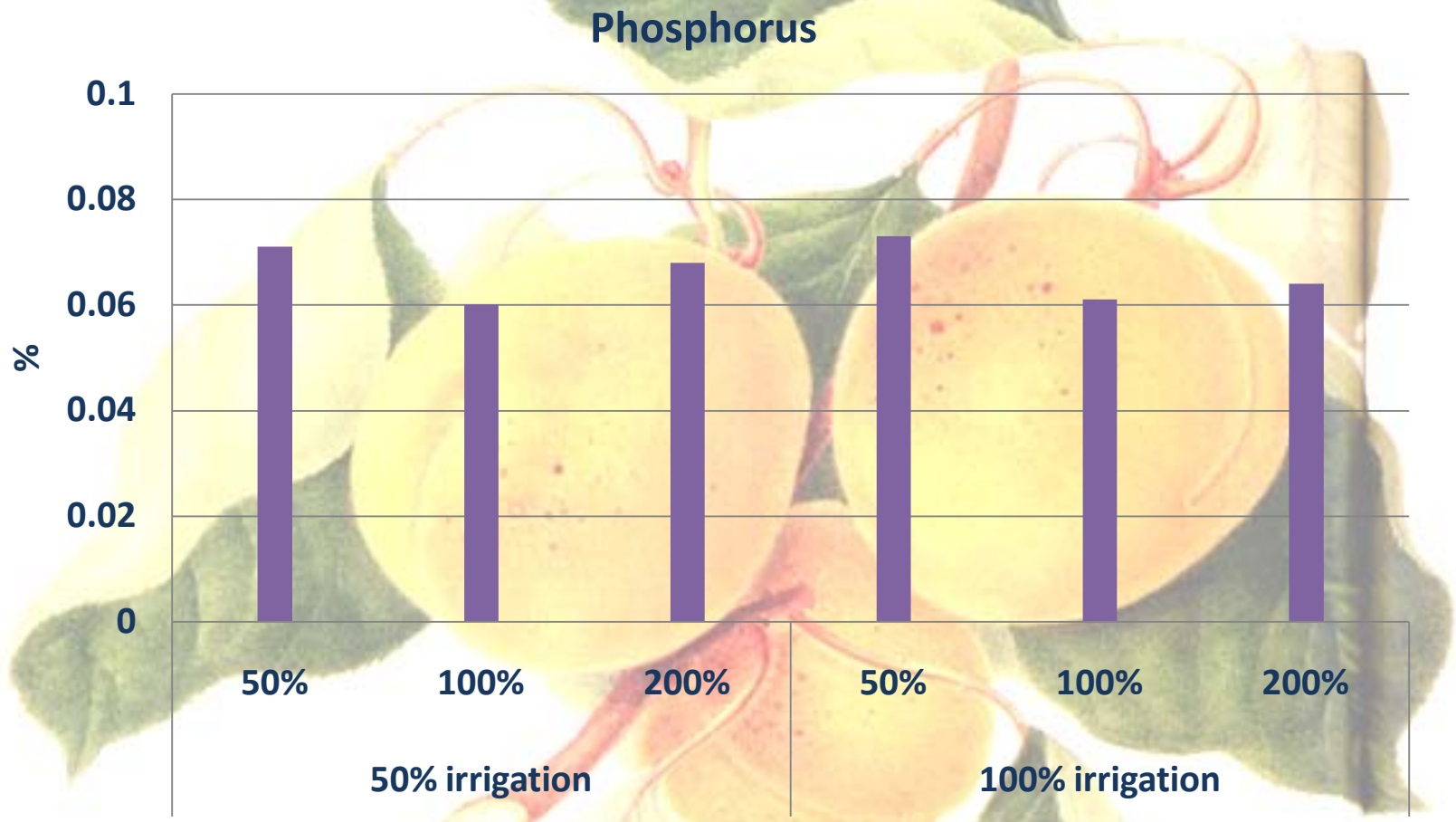
- Potassium leaf content increased with K treatment
- Water treatment seems to have an effect

Leaves mineral analysis



- **No effect on nitrogen leaf content**

Leaves mineral analysis



- **No effect on phosphorus leaf content**

Conclusion

- First year of the experiments
  - No effect on vegetative growth
  - Higher yield with 200% K treatment
  - K treatments effect on fruit weight and quality
  - Potassium fertilization increased leaf K content with no effect observed on N and P.

- Experiments to be continued.


Thank You