

# Iberian PLANT BIOLOGY-2025

Murcia, Spain (1-4 julio, 2025)

AUDITORIO Y CENTRO DE CONGRESOS VÍCTOR VILLEGAS



XXVI MEETING OF THE SPANISH  
SOCIETY OF PLANT BIOLOGY

XIX SPANISH-PORTUGUESE  
CONGRESS ON PLANT BIOLOGY

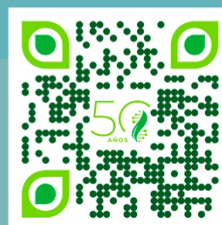


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## ABSTRACT BOOK



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## C0177 PHYSIOLOGICAL RESPONSE TO WATER STRESS IN FOUR ALMOND VARIETIES GRAFTED ONTO ROOTPAC-20

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### 2 Objectives

In the current context of almond cultivation intensification and high-density plantings, use of new rootstocks that reduce tree vigour and limited availability of irrigation water, the selection of appropriate plant material is essential. The current work aims to determine the morphological and physiological response to water deficit in almond plants grafted onto Rootpac-20 by studying water relations, growth, and transpiration.

### 3 Methods

80 one-year-old almond plants of Penta (P), Guara (G), Vialfas (V), and Soleta (S) cultivars were used. All plants were grafted on Rootpac-20 rootstock. Plants were grown in 5 L pots and placed inside a plastic greenhouse. All the plants were watered daily for 3 weeks to field capacity, followed by a water stress period (withholding irrigation for 20 days), and a 35-day recovery cycle, with daily watering at field capacity. Plant height and trunk diameter were periodically measured, and dry weight and leaf area were determined. Seasonal changes in stem water potential, relative water content, stomatal conductance and net photosynthetic rate were measured during the central hours of illumination. In addition, volumetric water content of the substrate, and daily evapotranspiration were determined using scales.

### 4 Results

Trunk diameter increased during the experiment in all varieties, with S and G showing the greatest growth. Similarly, G plants were the tallest, exhibiting high growth rates during the recovery phase. Evapotranspiration was higher in S plants than in the other treatments. Cumulative water consumption was 26.2 l for S and 24.40, 23.0, and 21.3 l for P, V, and G (93, 88, and 81% of the amount of water supplied in S). During the stress phase, the plants showed severe dehydration, as indicated by the lower stem water potential and relative water content, with S plants showing the lowest values. The decrease in stomatal conductance was reversible when irrigation was restored, but S and G plants required more time.

### 5 Conclusions

The responses found in this work should be taken into account when selecting the cultivar for the establishment of a new orchard, knowing the irrigation management that will be used.

### 6 Keywords (up to a maximum of 3)

growth, water relations, *Prunus dulcis*

