

II.4. OXIDATIVE STRESS ASSOCIATED WITH ROOTSTOCK-SCION INTERACTIONS

P. Irisarri¹, H.J. Martens², P. Errea³ and A. Pina⁴

Reactive oxygen species (ROS) production may occur in plant response to abiotic and biotic stresses. A failure in the redox system leads to an increase of ROS levels, which are harmful to essential biological processes. To mitigate and *repair* damage initiated by ROS, some species have developed antioxidant protection mechanisms including antioxidant enzymes such as: superoxide dismutase (SOD), catalase (CAT) and ascorbate peroxidase (APX). Recently, it has been found that oxidative stress could trigger cell and tissue degradation processes in incompatible grafts. The main goal of this study was the identification of putative SOD, CAT and APX gene sequences *in fruit trees* using *publicly available plant genome databases*. The gene expression and activity of these enzymes along with *in vivo* ROS detection were also examined in different graft combinations (compatible and incompatible) from pear (*Pyrus communis* L.) and quince (*Cydonia oblonga* Mill. clon BA29) several days after grafting. Interestingly, we observed no correlation between enzyme activity and enzymatic gene expression for APX and CAT. Hence, it is expected that some posttranscriptional mechanisms are playing an important role in this biological process. ROS levels were slightly higher in the incompatible combinations compared to the compatible ones.

¹ Fruit Tree Department, Agrifood Research and Technology Centre of Aragon (CITA), Zaragoza, Spain. E-mail: pirisarri@aragon.es

² Department of Plant Biology and Biotechnology, Faculty of Life Sciences, University of Copenhagen, Frederiksberg C, Denmark. E-mail: hjm@plen.ku.dk

Fruit Tree Department, Agrifood Research and Technology Centre of Aragon (CITA), Zaragoza, Spain. E-mail: perrea@aragon.es; apina@aragon.es