

## **Evaluation of oxidative stress in homo- and- heterografts from pear and quince**

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Reactive oxygen species (ROS) are generated when the plants are exposed to various biotic and abiotic stress factors such as temperature extremes, drought, mineral deficiency, chemical imbalances, wounding etc. The oxidative stress response is triggered by an imbalance in the production and metabolism of ROS and the harmful

effects of ROS on cellular components are well documented. Plants have developed antioxidant mechanisms to protect themselves against oxidative damage by scavenging of ROS. These mechanisms employ antioxidant enzymes, such as superoxide dismutase (SOD), ascorbate peroxidase (APX) and catalase (CAT). These antioxidant enzymes inactivate the cytotoxic compounds and minimize their ability to diffuse into the intracellular space. Recently, it has been hypothesized that oxidative stress could trigger cell and tissue degradation processes in incompatible grafts. The aim of this study was to determine the activity of antioxidant enzymes (SOD, APX and CAT) in callus unions with different degree of compatibility throughout two weeks after grafting as well as in vivo quantification of ROS over time using the ROS-indicator dye CM-H2DCFDA and confocal laser scanning microscopy. The preliminary analysis showed that antioxidant enzymes activities were lower at the rootstock/scion interface in incompatible combinations at early stages of development. The results will be discussed in terms of the possible involvement of ROS levels in rootstock-scion interactions and graft incompatibility in fruit trees.