



ABSTRACT

"Apoplastic ROS and cellular signaling – processes and components involved"

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Effective responses to external and internal stimuli will ensure optimal growth and survival in an environment where productivity and product quality are adversely affected by stresses. Plants must have effective means of adapting to changes in their environment. The main features of such defense strategies involve early recognition and perception of the developing stress, and subsequent activation of induced adaptive and defensive responses. Strong evidence has accumulated that ROS play an important role in the signaling under both abiotic and biotic stresses. The air pollutant ozone generates reactive oxygen species (ROS) in the apoplast. Consequently, ozone has been used as a tool to unravel *in planta* ROS-induced processes and apoplastic ROS sensing. Examples of identification of the molecular identity of some components, and interaction between multiple regulatory cascades involving apoplastic ROS, discovered with this approach are presented.