

ABSTRACT - PLANT PHYSIOLOGY

GUAIACOL PEROXIDASE ACTIVITY IN YOUNG YELLOW PASSION FRUIT PLANTS TREATED WITH STIMULATE®, SALICYLIC ACID, AND NITROPRUSSIDE SODIUM SUBMITTED TO WATER DEFICIT

Marcos Ferreira Almeida (marcosagro2014@gmail.com)

Raul Antonio Araújo Do Bonfim (raularaujoraul@gmail.com)

Mateus Pires Barbosa (mateus_pbarbosa@hotmail.com)

Milton Carriço Sá (milton.carrico@hotmail.com)

Leonardo Santos De Oliveira (leooliver.agro@gmail.com)

Leandro Dias Da Silva (leodias5@yahoo.com.br)

Paulo Araquem Ramos Cairo (pcairo@uol.com.br)

Sávio Da Paz Brito (savio.brito03@gmail.com)

The increase in the concentration of reactive oxygen species (ROS) is usually observed in plants subjected to water deficit. Free radicals from ROS degrade structural proteins and lipids, leading to cell membrane disintegration. Antioxidant enzymes such as guaiacol peroxidase (GPX) can help to degrade some ROS, thus mitigating oxidative stress. In this study, the objective was to evaluate the potential of exogenous applications of three inputs – Stimulate® (0.5 mL L⁻¹), a biostimulant consisting of auxins, gibberellins and cytokinins; salicylic acid (ASL, 2.5 µM), as a plant growth regulator; and sodium nitroprusside (SNP, 100 µM), a donor of nitric oxide – in the mitigating oxidative stress based on GPX activity, in young yellow passion fruit plants (*Passiflora*

edulis Sims) submitted to water deficit. A greenhouse completely randomized experiment was carried out, with a 4×2 factorial arrangement, which corresponds to exogenous applications of the three inputs plus the control (without inputs application), and irrigation regimes based on 90 and 30% of the pot capacity. Comparing with 90% irrigation, it was found that the GPX activity increased under 30% irrigation, but only in plants that received exogenous applications of inputs. The percentage increase in enzyme activity in plants submitted to water deficit was higher with exogenous application of SNP (151%), followed by Stimulate® (118%) and ASL (101%). We concluded that the three inputs, notably the SNP, contribute to mitigating oxidative stress because they promote an increase in GPX activity in young yellow passion fruit plants submitted to water deficit.