



ABSTRACT – *Genetically modified plants (GMP) aimed at phytopathogen resistance have shown potential in alternative disease control. The strategy of this study was to evaluate genetically modified plants overexpressing rpfF and mqsR genes. These genes are from the plant-pathogen Xylella fastidiosa. The rpfF is related to cell-cell communication (quorum-sensing) and mqsR encode a toxin of a toxin-antitoxin system and is related to induction of cell death and persistence cells formation. GMPs overexpressing these genes were evaluated in field conditions according to agronomic traits of interest, such as plant development (height, canopy volume, and chlorophyll content), fruit quality, and stability of the transgene and pathogen resistance phenotype. Hamlin overexpressing rpfF (H-rpfF) and Pineapple cultivars overexpressing mqsR (Pi-mqsR) showed lower plant height and canopy volume compared to wild-type plants (WT), while Pineapple overexpressing rpfF (Pi-rpfF) showed similar height as WT and a higher canopy volume. Regarding the photosynthetic rate, all the GMPs did not differ significantly compared to WT plants. The Pi-rpfF and Pi-mqsR fruits showed an increased mass (in grams), and Pi-mqsR fruits showed higher juice yield and Brix values. The seedlings obtained through the seed germination showed expression of β -glucuronidase, indicative of the stability of the transgene in the progeny. Neither CVC nor citrus canker symptoms were found in the field of this experimental area. Regarding Huanglongbing (HLB), H-rpfF and Pi-rpfF showed lower severity of symptoms compared to WT plants.*

Keywords: transgenic plants; agronomic traits; pathogen resistance