

Abstract

'Galia' muskmelon, popular for its intense flavor, aroma and sweetness, is an Israeli hybrid commonly grown throughout the Mediterranean and marketed in Europe. Although it is a superior melon, 'Galia' fruit has a short shelf life because it must be picked at full slip for optimum flavor and aroma. It is a climacteric fruit with postharvest losses attributed to the ripening effects of ethylene.

Previous work has transformed the 'Galia' male parental line with an antisense ACC oxidase (CMACO-1) gene that inhibits the last step in ethylene biosynthesis. From this work, two transgenic male parental lines were developed. The transformed male lines tested PCR positive for the transgene, but were unselected for delayed ripening. Transgenic 'Galia' F₁ hybrids (TGMH-AS-1 and TGMH-AS-2) were developed from crossing the two transformed male lines to a wild-type female parental line through traditional breeding methods.

During spring and fall 2004, transgenic 'Galia', wild-type 'Galia' and 'Gal-52' were grown in a passive-ventilated greenhouse in Citra, FL. In spring 2004, no significant differences were observed between transgenic and wild-type 'Galia' harvested fresh or after five days storage at 20°C. 'Galia' is highly susceptible to the disease powdery mildew (*Sphaerotheca fuliginea*), which was unable to be controlled in spring 2004.

Consequently, powdery mildew created significant stress on the plants and potentially negated any positive effect of the transgene. In fall, powdery mildew was controlled by fungicides. The transgenic lines remained on the vine an average of five days longer than the wild-type. At full-slip stage, there were no differences in quality parameters between the wild-type and transgenic 'Galia' fruits. Thus, the superior fruit quality, common of the 'Galia' F₁ hybrid is not affected by the transgene.