

## Abstract

'Galia' muskmelon is an Israeli melon hybrid, which has been the mainstay in much of the European market for more than 30 years. 'Galia' melons are harvested near peak maturity, which limits shelf life three weeks or less. The male parental line of 'Galia' was transformed with the ACC oxidase gene in antisense orientation. A postharvest evaluation of  $T_0$  fruits from two completely diploid independent transgenic lines is described herein. Explants were transformed using *Agrobacterium tumefaciens* strain ABI, which contained a vector pCmAC01-AS plasmid, bearing an antisense gene of CMACO-1 and the CP4 *syn* gene (glyphosate-tolerance). Both CMACO-1 and CP4 *syn* genes were assessed by a polymerase chain reaction method. Flow cytometry analysis was performed to determine plant ploidy level of primary transformants. Two completely diploid independent transgenic lines were obtained, which were named TGM-AS-1 and TGM-AS-2. Southern blot and segregation analyses in the  $T_1$  generation determined that each independent transgenic line had one single insertion of the transgene. Thirteen post-harvest parameters were evaluated in transgenic (TT) and wild type (WT) fruits. WT fruits were harvested at 37, 42 and 50 days after pollination (DAP), whereas TT fruits were harvested at 42, 50 and 56 DAP. The harvest of TT fruits was delayed since they ripened slower than WT. Fruit weight, length, width, soluble solids, titratable acidity, pH, firmness, flesh thickness, seed cavity size and seed number parameters were not significantly different between the two genotypes at 42 and 50 DAP. ACC oxidase activity from 42 DAP TT fruits was three times less than WT fruits. Likewise, ethylene production from 42 DAP TT fruits was reduced 80 % compared to WT. Transgenic  $T_0$  'Galia' male parental line fruits had a delayed fruit ripening process by up to 12 days compared with WT fruits.