

Title Delayed fruit ripening in papaya via genetic engineering
Author Leeton, P., Sargent, H. and Botella, J.
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Abstract

After reverse transcription-PCR of RNA derived from pawpaw cv. Sunrise Solo fruits, two ACC synthase genes, *capacs1* and *capacs2*, were isolated. These genes are specific to fruit ripening, and are expressed at different times throughout the process. Both genes were cloned separately in sense and antisense orientations. Embryos recovered from the bombardment process were selected for one antibiotic medium, and then grown into mature plants following a specific tissue culture routine taking up to 12 months. Plants were hardened for two more months in a glasshouse before planting into the field. There are currently 9 lines of *capacs1* sense orientation growing in the field, along with 15 *capacs1* antisense, 12 *capacs2* antisense and 10 control lines (both wild type seedlings untransformed tissue culture derived). Several of the lines tested have resulted from multiple insertion events. None of the plants showed any difference to wild type controls with respect to growth, disease resistance and fruit set. Whilst many transformed plants do not appear to be markedly different in ripening compared to the wild types, some, particularly those with more than one copy of the *capacs2* transgene, appear to exhibit a marked delay in fruit ripening.