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Poster Communication Abstract – 3.08

GENERATION OF PARTHENOCARPIC SOLANUM MELONGENA PLANTS USING CRISPR-CAS9 - MEDIATED EDITING

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Parthenocarpy is an important sought-after trait in horticultural crop asit results in seedless fruits with added value as food source and inindustrial processing. In Eggplant (*Solanum melongena* L.) harvesting ofcommercial ripe fruits has to take place well before physiologicalripening, which coincides with the presence of seeds, as these decrease thecommercial value of the fruits or even makes them unmarketable. Theobtainment of parthenocarpic lines for this crop would allow for productionof novelty commodity eggplant fruits, increase time window for theirharvesting and lower cultivation costs. To this end, we carried out aCRISPR-Cas9 mediated editing exercise to generate mutations in severaltarget genes known in literature to result in fertilization-independentsetting of normal fruits in other species. Primary targets have been genesinvolved in auxin metabolism and transport in the bud, and includedtranscription factors AGL6, AGL11, IAA9 and ARF8, auxin efflux carrierPIN4, aminotransferase PAD-1 and the two of *SmelAUCSIA* genes. For somecandidates, the effect of editing-induced loss-of-function mutations waspredictable from the start considering the results obtained in eggplant orin tomato with CRISPR-Cas9 or traditional transgenic approaches. We alreadyachieved editing of some of these targets in different eggplant backgroundsand several T0 transgenic plants displayed parthenocarpic fruit development. Backcrosses of these plants are underway, we already obtained frameshift AUCSIA edited plants free of the Cas9 cassette, and these willbe now thoroughly characterized.