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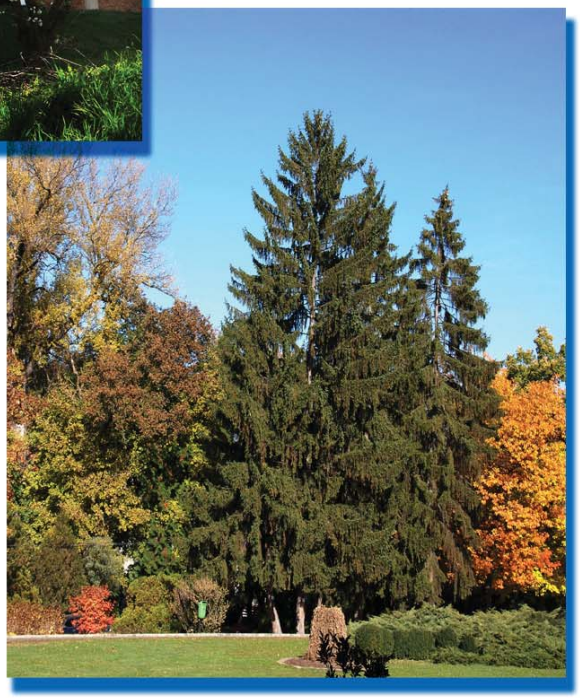

OPTIMIZATION OF *IN VITRO* PROTOCOLS FOR THE ISOLATION AND REGENERATION OF IMMATURE EMBRYOS FROM COMMON EGGPLANT (*SOLANUM MELONGENA*) AND SCARLET (*S. AETHIOPICUM*) AND GBOMA (*S. MACROCARPON*) EGGPLANTS

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Introduction. Common eggplant (*Solanum melongena*) is one of the most important vegetables in the world. However, its genetic base for many traits of interest is often narrow. In this regard, related species such as the African scarlet (*S. aethiopicum*) and gboma eggplants (*S. macrocarpon*) may widen the gene pool available for breeding common eggplants (and *vice versa*). Nevertheless, on many occasions, incompatibility barriers may difficult or prevent hybridization between related species. Embryo rescue technique can be an alternative to obtain interspecific hybrids by isolating and growing the hybrid embryos them under *in vitro* specific conditions. Unfortunately, little is known about the response of eggplant immature embryos to *in vitro* cultivation.
Aims. The present work is aimed to optimize the *in vitro* rescue technique for immature embryos of common and African eggplants at different early stages of development.
Materials and Methods. Four accessions corresponding to *S. melongena* L. (1), *S. aethiopicum* (1) and *S. macrocarpon* (2) were used in the experiments. Plants were grown under greenhouse conditions in Valencia during the spring-summer growing season. Flowers were selfed once a week during the month of May. Set fruits were then sampled to cover a range of 10 to 36 days after pollination (DAP) in order to achieve enough embryos at the four main immature stages (i.e. globular, heart, torpedo, early cotiledonary) in the studied accessions. A previously developed *in vitro* medium for *Solanaceae* was used and two growing conditions were considered: i) 5 first days of incubation at 24 h darkness and ii) 5 first days of incubation at 12 h/12 h light/darkness.
Results. The application of a few days of total darkness increased considerably the efficiency of embryo culture (48% vs. 30%), particularly at intermediate stages: heart and torpedo. Moreover, embryos from African eggplants showed, in general, a higher efficiency than common eggplant embryos. In addition, embryos from African eggplants were found to develop faster than those from common eggplant. Thus, the latter reached cotiledonary stage in >25 DAP, while the former only needed 16-18 DAP.
Conclusion. Darkness provides a positive effect on the response of immature embryos to *in vitro* cultivation and regeneration, although efficiency depends on the species and stage of development, as well as their interaction. This protocol can be now applied to interspecific potentially abortive embryos in interspecific crosses between common eggplant and African eggplants.