

SAUNDERS, JOSEPH W.¹, AND CHIA-JUNG TSAI², ¹USDA-Agricultural Research Service, and ²Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824. Genotype and abscisic acid promote somatic embryogenesis in sugarbeet callus.

Clone REL-2 was developed for superior embryogenesis and shoot regeneration, from a cross of biotech clone REL-1 with an embryogenic individual from EL45/2 (essentially SLC 133). REL-2 produces somatic embryos (SE) on primary leaf disc callus initiating on hormone-free medium. In suspension culture plating on hormone-free medium, REL-2 produces up to 35 times more embryos than REL-1. Plating experiments were conducted with combinations of abscisic acid with growth regulators 1-naphthaleneacetic acid (NAA), or 6-benzyladenine (BA), as well as with different sole nitrogen sources or sucrose concentrations with the goal of improving SE production. Higher BA concentrations included in the medium were associated with progressively fewer SE but more shoots. At some concentrations NAA, urea and glutamine individually stimulated greater SE production, but only for REL-1, where there was greater room for improvement. As a common factor in all tests, abscisic acid at some concentrations consistently improved SE production. Secondary embryogenesis, a desired potentially very efficient phenomenon, was not observed. REL-2 is available for application in sugarbeet biotechnology.