

Dagustu N, Sincik M, Bayram G, Bayraktaroglu M (2010) Regeneration of fertile plants from sunflower (*Helianthus annuus* L.) – Immature embryo. Sunbio 2010, 8th European Sunflower Biotechnology, 1-3 March, Antalya, Turkey.

Abstract

Immature embryos from 15 sunflower genotypes (5 restorers, 5 cytoplasmic male steriles and 5 maintainers) were studied for shortening the seed to seed cycle because of seed maturation in sunflower takes 50-60% of the life cycle duration (120-150 days). This technique allows the production of fertile plants from immature embryos by reducing the breeding cycle. Immature embryos of 10 days after pollination were dissected from seeds grown in the field plants (SGFP), were transferred to MS medium allowing shoot and root development for 5-10 days. Young plantlets transferred to soil, developed to maturity and were then self pollinated and seed-set. The first cycle of immature embryo-raised plants (ERP) was obtained. When these plants were at flowering stage, 10 day old embryos were dissected and 2nd cycle of ERP was obtained. The plants at the flowering stage for obtaining 3rd cycle are in the growth chamber at the moment. The cultured embryos developed into vigorous plantlets with 3-6 leaves. Out of 1710 immature embryos, the average response of the explants was 93.1% (1591) showing morphogenesis with a minimum of 42.5 (N Record 109/Sanay 1-2(N) and a maximum of 100% (PR6404(CMS), Narmo Sanay 6-1 (CMS), RIM 1-5 (CMS), BGC0565 (N), N Record 109/Sera (N), RHA 04, RHA 06, RHA 14, RHA 15). 70% of the developed plantlets had vigorous roots. They were transplanted into pots containing a 1:1:2 peat: perlite: soil mixture (v/v) at $24 \pm 2^{\circ}\text{C}$ in 16h/8 h (light/dark) in a growth chamber. Only 67.3% of them reached maturity, and were then either self-pollinated or pollinated with maintainers for seed set. On average 40-50 regenerated and matured plants per 100 immature zygotic embryos were obtained.