Dagustu N, Bayraktaroğlu M, Güden B (2011) Establishment of apical shoot meristem culture for *in vitro* conservation of sunflower (*Helianthus annuus* L.) genetic resources. International Symposium on Sunflower Genetic Resources 16-20 October 2011, Kuşadası, İzmir, Turkey.

Abstract

The high regeneration capacity is important for *in vitro* conservation of genetic resources and transformation studies. The research was conducted at Uludağ University, Agricultural Faculty, Field Crops Department, and Plant Tissue Culture Laboratory in 2011. Ten genotypes (T0910817-1, T0910950-2, T0910791-3, T0910182-2, T0910792-1, T0912285-1, T0911033-2, T0910791-1, T0910791-4, and T0910930-2.) were used as plant materials. The apical shoot meristems of sunflower genotypes *(Helianthus annuus L.)* were dissected from 4 day-old seedlings were transferred to ½ MS medium allowing shoot and root development. The experiments were placed into growth chamber in 16/8 hour light/dark photoperiod at 26± 2 ^{0}C for two weeks. They were transplanted into vial containing a 1:1:2 peats: perlite: soil mixture (v/v) for acclimatization, were covered with nylon bags and were kept at 24 ± 2^{o}C in 16h/8 h (light/dark) in a growth chamber for 2 weeks. Young plantlets were transferred to unsterile soil, develop to maturity. They were self pollinated in the natural conditions. The agronomic characters (plant height, number of leaf, number of branches, the diameter of head, and the diameter of stalk) of *in vitro* grown plants were measured before harvesting. Data was analyzed with Jump statistical programme in the completely randomized design with 3 replications, each replication consisted of one pot with 6 plants.

Out of 10 genotypes, seven showed a notable response to the *in vitro* establishment. The 67,33% of all cultured apical shoot meristems developed into vigorous plantlets with 3-6 leaves. The majority of the developed plantlets had vigorous root. Almost all of the plantlets grew healty and produced fertile plants in green house conditions. The analysis of variance for all agronomic characters except number of branches resulted in significant differences among genotypes at 5% level. The genotype with a relatively high regeneration capacity and agronomic performances was T0911033-2 followed by T0910950-2. Plant regeneration from apical shoot meristem of sunflower is practical and efficient when appropriate genotype and sterilizationprocedure are used.