Dagustu N., M. Bayraktaroğlu, B. Güden, 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, syf: 19.

Abstract

The high regeneration capacity is important for *in vitro* conservation of genetic resources and transformation studies. The research was conducted at Uludag University, Agricultural Faculty, Field Crops Department, 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, T0910930-2.) were used as plant materials. The apical *s*hoot 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 the growth chamber in 16/8 hour light/dark photoperiod at 26± 2 ^{0}C for two weeks. They were transplanted into viol containing a 1:1:2 peat: perlite: soil mixture (v/v) for acclimatisation, were covered with naylon 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 and were then self pollinated in the natural conditions. The agronomic characters (plant height, number of leaf, number of branches, the diameter of head, the diameter of stalk) of *in vitro* grown plants were measured before harvesting. Data was analysed with Jump statistical programme in the completely randomised 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 57% of all cultured apical shoot meristems developed into vigorous plantlets with 3-6 leaves. The majority of the developed plantlets had vigorous root. The only 69% of plantlets was grown to maturity. The analysis of variance for all 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 is used.

Key words: sunflower, apical shoot meristem , fertile plant regeneration