

## FREEZING TOLERANCE OF LENTIL (*LENS CULINARIS* MEDIK.) GENOTYPES UNDER LABORATORY CONDITIONS

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In order to evaluation of cold tolerance of lentil under controlled conditions, a study was conducted at Collage of Agriculture, Ferdowsi University of Mashhad, Iran. Seven lentil genotypes (MLC7, MLC60, MLC185, MLC225, MLC357, Robat and Gazvin) were acclimated in natural conditions in early autumn and at 4-6 leaf stage plants transferred to the thermogradient freezer to apply nine cold temperatures (0, -3, -6, -9, -12, -15, -18, -21 and -24°C). Then plants transferred to the cold frame and after three weeks, plant survival (PS), lethal temperature 50 according to the survival ( $LT_{50}$ ), stem length, dry weight and reduced dry matter temperature 50 ( $RDMT_{50}$ ) were determined. Results showed that MLC60 and Robat with %51 and %39 had the highest and the lowest survival percentage, respectively. Effect of freezing temperature on plant survival was significant ( $P \leq 0.01$ ) and all genotypes killed when exposed to the -15°C. MLC7 and MLC60 had the highest plant dry weight after recovery period. Plant dry weight ( $r = 0.91^{**}$ ), stem length ( $r = 0.89^{**}$ ) and branch dry weight ( $r = 0.88^{**}$ ) after recovery period and also  $LT_{50}$  ( $r = -0.87^{**}$ ) had the highest correlations with PS%. Results show that lentil could tolerate freezing temperature up to -12°C and MLC60 with lower  $LT_{50}$  and  $RDMT_{50}$  (-12.6°C and -11.7°C, respectively) was the most cold hardy genotype.

**Key Words:**  $LT_{50}$ ,  $RDMT_{50}$ , Recovery, Survival.