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INDUCED VARIATION FOR POST-EMERGENCE HERBICIDE TOLERANCE IN LENTIL

Lentil (*Lens culinaris* L. Medik.) is an important food legume for the cool season, but is a poor competitor to weeds because of a slow growth rate in the early stage of development. If weeds are left uncontrolled they can reduce yield up to 50%. Sensitivity of lentil to post-emergence herbicides warrants development of herbicide tolerant cultivars. In the absence of natural variability, mutation breeding is a powerful tool to create variability for desired traits. Thus, 1 000 seeds of the lentil genotype: LL1203 were exposed to gamma radiation at 300 Gy with the objective to induce herbicide tolerance. Seeds of all 530 surviving M1 plants were harvested individually and divided in two parts to raise M2 generation in two different plots. Each plot was sprayed with imazethapyr (@75 g ha⁻¹) and metribuzin (@250 g ha⁻¹) herbicides 50 days after sowing using 375 L ha⁻¹ of water. Data on herbicide tolerance for individual M2 plants were recorded after 14 days of herbicide spray on a 1-5 scale, where 1= Highly tolerant (plants free from chlorosis/wilting) and 5= Highly sensitive (leaves/tender branches completely burnt). Data of putatively herbicide tolerant M2 plants were also recorded for pod and yield plant⁻¹. None of the M2 plants showed a high level of tolerance to imazethapyr. However, 14 mutants having higher herbicide tolerance to metribuzin were isolated. Two mutants (LL1203-MM10, LL1203-MM7) were recorded with a score <2.0, while six mutants had <2.50 score as compared to 3.13 score of parent variety. The pods per plant and seed yield per plant of mutants were 383 and 12.4g for LL1203-MM7 and 347 and 12.1g for LL1203-MM10, both were higher than the parent genotype LL1203 (253 and 7.8g). The study indicated that metribuzin tolerant mutants having some other desirable traits can be of use in lentil breeding.

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