DEVELOPMENT OF HIGH YIELDING MUTANTS IN LENTIL

Lentil (*Lens culinaris* Medik.) locally known as Masoor, is the second most important rabi pulse crop, after chickpea, in Pakistan. It is cultivated on an area of over 63,400 ha, which constitutes about 4.83% of the total area under pulses. The annual production of the crop is 28,200 tones with an average yield of 445 kg/ha. Yield at the national level is very low, about one-half of the world's yield, which is mainly due to non-availability of high yield potential genotypes. Keeping in view the importance of mutants in developing a large number of new varieties [1], an induced mutations programme was initiated at AEARC, Tandojam during 1987-88, to develop high yielding varieties in lentil. For this, seeds of two lentil varieties, 'Masoor-85' and 'ICARDA-8' had been irradiated with gamma-rays ranging from 100-600 Gy in NIAB, Faisalabad during 1990. Selections were made in M_2 on the basis of earliness, plant height, branches/plant and 100 grain weight. After confirming these mutants in M_3 they were promoted in station yield trials and studied continuously for three consecutive years (1993-1995). Overall results revealed that these mutants have consistent improvement of earlieness in flowering and maturity. Plant height also increased in all mutant lines except AEL 23/40/91 where reduction in this attribute was observed as compared to parent variety (Table 1). Mutant lines AEL 49/20/91 and AEL 13/30/91 showed improvement in 100 grain weight. The improvement of some agronomic characters enhanced the yield of mutant lines in comparison to parent varieties (Masoor-85 and ICARDA-8). The diversity in yield over the respective parents was computed from 6.94 to 60.12%. From these encouraging results it is hoped that mutant lines like AEL 12/30/91 and AEL 49/20/91 may serve as potential lentil genotypes in future.

REFERENCES

Micke, A., 1988. Genetic improvement of grain legumes using induced mutations. An overview. In: Improvement of Grain Legume Production Using Induced Mutations. IAEA, Vienna. pp.1-51.

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Table 1. Performance of high yielding mutants of lentil developed at AEARC, Tandojam

Genotype	Parent	Radiation dose (Gy)	Days to flowering	Days to maturity	Plant height (cm)	100 grain weight (g)	Grain yield (kg/ha)	Increase over parent (%)
AEL 2/20/91	ICARDA	200	69.2	129.6	36.4	1.47	529	11.36
AEL 49/20/91	Masoor-85	200	64.7	131.0	39.7	1.75	452	27.32
AEL 12/30/91	ICARDA-8	300	65.7	128.7	38.1	1.39	761	60.21
AEL 13/30/91	ICARDA-8	300	72.0	128.7	41.0	1.75	508	6.94
AEL 23/40/91	ICARDA-8	400	65.7	125.7	32.7	1.26	538	13.26
AEL 57/50/91	Masoor-85	500	88.5	134.5	35.4	1.44	443	24.78
Masoor-85	Check	-	91.0	137.5	36.3	1.28	355	-
ICARDA-8	Check	-	91.2	137.2	35.7	1.34	475	-