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قسم الوراثة

6-Effect of gamma irradiation on morphological, physiological and molecular traits of *Brassica napus*.

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SUMMARY

This study was conducted to evaluate genetic diversity of the effect of gamma irradiation on three *Brassica (Brassica napus)* genotypes; Serw 4, Serw 6 and Pactol using morphological, physiological and molecular traits. In general, the best dose was the application of 300 Gy which stimulate plant growth to increase its active substances productivity. Among the five doses and three genotypes, 450 Gy and Pactol produced the highest seed/plant. For breeding purpose, moderate gamma rays with low physiological effect and strong genetic effects are desirable. The application of RAPD-PCR technique showed high similarity between control and the lowest dose (150 Gy) in genotypes Serw 4 and Pactol and between 450 and 600 Gy in genotype Serw 6. Depend on the RAPD-PCR and agronomic data; Serw 4 and Pactol are more related than Serw 6. The effect of gamma rays was more effective in Serw 6 rather than genotypes Serw 4 and Pactol. The higher genetic diversity index should be used as potential donor materials in breeding programs. There is, therefore, possibility for further improvement in *B. napus* mediated induced mutations, leading to a genetic improvement of a specific trait and the selection of economically important mutants.

