

Piyanan Phuangjan 2011: Induced Mutation on Hybrid Sunflower
(*Helianthus annuus* L.) by Gamma Irradiation through Tissue Culture. Master of science
(Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor:
Associate Professor Sontichai Chanprame, Ph.D. 62 pages.

The objectives of this research were to determine the suitable doses of gamma rays for induced mutation in F₁ hybrid sunflower ‘Opera’ and to study the genetic variation occurred after irradiation of the cultured tissue using AFLP technique. Multiple shoots induction of ‘Opera’ (F₁) hybrid was done in MS medium supplemented with various concentrations of BA or TDZ. It was found that the suitable medium for multiple shoots induction was MS plus 1 mg/l BA. The medium produced the average of 6.67 shoots. These shoots were subjected to acute irradiation at the doses of 0, 1, 2, 3 and 4 Krad. Seeds of this cultivar were also irradiated at 0, 12, 13 and 14 Krad prior to *in vitro* germination in MS medium. The results showed that LD_{50(60 ds)} of Opera seed was 13 Krad while LD_{50(60 ds)} of cultured shoot was 2.69 Krad. Genetic variation study using AFLP technique revealed that 5 out of 10 primer pairs gave polymorphic bands of DNA. The *Eco*RI (ACC) and *Mse*I (CAT) yielded the highest percentage of polymorphism of 6.51%

Student's signature

Thesis Advisor's signature