

FINAL REPORT

FNCA' MULTILATERAL RESEARCH PROGRAM 2(MRP-2)

"INSECT RESISTANCE IN ORCHIDS"

Insect Resistance Induction of Orchids in Thailand*

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ABSTRACT

The protocorm like bodies (PLBs) of commercial clone of cut flower : *Dendrobium Sonia* 'BOM 17' were irradiated *in vitro* with acute gamma rays at 0, 60, 70, 80, 90 and 100 Gy. The PLBs were subcultured for 4 times. About one year after being irradiated, the PLBs developed to be large size seedlings. The seedlings were transplanted to grow in the nursery. Survival rate of seedlings, size and abnormal characteristics were inspected.

The *in vitro* acute gamma rays irradiated seedlings of *Dendrobium Sonia* 'BOM 17 Red' and *Dendrobium Sonia* 'Earsakul' were planted in the nursery for natural infestation of thrips. The results showed that thrips could damage young leaves of orchid shoots and the severe damage symptoms were observed in dry season. At 4 months after growing seedlings in the nursery, there were 0-17.14 % of damaged seedlings caused by thrips observed on the first new bulb and the damage caused by thrips increased to 67.27-92.31 % on the third new bulbs which were grown in the nursery for 10 months. At low dose gamma irradiation treatment, the damaged seedlings of 36.7-40.8 % were observed on the second new bulbs and they were increased to 38.6-53.1 % on the third new bulbs. Totally 76.8-93.8 % of all seedlings were damaged by thrips. The tested seedlings grown in the nursery without application of insecticide and fungicide had low survival rate due to the severe infestation of worms and diseases.

Irradiation at different growth stages of the same species yielded different doses of radiation that caused 50% lethality (LD₅₀).

Dendrobium Sonia 'BOM 17 Red' plantlets irradiated with gamma rays gave rise to some plantlets having more tolerance to thrips than the control. Therefore, it is necessary that the selection for orchid clones tolerant to thrips must be also performed at flowering stage.

Key words: orchid, dendrobium, thrips resistance, irradiation, gamma rays, *in vitro*

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