

RESEARCH NEWS**CREATING NEW PHENOTYPES OF *Crossandra infundibuliformis* VAR. DANICA THROUGH GAMMA-RAY INDUCED *IN-VITRO* MUTAGENESIS**W.D.C.J. HEWAWASAM, W.M. ABEYRATHNA¹ and D.C. BANDARA²*Green Farms Ltd., Pahalawalahapitiya Road, Marawila*¹*Horticultural Crop Research and Development Institute, Gannoruwa, Peradeniya*²*Department of Agricultural Biology, Faculty of Agriculture, University of Peradeniya*

The plant, *Crossandra infundibuliformis* var. Danica (Acanthaceae), is a beautiful and highly demanded flowering shrub that has been introduced to the international floriculture market. The challenge today is to develop this plant for its ornamental value, while maintaining existing characters.

Mutation breeding and tissue culture techniques on *Crossandra* shoot tips have been initiated with the objectives of finding the potential of gamma radiation in combination with *in-vitro* culture for increasing genetic variation in *C. infundibuliformis* var. Danica and for selecting novel mutant lines with altered phenotypic characters among the regenerated progenies and utilizing them to develop as improved cultivars.

In-vitro shoots of *Crossandra* var. Danica were exposed to different doses of gamma-rays. On the basis of the probit estimate of % explants survival to treatment dose, the gamma radiation dose that reduced culture survival to 50% of the untreated control (ED₅₀) was 6 Krad. Increasing dose of gamma radiation caused reduction in mean shoot length after 2 months in multiplication medium. At the same time, many leaf abnormalities such as changes in leaf size, shape, margin and apex were observed in the treated shoots growing under *in-vitro* conditions. These phenotypic variations increased with increasing treatment dosage. Compared to control, treated shoots showed delayed rooting in hormone free MS medium. MS medium supplemented with 2mg/l IBA gave better results for *in-vitro* rooting in treated shoots. However, rootability of these mutants also decreased with increasing treatment dosage. After 3 weeks of acclimatization, the treated plantlets were subsequently transferred to a soil mixture in the plant house. The survival rate of regenerated plantlets after transplantation also dropped with increased dosage. Next these plants were transferred to 60% shaded net house conditions. The plants, which withstood both the mutagenic effect and the environmental adversities for three months under net house conditions, survived till flowering. These plants showed many phenotypic abnormalities such as reduction in plant height, branch number and leaf abnormalities at their early stage of growth. At flowering time, among treated population, a single individual from 3 Krad treatment produced a solid mutant with altered leaf shape and flower colour. It could be maintain the same phenocopy even after five vegetative generations. This mutant was labeled as a new cultivar in the name of 'Savindi' and it is now being assessed for its suitability for releasing as a novel ornamental product to the international floriculture market.