CREATING NOVEL PHENOTYPES OF *Crossandra infundibuliformis* VAR. DANICA THROUGH *IN-VITRO* CULTURE AND INDUCED MUTATIONS

By

WARAHENAGE DON CHANDANA JAYANTHA HEWAWASAM

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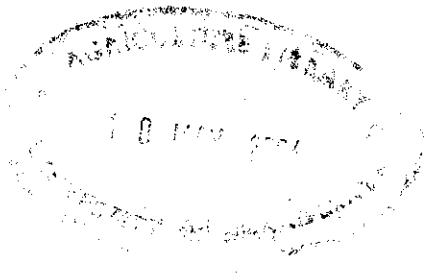

ABSTRACT

The aim of this research project was to create new cultivars of *Crossandra infundibuliformis* var. Danica possessing novel and /or improved ornamental characters.

Shoots of *Crossandra* var. Danica obtained *in-vitro* were exposed to different doses of gamma radiation and colchicine respectively.

On the basis of the probit estimate of explant survival (%) to treatment dose, the gamma radiation and colchicine doses that reduced culture survival to 50% of the untreated control ($E.D_{50}$) were 4.3 Krad and 0.04% respectively.

Increasing dose of both mutagens caused reduction in mean shoot length after 2 months in multiplication medium. Increasing dose of colchicine showed increase in the average number of shoots produced per culture. Shoot tip cultures treated with higher doses (> 0.03%) of colchicine were abnormal due to stunted growth after 2 months in the same medium. At the same time, many leaf abnormalities, 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, but not with the type of the mutagen used.

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, rooting ability of these mutants also decreased with increasing treatment dosage.

After 3 weeks of acclimatization, the treated plantlets were transferred to a net house with 60% shaded conditions. The survival rate of regenerated plantlets after transplanting also decreased (showing different survival rates in each treatment level) with increased dosage.

Next, these plants were transferred to a net house with 60% shaded conditions. The plants, which withstood both the mutagenic effect and the environmental adversities for three months under net house conditions, survived to flower. These plants showed many phenotypic abnormalities, i.e. reduction in plant height, branch number and leaf abnormalities, at 3 months after transferring to the normal plant house conditions. At flowering time, among the treated population, a single individual from the 3 Krad gamma radiation treatment produced a solid mutant with altered leaf shape and flower colour. The plants maintained the new phenotypic characters even after five cycles of vegetative propagation.

This mutant was named as a new cultivar 'Savindi' and it is now being assessed for its suitability for releasing as a novel ornamental product to the international floriculture market.