

## B-79 : EVALUATING THE POSSIBILITIES OF SUPER-LOW TEMPERATURE (LIQUID NITROGEN) STORAGE OF CITRUS SEEDS.

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Long term storage of citrus seeds is a problem due to rapid loss of viability in storage except for a few Citrus species. There is a possibility of preserving this kind of seeds in super-low temperature (Liquid Nitrogen-LN<sub>2</sub>) storage at -196°C.

The objective of this study was evaluating the possibilities of super-low temperature (LN<sub>2</sub>) storage of three different citrus species.

Seeds were extracted from ripe fruits of *C.grandis* Osbeck, *C.otachibana* Hort.ex Y. Tanaka and *C.trifoliata* L. and treated with 1% 8 Hydroxyquinoline sulphate for 4 mins followed by washing and transferred to the seed drying room at 40% RH and 24°C.

Firstly initial seed germination and initial seed moisture content were determined. Seeds were divided into two portions. One portion was placed in polyethylene bags and kept in the storage room at 10°C. The other portion was spread out in the controlled humidity chamber at 50% RH. Seed samples were drawn at one day intervals for the determination of seed moisture content and seed germination. Seed moisture content was monitored within the seed drying period. Seeds dried to less than 30% seed moisture content were immersed in LN<sub>2</sub> (rapid cooling method) for 30 mins. Following the treatment seeds were directly immersed in water at 40°C (rapid rewarming method). Seed germination was tested before and after LN<sub>2</sub> treatment. Similar procedure was followed for each sample until equilibrium moisture content was reached.

According to the results obtained seed moisture content of *C.trifoliata* seeds cannot be reduced less than 30% without loss of viability. *C.grandis* and *C.otachibana* seeds can be dehydrated up to 5% moisture content level without loss of viability. Seeds of *C.grandis* and *C.otachibana* can survive after LN<sub>2</sub> treatment and *C.trifoliata* seeds lose their viability after LN<sub>2</sub> treatment.

These results suggest that *C. grandis* and *Cotachibana* seeds are dehydration tolerant (orthodox) and can be preserved in liquid nitrogen. *C. trifoliata* seeds are dehydration sensitive (recalcitrant) and cannot be preserved in liquid nitrogen.