

## Cryopreservation of *Citrus maxima* embryonic axes using advanced cryo-techniques and establishment of base collection

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*Citrus* is the second most important fruit crop of the world trade for fresh fruits, more than 50 countries are growing commercially in different agro-climatic conditions for its diversified use and increasing demand worldwide. Pummelo (*Citrus maxima* L.), is one of the most widely cultivated crops in Southeast Asia and extensively used for traditional medicament. Three distinct and modified cryo-techniques viz., air desiccation, vitrification and encapsulation-dehydration were applied for *ex-situ* preservation of pummelo germplasm using embryonic axes. The moisture content of fresh embryonic axes of pummelo was 33-58% which showed intermediate storage behavior of this species. Successful cryopreservation was attempted after desiccation upto critical moisture content of 10-16%. The highest recovery (100%) was recorded through encapsulation-dehydration followed by air-desiccation (95%) and vitrification (90%). Growth of all *in vitro* regenerated plantlets whether from fresh, desiccated or cryopreserved axes was normal with no intervening callus. These recovered *in vitro* plantlets were successfully transferred to the fields. These results indicate that these cryo-methods could be successfully used to establish a backup cryo base collection of pummelo germplasm. More than 100 accessions of pummelo have been successfully cryo stored using desiccation followed by fast freezing technique in cryobank at NBPGR, India. This collection stored in liquid nitrogen would provide a complimentary conservation of this unique and diverse germplasm for utilization in citrus industry and crop improvement programmes.

### Biography

Sukhdeep Kaur is pursuing her PhD from Amity University, Noida (India), and is pursuing her research work in Tissue Culture and Cryopreservation Unit at ICAR-National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi (India), under the supervision of Dr. S K Malik (Principal Scientist). She is working on "Genetic diversity and *ex-situ* conservation of pummelo (*Citrus maxima*)". She has published two papers in journals.

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