

CRYOPRESERVATION OF HOP TIPS



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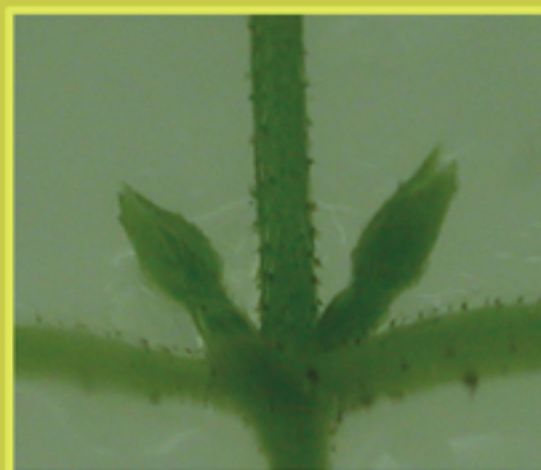
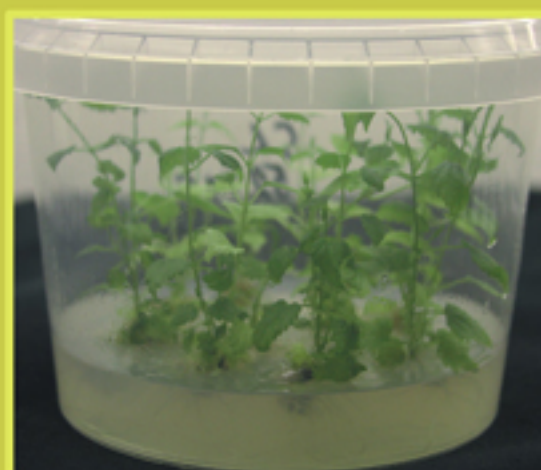
Cryopreservation is a process of plant conservation under ultra - low temperatures of 196 °C under zero in a liquid nitrogen. It is used for conservation of gene fond in plants, which are multiplied in a vegetative way. This method contributes to the conservation of genetic stability and prevent from ageing. It is used for conservation of genetic resources of cultural and wild plants in such virus free materials, which is endangered by depreciation caused by biotic and non - biotic stresses if multiplied in ex vitro conditions. Plants transformed into *in vitro* cultivation serve as an original material for this purpose. Pollen for hybridization is conserved in this way as well. In 2003 the first cryobank in Czech Republic was established in Research Institute of Plant Production in Prague for plants multiplied in a vegetative way. In the first phase its activity has been aimed at the most important plants multiplied in this way: potato, hop, garlic, apple tree, pear tree, morello cherry tree, cherry tree, strawberry and grapes.

Encapsulation methods (dehydration, controlled freezing and ultra - quick freezing) were tested in hops. *In vitro* cultures of hop served as the initial material. They were multiplied to a needed number and tissues were sampled. The method for hop cryopreservation combines cold pre - treatment 4 °C, treatment of explants with cryoprotectant C (0.7 M sucrose), following desiccation of shoot tips and ultra - rapid rate of freezing. Recovery of hop plants after cryopreservation was in average 35 % see table 1.

Nowadays 32 hop varieties are in cultivation *in vitro*, eight of them belongs to Czech ones. Fifteen hop varieties are conserved in liquid nitrogen. The objective of cryobank is to conserve genetic resources of Czech origin hops and eventually some important foreign hop varieties as well.

Acknowledgement

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Recovery of hop plant after cryopreservation

Variety of hop	Plant recovery %
Southern Star	39
Outeniqua	36
Columbus	39
Harmonie	30
Osvald's. clone.No. 31 (M)	34
Sládek	36
Premiant	33
Mean	35