

CRYOBANK OF GARLIC (*ALLIUM SATIVUM* L.) GENETIC RESOURCES IN POLAND



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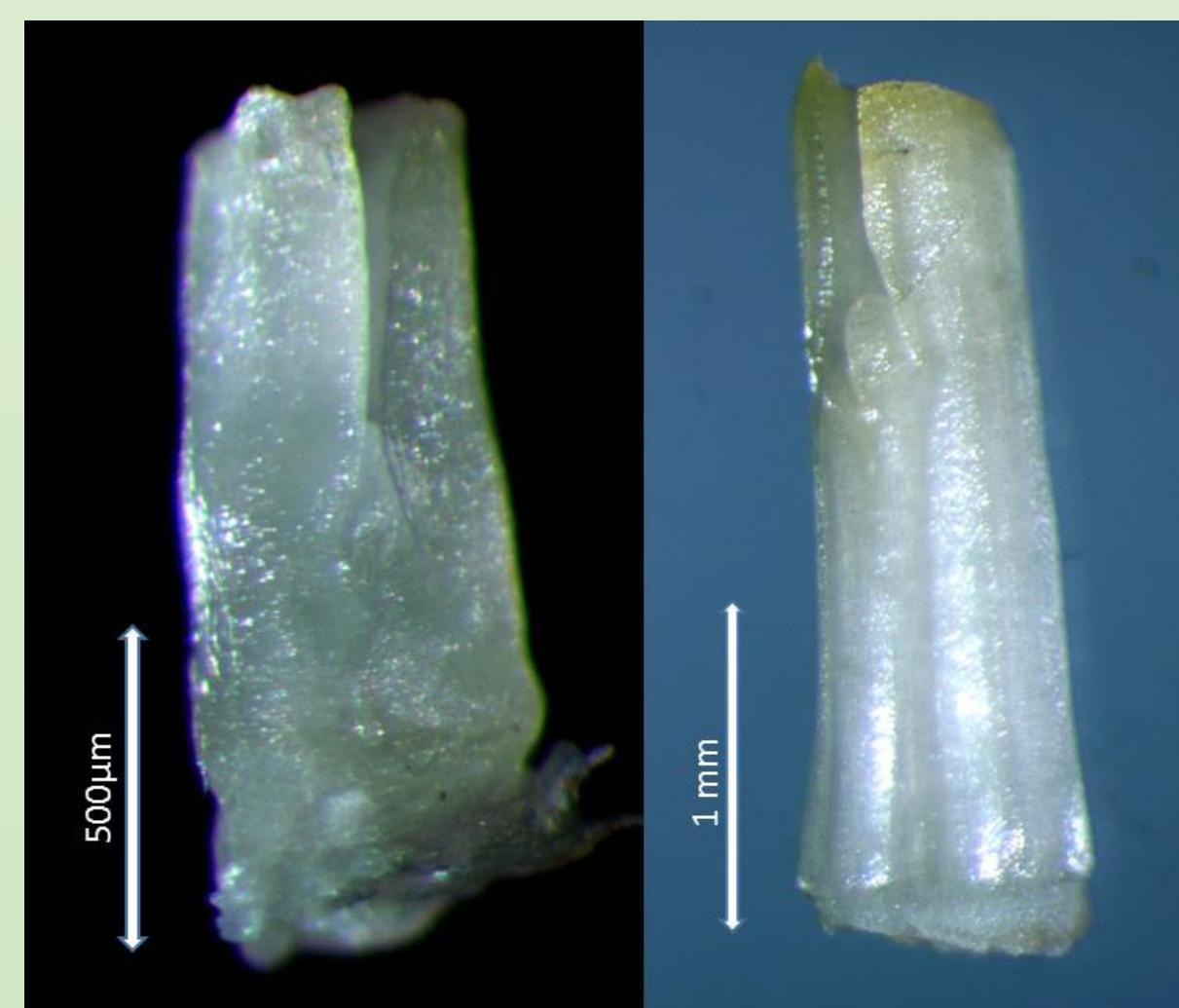
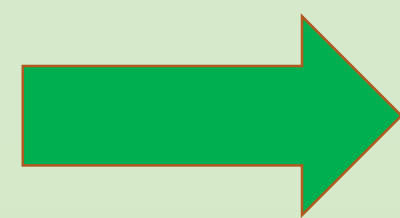
Since 1986, in the Research Institute of Horticulture in Skierniewice, genetic resources of 539 garlic accessions (*Allium sativum* L.) have been maintained in a field collection. In this collection, two forms of garlic: bolting (281 accessions) and non-bolting (236 accessions) are distinguished.

MATERIAL AND METHODS:

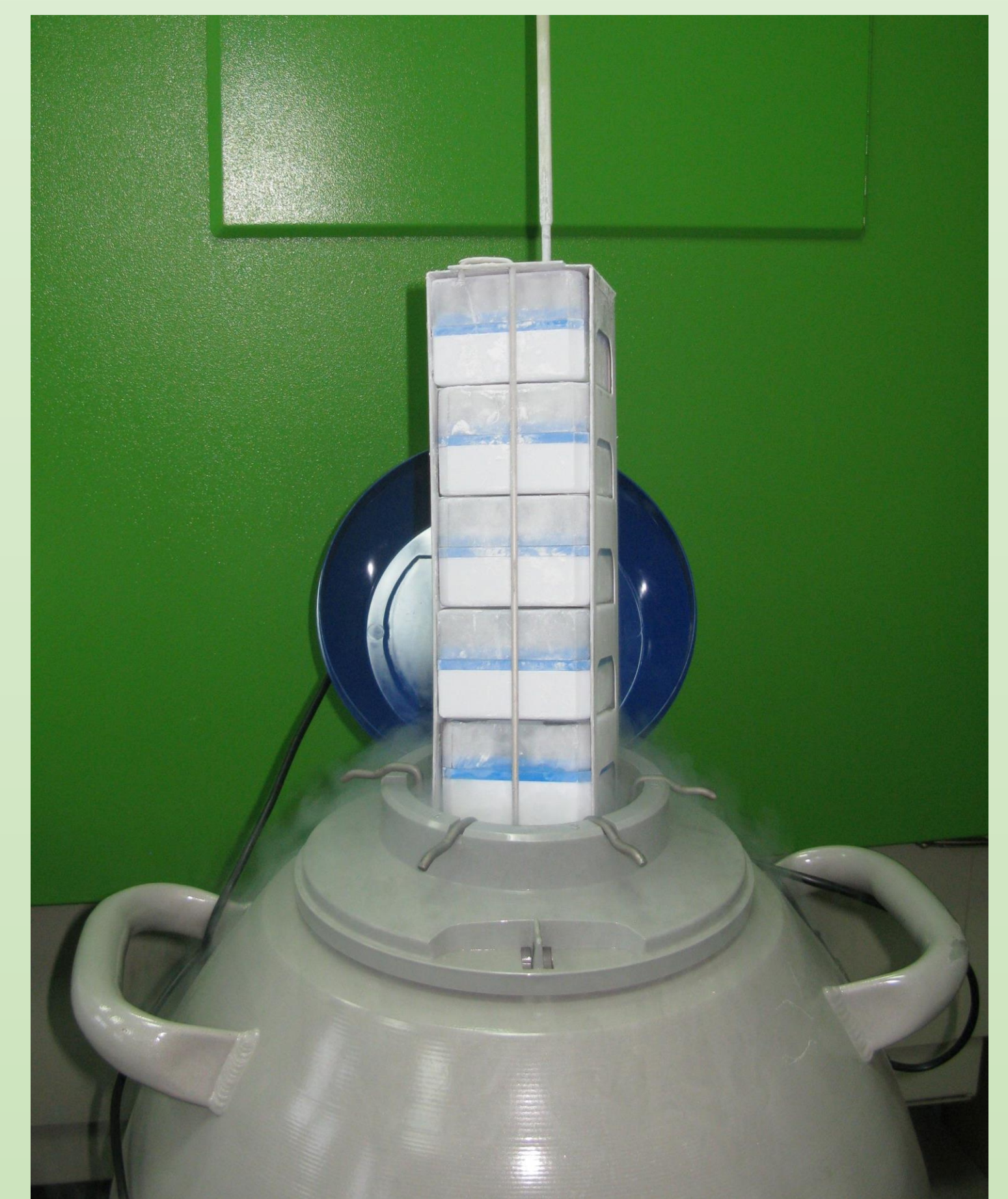
The plant material used in this study comes from the Polish, Czech, German, French and Italian genebank's collection. Shoot tips, 1-2 mm x 1-2 mm, consisting of a basal plate and 2-3 leaf primordia were aseptically excised from the sterilized (70% ethanol, 3% sodium hypochlorite) garlic bulbils, cloves or *in vitro* plantlets. Cryopreservation of shoot tips were performed by vitrification method with PVS3 solution (50% (w/v) sucrose, 50% (w/v) glycerol).



Garlic bulbil, clove, *in vitro* plantlets – source of plant material



Isolated shoot tips



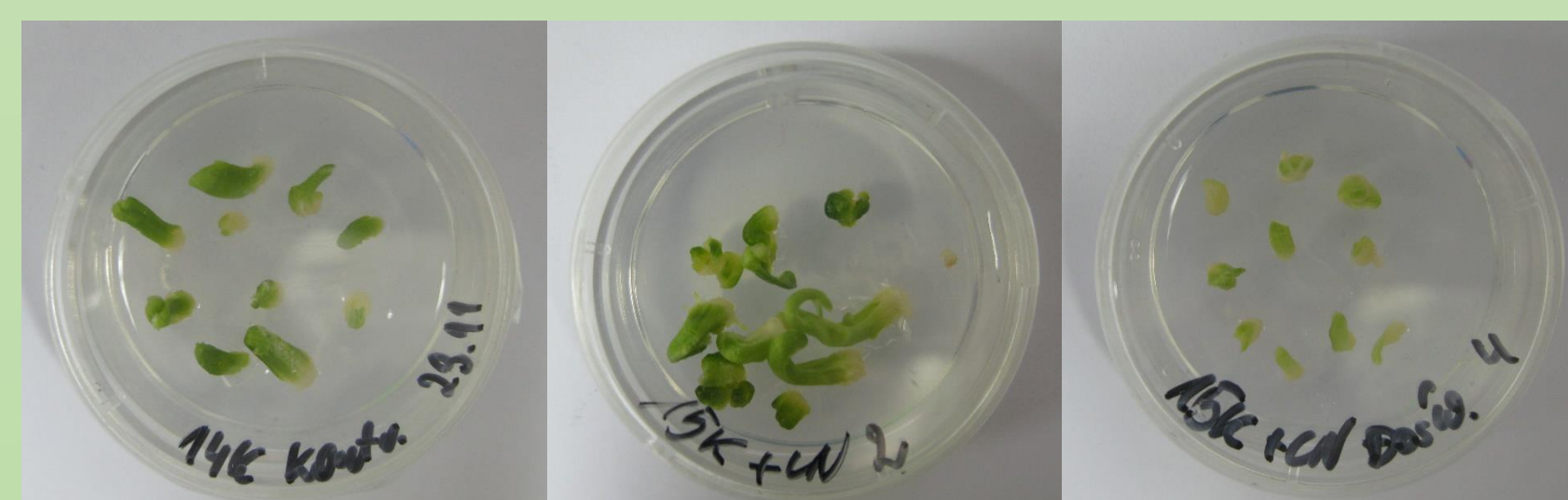
Dewar with cryopreserved garlic samples

RESULTS:

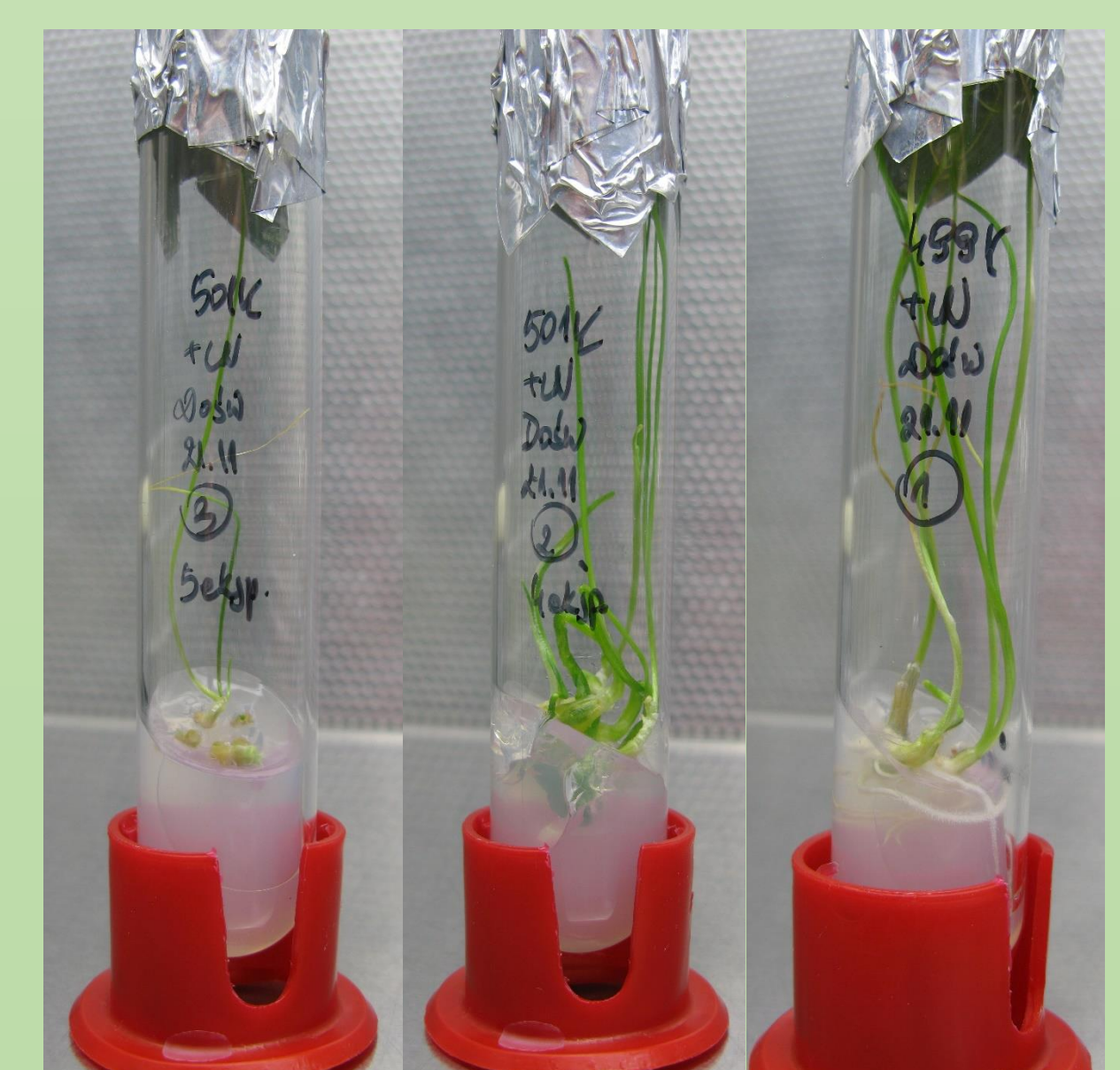
The survival rate of garlic was determined two weeks after rewarming, regrowth six weeks after rewarming. Survival rate of bolting garlic accessions ranged from 11.9% to 100% (average 85.2%), whereas regeneration rate ranged from 6.0% to 94% (average 60%). In case of non-bolting garlic accessions, survival rate was from 14.0% to 84% (average 46%), whereas regeneration rate ranged from 13.0% to 87.9% (average 35%).



Survival rate of bolting garlic accessions



Survival rate non-bolting garlic accessions



Examples of regeneration rate of garlic accessions

Safetly standars for long-term storage in liquid nitrogen:

- regeneration rate $\geq 30\%$ - 100 explants are resrepresentative set to put in liquid nitrogen as safely duplicate
- regeneration rate 10-30% - it is necessary to put into liquid nitrogen 200 explants as safely duplicate
- regeneration rate $< 10\%$ - such accession is excluded from the study

Actually, in Polish cryobank are maintained 160 garlic accessions from the European field collections: 75 accessions come from the Polish collection, 51 accessions from the Czech collection and 34 from the German collection.