



Technical developments for Ontario hazelnuts

**In vitro technology transfer:
From benchtop to commercial propagation
A receptor's view**

From benchtop to commercial propagation

Harster Greenhouses Inc. and TCL

Who we are:

- The largest producer of in-vitro violets in North America

Location :

- West Flamborough, halfway between Guelph and Niagara peninsula



What we do:

- Harster's successfully mass produces commercial quantities of tissue cultured violets in its own laboratory.
- Transplants are grown to maturity in state of the art controlled greenhouse facilities.
- End product is sold to wholesalers and chain stores throughout all of North America

Harster Greenhouses Inc.

5 acres of mass production of tissue culture propagated St Paulias.



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From benchtop to commercial propagation

Integrated production of hazelnut trees seedlings

From A to Z

- Selected hazelnut Germplasm
- Tissue Culture lab propagation
- State of the art Greenhouses
- Land



Our strengths

- Existing commercial lab
- Greenhouse acclimatization expertise
- Controlled environment system knowledge
- Business expertise

What makes us unique

- R&D capability and resources (University of Guelph)
- Efficacy
- Consistency
- Pesticide free
- Timely availability

From benchtop to commercial propagation

Laboratory facility

Research and propagation

- The laboratory: started in 1995
- Production: African violets
- Past research projects: Medicinal plants
- On going: Hazelnut trees, other tree species, ornamental trees



University of Guelph:

- Strong relationship since inception of our lab.
- The medicinal plant project was a joint venture with the university.
- Well placed to benefit from continuous research, improvements and break throughs

From benchtop to commercial propagation

Hazelnut trees in vitro propagation - Challenges

Cost effective propagation

- Optimize technology
- Find savings in materials and labour / innovative thinking
- Customize medias and techniques
- Increase the available stock for propagation



Acclimatization

- From incubator to harsh environment
- Decrease shrinkage
- Growing techniques
- Experienced crew





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Hazelnut trees in vitro propagation - Benefits

- Consistency of the product
- Traceability from germplasm to finished product
- Year round production
- Immediate feedback
- Large quantities available rapidly



From benchtop to commercial propagation

Hazelnut trees in vitro propagation - Potential

Canadian technology

- In vitro propagation technique developed in Guelph
- Paid for by canadian tax dollars
- Development of canadian hazelnut trees varieties
- Payment of royalties on Canadian varieties



Locally

- Investment
- New jobs
- New markets

From benchtop to commercial propagation

Hazelnut trees in vitro propagation

Harster Greenhouses provides :

- The commercial production capacity to meet the demand for hazelnut trees.
- The lab to engineer exponential multiplication of consistent trees
- The greenhouses infrastructure to acclimatize and start the seedlings
- The resources to adapt new varieties in its production



Canadian grown !





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