Simcoe Apple Research Program Update

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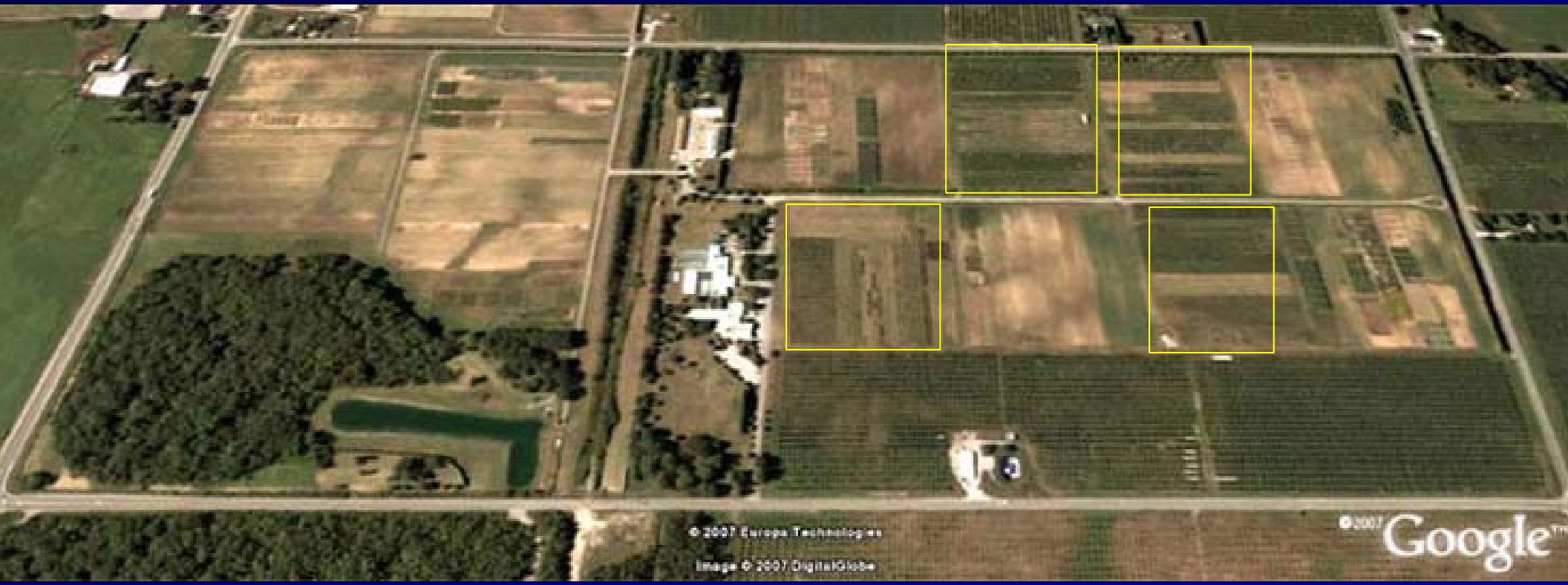
Proposed Discussion

- Sabbatical leave at AAFC, Summerland
  - Facilities and resources
    - Current research
    - Future opportunities

Simcoe Research Station



- Total area - 87 ha
- 10 -15 ha of apple research orchards, planted in 4 blocks
- Laboratory and regular air storage facilities

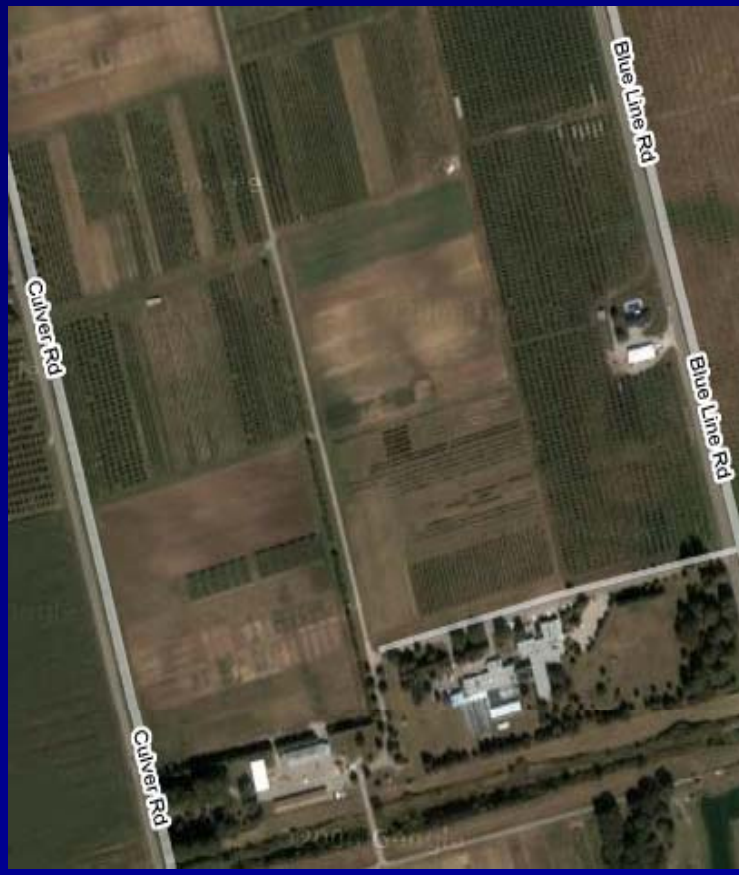
Resources

Personnel

- Debbie Norton Technician (funded 85% through OMAFRA)
- Currently two graduate students
- Research station staff to assist with orchard management (spray/prune/harvest etc)

Annual Operating Costs

- $300 - $400,000 /year
- ~75% provided by UoG/OMAFRA
- ~25% (80K) required externally

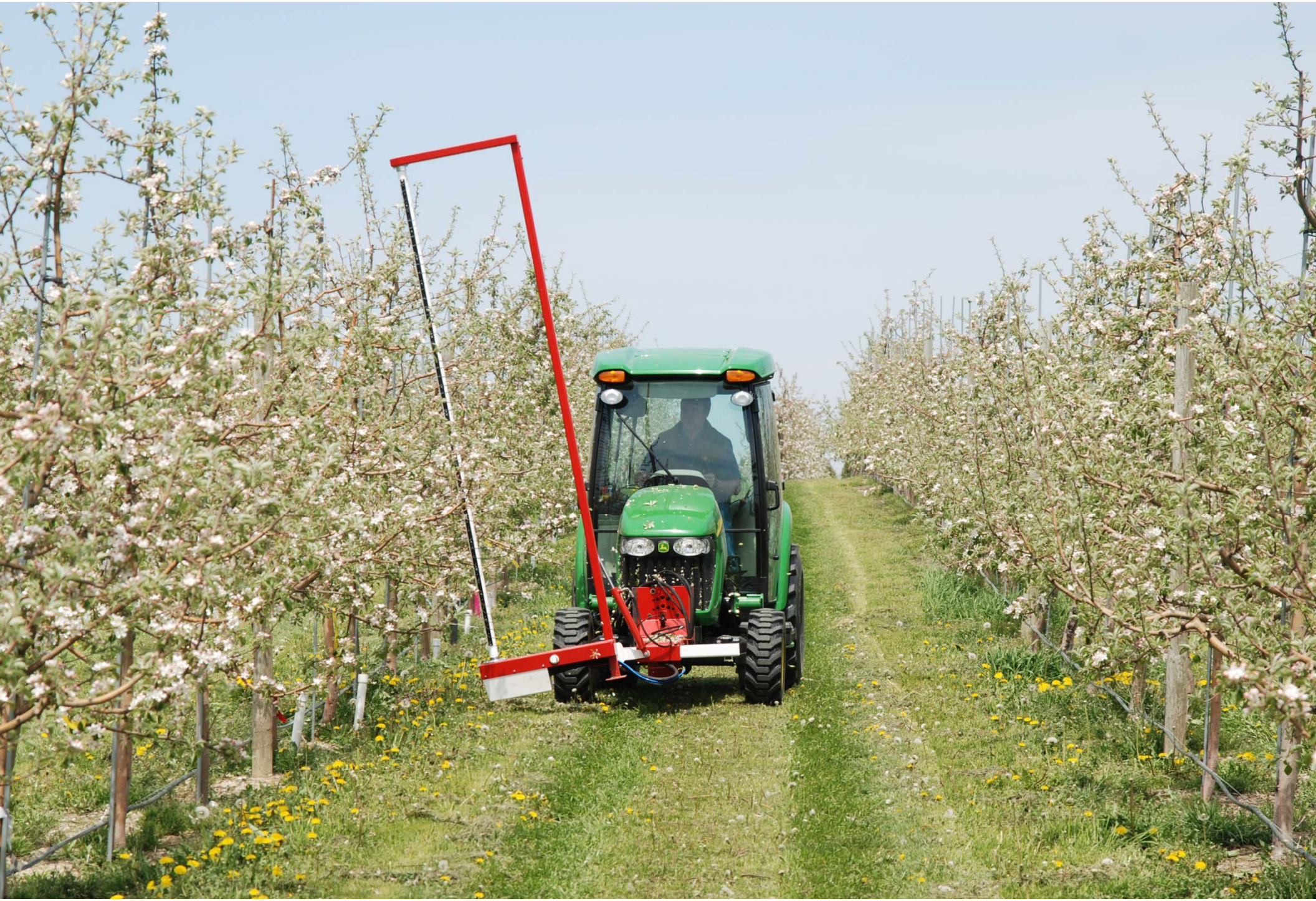


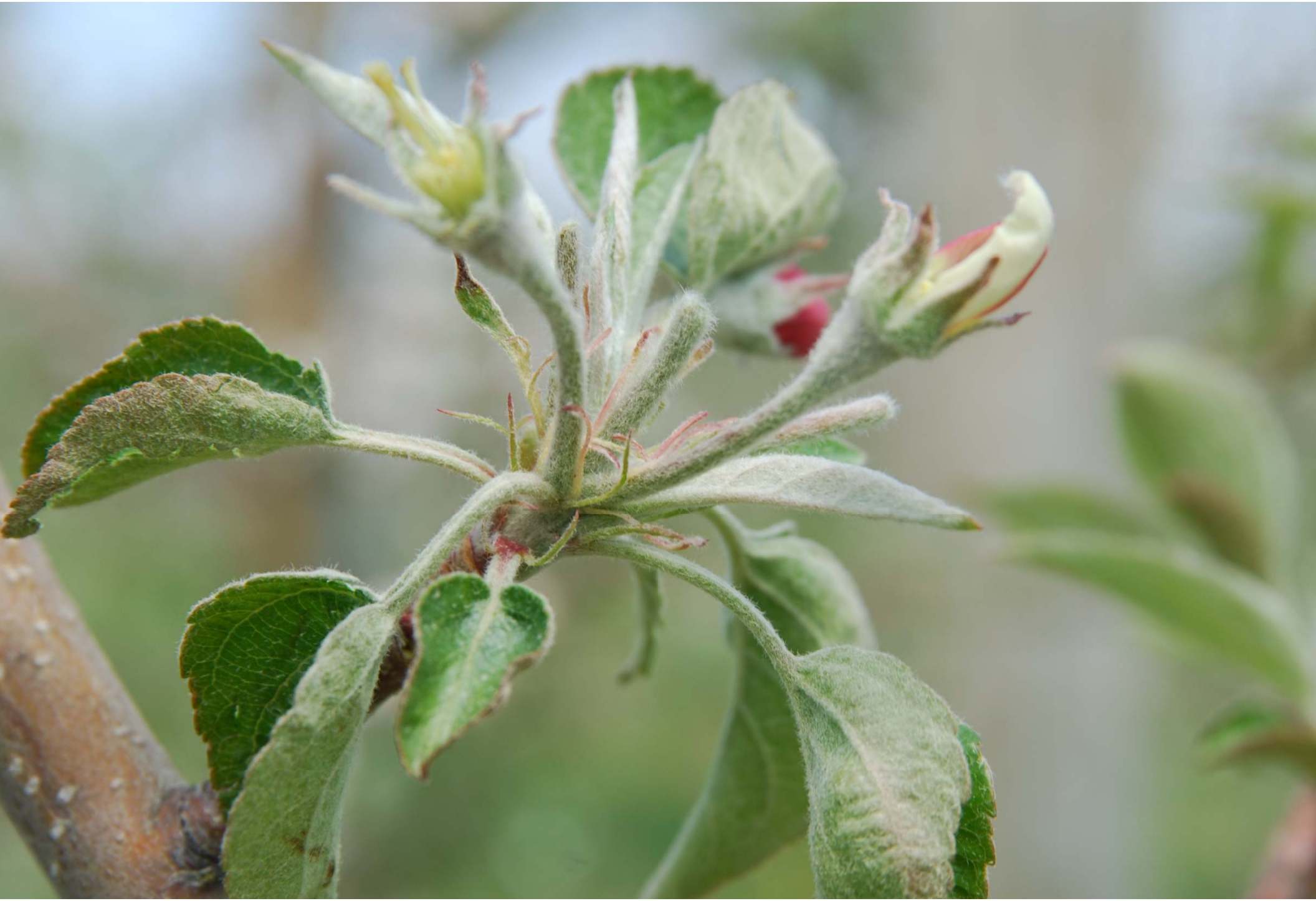
Present Funding

- Univ. of Guelph/OMAFRA Sustainable Production systems competitive research program
- Ontario Apple Growers ($20K in 2010)
- Private Industry (Chemical Companies)
- Federal Gov't R&D Programs

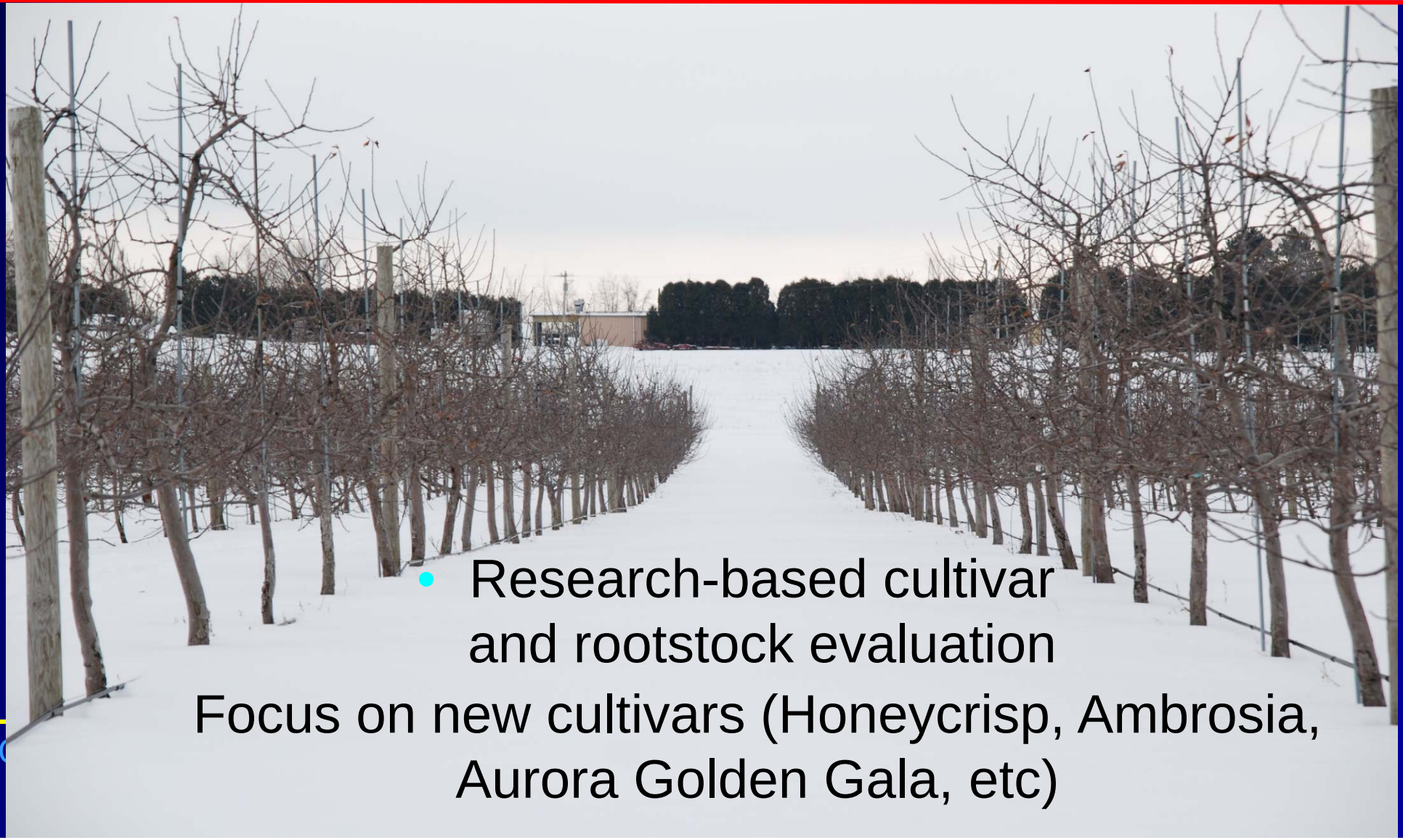
Current Research Focus

- Orchard management practices to improve production efficiency, profitability, and fruit quality
  - Fruit thinning
  - Fruit quality
  - Harvest Management





Current Research Focus

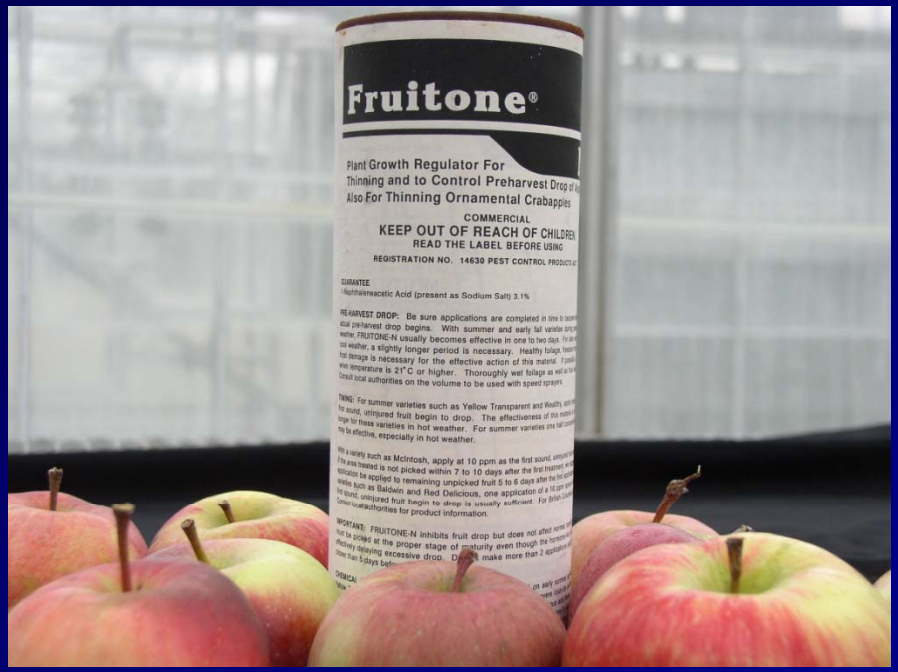


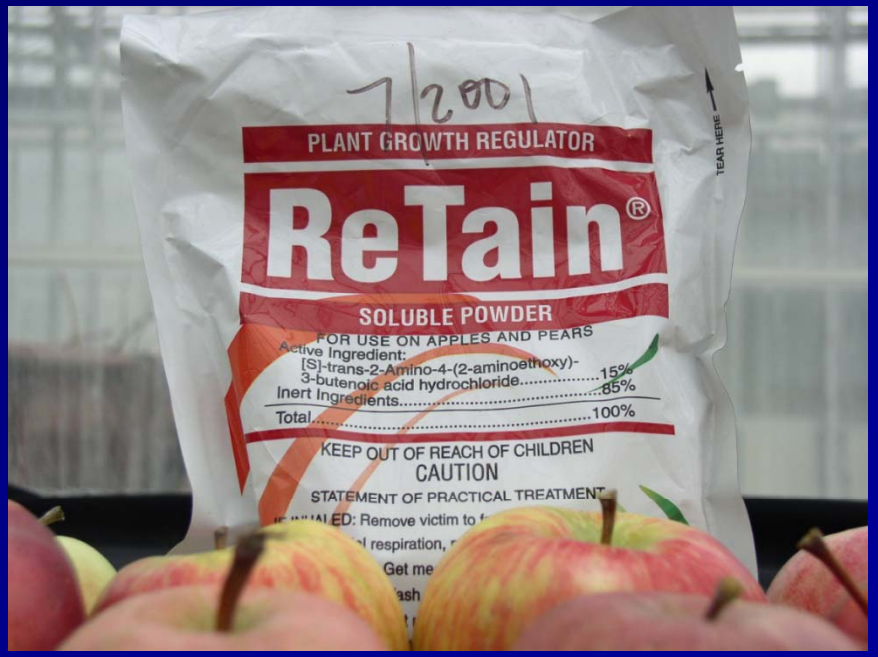
- Research-based cultivar and rootstock evaluation

Focus on new cultivars (Honeycrisp, Ambrosia, Aurora Golden Gala, etc)

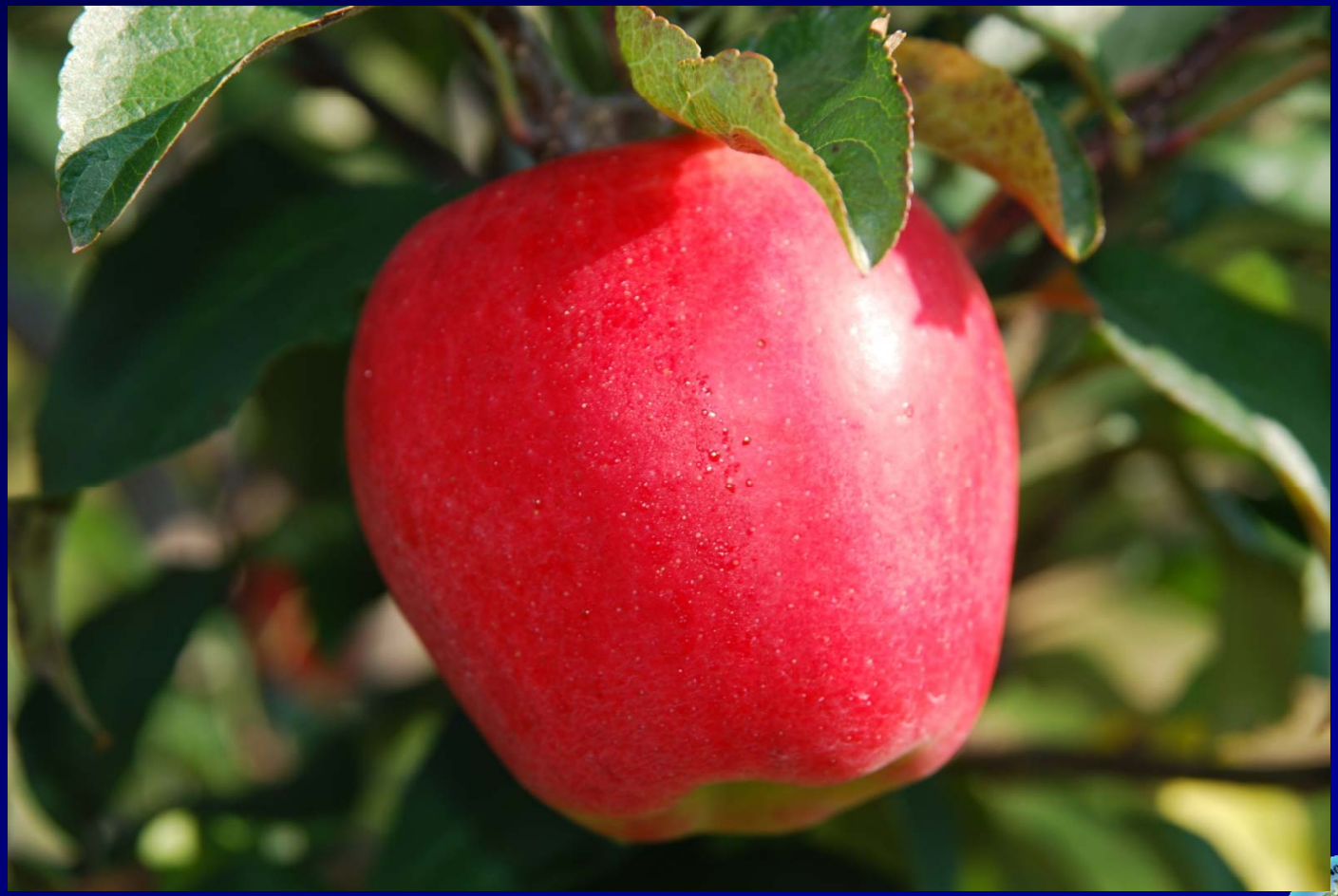
Current Research Focus

- Use and physiology of plant bio-regulators to regulate cropping, improve production efficiency and fruit quality

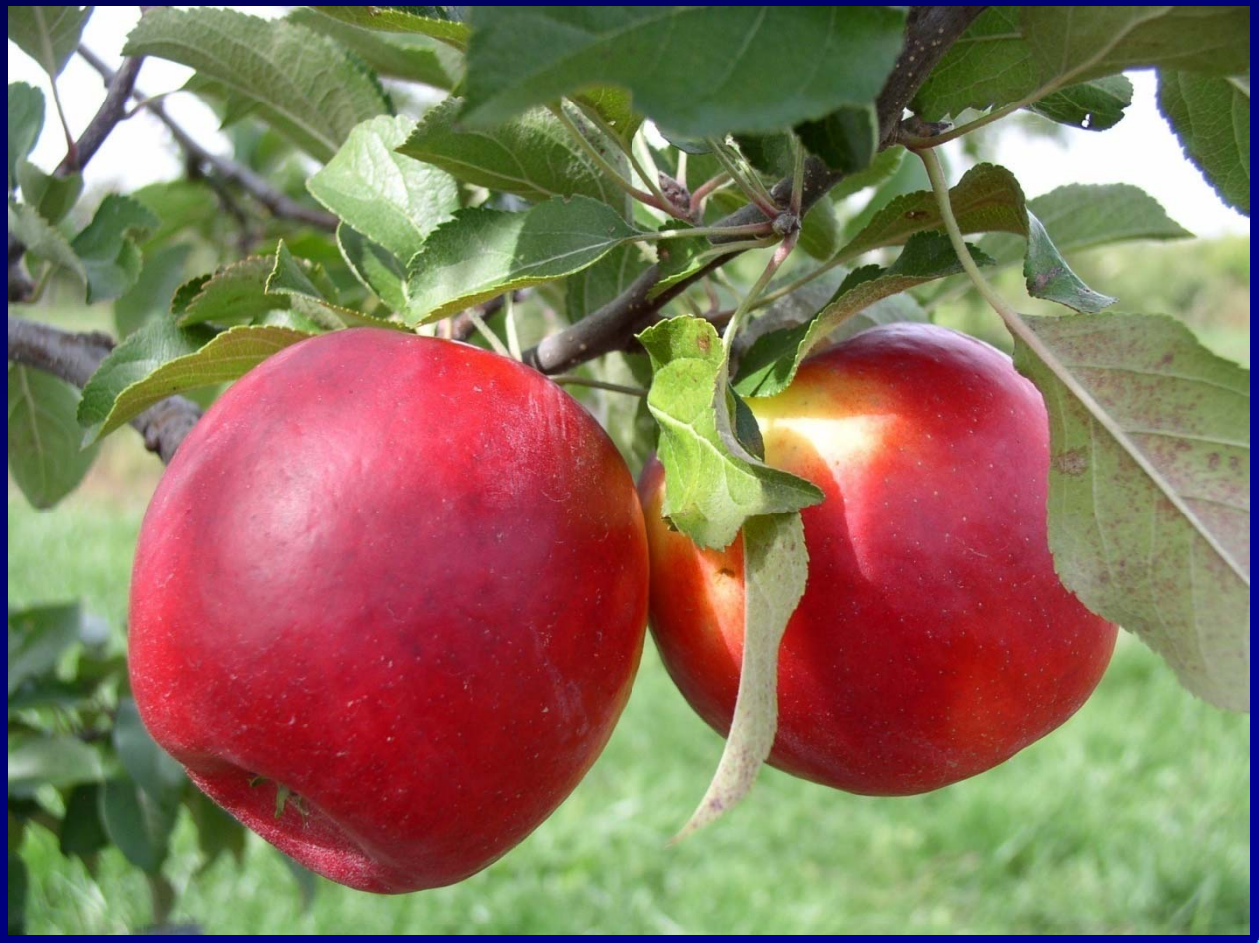




Research- Based Cultivar Development



Research- Based Cultivar Development

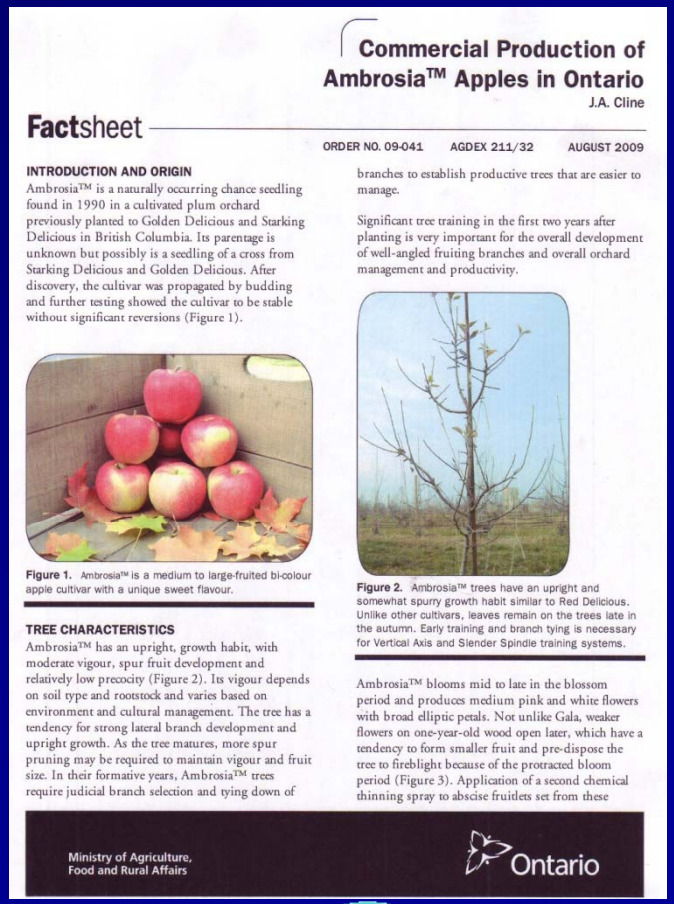


Current Research Focus

- Mineral nutrition and soil management effects on fruit quality and tree growth
- Beneficial use of organic and inorganic amendments for reducing soil-borne disease, herbicide use, and improving fruit quality and plant health

Current Extension Activities

- Direct grower and consumer inquiries
- Preparing factsheets (Ambrosia is most recent)
- Assist with editing Publication 360
- Collaborate with OMAFRA Specialists
- Station Tours
- Communicate research through:
  - orchard network
  - popular press articles
  - grower meetings



Commercial Production of Ambrosia™ Apples in Ontario

J.A. Cline

Factsheet

ORDER NO. 09-041 AGDEX 211/32 AUGUST 2009

INTRODUCTION AND ORIGIN

Ambrosia™ is a naturally occurring chance seedling found in 1990 in a cultivated plum orchard previously planted to Golden Delicious and Starking Delicious in British Columbia. Its parentage is unknown but possibly is a seedling of a cross from Starking Delicious and Golden Delicious. After discovery, the cultivar was propagated by budding and further testing showed the cultivar to be stable without significant reversions (Figure 1).

Figure 1. Ambrosia™ is a medium to large-fruited bi-colour apple cultivar with a unique sweet flavour.

TREE CHARACTERISTICS

Ambrosia™ has an upright, growth habit, with moderate vigour, spur fruit development and relatively low precocity (Figure 2). Its vigour depends on soil type and rootstock and varies based on environment and cultural management. The tree has a tendency for strong lateral branch development and upright growth. As the tree matures, more spur pruning may be required to maintain vigour and fruit size. In their formative years, Ambrosia™ trees require judicial branch selection and tying down of branches to establish productive trees that are easier to manage.

Significant tree training in the first two years after planting is very important for the overall development of well-angled fruiting branches and overall orchard management and productivity.

Figure 2. Ambrosia™ trees have an upright and somewhat spurry growth habit similar to Red Delicious. Unlike other cultivars, leaves remain on the trees late in the autumn. Early training and branch tying is necessary for Vertical Axis and Slender Spindle training systems.

Ambrosia™ blooms mid to late in the blossom period and produces medium pink and white flowers with broad elliptic petals. Not unlike Gala, weaker flowers on one-year-old wood open later, which have a tendency to form smaller fruit and pre-dispose the tree to fireblight because of the protracted bloom period (Figure 3). Application of a second chemical thinning spray to abscise fruitlets set from these

Ministry of Agriculture, Food and Rural Affairs

Ontario

Future Research Activities

- Methods to enhance the return bloom of Honeycrisp
- Optimizing fruit quality of new apple cultivars
- Biennial bearing and precocity of Northern Spy and Honeycrisp
- Mechanical thinning of apples with focus on potential replacement for Carbaryl
- Continuation of the development of Vineland rootstock

Future Research Activities

- Increasing access to and use of economic tools to determine long-term feasibility of orchard planting decisions
- Field validation of new technology that can non-destructively determine fruit quality (starch, ethylene, soluble solids)
  - Determine orchard variability to assist with harvest management
  - Increased sampling -> better understanding of fruit storage potential for CA or Air

www.plant.uoguelph.ca/treefruit