GROWING HONEYCRISP APPLES WITHOUT PESTICIDES: LONG-TERM BENEFITS AND CHALLENGES*

* Based on 6 published papers by Chouinard, Philion, Cormier, Tavares, Bérard, Knoch, Larose, Joubert, Dumont, Mukherjee, Veilleux & Patience (2016, 2017, 2019)
France (apples)
Italy (pears)
Italy (apples)
Honeycrisp 2012-2017 (Chouinard et al. 2019)
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6-yr average
OTHER HIGHLIGHTS

- **Scab (fruit):** 0% vs 1.4%. (2013)
- **Scab (foliage):** 0.2% vs 2.3%. (2013)
- **Aphids:** 7% vs 4% (3-yr assessment)
  
  **Leafhoppers:** 2.5% vs 15.7% (2012)
- **SBFS complex:** 1.0% vs 7.3% (2015-2016)
- **Spider mites:** 0.5 vs 0.5 (3-yr assessment)
  
  (motiles/leaf)
RAINPROOF NETS

PLA wetting
Contact angle = 80°

Surface chemistry
PICVD treatment
Contact angle = 100°

Contact angle = 145°

Untreated HDPE
Treated

From: Knoch & Tavares, pers. comm
MESH SIZE VS EXCLUSION - LAB TESTS

Thorax: 1.76 ± 0.02 mm (female)
MESH SIZE VS EXCLUSION - BENEFICIALS

A. matricariae
Thorax: 0.43 ± 0.01 mm

A. abdominalis
Thorax: 0.50 ± 0.01 mm

A. aphidimyza
Thorax: 0.55 ± 0.03 mm
BUMBLEBEE POLLINATION
Fruit size

2016

p = 0.4386

2017

p = 0.09275

Bee hives
Netted Bumblebees
Netted control

Bee hives
Netted Bumblebees
Netted control

Diam (mm)

Normandeau et al., submitted
Number of seeds vs bumblebee hive location

2016

2017

Number of seeds/fruit

p = 0.004174

Normandeau et al., submitted
Protection from « up coming » BMSB

Orchard catches:
2014: 1 Rockburn
2016: 1 Rockburn
2019: 3 (in 3 localities)

Catches in Montreal:
2014: 2
2016: 75
2017-18-19: established
To be continued...

- Multi-task netting / systems
- Mechanized install / opening / closing
- Spraying through nets (fertilizers, thinners, pesticides)
- Optimized orchard design + training system
- Varietal suitability
- Full-block systems
- ProtekNet (1 x 2 mm) vs DrapeNet (2 x 7 mm) vs Artes (2.3 x 3.4 mm)
- Photoselective netting
- ...