## Hop Imports – Canada, 2013-2014

Statistics Canada

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>kg</td>
</tr>
<tr>
<td><strong>Total hop imports†</strong></td>
<td>13 523 306</td>
<td>1 048 001</td>
</tr>
<tr>
<td><strong>Pellets only</strong></td>
<td>11 497 852</td>
<td>871 2016</td>
</tr>
<tr>
<td><strong>Percent (%) of total in pellets</strong></td>
<td>85%</td>
<td>83%</td>
</tr>
</tbody>
</table>

† Includes all line items for hops such as hop cones (whole or partial), hop powders, hop pellets, etc. and resin products.
### Hop Imports – Ontario, 2014

#### Statistics Canada

<table>
<thead>
<tr>
<th></th>
<th>Ontario</th>
<th>Canada (excluding Ontario)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>kg</td>
</tr>
<tr>
<td><strong>Total hop imports†</strong></td>
<td>7,136,736</td>
<td>547,565</td>
</tr>
<tr>
<td><strong>% of Canadian total</strong></td>
<td>53%</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>- Ontario imports fluctuate year by year while total Canadian imports continue to increase (2011-2014)</td>
<td></td>
</tr>
<tr>
<td><strong>Pellets only</strong></td>
<td>5,922,245</td>
<td>455,232</td>
</tr>
<tr>
<td><strong>Percent (%) of total in pellets</strong></td>
<td>83%</td>
<td>83%</td>
</tr>
</tbody>
</table>

† Resin products removed to allow for comparison with domestic production
Ontario Hops - 2015

- ~32 commercial growers across Ontario
- Approximately 24 ha (~60 acres)
- 300% increase since 2009
- Conventional & organic production
  - 70%:30% acreage
  - 40%:60% # of growers
Canadian Hop Acreage (%) by Province

<table>
<thead>
<tr>
<th>Province</th>
<th>Ha (ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia (BC)</td>
<td>32 (79)</td>
</tr>
<tr>
<td>Québec (QC)</td>
<td>28 (69)</td>
</tr>
<tr>
<td>Ontario (ON)</td>
<td>24 (59)</td>
</tr>
<tr>
<td>New Brunswick (NB)</td>
<td>8 (20)</td>
</tr>
<tr>
<td>Nova Scotia (NS)</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Prince Edward Island (PEI)</td>
<td>3 (7.5)</td>
</tr>
<tr>
<td>Manitoba (MB)</td>
<td>2 (5)</td>
</tr>
</tbody>
</table>
2015 Field Season to date

- Damage in several yards due to late May frost
- Irrigation less of an issue due to wet 2015, however still required to maximize yield
- Downy mildew an issue for growers with systemic infection or who were delayed in applying preventative sprays
- Leafhoppers, Japanese beetle sporadic – damage to some yards, not others
- First confirmation of Fusarium in hops in Ontario and Quebec
- Virus appears to be wide spread
- Mite populations building now
Virus

Photo: University of Guelph

Photo: University of Guelph

Photo: OMAFRA
New Products Registered on Hops:

- **Purespray Green Oil** (mineral oil) for suppression of powdery mildew and spider mites, feeding deterrent for aphids
- **Agri-mek** (abamectin) for control of spider mites
- **Vivando** (metrafenone) for suppression of powdery mildew

**EMERGENCY USE REGISTRATION UNTIL JULY 2016 ONLY:**
**Regalia Maxx** (*Reynoutria sachalinensis*) for suppression of downy mildew
Projects currently underway for hops products (Not Currently Registered):

- Xentari (*Bacillus thuringiensis* subs. *aizawai*) for hop looper – registered by PMRA, not classified in Ontario yet
- Ranman (cyazofamid) for downy mildew
- Kanemite (acequinocyl) for mites
- Success/Entrust (spinosad) for loopers
- Presidio (fluopicolide) for downy mildew
- Aim (carfentrazone) for weeds
- Alion (indaziflam) for weeds
- Fulfill (pymetrozine) for aphids
- Pyganic (pyrethroids) for aphids and leafhoppers
- Select/Centurion (clethodim) for grassy weeds
- Regalia Maxx (*Reynoutria sachalinensis*) for downy mildew and powdery mildew
- Actinovate (*Streptomyces lydicus*) for downy mildew and powdery mildew
Research Update

• 2013-14: ‘Hopsprayer’ project OMAFRA

• 2011-2014: OMAFRA Scouting Project

• 2013-2015: U of G New Directions grant - brewer and grower surveys; replicated field trials with U of Guelph

• 2014-2015: OMAFRA Frost Management Trial

• 2014-2017: U of Guelph Hop fungal disease

• 2015: OMAFRA Leaf Stripping Trial
Status:
- PI: Dr. Mary Ruth MacDonald
- Technician: Cathy Bakker
- Location: Simcoe Research Station
- Size: ~48m x 48m (0.23 ha)
- 10 cultivars in a replicated field trial
- 1 cultivar for replicated agronomic trials
  - Plants purchased from Great Lakes Hops
  - Transplanted on 30 May, 2013
  - 5 plants per plot x 4 replicates
  - Spacing: Rows 4.5 m, Plants 1 m
New Directions - Cone Yield at 8% Moisture

Highest yielders were: 2013: Zeus, followed by Galena and Bertwell, and 2014: Cascade, Zeus and Galena
New Directions - Alpha and beta acids
2014

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Alpha Acid Content (%)</th>
<th>Beta Acid Content</th>
<th>Source: C. Bakker and MR McDonald, University of Guelph</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Results from trial</td>
<td>Expected range¹</td>
<td>Results from trial</td>
</tr>
<tr>
<td>Galena</td>
<td>10.7 a</td>
<td>8.0-14.9</td>
<td>8.6 a</td>
</tr>
<tr>
<td>Chinook</td>
<td>9.6 a</td>
<td>13.9-15.3</td>
<td>3.3 e</td>
</tr>
<tr>
<td>Centennial</td>
<td>8.6 a</td>
<td>9.0-12.0</td>
<td>4.1 dce</td>
</tr>
<tr>
<td>Zeus</td>
<td>8.5 a</td>
<td>14.6-18.3</td>
<td>3.5 de</td>
</tr>
<tr>
<td>Cascade</td>
<td>5.5 b</td>
<td>5.1-8.5</td>
<td>7.4 b</td>
</tr>
<tr>
<td>N. Brewer</td>
<td>4.6 bc</td>
<td>7.0-12.1</td>
<td>4.6 dc</td>
</tr>
<tr>
<td>Sterling</td>
<td>3.4 bc</td>
<td>6.0-9.0</td>
<td>4.4 dce</td>
</tr>
<tr>
<td>Bertwell</td>
<td>3.2 bc</td>
<td>N/A</td>
<td>4.2 dce</td>
</tr>
<tr>
<td>Crystal</td>
<td>2.3 c</td>
<td>2.8-4.4</td>
<td>4.8 c</td>
</tr>
<tr>
<td>Hallertauer</td>
<td>1.8 c</td>
<td>3.0-5.5</td>
<td>1.7 f</td>
</tr>
</tbody>
</table>

Alpha and beta acid content generally lower than expected in both years, possibly due to harvest scheduling or virus infection

1. Range expected based on historical data and typical seasonal variations.
New Directions - Pests

Japanese beetle damage

Least: Chinook
Worst: Hallertauer, N. Brewer

Leafhopper damage

Least: Bertwell, Galena
Worst: Sterling, N. Brewer

Source: C. Bakker and MR McDonald, University of Guelph
New Directions - Pests

Alternaria cone disorders

Source: C. Bakker and MR McDonald, University of Guelph
U of G – Hop fungal disease

- **Survey yards/wild hops for downy mildew (2014-2015)**
  - *DM detected in 4/9 commercial hop yards and 1 wild hop cluster in 2014 with low disease pressure; DM detected in 3/4 hop yards in 2015 with severe damage in some yards*

- **Evaluate DM systemic infection in overwintering hop crowns (2015)**

- **Assess cross-infection between hops and cucumber DM**
  - *Fresh inoculation source will be collected for tests in 2015-2016*

- **Identify post harvest cone pathogens**
  - *Alternaria cone disorder was the main post harvest disease in 2014*

- **Determine if DM is present in hops plants/rhizomes at planting**
  - *PCR primers for detecting hop DM were developed and tested in 2014. Testing to be done in 2015. To date, all rhizomes tested have been clean.*

Source: A. Fang Shi and MR McDonald, University of Guelph
Rhizome samples

Are you expanding your hop yard in 2016? Would you be willing to donate rhizomes? We can accept a limited number of additional samples, 5 samples per grower

This is not a diagnostic test!

Please contact:

Amy Fang Shi (Research Associate, University of Guelph): fshi@uoguelph.ca
OMFRA Frost Management Trial

Goal: Assess impact of cultural practices on yield in years of severe, late frost

• Simulated:
  a) frost damage to growing point by cutting tip of bine to above 2\textsuperscript{nd} node from tip or
  b) complete death of bine by removing entire bine

• 4 treatments:
  – Control (no cut back)
  – Cut bine tip + no bine removal
  – Cut bine tip + no bine removal + re-train 1 bine from new basal growth after 7 days
  – Remove entire bine and re-train from new basal growth after 7 days
OMAFRA Leaf Stripping Trial

Goal: Assess impact of stripping for disease management on yield

• When plant height reached 250-300 cm, bines stripped of lower leaves and laterals up to varying heights from ground

• 5 treatments:
  – Control (no stripping)
  – Strip bines up to 50 cm
  – Strip bines up to 100 cm
  – Strip bines up to 150 cm
  – Strip bines up to 200 cm
Great Ontario-Hopped Craft Brewing Competition

- Annual event in February at OFVC (Niagara Falls)
- 10 teams (commercial Ontario hop grower and brewer or final year Brewmaster student).
- New beer style each year.
- Certified BJCP led judging panel.
- Fully subscribed in 2015 – entrants turned away
- [www.ONHops.ca](http://www.ONHops.ca)
The Bottomless Cup

1ST PLACE: THE OLDE STONE BREWING COMPANY & SLOW ACRES ORGANICS

2ND PLACE: GARDEN BREWERS & BUTTRUM’S FAMILY FARM

3RD PLACE: NICK BOBAS (STUDENT, NC TEACHING BREWERY) & CLEAR VALLEY HOPS
Other Services Update

• Hops Research and Services Priority Setting
• Trellising video (more videos to come 2015)
• Great Lakes Hops Working Group – Meeting, Hops IPM Guide update to include GLHWG content
• Nutrient deficiency resource development
• Updates to OMAFRA hops page and beer competition site
• Ontario CropIPM module
• Numerous hops-specific presentations
• Hop Acreage Survey??
Thank you!

Production, Marketing - Evan Elford, New Crop Development Specialist

[Email Link]

Pests and Pest Management – Melanie Filotas, Specialty Crops IPM Specialist

[Email Link]