

The background of the slide is a close-up photograph of green hops, showing their characteristic cone-like structure and serrated leaves.

OMAFRA Hops Update – August 2015

Melanie Filotas
Ontario Ministry of Agriculture, Food
and Rural Affairs

Ministry of Agriculture,
Food and Rural Affairs

Ministère de l'Agriculture, de
l'Alimentation et des Affaires rurales



Hop Imports – Canada, 2013-2014

Statistics Canada



	2013		2014	
	\$	kg	\$	kg
Total hop imports†	13 523 306	1 048 001	18 889 314	1 248 538
Pellets only	11 497 852	871 2016	15 902 062	1 032 549
Percent (%) of total in pellets	85%	83%	84%	83%

† 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



	Ontario		Canada (excluding Ontario)	
	\$	kg	\$	kg
Total hop imports†	7 136 736	547 565	10 464 472	699 902
% of Canadian total	53%	52%	55%	56%
Notes	- Ontario imports fluctuate year by year while total Canadian imports continue to increase (2011-2014)			
Pellets only	5 922 245	455 232	8 268 679	551 231
Percent (%) of total in pellets	83%	83%	79%	79%

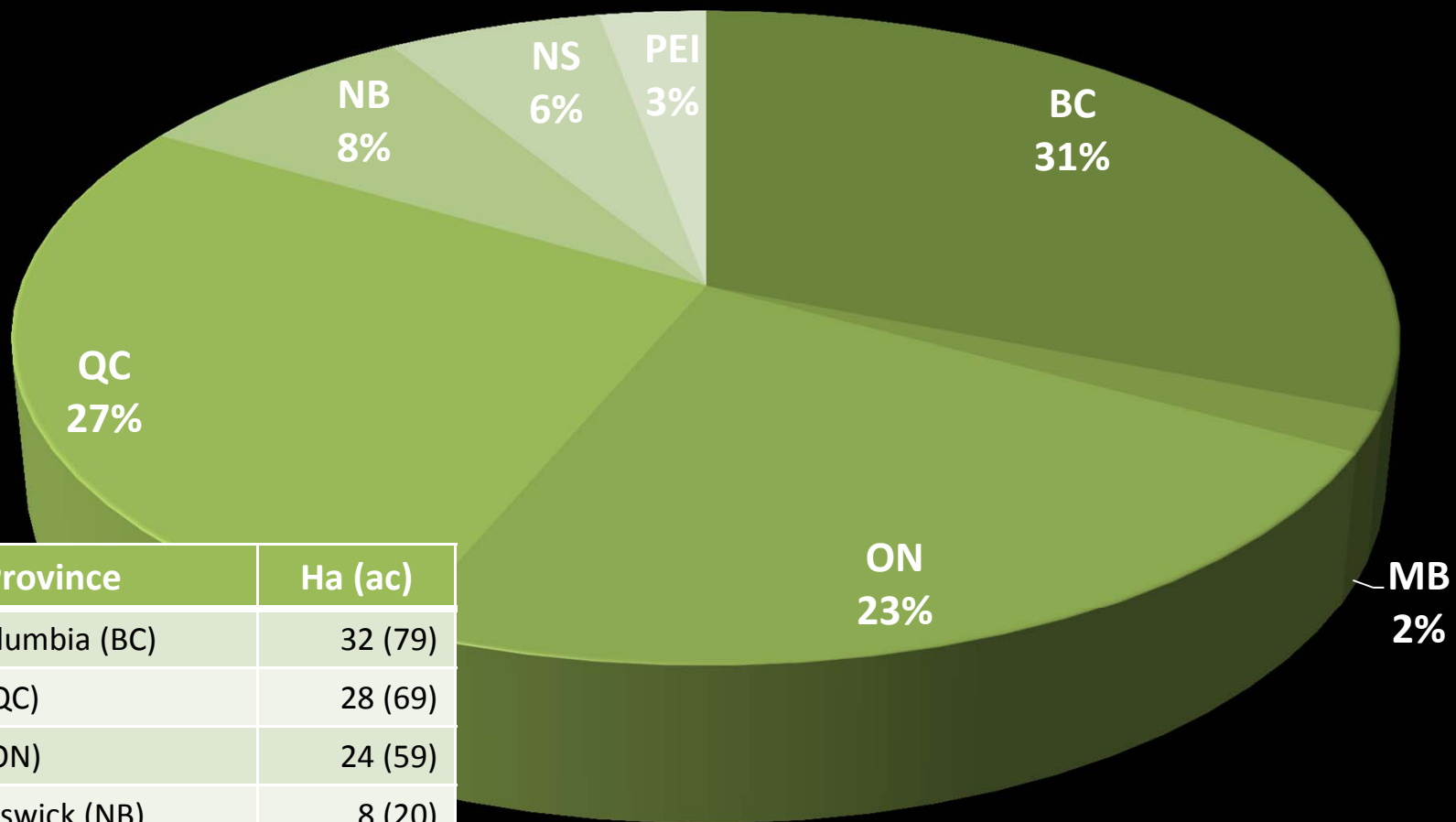
† Resin products removed to allow for comparison with domestic production

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



Province	Ha (ac)
British Columbia (BC)	32 (79)
Québec (QC)	28 (69)
Ontario (ON)	24 (59)
New Brunswick (NB)	8 (20)
Nova Scotia (NS)	6 (15)
Prince Edward Island (PEI)	3 (7.5)
Manitoba (MB)	2 (5)

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

Fusarium



Photo:
OMAFRA



Photo: OMAFRA



Photo:
OMAFRA

Virus



Minor Use

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

Minor Use

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





New Directions Research Yard

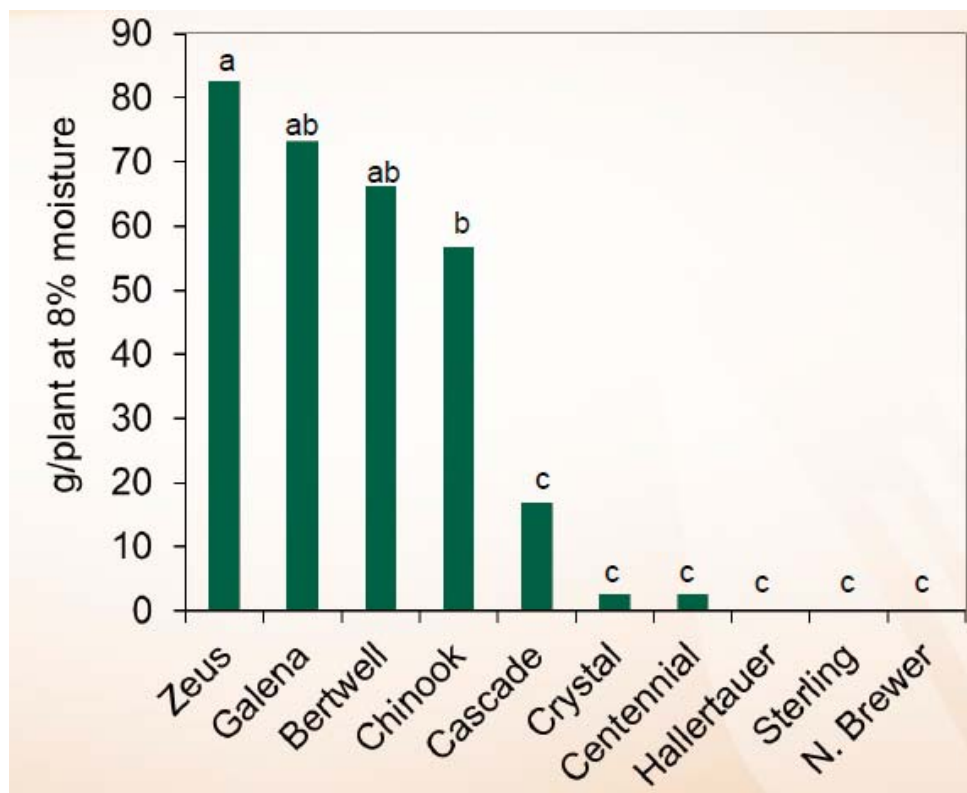
Status:

- 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

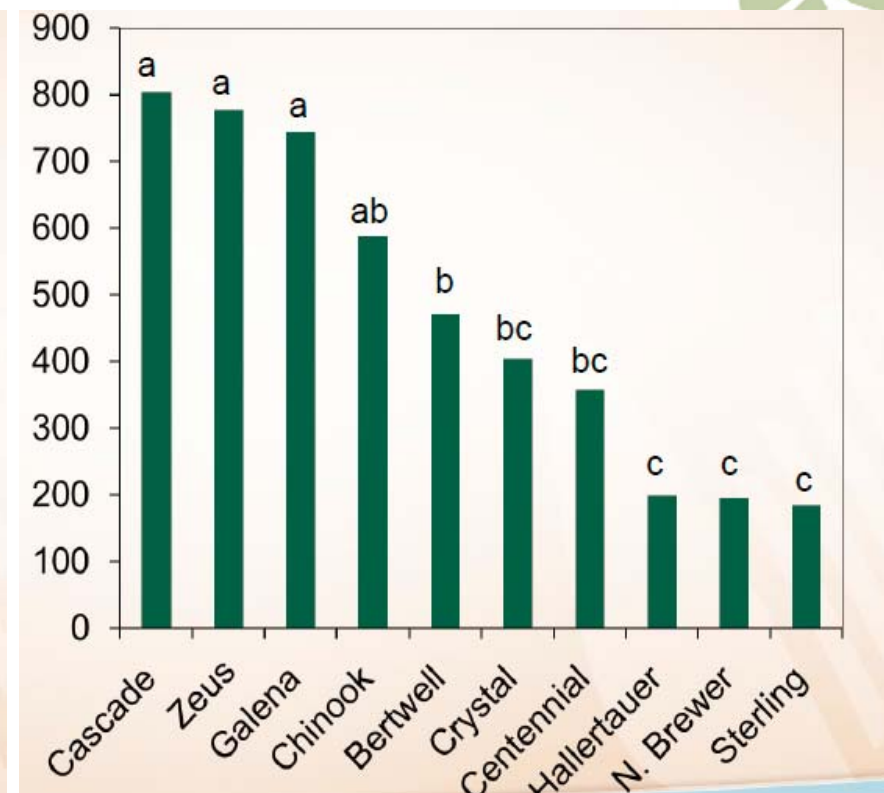
New Directions - Cone Yield at 8% Moisture



2013



2014



Highest yielders were: 2013: Zeus, followed by Galena and Bertwell, and 2014: Cascade, Zeus and Galena

New Directions - Alpha and beta acids

2014



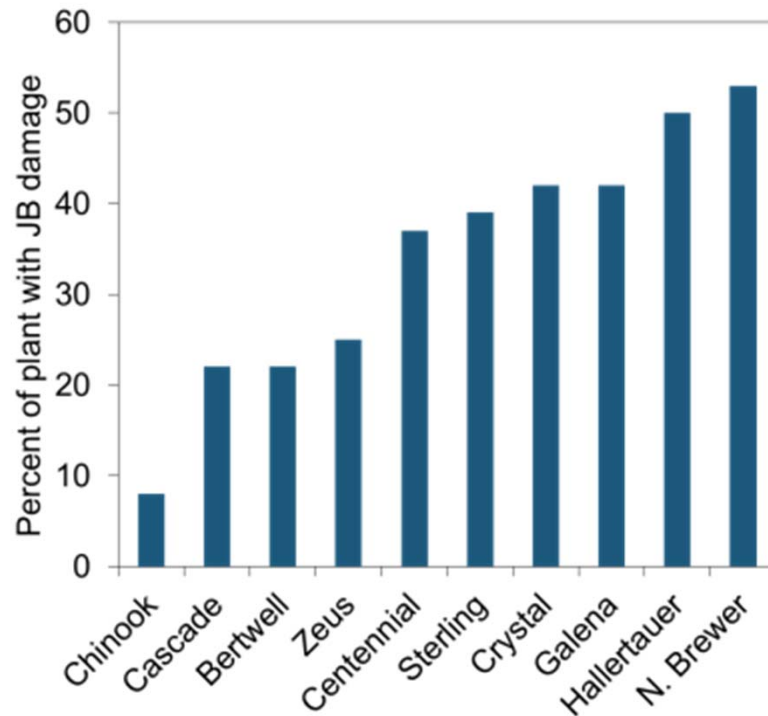
Cultivar	Alpha Acid Content (%)		Beta Acid Content	
	Results from trial	Expected range ¹	Results from trial	Expected range ¹
Galena	10.7 a	8.0-14.9	8.6 a	4.6-9.0
Chinook	9.6 a	13.9-15.3	3.3 e	3.6-4.5
Centennial	8.6 a	9.0-12.0	4.1 dce	4.0-5.0
Zeus	8.5 a	14.6-18.3	3.5 de	4.8-5.5
Cascade	5.5 b	5.1-8.5	7.4 b	4.0-6.6
N. Brewer	4.6 bc	7.0-12.1	4.6 dc	2.2-5.3
Sterling	3.4 bc	6.0-9.0	4.4 dce	4.0-6.0
Bertwell	3.2 bc	N/A	4.2 dce	N/A
Crystal	2.3 c	2.8-4.4	4.8 c	5.8-7.0
Hallertauer	1.8 c	3.0-5.5	1.7 f	3.3-5.6

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

New Directions - Pests

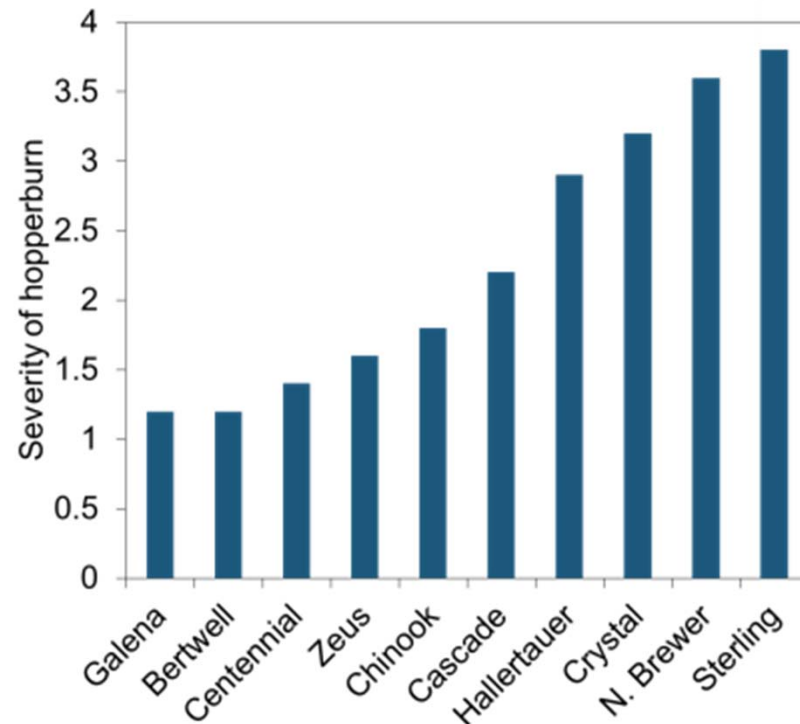


Japanese beetle damage



Least: Chinook
Worst: Hallertauer, N. Brewer

Leafhopper damage

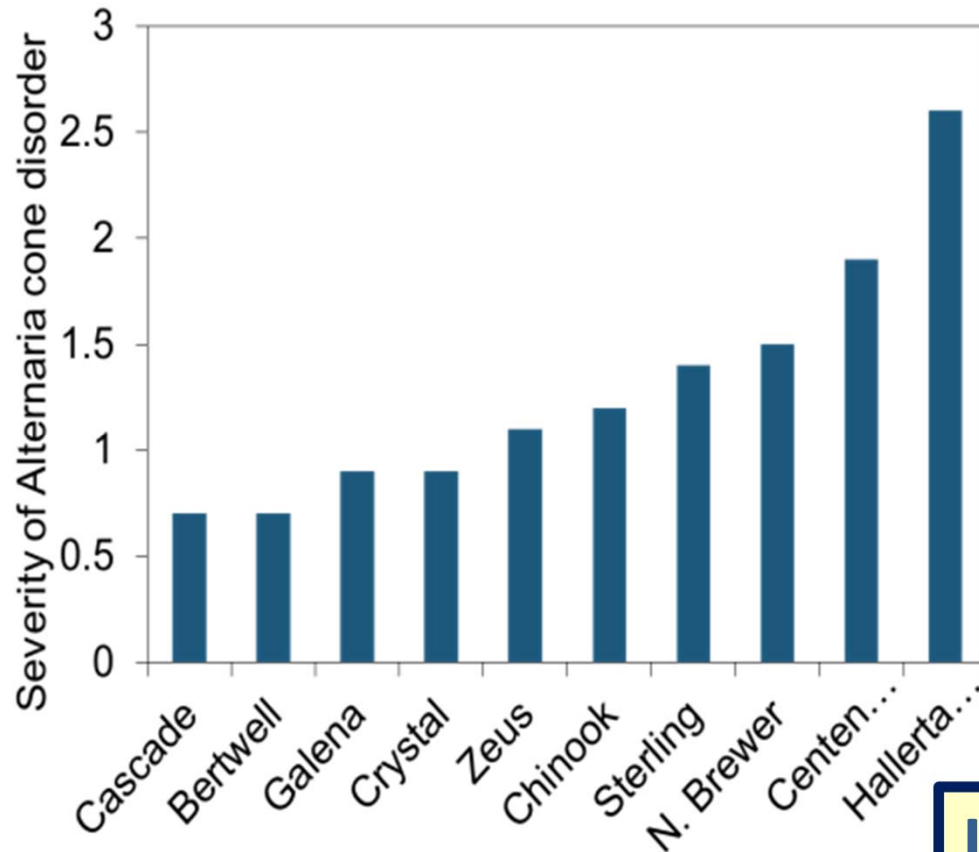


Least: Bertwell, Galena
Worst: Sterling, N. Brewer

New Directions - Pests



Alternaria cone disorders



Least: Cascade, Bertwell
Worst: Hallertauer,
Centennial

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 ¾ 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.*

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 2nd node from tip or
 - b) complete death of bine by removing entire bine



Photo: OMAFRA

- 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

RULES REGISTER TEAMS GALLERY SPONSORS & MEDIA

THE GREAT ONTARIO-HOPPED CRAFT BEER COMPETITION



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

evan.elford@ontario.ca

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

melanie.filotas@ontario.ca

