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Hop Pest Management

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Overview

- Scouting protocol
- Primary pests
- Considerations
- Resources

Scouting

- Scouting involves monitoring the crop and cropping area for problems
- Begin as soon as plants begin to grow or pests become active
- Continue until the crop is dormant or the risk of the pest has passed

Scouting

- A critical step in quantifying the potential pest damage
- Aids in determining if intervention to control the pest is warranted
- Helps determine the lifestage of the pest which is critical to optimize management
- Assists in determining management efficacy

Scouting protocol

- Section your farm off into manageable portions based on acreage, variety, and age
- Review the list of known pests and beneficials
- If biological information is available, use it to gauge when you might scout more intensively

Wait-- What am I looking for?

- One of the hardest things to learn about scouting is how to pick up on the visual cues that something is wrong with the plant
- Consider the following as a starting point:
  - Cupped, chlorotic, spotted or malformed foliage
  - Discolored, damaged, swollen or sunken areas of bark
  - A large number of insects—identify them!
  - Pockets of less vigorous or dying plants
  - **Anything out of the ordinary**

General Protocol

- Gently shake strings or ruffle foliage as you walk looking for a flush of activity
- Remove leaves as you move through the yard—turn them over and give a close inspection using a hand lens
- Check leaves from all reachable heights, but favor the lower, denser portion of the canopy
- The more you look, the more you see…..

Pests of Hop

Primary

- Downy Mildew
- Powdery mildew
- Cone diseases
- Potato leafhopper
- Mites
- Beetles
- Viruses

Emerging

- European corn borer
- Spotted lanternfly

Seasonal Primary Pest Occurrence in Michigan Hopyards

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Date		April					May					June				July				August					September				
		7	14	21	23	27	1	8	15	22	29	7	17	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26
DD Base 50[1]		6	20	43	46	60	71	96	180	270	320	500	645	731	832	947	1099	1262	1459	1620	1790	1909	2024	2147	2276	2350	2400	2476	
Growth stage[2]		Sprouting and leaf development										Bine elongation							Cone development and maturation										
		Dormant					Sidearm formation									Flowering							Harvest						
Pest	**Pest lifestage**																												
Downy mildew	Systemic infection			Begin treatment at 6".																									
	Secondary infection						Continue treatments on a 7-14 day schedule up until harvest.																							
Two-spotted spider mite	Overwintering females						Monitor for activity as temps warm.																						
	Eggs and motiles											Monitor populations of eggs and motiles weekly, treat as needed.																	
Potato leafhopper	Arrive on spring storms											Scout carefully following spring storms.																	
	Eggs, nymphs and adults											First generation egg laying.				Eggs, nymphs and adults may be present at this time, treat as needed.													
Rose chafer	Adult beetles															Beetles present, treat as needed.													
Japanese beetle	Adult beetles																			Beetles present, treat as needed.									
Powdery mildew[3]	Initial infection						Flag shoots emerge, prune to remove.																						
	Secondary infection						Secondary disease cycle, favored by rapid plant growth, mild temperatures and high humidity. Treat with fungicide as needed.																							

1. Degree day accumulation based on 5-year average in central, lower Michigan.
2. Growth stage is highly dependent on location, annual weather fluctuations and cultivar, this table is meant as a guide to estimate pest activity, growers are encouraged to odify the table based on observations.
3. Powdery mildew is not a primary pest for growers in the midwest but is a critical pest in greenhouses and other production regions and so has been included in this table.

Start Strong

- Site prep to reduce weed pressure
- Pesticide applicator license
- Research cultivars, market, propagators
- Review educational materials
- Prepare to apple pesticides
- Scout regularly
- Ask questions

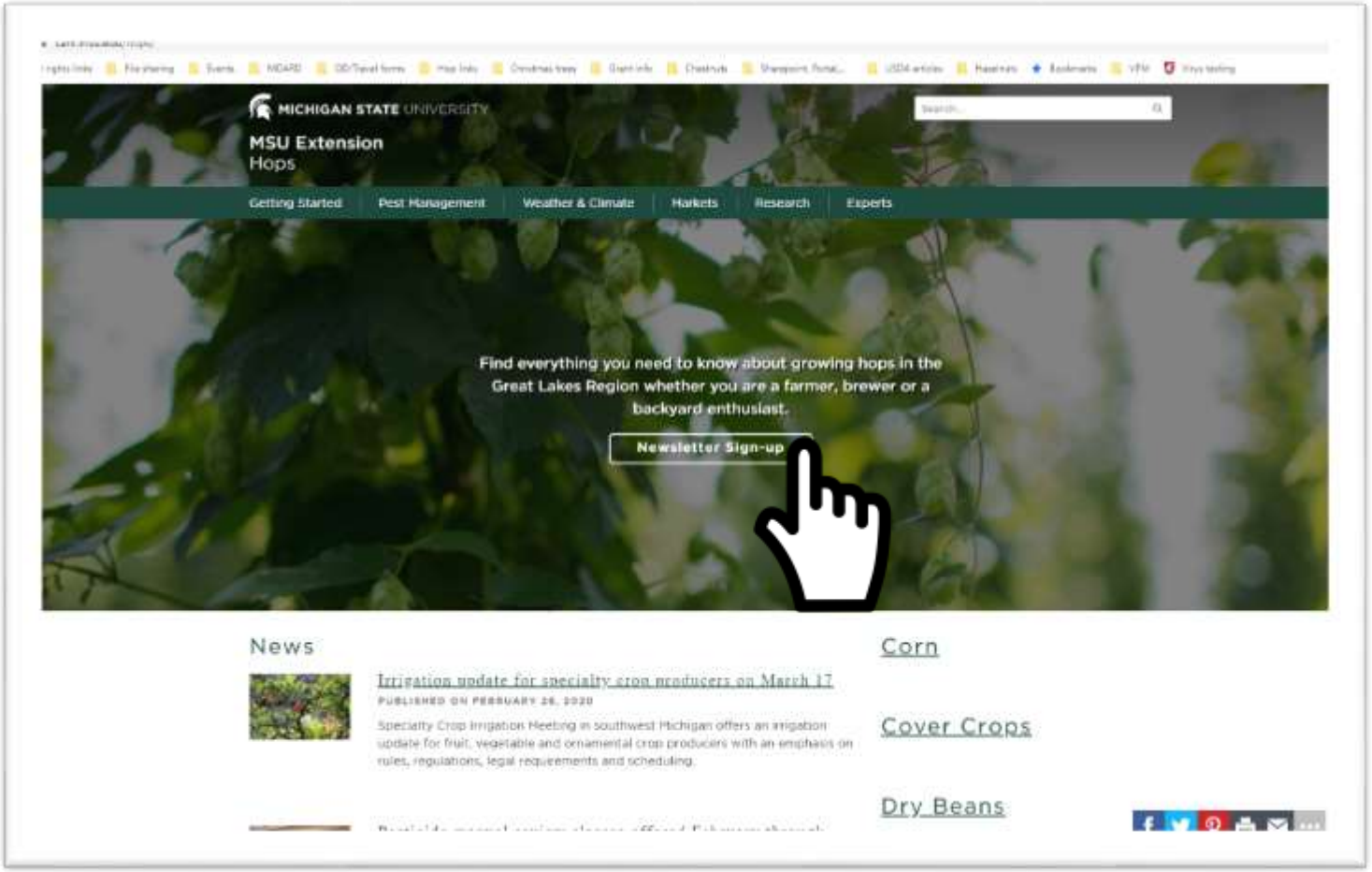
Resources

Hop Production in the Midwest and Eastern North America Online Course

- Join experts from the Great Lakes Hop Working Group for this self-paced, comprehensive introductory course on hop production
- Online, on-demand
- $50 fee that goes to support the work group

Resources

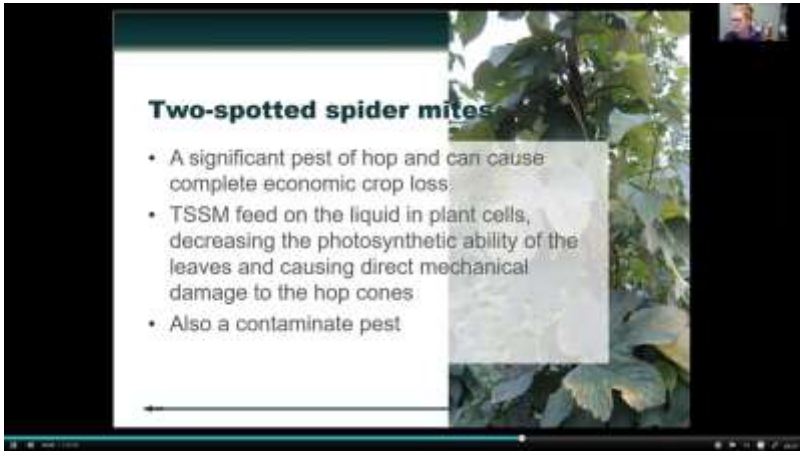
Hops.msu.edu



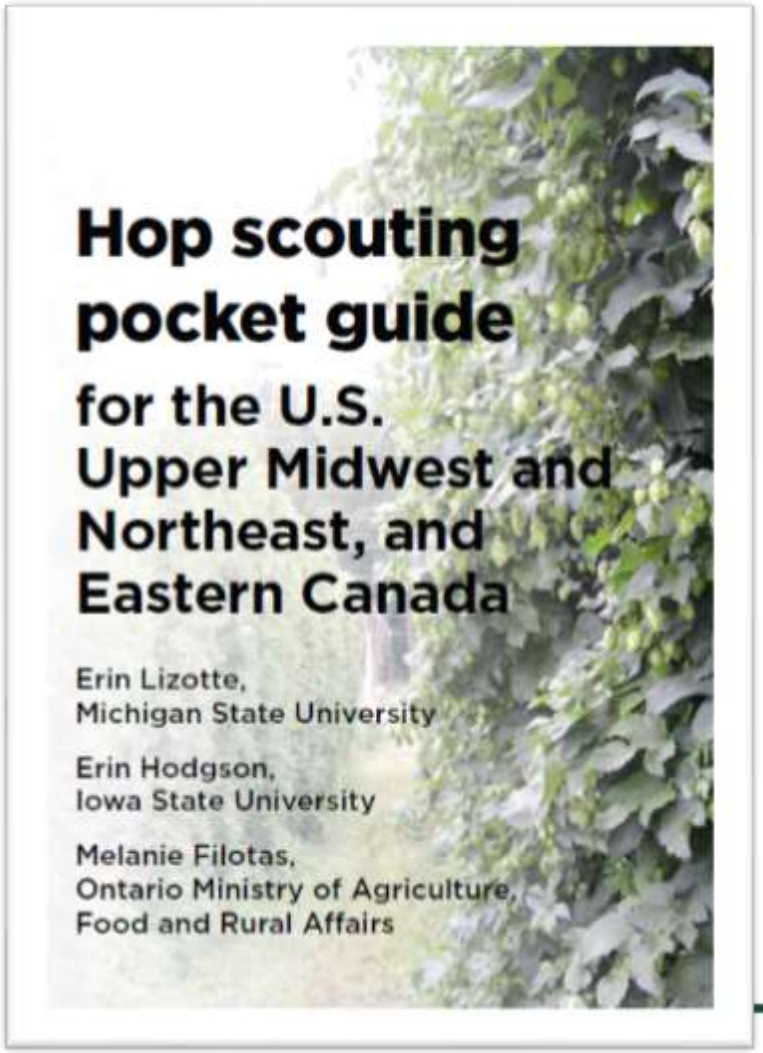
Resources

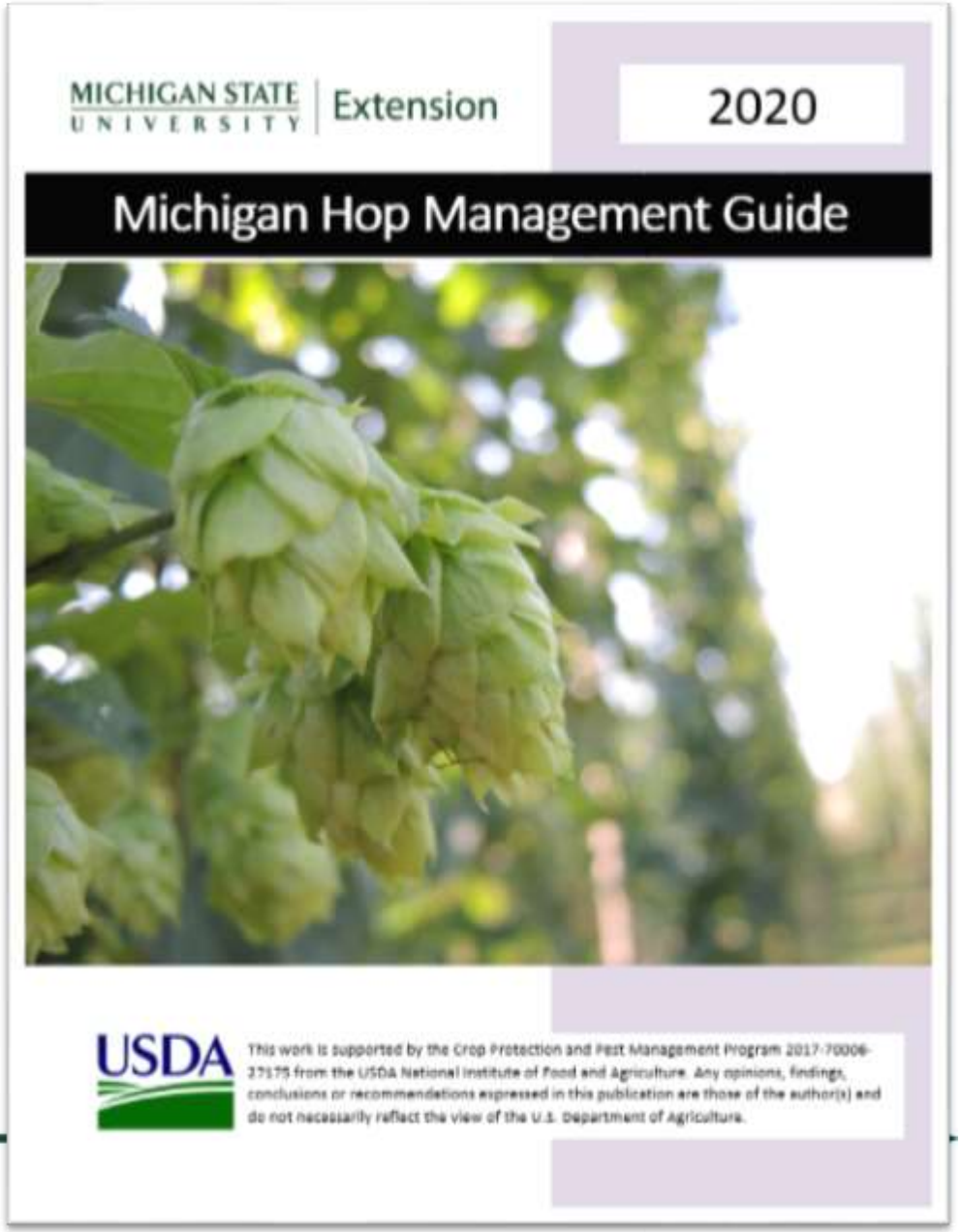
Bine and Dine Webinar

- Monthly during the season
- Covers agronomic practices, IPM, fertility and more
- Join live or view recorded
- Free
- Registration will open soon



Resources


Hop scouting pocket guide
for the U.S. Upper Midwest and Northeast, and Eastern Canada
Erin Lizotte, Michigan State University
Erin Hodgson, Iowa State University
Melanie Filotas, Ontario Ministry of Agriculture, Food and Rural Affairs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