

Northeast Hops News

Northeast Hops News is brought to you each month by Steve Miller, Hops Specialist, Madison County Cooperative Extension. Steve researches, writes, and finds articles that would be useful and interesting to the hops community. If you have questions regarding content or would like to contribute to this newsletter, please contact Steve Miller at sgm6@cornell.edu

Funding for this publication is provided by grants from USDA Ag Markets, Specialty Crop Block Grant, and the NY Farm Viability Institute.

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Downy Mildew is Widespread

Weather conditions last Fall and this Spring have produced ideal conditions for Downy Mildew. Here are a collection of resources for growers:

From Michigan State University Extension:



Photo 1

Credit: Erin Lizotte, MSU Extension

“Typically, downy mildew appears early in the season on the emerging basal spikes. Spikes then appear stunted, brittle and distorted. Infected leaves have angular water-soaked lesions that follow leaf venation. Eventually, the water-soaked lesions turn brown and necrotic (Photo 1) with fuzzy and gray-black asexual spore masses developing on the underside of infected leaf lesions (Photos 2-3). As vines continue to expand, new tissue becomes infected and fails to climb the string. Growers can attempt to retrain new shoots, but often incur yield loss as a result.



Photo 2

Credit: Erin Lizotte, MSU Extension



Photo 3

Credit: Erin Lizotte, MSU Extension

Cultural practices alone are not enough to manage downy mildew. Well-timed fungicide applications just after the first spikes emerge, which is occurring now in many Michigan locations, and before pruning have been shown to significantly improve infection levels season long. Subsequent fungicide applications should be made in response to conducive environmental conditions – temperatures above 41 F and wetting events. Protective fungicide strategies are particularly important during the year of planting to minimize crown infection and limit disease levels in the future. Fungicides containing copper, boscalid, pyraclostrobin, phosphorous acids and a number of biopesticides have varying activity against downy mildew. For organic growers, [OMRI](#)-approved copper formulations are the most effective.”

The complete resource is available at :

http://msue.anr.msu.edu/news/management_options_for_hopyards_with_downy_mildew

From Steve Miller:

We have seen a lot of Downy Mildew already this year in New York as well as the Northeast and Midwest. David Gent, USDA Hops Pathologist, recommended tank mixing a phosphorous acid (Rampart, Fungiphite, Fastphite, or K-phite — the latter two are restricted use) with Curzate or Ranman. Always follow label directions and consult your 2015 Cornell Hops Guidelines for information on pesticide applications. He thought Ridomil may still work here but maybe not. If I recall growers aren't using Aliette out west anymore.

This looks to be a bad year for Downy Mildew. Given the situation, I might recommend growers to pull out plants which have >30% of their shoots diseased or even kill them with RoundUp. It could take several sprays. This is a drastic measure, so I am suggesting this only in extreme cases. Also, I would try to see if the crown is systematically infected or not by looking at the layout of diseased shoots around the base of the plants. If all shoots come from the same spot, infection might be localized and hopefully isolated by pulling shoots, digging rhizomes and spraying on a tight schedule.

Some of this infection may certainly be related to Downy Mildew from last Fall. This is why good scouting, record keeping, and Fall fungicide treatments are in order, especially on highly susceptible varieties.



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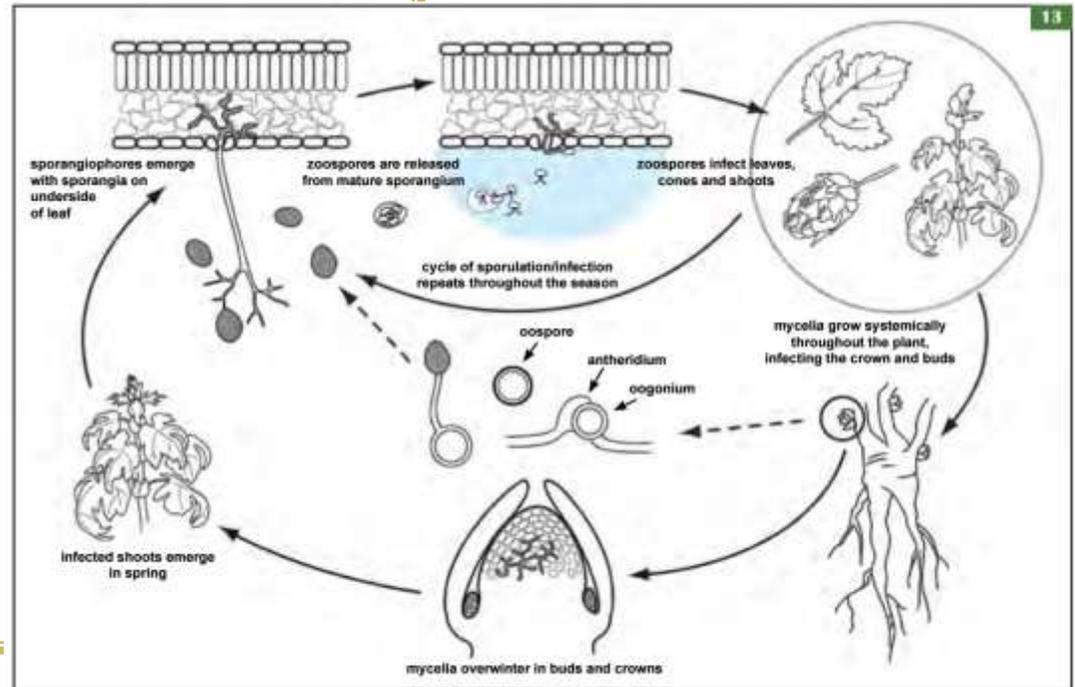
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Cornell Cooperative Extension in Madison County provides equal program and employment opportunities. CCE does not endorse or recommend any specific product or service. This newsletter is solely intended to educate consumers about their choices.

Washington State University offers a free guide to integrated pest management in hops. This guide can be found at <http://ipm.wsu.edu/field/pdf/hopandbook2009.pdf>

The **2015 Cornell Integrated Hops Production Guide** is available for sale through our office. If you are interested in purchasing this New York State specific resource, please send a check for \$32 to Cornell Cooperative Extension of Madison County P.O. Box 1209 Morrisville, NY 13408 Attn: Sarah Ficken. Please include a note with your check stating that you would like to purchase the hops guide and the address to which you would like the hops guide mailed.



ABOVE: Figure 12. The life cycle of *Pseudoperonospora humuli* on hop. (Prepared by V. Brewster) BELOW: Figure 13. Hop plants pruned thoroughly mechanically (A) or chemically by a desiccant (C) in early spring. Notice in A and C that all shoots on the sides of the hills have been removed. Incomplete mechanical (B) or chemical pruning (D) can result in more severe outbreaks of both downy mildew and powdery mildew. (D. H. Gent)
Source: Washington State University—Field Guide for Integrated Pest Management in Hops

Management Options

Guideline

Scouting/threshold	Evidence of downy mildew can be seen when after training the main bine ceases growth and falls from the string. Lesions are present on leaves next to spikes (primary, secondary, and aerial) and are confined between leaf veins and appear angular
Slightly Susceptible Varieties	Cascade, Fuggle, Magnum, Newport, Tettnanger, Willamette, and Perle are among the most resistant varieties. Varieties more susceptible to the foliar form of downy mildew include Cluster, Galena, Hallertaur Mittelfruh, Hersbrucker Spalt, and Nugget
Cultural Management	Remove all green tissue in early spring. Remove lower 3 feet of leaves just prior to flowering and periodically through the season after the bine has been trained. Sufficient but not excessive fertility and water management, reduction of initial inoculums through the planting of certified clean plant tissue, and removal of basal growth mechanically or chemically
Chemical Treatment	Timely applications of appropriate fungicide during the first year and when weather is favorable to the disease will help minimize crown infections and disease levels in ensuing seasons. Under high disease pressure a fungicide applied just after the first spike emerges and before spring pruning enhances control of downy mildew later in the season. Once the disease has penetrated the plant tissue it is less affected by nonsystemic fungicides. Late applications should coincide with major infection events.

Source: 2015 Cornell Integrated Hops Production Guide

Hops Scouting Report — Week of June 1st

By Jason Townsend

At this point, most hops yards in New York are 2 to 8 feet up the coir, depending on varieties and conditions. The rain of late May is much needed. Before this rain, some yards were tending toward the dry side. Steady, consistent irrigation is definitely important in letting the plants absorb nutrients and fertility amendments. Lack of irrigation leads obviously to stressed out plants that are all the more vulnerable to the downy mildew spores being released by this last period of rain and the warm weather pests that are turning up.

Taking each one of these problems in turn:

Downy mildew is definitely showing up in the form of basal spikes and secondary spikes (bines that are falling off coir with the same close-spaced leaf internode distance that basal spikes have.) Basal and secondary spikes are both carriers of downy mildew spores and will allow the disease to spread during wet conditions. The cleanest yards I've visited have already applied at least one anti-fungal spray, and some have already applied more than one spray. Early control, followed by mechanically or chemically stripping basal leaves seems like the most sure-fire approach to downy mildew. Downy mildew is really spreading in this weather and a phosphite spray is needed on really every hops yard out there or else it will only continue.



The effects of downy mildew later in the season

With last week's winds from the south, **potato leaf hopper (PLH)** adults have shown up in force and will soon start reproducing in the state. Right now you'll see them hopping as you brush past foliage,



This photo shows an adult potato leaf hopper (above) and nymphal potatoe leaf hopper (below)

Photo credit: <http://ento.psu.edu/extension/factsheets/potato-leafhopper>

but soon you'll see the crab-like nymphal stages underneath leaves. They are after plant sap and will cause characteristic "hopper burn," which shows up as brown, curling leaf margins. It's unclear how economically damaging this pest will turn out to be, but Lily Calderwood's Ph.D. research in Vermont showed up to a 56% reduction in photosynthetic capacity of leaves with severe hopper burn. One thing for sure: first year plants can be severely affected by PLH and definitely warrant insecticide control if hoppers are present and reproducing in the hops yard.

And finally...weeds. They are probably the biggest challenge with this perennial crop here in the Northeast. Weed control approaches I'll be monitoring this summer include: sheep, landscape fabric, gravel mulch, organic mulch, use of a Weed

Badger, and use of some farm-engineered rotary hoes and sweeps.

Notes from UVM's Hop Program:

What's Hopping: Musings from the Hopyard! Potato Leafhoppers Have Arrived



First, second, and third instar potato leafhopper nymphs.

Adult female potato leafhoppers (*Empoasca fabae*) arrived to the Borderview research farm in Alburgh between May 23 and May 26. Stick your hand in a hop plant and ruffle it around — you may see light colored potato leafhoppers fly out. Whether you have seen potato leafhoppers or not, it is time to start scouting your hopyard for arthropod pests.

The potato leafhopper is a migratory insect pest. The 2014 potato leafhopper population was scarce and did not peak until the end of July. In previous years potato leafhopper arrived around June 1st and the population peaked earlier (late June or early July) which we can expect in 2015. Our potato leafhopper factsheet has more information on biology and symptoms.

Research we conducted last year showed that 3 adult potato leafhoppers per leaf reduced first year hop photosynthesis. We know this is a pest of concern, but we do not have an economic threshold for this pest on hops. The majority of (organic and non-organic) pesticides labeled for use against potato leafhopper are broad-spectrum products.

Broad-spectrum pesticides not only kill the target pests but also natural enemy arthropods. Therefore, we discourage the use of these broad-spectrum pesticides on hops due to the elevated risk of two-spotted spider mite outbreak. However, we have found the potato leafhoppers prefer to feed on red clover planted in the drive rows than on other hop plants. This suggests that planting red clover in drive rows as a “trap” crop” may reduce the number of leafhoppers on hop plants. If you give this a try, let us know!



Hopperburn: visual V-shaped chlorosis injury caused by potato leafhopper.

<http://blog.uvm.edu/hoppenin/2015/06/02/potato-leafhoppers-have-arrived/>

Resources for Growers:

The “Proceedings from the Great Lakes Hop and Barley Conference” in Michigan contains PowerPoint presentations about disease management, nutrition, irrigation, and cost.

<http://hops.msu.edu/resources>

The NW Crop and Soils Program from University of Vermont offers some interesting research on crowning, weed management, and organic variety trials.

<http://www.uvm.edu/extension/cropsoil/hops>

Empire State Development has an interesting FAQ page for individuals interested in adding a farm brewery to their operation

<http://www.empire.state.ny.us/NYSBeverageBiz/faq.html>



2015 Hops Production in the Lake Erie Region Conference

June 26 - 27, 2015

9 AM - 4 PM

Cornell Lake Erie Research and Extension Center
Meeting Room and Hop Yards
6592 West Main Road, Portland, NY 14769

Featured Speakers

Mike Roy - Roy Farms Inc., Moxee Washington*

Mary Gardiner - Ohio State University

David Spann - Chautauqua Soil & Water

Beth Reed - Small Business Development Center

Steve Miller - Hops Educator, Cornell CE

Tim Weigle - NYS IPM Program & LERGP

and many more to come...

*Sponsored by Ommegang Brewery

Friday June 26 -

Focus on Getting Into Hops Production

Classroom and in-field opportunities to learn first hand the hows and whys of hops production

Saturday June 27 -

Becoming profitable with Hops Production

Now that they are in the ground and the trellis is up, learn about some of the techniques that will help you to become profitable with your hops production.

Classroom and in-field opportunities

Single Day Registration: \$75
Two-day registration: \$125
Beer & BBQ Dinner June 26: \$50

To Register:

Contact Kate at (716) 792-2800 x202 or kjr45@cornell.edu

For credits cards please our website at:

<http://lergp.cce.cornell.edu>

or use form on back



Class size is limited to 80 each day, sign up early to reserve your spot



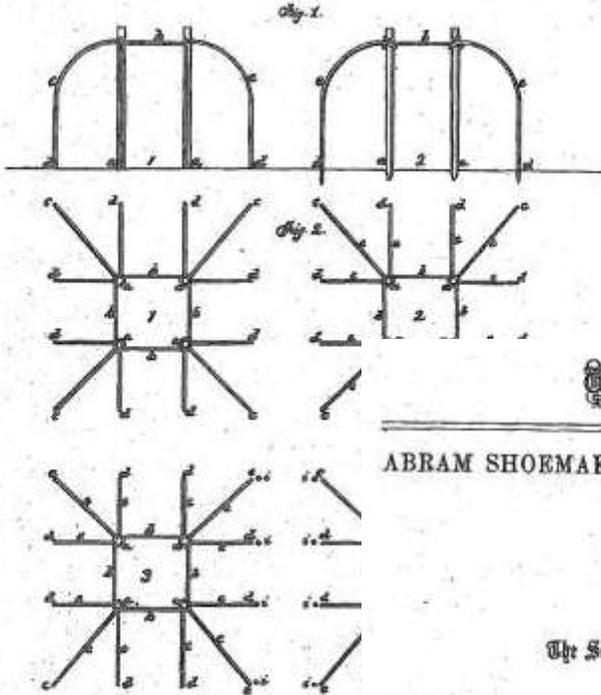
From the Archives

Shoemaker & Phelps.

Frame for Hop-Vine.

N^o 75474.

Patented Mar 10, 1868



Witnesses.
Wm. A. Morgan.

Patent Number 75474 is for an “improved hop-vine frame.” While this set-up is not frequently used anymore, with most hopyards consisting of a trellis system, Shoemaker and Phelps designed this with many modern IPM principles in mind.

While most growers do not currently use intercropping within their hopyards like this patent suggests, some growers do graze sheep through the yards, adding a level of diversity.

The patent also stresses the importance of access to full sunlight and free circulation of air around the plants.

United States Patent Office.

ABRAM SHOEMAKER AND WALLACE PHELPS, OF CONESVILLE, NEW YORK.

Letters Patent No. 75,474, dated March 10, 1868.

IMPROVEMENT IN FRAME FOR HOP-VINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ABRAM SHOEMAKER and WALLACE PHELPS, of Conesville, in the county of Schoharie, and State of New York, have invented a new and useful Improvement in Frame for Hop-Vines, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of our improved hop-vine frame.

Figure 2 is a top view of a group of the frames, showing their position and relation to each other.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and useful improvement in the construction and arrangement of frames for training hop-vines and other running plants, the object of which is to obtain the cheapest structure that will afford an extensive support for the vines, so that they shall have full exposure to the sun, and a free circulation of air among them.

The general arrangement of our improved frames is in squares placed in lines or rows parallel to each other, with wide alleys between, in which corn or other straight and smaller plants may be cultivated, as shown by the four squares, 1, 2, 3, 4, fig. 2. This growth in the squares is simply for the purpose of keeping lice or other insects from deteriorating the hops, an expedient proven by repeated trial to be effective.

Each frame is formed with four strong vertical stakes, *a a*, for the main support of the structure, set in the ground at the corners of an interior square, and secured at the top by four horizontal cross-ties or braces, *b b*, making the sides of the central square. At the corners *c c* of an interior square, and at two intermediate points, *d d*, on each side thereof, in line with the sides *b b* of the interior square, are set in the ground pliant hoop-poles or rods, *e e*, bent over at their upper ends, which are fastened to the top of the main stakes *a a*, as shown clearly in fig. 1.

The hop or other running plant is set at the foot of each of the poles *e e*, to climb upon it, and thus sixteen plants, including those of the four centre-poles, will grow upon each frame, uniting at the central square, and forming an arbor or bower fully exposed to the sun and rain in every part, and open enough for a free circulation of the air among the vines. The distances apart of the poles will vary in different localities, according to the soil and nature of the plant. The width of the alleys between the frames will also be governed according to circumstances, and a wide space may be left for the cultivation of other plants and vegetables, as indicated by the letters *i i*, which will not shade the hop or other vines growing on the frame.

Having described our invention, we claim as new, and desire to secure by Letters Patent—

An improved hop-vine frame formed in squares of four stakes, *a a*, joined together at top by the cross-ties *b b*, in combination with the bent poles *e e*, arranged as and for the purposes herein described.

ABRAM SHOEMAKER,
WALLACE PHELPS.

Witnesses:
A. G. CASE,
Wm. E. RICHMEYER.

If you ordered hop plants through Cornell Cooperative Extension of Madison County in collaboration with Zerillo's Greenhouse, please watch your e-mail for notice when your plants are ready to be picked up.

If you have any questions, please don't hesitate to reach out to Sarah at sjs299@cornell.edu



Have something you would like to see in the next Hops Newsletter?

Please share is with Sarah at sjs299@cornell.edu

USDA-NASS Issues June Hop Acreage Report

The USDA National Agriculture Statistics Service released the official Hop Acreage Strung for Harvest Report today for commercial acreage located in Washington, Oregon and Idaho. Hop Growers of America is currently compiling estimates for an additional 18-20 states, and will release the enhance report later this week. It will be sent to all HOP NEWS subscribers.

NASS reports an increase of 5,976 acres in the Pacific Northwest, 15.7% over last year's total for the three states. Individual acreage increases by state include 3,347 for Washington, 1,397 for Oregon and 1,232 for Idaho.



United States Department of Agriculture

National Agricultural Statistics Service

Upcoming Events

June 2015

June 12 — The Craft Brewing and Hops Farming Industries in WNY

Flying Bison Brewery — Buffalo, NY

This workshop includes sessions on STATE REQUIREMENTS FOR FARMERS AND BREWERS, GETTING STARTED GROWING HOPS IN NEW YORK (presented by Steve Miller), and CRAFTING BEER — THE HISTORY OF FLYING BISON BREWING COMPANY.

June 26-27

CLEREL Hops Conference

CLEREL Grape Lab — Portland, NY

Two day conference with the first day emphasizing the hows and whys of hops production. The second day will focus on techniques to become profitable with your hops production

September 18-20

Hop Fest Weekend

Bouckville, NY

The Madison County Hop Fest celebrates the past, present, and prosperous future of the hop industry of Madison County and throughout New York.

December 4-5

Cornell Hops Conference

Morrisville, NY

The annual two day Cornell hops conference held in Morrisville.

Hops in the News:

Insight into the hops market from a brewer's perspective

<https://www.brewersassociation.org/insights/the-hops-market/>

Full house attends the Central New York 2015 Malting Barley Roundtable

<http://countryfolks.com/full-house-attends-the-central-new-york-2015-malting-barley-roundtable/>

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Mission

The Cornell Cooperative educational system enables people to improve their lives and communities through partnerships that put experience and research knowledge to work