



Homegrown Hops in Your Backyard
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2021 Master Gardener Volunteer Training


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The Ohio State University
South Centers
 College of Food, Agricultural, and Environmental Sciences
 1864 Shyrille Road Piketon Ohio


Piketon
 South Centers



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OHIO STATE UNIVERSITY EXTENSION

Ohio Hop Production

- Perennial plant – productive for 15-18 years
- Planted in rows. Typical Ohio hop yard is 1-3 acres
- “Bines” grow up 18-22 ft high trellis each year
- Drip irrigation and fertigation is required
- Disease and insect management is great
- Plants break dormancy in March and are harvested in August to September
- Hops are sold as:
 - Fresh Whole Cone – for “wet hop” beer
 - Dried Whole Cone – mostly for dry hopping
 - **Pelletized** – most common form for breweries
 - Ohio hops currently sold direct to breweries

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OHIO STATE UNIVERSITY EXTENSION

Ohio Hops

- Ohio hops research program began in 2013 goals to develop and grow the hop industry in Ohio.
- Working closely with growers and other stakeholders, OSU aims to reduce risks and barriers associated with growing hops by developing critical building blocks farms need to design durable hop production systems
- Development of locally adapted cultivars, disease and insect management strategies and products, nutrient management tools, appropriately scaled equipment, informed stakeholders, and strong networks.

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Ohio Hops

- OSU Extension and OSU Department of Entomology are conducting field research, education & marketing survey on Ohio grown hops.
- **WHY?** To capture dollars and jobs that are currently being sent out of Ohio by an increasing brewing industry.
- Research is evaluating hop cultivars, innovative hop production techniques, insect and disease control methods, harvesting, quality attributes, processing and marketing techniques.


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Ohio Hops


- These programs are made possible through a grant from the Ohio Department of Agriculture, the State of Ohio, and the United States Department of Agriculture under the provisions of the Specialty Crop Block Grant.
- 2012 and 2014 ODA/USDA Specialty Crop Block and Ohio IPM Grant to conduct hops development projects.
- **THANKS FOR YOUR SUPPORT!!**

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Introduction

- Hops are in high demand by the growing brewing industry.
- Little information is available on growing hops in Ohio—haven't been grown commercially since around the 1920's when the crop was virtually wiped out by downy mildew disease.
- Why do Ohio Craft brewers care about Ohio Hops?
 - Escalating prices for some hop varieties (\$50/#)
 - Decline in # of West Coast producers
 - Continued growth of micro-brewing segment
 - Trend toward "Buying Local", put a face with your beer.



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Ohio Craft brewing industry

- Ten years ago, you could count all of the state's breweries on your fingers and toes. As of 3/28/19 there are 619 (266 on 1/10/18, 199 on 12/2016) licensed Ohio breweries and 135 (48 on 1/10/18) pending (Ohio Division of Liquor Control www.com.ohio.gov/liqr/ 3/28/19) feed a craft beer demand that unlike the Ohio wine industry's steady, extended growth of the past 20 years, seems to have bubbled up out of nowhere.
- Spurred on by the demands of a growing craft brewing industry and a strong public interest in locally grown brews and ingredients, we have been experimenting with hops and malting barley as alternative agriculture income revenues in Ohio since 2011.



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OHIO STATE UNIVERSITY EXTENSION

Hops- not new to Ohio

- Ohio—haven't been grown commercially since around the 1920's when the crop was virtually wiped out by downy mildew disease, the hops louse (aphid) and prohibition.



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Opportunity for Ohio Agriculture

Ohio breweries produce over 1.4 million barrels of craft beer annually

Breweries currently source most ingredients from out of state:

Hops:

- Estimated 2,100,000 lbs (1.5 lbs per bbl) worth \$21M
- Imported primarily from Pacific Northwest (PNW)
- To meet Ohio current demands an estimated 6,000 acres needed
- Currently ~200 acres of hops planted



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Growing hops is not for everyone...

Hops:

- Significant up front investment (\$12-18,000 per acre)
- Labor intensive and time consuming (during summer)
- Plants take 2-3 years to produce full yield
- Significant processing and storage costs involved
- Requires direct selling to breweries

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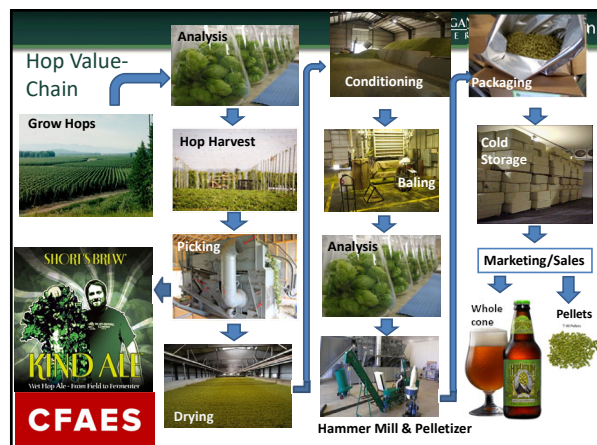
Benefits to Ohio Breweries and Ohio



- Decreases transportation costs
- Provides transparency in supply chain (farm to glass)
- Serves consumer demand for locally grown products
- Connects agriculture to craft brewing
- Keeps craft beer dollars in Ohio

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What are Hops?



Hops are the female flower cones of the hop plant (*Humulus lupulus*) have resin glands produce lupulin.

- Contain characteristics favorable to beer, balancing the sweetness of the malt with bitterness, contributing flowery, citrus, fruity or herbal aromas.
- Hop plant (vine) is a vigorous climbing herbaceous perennial.
- Different varieties of hops are grown, with different types being used for particular styles of beer.

***BEFORE YOU PLANT ASK YOUR BUYER WHAT VARIETY THEY WANT DON'T MAKE A 20 YEAR MISTAKE!!**

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Hops



Lupulin Glands

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Kindly provided by Tom Pugh and David Ryder of Miller Brewing Company

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Hops Lupulin



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Ohio Hops

We have documented every step of trellis construction, rhizome planting through harvest with photographs which can be viewed at:
<http://southcenters.osu.edu/horticulture/other-specialties/hops/hops-photo-gallery>

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Challenges for Hops Growers

- Moisture
- Erosion
- Soil Content
- Sunlight
- Pest Control
- Trellis Set-up
- Harvesting & Harvesting Labor
- Drying , Pelletizing, Processing (Food Safety Guidelines)
- ****Marketing (line up buyers before planting)***

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Hop Yard Requirements

- Space
- Infrastructure
- Trellising
- Main poles
- 34.5 feet apart
- Trolley wires
- String for growing
- Irrigation
- Fertile soil
- SUNSHINE!



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Hop Yard Requirements

- Space Requirements: Vertical Space: 10 to 20 ft unobstructed
- Field Space: Acres?
- Typically: 1000 plants per acre
- Infrastructure
- Trellising: Main poles 15- 24 ft tall
- Trolley wires (top wire)
- Strings
- Irrigation: Drip, Micro-jet sprinkler
- \$18,000 to \$22,000 per acre establishment costs not land

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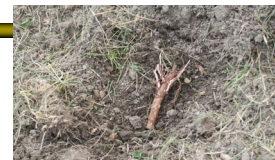
What types of Hops for Ohio?

- Which varieties do best in Ohio?
- Diseases and pests?
- Quality testing by brewers being done
- Ohio Craftbrewery survey
- Over 100 different varieties of hops are grown, with different types being used for particular styles of beer.

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Hop propagation from rhizomes



Rhizomes

horizontal underground stem that emerges from plant roots.

* Also potted plants

* Planted May 8th (Wooster)-9th (Piketon) of 2013

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Locally Grown Plug Plants (opportunity for Ohio growth)



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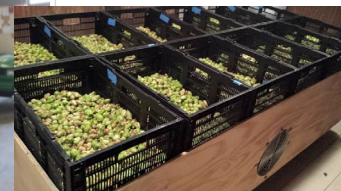
OSU Hop Harvester



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Drying Oast



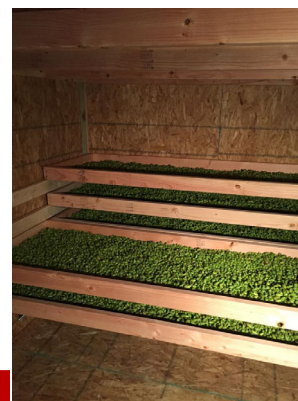
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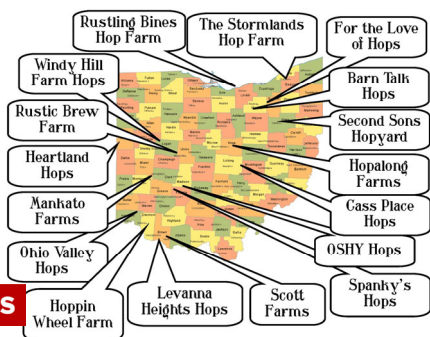
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Where are Ohio Hops Grown?



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WWW.OHGG.ORG



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Take Home Message

You can grow hops in Ohio.
 Grow for your beer taste.
 Quality is Crucial!!
 Pre plan!!
 You will not get rich growing hops.
 Don't underestimate the management required

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Research reports and more information

- Brad Bergefurd, Horticulture Specialist
<http://southcenters.osu.edu/horticulture>
- Subscribe to OSU hops email lists -
☐ go.osu.edu/hopslistserv
- <https://www.facebook.com/OhioHops/>

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Want to learn more!!

- Ohio Hops & Craft brewers Conference and Trade Show (OHGG.org)
- Summer Field Days Bowling Green, Piketon and Wooster.
- OHGG Ohio Hop Farm tour, last weekend of July



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