

Hop Production to Enhance Economic Opportunities for Ohio Farmers and Brewers 2016

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Objective

To screen hop cultivars for suitability, production performance and quality attributes under Ohio growing conditions.

Background

This study was conducted at the Ohio State University (OSU) South Centers/Piketon Research & Extension Center at Piketon, Ohio (lat. 39.07° N, long. 83.01° W), elevation 578 feet. The experimental soil is designated as a DoA—Doles silt loam, with 0–3% slopes. It is a deep, nearly level and somewhat poorly drained soil. Typically, the soil surface is a brown, friable silt loam about 20 cm deep and beneath this the subsoil is about 18.5 m.

Methods

Experimental design is Randomized Complete Block (RCB) with 4 replications of each treatment. Rhizomes were hand planted into 10 inch tall raised beds covered with black landscape fabric for weed and soil erosion control. Plants are spaced 3 feet apart in row and beds are spaced 12 foot on center. Drip irrigation is installed on high tinsel wire above the landscape fabric. 159 pounds of P₂O₅, 140 pounds of K₂O and 2477 pounds of CaCO₃ per acre was applied according to soil test results and incorporated before forming beds and applying landscape fabric. A high trellis training system (17 ft. tall) was installed and assembled after formation of the raised beds.

Insect control: Collected leaf samples were inspected weekly for the presence of two-spotted spider mite, hop aphid and the potato leaf hopper. Chemical control was used when the thresholds had been reached for each insect type.

Disease control: Plant samples were analyzed by the Plant Pathology lab, OARDC to evaluate for disease as needed throughout the growing season.

Fungicide applications were made on a 10 day schedule.

Irrigation: Drip irrigation was applied as needed throughout the growing season.

Fertilization 125 lb/acre of Nitrogen fertilizer applications were made via fertigation through the drip irrigation system, over a six week period 4/15/16-6/10/16. Nitrogen source used was 28%.

Yield data

Hop cones were hand harvested as they reached physiological maturity according to chemical analysis results and fresh weight data was collected. Hop cones were then dried to 8% moisture



using a hop drying Oast (dryer), weighed, and air tight packaged with a vacuum sealer and immediately placed into a freezer at -20 degrees F.

Table 1: Hop Yields Piketon, Ohio 2015

Cultivar	Wet lbs. per Acre	Wet lbs. per Plant	Dry lbs. per Acre	Dry lbs. per Plant
Nugget	2872 A	2.3735 A	1070 A	0.8843 A
Columbus	2670.2 A	2.2068 A	877.6 A	0.7253 A
Cascade	1484.6 B	1.227 B	482.2 B	0.3985 B
Sterling	1017.4 BC	0.8409 BC	307.2 BC	0.2539 BC
Centennial	503.7 C	0.4163 C	161.2 C	0.1333 C
Willamette	218.2 C	0.1803 C	52.6 C	0.0435 C
LSD	874.34	0.7226	313.65	0.2592

*Treatments with same letter are not significantly different.

* All results based on 1210 plants per acre

Table 2: Hop chemical analysis 2016

Variety	Moisture	Alpha Acids	Beta Acids	Alpha Acids at 8%	Beta Acids at 8%
Cascade	78.06	2.10	1.83	8.6	7.5
Centennial	68.5	3.83	1.20	10.9	3.4
Columbus	76.13	4.75	1.30	17.0	4.9
Nugget	73.46	3.03	1.71	10.2	5.7

Summary

Overall plant and hop cone quality was good. Wet pounds per acre ranged from a high of 2,872 (Cv. Nugget) to a low of 218 (Cv. Willamette). Wet pounds per plant ranged from a high of 2.37 pounds (Cv. Nugget) to a low of .18 pound (Cv. Willamette). Wet hop market prices average \$25 per pound with gross return potential from Ohio hops in excess of \$70,000 per acre. Acreage estimates indicate 80 mature Ohio hop acres harvested in 2015.

(http://www.usahops.org/userfiles/image/1452960660_2015%20Stat%20Pack.pdf)

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