

Metal V Trellis Hop Production to Enhance Economic Opportunities for Ohio Farmers 2019

Brad Bergefurd, Extension Educator, Scioto County and Piketon Research & Extension Center,
Ohio State University

Thomas Harker, Horticulture Research Assistant, South Centers

Ryan Slaughter, Horticulture Research Assistant, South Centers

Wayne Lewis, Farm Manager, South Centers

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 14 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 (20 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 7-10 day schedule depending on weather conditions and disease pressure.

Irrigation: Drip irrigation was applied weekly throughout the growing season.

Fertilization: 100 pounds per acre 19-19-19 was applied on April 3rd 2019. 200 lb. per acre of Nitrogen fertilizer applications were made via fertigation through the drip irrigation system, over a eight week period starting 5/6/19-6/26/19. Primary nitrogen source used was 28%.



Yield data

Hop cones were mechanically 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 pelletized.

Table 1: Metal V Trellis Hop Yields Piketon, Ohio 2019

<i>Cultivar</i>	<i>Wet lbs. per Plant</i>	<i>Wet lbs. per acre</i>	<i>Dry lbs. per Plant</i>	<i>Dry lbs. per acre</i>
<i>Columbus</i>	1.9967 A	2070.6 A	0.71008 A	736.35 A
<i>Yakima Gold</i>	1.8144 A	1881.6 A	0.63739 A	660.97 A
<i>Nugget</i>	1.7671 AB	1832.5 AB	0.5592 AB	579.89 AB
<i>Crystal</i>	1.418 ABC	1470.4 ABC	0.37775 CB	391.73 CB
<i>Chinook</i>	1.1468 BCD	1189.2 BCD	0.36344 C	376.88 C
<i>Galena</i>	0.8739 CDE	906.2 CDE	0.34967 C	362.61 C
<i>Magnum</i>	0.8108 CDE	840.8 CDE	0.2957 CD	306.65 CD
<i>Cascade</i>	0.717 DE	743.5 DE	0.25771 CD	267.24 CD
<i>Mt Hood</i>	0.5295 DE	549.1 DE	0.24683 CD	255.97 CD
<i>Centennial</i>	0.2888 E	299.5 E	0.10986 D	113.92 D
<i>LSD</i>	0.6533	677.43	0.1912	198.28

*Any means with the same letter are not significantly different.

Table 2: Hop Quality Analysis 2019.

<i>Cultivar</i>	<i>% Alpha Acid</i>	<i>% Beta Acid</i>	<i>HIS</i>
<i>Cascade</i>	4.6	2.5	0.28
<i>Centennial</i>	9.1	3.4	0.25
<i>Chinook</i>	8.3	2.1	0.29
<i>Columbus</i>	15.9	3.9	0.26
<i>Crystal</i>	4.1	4.1	0.23
<i>Galena</i>	9.4	3.0	9.4
<i>Magnum</i>	10.8	4.6	0.28
<i>Mt Hood</i>	6.8	3.3	0.29
<i>Nugget</i>	9	2.8	0.28
<i>Yakima Gold</i>	7.0	5.2	0.30

Summary

Overall plant and hop cone quality was good. Wet pounds per acre ranged from a high of 2,070 (Cv. Columbus) to a low of 299(Cv. Centennial). Wet pounds per plant ranged from a high of 1.99 pounds (Cv. Columbus) to a low of .288 pound (Cv. Centennial). Dry pounds per acre ranged from a high of 736 (Cv. Columbus) to a low of 113(Cv. Centennial). Dry pounds per plant ranged from a high of .71 pounds (Cv. Columbus) to a low of .10 pound (Cv. Centennial).





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For more information, contact:

Brad Bergefurd
OSU South Centers
1864 Shyville Road
Piketon, Ohio 45661
bergefurd.1@osu.edu



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AND ENVIRONMENTAL SCIENCES

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