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Hop Production to Enhance Economic Opportunities for Ohio Farmers 2020

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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 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: 200 lb. per acre of Nitrogen fertilizer applications were made via fertigation through the drip irrigation system. 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: Wooden Inline Trellis Hop Yields Wooster, Ohio 2020

Cultivar	*Wet lbs. per Plant*	*Wet lbs. per acre*	*Dry lbs. per Plant*	*Dry lbs. per acre*
Columbus	2.7643 A	3344.8 A	1.3227 A	1600.5 A
Nugget	0.9752 B	1180 B	0.4405 B	533 B
Cascade	0.5595 BC	677 BC	0.2522 BC	305.2 BC
Sterling	0.5011 BC	606.3 BC	0.2753 BC	333.1 BC
Williamette	0.2115 C	255.9 C	0.0914 C	110.6 C
Centennial	0.1828 C	221.2 C	0.0859 C	103.9 C
LSD	0.6279	759.79	0.3044	368.35

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

Summary

Overall plant and hop cone quality was good. Wet pounds per acre ranged from a high of 3,344 (Cv. Columbus) to a low of 759 (Cv. Centennial). Wet pounds per plant ranged from a high of 2.76 pounds (Cv. Columbus) to a low of .18 pound (Cv. Centennial). Dry pounds per acre ranged from a high of 1,600 (Cv. Columbus) to a low of 103 (Cv. Centennial). Dry pounds per plant ranged from a high of 1.32 pounds (Cv. Columbus) to a low of .08 pound (Cv. Centennial).

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