

Evaluation of Grape Varieties for Certified Organic Production – Neely-Kinyon Trial, 2007

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Introduction

In 1899, Iowa ranked 11th in the United States in grape production and sixth in 1919. When the focus was shifted to corn and soybean production in the 1930s and 1940s, grape production decreased and with the introduction of the corn herbicide 2,4-D, damage sustained from herbicide drift in the remaining Iowa vineyards was significant enough to cause a great decline in Iowa grape production. In 2003, Iowa had an estimated 200-250 acres of grapes planted, and continues to grow (Domoto, 2003).

Materials and Methods

On May 25, 2001, four cultivars of grapes (six vines per cultivar) were planted at the Neely-Kinyon Research Farm: Bluebell, Edelweiss, Foch, and Frontenac. Vines were planted 7 feet apart with 9 feet between rows. The vineyard, after the last vine planting, measures 50 feet by 72 feet.

At planting, all vines received a 5-lb application of composted turkey litter (Ultra-Gro®, Ellsworth, IA) with a chemical analysis of 2.2-2.8-1.5 (N-P-K), and a 6-in. layer of straw mulch applied to the base of each vine. In 2007, 5 lb of hoophouse compost was applied to established vines and worked into the surrounding soil on May 30. Straw mulch was reapplied to the base of the established vines after weeding to maintain a 6-in layer on May 30, 2007. Kentucky bluegrass was planted in the late spring of 2002 between vine rows to maintain a ground cover in vineyard middles. The ground cover was maintained by mowing

on May 30, June 7 and 26, and July 24. The single-cordon trellis system was constructed on June 5, 2002, consisting of vertically placed steel posts 6.5 feet out of the ground with two wires strung between the posts at 3.5 and 6 feet from the ground. The mulched area surrounding the vines was weeded by hand on May 30, 2007. Vines were pruned on April 10 and June 21. Shoot positioning and cluster thinning was conducted on the Bluebell, Edelweiss, and Frontenac cultivars on June 26, 2007. Shoots were repositioned after significant growth on July 24.

All vines were sprayed with Champion Wettable Powder® (NuFarm, Burr Ridge, IL) and lime (Good Earth Horticulture, Inc., Lancaster, NY) at 3 lb of Champion®, 6 lb of lime, and 100 gallons of water per acre on May 3, 30 and June 6. Suregard Lime Sulphur Solution (Value Garden Supply, St. Joseph, MO) was applied at 6 gallons with 100 gallons of water per acre on May 16.

The Foch and Bluebell cultivars were harvested on August 22, Frontenac and Edelweiss were harvested on August 27, 2007. Brix levels were taken on all varieties the day after harvest with a hand refractometer.

Results and Discussion

Yields were significantly impacted in 2007 by freezing weather early in the season, herbicide spray drift, which reduced leaf area and grape production, and higher humidity and increased incidence of anthracnose and black rot. Poor flower and fruit set was followed by high disease pressure and animal predation. As an example, yields were reduced from 1.4 tons/acre in the Frontenac cultivar in 2006 to 0.14 tons/acre in 2007 to (Table 1). Yields were greatest in 'Foch' (0.8 tons/acre). Grape cluster

weight averaged 10 g/cluster, significantly lower than in 2006, when clusters averaged 35 g. There was a significantly greater cluster weight in the Edelweiss compared with the other varieties (Table 1). Grape cluster number was also down from an average of 78 to 46/vine in 2007 (Table 1), but ‘Foch’ vines had a significantly greater number of clusters at 110 clusters/vine. Brix levels averaged 17° and were highest in ‘Foch’ grapes (20.3°), followed by ‘Bluebell’ and ‘Frontenac’ (Table 1). Juice and jelly made from organic grapes was of high quality despite low yields.

References

Domoto, P. 2007. ISU Viticulture webpage <<http://viticulture.hort.iastate.edu>>

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Table 1. Plant performance in the organic grape variety trial, Neely-Kinyon, 2007.

Variety	Yield (ton/ac)	Brix (°)	Productivity (clusters/vine)	Average cluster weight (g)
Bluebell	0.16b	17.12b	35.00b	7.15b
Edelweiss	0.15b	15.16c	11.17c	17.52a
Foch	0.76a	20.29a	110.00a	10.53b
Frontenac	0.14b	15.85bc	27.33bc	6.83b
LSD _{0.05}	0.31	1.40	22.24	5.96