

Evaluation of Grape Varieties for Certified Organic Production – Neely-Kinyon Trial, 2008

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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. Each May, 5 lb of hoophouse compost was applied to established vines and worked into the surrounding soil, and the straw mulch was reapplied to the base of the established vines after weeding to maintain a 6-in layer. 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 bi-weekly mowing throughout the growing season. 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. Vines were pruned on April 21. Shoot positioning and cluster thinning was conducted on the Bluebell, Edelweiss, and Frontenac cultivars on June 26, 2008.

Suregard Lime Sulphur Solution (Value Garden Supply, St. Joseph, MO) was applied at 6 gallons with 100 gallons of water per acre on April 21. 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 21, 28, June 4, 11, 18, 25; July 3, 10, 17, 24 and 31.

All cultivars were harvested on August 21. A disease rating was taken on all vines prior to harvest. The disease rating scale consisted of the following: 0=no disease; 1=1-25% diseased; 2=26-50% diseased; 3=51-75% diseased; 4=76-99% diseased; 5=all diseased.

Results and Discussion

Vines underwent many stressful episodes in 2007, and new wood weight only averaged 7 oz at pruning. Yields were also impacted in 2008 by freezing weather early in the season, herbicide spray drift, which reduced leaf area and grape production, and high rainfall and humidity favoring anthracnose and black rot. Animal predation also appeared to impact Edelweiss harvest. Disease was reduced in 2008, however, because of a rigorous weekly spray schedule. Disease ratings, recorded at harvest, averaged 1.04 across all cultivars, but the 'Bluebell' grapes exhibited an increased incidence of black rot compared to the other

cultivars. Yields were greater in 2008 compared to 2007, however. As an example, ‘Frontenac’ grapes yielded 0.14 tons/acre in 2007 and close to 1 ton/acre in 2008 (Table 1). Yields were greatest in ‘Foch’ (0.8 tons/acre) and in ‘Frontenac’. Grape cluster weight averaged 32 g/cluster, significantly greater than in 2007, when clusters averaged 10 g. ‘Frontenac’ cluster weight averaged 45 g (Table 1). Grape cluster number averaged 30 clusters/vine, with the exception of ‘Edelweiss’, which were reduced to 6 clusters/vine presumably due to animal predation. Juice and jelly made from organic grapes was of high quality.

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, 2008.

Variety	Number of buds/vine	New wood weight (oz)	Yield (g/vine)	Yield (ton/acre)	Clusters/vine	Average cluster weight (g)	Disease pressure (0 to 5)
Bluebell	22.8	6.25	724.5	0.55	27.00	26.83	1.67a
Edelweiss	21.7	7.32	158.2	0.12	5.83	27.14	1.50ab
Foch	16.2	8.33	1096.2	0.83	36.67	29.89	0.17ab
Frontenac	21.3	6.38	1194.2	0.91	26.17	45.63	0.83b
LSD _{0.05}	NS	NS	NS	NS	NS	NS	0.83