

Evaluation of Grape Varieties for Certified Organic Production – Neely-Kinyon Trial, 2006

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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 2006, 5 lb of hoophouse compost was applied to established vines and worked into the surrounding soil. Straw mulch was reapplied to the base of the established vines to maintain a 6-in layer on July 18, 2006. 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 June 22 and July 20,

2006. 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 July 18, 2006. Vines were pruned on July 14 and July 20. Shoot positioning occurred on July 20 and cluster thinning was conducted on the Bluebell, Edelweiss, and Frontenac cultivars on June 22 and on the Foch cultivar on June 26, 2006.

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 June 13, and July 6 and 19, 2006. Entrust™ (Dow Agrosiences LLC, Indianapolis, IN) was applied at 2 oz/acre to all vines on August 29 to control lepidopteran pests.

The Edelweiss and Bluebell cultivars were harvested on August 15, Frontenac was harvested on August 22, and Foch vines were harvested on August 23, 2006. Brix levels were taken on all varieties at harvest with a hand refractometer.

Results and Discussion

Yields were significantly improved in 2006, compared to 2005, with an equivalent of 1.4 tons/acre harvested in the Frontenac cultivar (Table 1). This yield was equal to a 300% increase over 2005 yields. Yields were greatest in Frontenac and Edelweiss (1.2 tons/acre) followed by Bluebell (.83 tons/acre) and Foch (.35 tons/acre). ‘Foch’ was significantly affected by herbicide spray drift, which reduced leaf area and grape production. There was a significantly greater cluster weight in the Edelweiss and

Frontenac cultivars compared with the other varieties (Table 1). Average 'Frontenac' cluster weight was 34.8 g/cluster in 2006, compared to 26 g/cluster in 2005. There were more clusters per vine (average of 92) in the 'Bluebell' variety compared with all other varieties, similar to 2005 results. The average number of 'Frontenac' clusters/vine in 2006 was 63.5, compared to 31 in 2005. Brix levels were highest in 'Foch' grapes, followed by 'Bluebell' and 'Frontenac' (Table 1). Disease symptoms were moderate in 2006 compared to 2005 because of a wet spring, but the cluster filling period was very dry, allowing for low black spot infection. Large numbers of the grape forester caterpillar were evident in 2006, however,

leading to a significant consumption of leaf tissue, which may affect 2007 yields.

References

Domoto, P. 2003. ISU Viticulture webpage <<http://viticulture.hort.iastate.edu>>

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Table 1. Plant performance in the organic grape variety trial, Neely-Kinyon, 2006.

Variety	Yield (ton/ac)	Brix (°)	Productivity (clusters/vine)	Average cluster weight (g)
Bluebell	0.83bc	16.92b	92.33a	14.83b
Edelweiss	1.21ab	14.71c	55.17b	36.05a
Foch	0.35c	20.00a	51.17b	9.97b
Frontenac	1.41a	15.69bc	63.50b	34.77a
LSD _{0.05}	0.56	1.60	27.65	9.35