

Fertility program comparisons on Concord grape production in Central Michigan. Experiment 14-P104.

Experiment Info:

Exper.:	14-P104
Planted:	5-29-2010
Variety:	Concord
Population:	545
Plot size:	10' x 32'
Replications:	Three
Harvest:	9-20-2014

Soil Test Values (ppm):

Farm/ Field	108
pH:	7.3
CEC:	8.6
%OM:	1.3
Bray P1:	211
Bicarb P:	-
K:	124
S:	2
%K:	3.7
%Mg:	21.6
%Ca:	74.4
%H:	-
% Na:	0.3
Zn:	13
Mn:	5
Fe:	34
Cu:	1.7
B:	0.8

Objective:

Compare fertility programs impact on the development and yield of young Concord grape vines in Central Michigan.

Materials & Methods:

In the spring of 2010, this research vineyard was established with two rows of concord grapes. The rows were spaced ten feet apart and the in-row spacing for the vines was eight feet. Each plot contained four vines (4 vines x 8 ft.). These vines were established and growth directed for a Single Curtain, Bilateral Cordon with a standard two-wire trellis without any crop load during the first two seasons of growth. The 2013 season was the first cropping year for this block of grapes. During early March, the vines were all pruned back to a uniform number of nodes prior to bud break. Pesticide applications to provide disease and insect control were applied uniformly across all plots as necessary during the growing season. Spring fertilizer applications were directed at the base of the vines at the time of but-break. Foliar fertilizer applications were applied to selected plots at full bloom, bunch closure and Veraison utilizing a backpack sprayer. At maturity, all clusters were harvested and weighed for all four vines within each plot. Four random clusters were then selected from each plot. These clusters were combined, crushed, and the Brix levels determined using a refractometer.

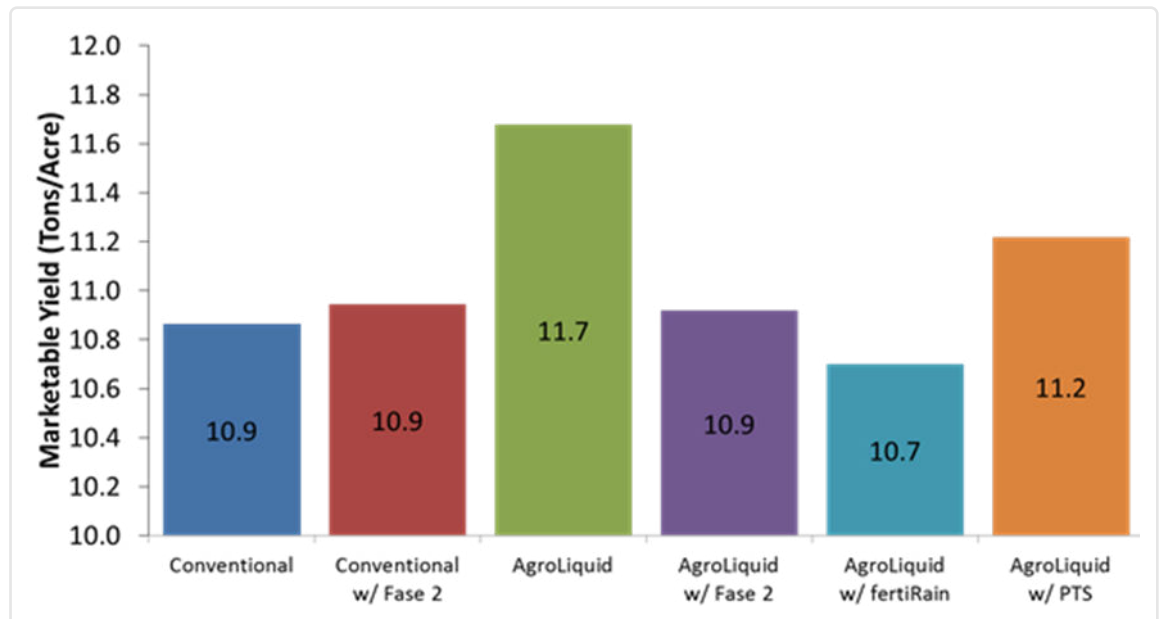


Figure CG1. Yield results by treatment for Concord grape from the 2014 growing season. All treatments were not statistically different ($P \leq 0.10$)

Table CG1. Fertility programs and yield information for Concord Grapes, 2014. Experiment 14-P104

	Treatment	Rate/A (gal or lb/A)	Method of Application	Nutrients lbs/A	NUE**	Yield Tons/A	Degree Brix
1	Conventional 28% UAN+ 10-34-0+ SOP	17, 13, 130#	Band	182.3	119.1	10.86	11.5
2	Conventional w/ Fase 2 28% UAN+ 10-34-0+ SOP	17, 13, 130#	Band	184.7	118.0	10.90	12.7
	Fase 2	2 qt x 3 apps	Foliar				
3	AgroLiquid HN+ PG+ SK+ Micro 500+Mn	14, 5, 6.5,1, 0.125	Band	65.9	354.3	11.68	12.0
4	AgroLiquid w/ Fase 2 HN+ PG+ SK+ Micro 500+ Mn	14, 5, 6.5,1, 0.125	Band	68.3	319.9	10.92	12.9
	Fase 2	2 qt x 3 apps	Foliar				
5	AgroLiquid w/ PTS HN+ PG+ SK+ Micro 500+ Mn PTS	14, 5, 6.5,1, 0.125 2 oz x 3 apps	Band Foliar	66.0	339.3	11.20	12.9

*Micronutrients not included in total fertilizer per acre calculations. **NUE = Nutrient Use Efficiency = Lbs Yield / Total Lb. N,P,K&S as Fertilizer Applied, HN=High NRG-N, PG= Pro-Geminator, SK= Sure-K, PTS = Protristim

Conclusions:

- The yield of Concord grapes from the AgroLiquid fertility program (Trt 3) was 0.8 ton/Acre (7.3%) greater than the conventional fertility program (Trt 1). The AgroLiquid treatment program without any foliar applications resulted in the highest yield in this season and greatest NUE, nearly threefold greater than the conventional treatment (Table CG1).
- Three applications of Fase 2 at selected growth stages (treatments 2 & 4) resulted in nearly identical yields for the Concord grapes produced with the conventional fertility products and the AgroLiquid products, both producing 10.9 tons per acre. While both yields were less than the AgroLiquid treatment without any foliar applications for yield, the Brix levels for both the treatments were increased dramatically over their nearly all other treatments (Table CG1).
- The soluble solids or Brix values for all the Concord grape treatments this season were increased with the use of foliar fertilizer treatments. Therefore, it was assumed that all these treatments had an impact on the grape maturity at the time of harvest. Still, the Brix levels in these grapes at the time which they were harvested averaged just over 12 degrees Brix, well below where they would typically be harvested. Had the harvest been delayed a week or more, higher values may have existed but due to 2014 season lower than normal values were observed across the area.
- This was only the second year of harvesting this block of grapes, but in 2013 the foliar treatments increased both yield and Brix values of the grapes. Therefore, it was somewhat surprising to see the non-foliar AgroLiquid treatment had the greatest yield. The winter of 2013 /2014 had below average temperatures and the variability across all yield values was greater this season, possibly due to winter's impact on the buds.