

JOHANNESBURG REISLING GRAPES

In 1994, Kevin Dickinson and myself, along with Metalosate distributors and grower cooperators, established field demonstration trials to determine the effectiveness of a newly developed Albion product. It is a water soluble 0-0-30 liquid potassium carbonate that is complexed with amino acids. This enhances foliar absorption of potassium across cellular membranes. The product has been in development for two years with Harvey and Stephen Ashmead overseeing the project.

Potassium is a macronutrient responsible for plant protein synthesis, enzyme activation, carbohydrate synthesis, and is also responsible for the proper function of the stomatal aperture, regulating transpiration. Potassium cations make up 50 to 70 percent of all cations present in the juice of wine grapes at harvest where it is found in the salts of tartaric and malic acid.

One trial in the 1994 program was carried out on a Johannesburg Reisling planting in the Yakima Valley of Washington near the town of Zillah, owned and operated by Covey Run Vineyard. The 1993 harvest was delayed due to low accumulation of soluble solids of which carbohydrates constitute a large portion as the grapes ripen. Soil samples taken in late January 1994, revealed low potassium levels. These factors assured us that the block was a candidate for foliar potassium (Fig. 1).

Half of the block was treated three times at approximately two week intervals from mid-July to late August. The rate per acre of potassium amino acid complex was 3.0 quarts (7.0 L/Ha). Refractometer readings titratable acid percentage, and pH were measured as the grapes began to ripen in early September through harvest. Grape bunches were chosen at random from treated and untreated halves of the block by the vineyard manager. (Table 5). The treated half of the block showed a consistently higher level of soluble solids (sugars) in degrees brix than the untreated without adversely affecting the acid or pH of the juice.

Date	Plot	Brix	Acid	pH
7 Sept	Untreated	19.9	1.08	2.83
	Treated	20.4	1.02	2.87
21 Sept	Untreated	21.2	1.06	2.9
	Treated	22.8	1	2.94
4 Oct	Untreated	19.4	0.77	3.15
	Treated	22.4	0.77	3.15
12 Oct	Untreated	21.6	0.81	3.14
	Treated	22.4	0.75	3.18
28 Oct	Untreated	21.4	0.75	3.11
	Treated	23.4	0.73	3.1

The treated plots were sprayed 3 times with 3 quarts/acre of Albion Potassium Amino Acid Complex. The untreated plots received no leaf feed at all.

The application of potassium to the foliage of wine grapes should by no means be relied upon to supply the entire needs of the plant, but can certainly be beneficial at times of high potassium translocation from leaves to fruit and also at times of high water stress.

REPORT NUMBER:

P0211.001

GROWER:

COVEY RUN VINEYARD

SEND TO:

ALBION LABORATORIES INC.
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DATE OF REPORT:

02-02-1995

SOIL ANALYSIS REPORT

SAMPLE NUMBER	FIELD IDENTITY	LAB NUMBER	CROP NAME	YIELD GOAL
1	JOHANNESBURG REISLING	0	GRAPES	10 T/Ac

SAMPLE NUMBER	pH		HYDROGEN H Meq/100g	ORGANIC MATTER % ★ ENR lbs./Acre		NITRATE NITROGEN ppm-N	SULFUR S ppm-S	PHOSPHORUS P ppm-P	POTASSIUM K ppm-K	CALCIUM Ca ppm-Ca	MAGNESIUM Mg ppm-Mg	SODIUM Na ppm-Na
	SOIL	BUFFER										
1	7.9			1.5	72L	17L	22VH	12M	114L	2215H	386H	79M

★ Estimated Nitrogen Release

SAMPLE NUMBER	EXCESS LIME RATING	SOLUBLE SALTS mmhos/cm	ZINC Zn ppm-Zn	MANGANESE Mn ppm-Mn	IRON Fe ppm-Fe	COPPER Cu ppm-Cu	BORON B ppm-B	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED)			
									% K	% Ca	% Mg	% Na
1	LOW	0.4L	1.3VH	2.2VH	15H	0.8VL	0.4L	14.9	2.0	74.2	21.3	2.3

SOIL FERTILITY RECOMMENDATIONS

SAMPLE NUMBER	NITROGEN	PHOSPHATE	POTASH	SULFUR
	N	P ₂ O ₅	K ₂ O	S
-----LBS/ACRE-----				
1				

METALOSATE FOLIAR APPLICATION

CALCIUM	MAGNESIUM	ZINC	MANGANESE	IRON	COPPER	BORON
Ca	Mg	Zn	Mn	Fe	Cu	B
-----OZ/ACRE-----						

SOIL AMENDMENTS

LIME	GYPSUM	ELEMENTAL SULFUR
-----TONS/ACRE-----		

These results are from analyses not performed by Albion Laboratories.

Figure 1. Soil analysis report indicating a low level of available potassium.

This report applies only to the sample(s) tested. Sample(s) are retained a maximum of thirty days after testing.
ALBION LABORATORIES, INC.

BY:

CONCORD GRAPES

The Church of Jesus Christ of Latter-Day Saints operates four farms in the Northern Utah area which produce concord grapes used in processing for bottled grape juice. A foliar potassium trial was conducted on the largest of these farms, which consists of 36 acres (14.5 Ha) of vineyard.

The total area was treated with the exception of 6 rows in the center of the vineyard. Two applications of the 0-0-30 liquid Foliar Potassium were made at two quarts per acre (4.6 L /Ha) with the first one on August 1, 1994, and the second application followed three weeks later. Two refractometer readings were taken in the field with the first following the initial potassium application and the final test taken at harvest time.

The first sample test showed an increase of .5% in the sugar content of the grapes. The final harvest reading indicated a difference of 1.5% in the sugar content between the treated and the untreated areas. The brix reading were 19% and 20.5% sugar in the control and treated areas respectively. This is a 7.8% increase.

The average yield for the area was approximately 5.25 tons per acre which produced about 835 gallons (1280L/Ha) of juice. The sugar content of the final product must be 23% (1.9 M.T./Ha) for canning. To make up for any deficit in sugar, grape juice concentrate is added to the harvest juices. It takes 3% of additional concentrate to offset a 1% deficit in sugar from the harvested grapes. At \$8.65 per gallon of finished 23% juice, the savings realized per acre would be \$216 (\$534/Ha) for each 1% increase in the sugar at harvest time. In this trial, the increase in the sugars from the potassium applications translated into savings of \$324 per acre (800/ Ha).

These data are preliminary and the trial was not conducted on a scientific basis, so the results can only indicate a general trend. However, these responses show a trend that late season applications of Albion's 0-0-30 Foliar Potassium on grapes can yield positive economic responses.

ACKNOWLEDGEMENTS

On behalf of Albion Laboratories, I would like to thank the following people without whom these trials would not have been possible:

Jeff Sample, Dan Griffith, Doug Anyan- Horticulturists
Wilbur-Ellis Company, Yakima, WA

Bob Mattingly - Vineyard Manager
Covey Run Winery and Vineyards, Zillah, WA

Lloyd Stoker - Vineyard Manager
LDS Church Farms - Layton, Utah

Harvey and Stephen Ashmead - Research and Development
Albion Laboratories, Inc.



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