RICHARD L THOMAS • 412 POPPY HILL DRIVE • HEALDSBURG, CALIFORNIA 95448
VINEYARD CONSULTING AND EVALUATION • VITICULTURE INSTRUCTOR S.R.J.C. • 527-4408 OR 433-2171

July 24,1997

Mr. Jim Maize
5700 Bennett Valley Rd.
Santa Rosa, Calif. 95404

Dear Mr. Maize,

Per your request I did a back hoe analysis of your property located in Bennett Valley to determine suitability for vineyard production. I finally have received the soil results back and they are pretty much what I would have guessed.

We dug about 8 holes randomly across the field and found that the entire field is relatively uniform which makes vineyard development an easier task. The soil is classified as a Raynor clay by the Soil Survey of Sonoma County published by the Soil Conservation Service and the USDA. Raynor clay soils are heavy black soils similar to Diablo, Clear Lake, and Zamora clays scattered throughout the county. As I would have guessed, the soil will require about 8-10 ton per acre of gypsum to help get the Ca:Mg ratio to a more preferred 4:1 in the ppm area. Also the base saturation percentages need to be adjusted which will also be done by the gypsum addition. Also the pH is low and will require an additional 6-8 ton of Ag. lime per acre. See analysis sheet for desired numbers.

Once these soil amendments are added and slip-plowed in the soil chemistry will be adequate for quality wine grape production. Due to the heavy nature of the soil and the underlying rocky conditions I would strongly suggest carefully planning and consider some extensive drainage work that would ensure future stability. I would be happy to suggest the right people for that if you desire.

The low amounts of phosphorous and potassium can very easily be handled through the drip irrigation system on a post planting basis. Overall the entire cleared area could be planted to vineyard and I have been informed that adequate water is available for a project of this size.

I believe that several grape varieties would do well in this location and produce a high quality product. Chardonnay, Sauvignon blanc, Merlot, Shiraz, and several other Rhone varieties would all do well here. It is a little too warm to think about quality Pinot Noir and perhaps a little too cool on these heavy soils for Cabernet Sauvignon.

I am sure that several wineries would be interested in discussing long term contracts for fruit from this location.

As for development costs about $15-18,000 per acre is a ballpark figure for today but there are a lot of variables including spacing and rootstock that can affect these numbers. I would be happy to sit down with you or anyone and discuss the development of this property if you should desire.

Overall I do not find anything that would prevent this property from being planted to quality wine grapes. My single caution is to plan properly to avoid future slippage and do proper row orientation and non-till farming practices.

Please do not hesitate to call if you have any further questions.

Respectfully Submitted,

Richard L. Thomas

Farmecology
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SOIL ANALYSIS

Grower: MAISE
Location: 4700 BENNETT VALLEY RD.
Date: 6/26/97

Sample ID	Lab #	MILLIEQUIVALENTS/LITER					PPM					MEQ/100 grams			
		Water Extract						Ammonium Acetate				HNO				
		Ca	Mg	Cl	Na	HCO_3	B	Ca	Mg	K	Na	K	Ca	Mg	K	CEC
1A 0-32"	S-403	0.7	0.6				0.26	3990	2244	162	77		19.9	18.5	.41	41.6
1B 32" +	S-404	1.0	1.1				0.21	4545	2601	126	235		22.7	21.4	.32	45.7
2 0-60"	S-405	0.5	0.5				0.16	3570	1989	192	260		17.8	16.4	.49	36.8
4 18" +	S-406	0.6	0.5				0.13	4343	2066	108	270		21.7	17.0	.28	45.6

Lab #	Saturated Soil			PPM								TONS/ACRE	PERCENT				
				Olsen	Bray	DTPA				Ion Electrode	$CaHPO_4$	Lime Require-ment		Base Saturation			
	S.P.	pH	ECe	P	P	Zn	Mn	Fe	Cu	NO_3-N	SO_4-S		O.M.	Ca	Mg	K	Na
S-403	74	5.32	0.27	1.1	1.4	0.26	33.0	77.0	2.5			2.5		47.8	44.5	.99	.80
S-404	49	5.53	0.43	2.7	1.2	0.34	118.0	39.6	4.6			0.3		49.7	46.8	.70	2.24
S-405	70	5.76	0.23	1.4	1.4	0.22	45.3	61.6	1.9			1.0		48.4	44.6	1.33	3.07
S-406	43	6.06	0.29	1.4		0.12	7.0	24.2	1.7			5.4		47.6	37.3	.61	2.57

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Some Ideal Nutrient Ranges For Soils.

	Low	Adequate
Phosphorus ----------	< 10 ppm	> 10 ppm
Potassium (extractable) ----------	<100 ppm	>100 ppm
HNO_3 (K) Potassium (available) ---- -	<200 ppm	>250 ppm

Potassium deficiency is probable when extractable potassium is below 100 ppm and available potassium is below 250 ppm. Other factors such as type of clay and Ca/Mg ratios further effect Potassium availability.

Ca:Mg ratio in MEQ / 100g : An ideal range is 2:1 to 4:1. Greater than 1:1 Mg can cause growth suppression and decreased potassium uptake.

Manganese deficiencies are common on high magnesium soils.

pH values :

Below 5 - can have acid infertility problems such as manganese and aluminum toxicity. Reduced nitrogen and phosphorus uptake, and poor microbial activity.

5 to 5.5 - generally do not have pH related infertility problems. However, yield reduction has been reported from vines grown on soils with pH values below 5.5. Phosphorus uptake can be reduced in low phosphorus soils, and reduced microbial activity can occur.

6 to 6.5 - Ideal range

Saturation Percentage (SP) :
Grams of water required to saturate 100 grams of soil, related to soil texture.

Below 20	Sand or loamy sand
20 - 35	Sandy loam
35 - 50	Loam or silt loam
50 - 65	Clay loam
65 - 135	Clay

Water soluble Ca:Mg ratios in MEQ/L: Ratios greater than 1:1 Mg can reduce potassium availability even when extractable potassium levels are adequate.

BORON : General guideline for grapevine sensitivity to soil boron in water extract.

PPM Boron	Grapevine Symptoms
0 - 0.5 ----------	None
0.5 - 1 ----------	Very Slight to None
1 - 1.5 ----------	Slight
1.5 - 2.5 ----------	Moderate
2.5 - 4 ----------	Severe

Percent Base Saturation :
General guidelines

Ca	60 - 65%	(Light soil)
	65 - 70%	(Heavy soil)
Mg	10 - 20%	
K	5 - 7 %	

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