Integrated Crop Management of Grapevines

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Herbicide Injury to Grapevines

Diuron(Karmex) Injury

Simazine(Princep) Injury

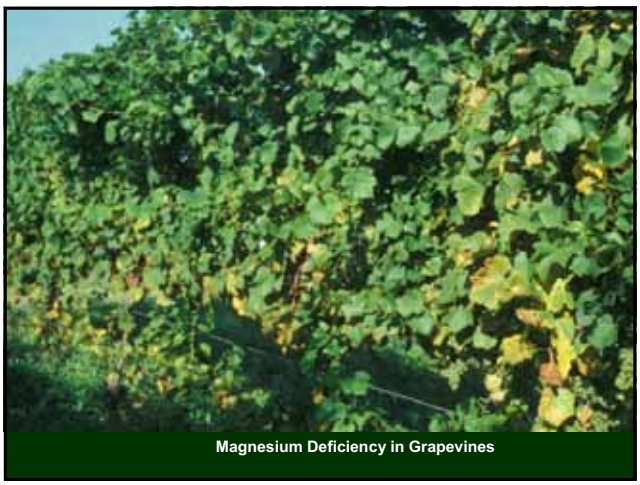
Phenoxy (2,4-D and related compounds) Injury

Glyphosate(Roundup) Injury

Symptoms of Nutritional Deficiences in Grapevines

Iron Deficiency in Grapevines

Iron Deficiency in Grapevines



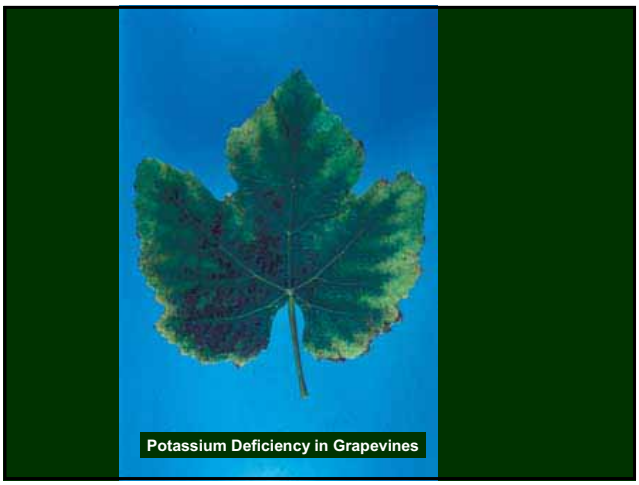
Magnesium Deficiency in Grapevines

Magnesium Deficiency in Grapevines

Magnesium Deficiency in Grapevines

Manganese Deficiency in Grapevines

Potassium Deficiency in Grapevines



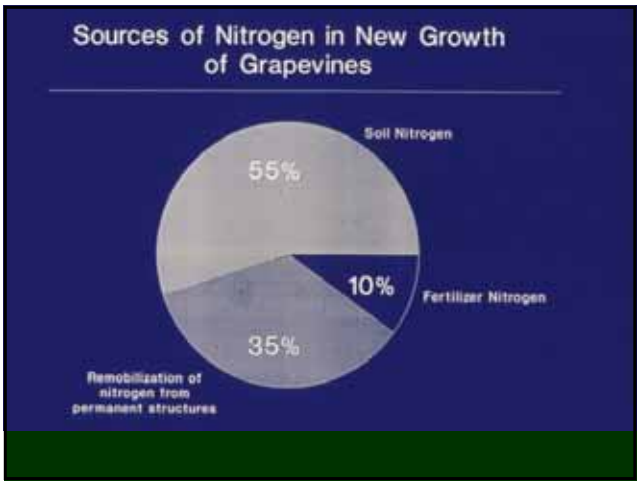
Potassium Deficiency in Grapevines

Potassium Deficiency in Grapevines

Sauerschaden on
White Riesling Grapevines

Oxidant Stipple on
White Riesling Grapevines

Oxidant Stipple on
White Riesling Grapevines



95% of the roots of 12 year-old Concord vines were in the top 18" of soil

The influence of time of nitrogen fertilization applications on the percent of fertilizer taken up by vines.

Time of N application	Fertilizer uptake in treated vines (%)
Budbreak	9.8
Bloom	16.7
Bloom + 6 wks	14.8

The influence of time of nitrogen fertilization applications on the percent of fertilizer taken up by vines.

Time of N application	Fertilizer uptake in treated vines (%)	Fertilizer in all vines (%)
Budbreak	9.8	22.0
Bloom	16.7	37.0
Bloom + 6 wks	14.8	33.0

The influence of time of nitrogen fertilization applications on the percent of fertilizer remaining in the top 36" of soil.

Time of application	N fertilizer in soil in October (%) 0-24"	24-36"	0-36"
Budbreak	9.4		
Bloom	29.5		
Bloom + 6 wks	48.2		

The influence of time of nitrogen fertilization applications on the percent of fertilizer remaining in the top 36" of soil.

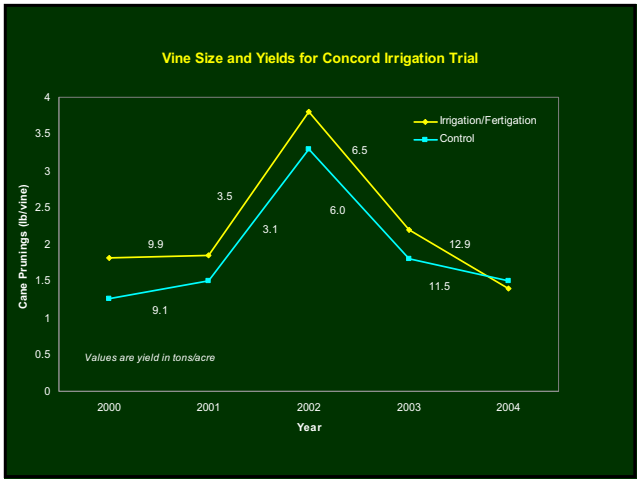
Time of application	N fertilizer in soil in October (%) 0-24"	24-36"	0-36"
Budbreak	9.4	3.5	
Bloom	29.5	5.6	
Bloom + 6 wks	48.2	12.6	

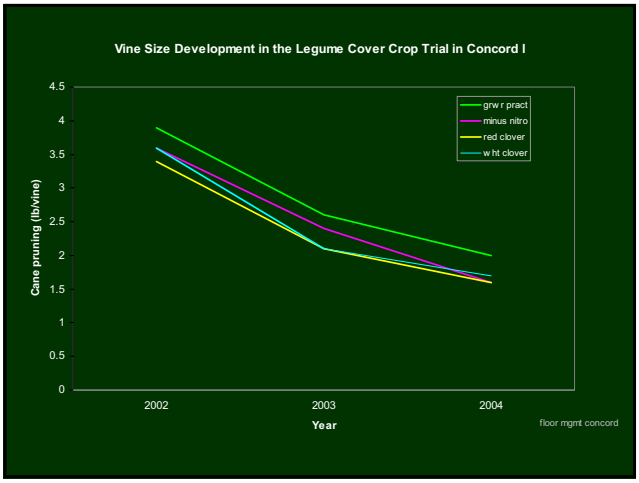
The influence of time of nitrogen fertilization applications on the percent of fertilizer remaining in the top 36" of soil.

Time of application	N fertilizer in soil in October (%) 0-24"	24-36"	0-36"
Budbreak	9.4	3.5	12.9
Bloom	29.5	5.6	35.1
Bloom + 6 wks	48.2	12.6	60.8

The influence of time of nitrogen fertilization applications on the percent of fertilizer taken up by vines and remaining in the top 36" of the soil in October.

Time of application	Uptake by vines	Fertilizer in soil (0-36")	Total Measured Fertilizer
Budbreak	22.0	12.9	34.9
Bloom	37.0	35.1	72.1
Bloom + 6 wks	33.0	60.8	93.8





Vine Size Experiment
Plastic Mulch Treatment
5/27/03

Vine Size Experiment
Foreground =Control Background = Plastic Mulch
9/16/03

Vine Size Experiment
Straw Mulch Treatment
5/27/03

Vine Size Experiment
Control – No Mulching, no supplemental nitrogen
9/16/03

Vine Size Experiment
Supplemental Nitrogen Treatment
9/16/03

Table 1. Leaf petiole concentration for total nitrogen and nitrate nitrogen at veraison for 'Niagara' grapevines subjected to varying strategies for row middle management. Hinkelman Farms, 2003.

Treatment	Total N (%)	Nitrate N (ppm)
Control	0.96 a	97.3 b
Plastic mulch	1.02 a	169.8 ab
Straw mulch	0.99 a	311.3 ab
Nitrogen fertilization (6 times)	1.01 a	440.0 a
$LSD_{(0.05)}$[1]	0.11	330.3

[1] Mean separation within columns according to Fisher's test for least significance. P <= 0.05.

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Table 1. Pruning weight, °Brix and yield for 'Niagara' grapevines subjected to varying strategies for row middle management. Hinkelman Farms, 2003.

Treatment	Cane pruning wt[3] (lb/vine)	Yield (ton/ acre)
Control	1.8 b	11.1 a
Plastic mulch	1.6 b	11.0 a
Straw mulch	1.6 b	8.9 b
Nitrogen fertilization - (6 times)	2.6 a	10.8 ab
LSD $_{(0.05)}$[2]	0.6	2.0

[1] Crop adjust = attempt to remove by hand half of the clusters on the vine.
[2] Mean separation within columns using Fisher's Test for least significant difference.
[3] Cane weights recorded Nov., 2003.