



Lodi-Woodbridge Winegrape Commission

IPM Program Update

Crush District #11, Local Commission

February 1994

We are already off and running with IPM activities in 1994. But, before we cover those activities we want to briefly review results from the IPM monitoring activities in 1993.

SOIL MICROBE DATA

Table 1 shows the 1992 and 1993 soil microbe data and the averages for the two years where preemerge herbicides were applied vs. where they were not applied. Microbial activity was measured at a soil depth of 12 inches. The relative increases are substantial in the Gram (-) Rod Bacteria, Molds, Yeasts and Chitinase-Producing Actinomycetes groups.

APC: This is a measure of total aerobic organisms, i.e. those organisms that require oxygen for growth. Organic matter inputs generally increase APC, as well as good watering practices.

ANPC: This is a measure of total anaerobic bacteria, i.e. those that require a lack of oxygen for growth. Soils high in clay content or poor drainage, when overwatered, will produce high counts. These organisms are responsible for production of compounds that are undesirable.

MAC CONKEY TEST: These gram (-) rod bacteria contain species that are associated with the production of plant growth regulating compounds.

MOLDS & YEASTS: Molds play a role in nutrient recycling. Some species produce plant growth regulators as well as vitamins.

TABLE 1
Soil Microbe Colonies / gm of Soil

	P.E. Herbicides Applied			Desired Levels	P.E. Herbicides Not Applied			Relative Increase in Microbial Activity
	1992	1993	92-93 AVE.		1992	1993	92-93 AVE.	
APC (Aerobic)*	3.8	5.8	4.8	>3.0	4.0	6.6	5.3	ND
ANPC (Anaerobic)*	0.8	2.7	1.75	<1.0	0.6	2.0	1.3	30% Decrease
Gram(-)Rod Bacteria* (Mac Conkey Test)	304	4637	2470	1000-300,000	4033	15,618	9826	4X
Mold**	52	28	40	50-200	213	116	165	4X
Yeast**	10	14	12	50-200	93	25	59	5X
Actinomycetes(Tot.)**	561	164	363	1000-3000	1033	499	766	2X
Actinomycetes** (Chitinase-Prod.)	57	17	37	1000-5000	237	19	128	3.5X
Bacillus Group** (Blood Agar Tests)	769	1633	1202	1500-6000	1533	3639	2587	2X

*Multiply figures by 1,000,000 for total microbial colonies/gm of soil.

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TOTAL ACTINOMYCETES: This class is associated with the production of extracellular enzymes which are involved in nutrient availability and plant/pest interactions.

CHITINASE PRODUCERS: These Actinomycetes produce the extracellular enzyme chitinase that is responsible for decomposition of chitin found in nematodes, insect exoskeletons and in spores of soil diseases.

BLOOD AGAR: These numbers represent the group Bacilli. Some strains produce insect toxins such as the familiar BT.

LEAF NUTRIENT DATA

Table 2 depicts typical leaf nutrient analyses from two survey blocks in 1992 and 1993. In the Cabernet Sauvignon of Region I, major differences were seen in the status of the vines at bloom and in July between the two years. In 1992, the potassium and copper levels at bloom were adequate while the calcium and zinc levels were not adequate. By July, calcium and copper were adequate, but potassium was now not adequate and zinc continued to be too low. In 1993, only copper was adequate at bloom (just barely) while potassium, calcium and zinc were not adequate. The grower addressed the zinc-deficiency with a foliar application of zinc postbloom which resulted in a very adequate level of zinc in the July leaf sample. However, the low levels of calcium, potassium and copper were not addressed, and consequently, these nutrients continued to be at low levels in the July leaf sample. Also, nitrogen levels tended to be too high in both years.

In the Chardonnay in Region II, very similar trends were seen. However, in this block, the grower chose to address the zinc-deficiency he experienced in 1992 with a pre-bloom foliar application of zinc in 1993. This is reflected in more than adequate zinc levels in both the bloom and July leaf analyses. But, the grower likewise did not address the low potassium and calcium levels and marginal copper levels in 1992 and 1993. Optimizing nitrogen, potassium, calcium and copper levels in grapes is a critical factor in maximizing the expression of natural resistance to diseases and insects in the plants themselves.

TYPICAL LEAF NUTRIENT ANALYSES - 1992 & 1993

Nutrient	Desired Range	Region I Cabernet Sauvignon				Region II Chardonnay			
		1992		1993		1992		1993	
		Bloom	July	Bloom	July	Bloom	July	Bloom	July
% Nitrogen	1.8 - 2.5	3.22	3.00	4.62	3.03	2.72	3.20	3.52	3.32
% Phosphorus	.16 - .45	.26	.15	.25	.17	.29	.21	.33	.24
% Potassium	1.8 - 2.5	2.33	.50*	.74*	.61*	2.60	1.00*	.61*	.79*
% Calcium	1.8 - 2.5	1.62*	2.59	1.30*	1.78*	1.13*	1.32*	1.66*	1.49*
% Magnesium	.18 - .45	.47	.50	.27	.42	.52	.31	.27	.36
ppm Zinc	19 - 60	16*	18*	17*	80	11*	15*	93	58
ppm Copper	6 - 20	15	13	10	2*	8*	10	12	7*
ppm Boron	20 - 100	39	63	92	50	50	60	56	59

* Below desired range.

BRIX DEVELOPMENT DATA

In 1993, there appeared to be some impacts from the cover crops on Brix development in the survey blocks. The annual clover mix and the Cahaba White Vetch/Barley mix did appear to slow Brix development down somewhat (0.5 to 1.0 pts). Whether this slowing was due to late spring water and/or nutrient competition with the vines or to more nitrogen being available to the vines in the soil post veraison is not known. The perennial clover mix appeared to accelerate Brix development (1.0 to 2.0 pts.) in both 1st year and 2nd year blocks.

KELLOGG FOUNDATION PROJECT

NEW VISION VINEYARDS

We are poised and ready to go with our New Vision Vineyard cooperators. All in all, we have 12 cooperators with 20 vineyards in the project. Some vineyards are new and some are mature and there is a wide range of sustainable strategies being tried from vineyard to vineyard. It will be interesting to visit these growers and their blocks as the season progresses.

IPM SCOUTS

We have begun preliminary work on this objective of incorporating farmworkers into farming operations as IPM scouts. We hope to identify a vehicle in the district for accomplishing this task.

CALIFORNIA ENERGY COMMISSION (CEC) PROJECT

Tammy Lauchland, our resident IPM Coordinator, has been busily organizing this project and has 10 cooperators identified. These cooperators will supply very specific time, labor and product use information from blocks having pesticide and fertility inputs ranging from fully conventional to highly sustainable so that the energy inputs in these blocks can be compared.

MEETINGS

FEBRUARY 24, 1994

Annual Winter Research/IPM Grower Meeting
3.0 PCA Hours
Hutchins Street Square
Lodi, CA

MARCH 9, 1994

Grower Breakfast Meeting: Natural Pest Control
Guest Speaker: Robert Wisecarver
California Waste, Lodi, CA

MARCH 1994

Pest & Disease ID Workshop for Farmworkers (In Spanish)
Lodi, CA (Date TBA)

APRIL 1994

Pest ID Workshop for Growers/PCAs
Lodi, CA

MAY 1994

IPM Faire: Weed Control Equipment Demo
Lodi, CA

NEW PUBLICATIONS/TAPES

Publications

*Controlling Weeds with Fewer Chemicals. 1991, Craig Cramer. Rodale Press.
(Available from Ag Access 916-756-7177).*

Managing Cover Crops Profitably. USDA.

IPM Practioner: 1994 Directory

Tapes

Audio tapes from the 1994 Eco-Farming Conference:

Food Safety in the 90's

Methyl Bromide: Strategies to Deal with the Inevitable Loss of this Chemical

Sustainable Wine & Table Grape Production: What's New?

Biological Management of Soil and Plant Pathogens

Organic Wine and Table Grape Crop Session

Beneficial Insects & Flower Habitats

Vermiculture: Worms as Soil Builders

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