



# your Lake County HORTICULTURAL NOTES

NOVEMBER 1991

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## HORT NOTES SUBSCRIPTION FORMS DUE!

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(if you have returned it already -  
THANK YOU!)

↗ \*Please fill out the questionnaire  
at the bottom of the form\* ↖

### POTASSIUM DEFICIENCY CORRECTION FACTORS

A number of grape and pear growers are planning to apply potassium (K) fertilizer (mainly banded potassium sulfate) to selected blocks this fall. Indeed, the need is indicated by below-adequate tissue levels and, in some cases, classic symptoms of discolored/scorched, rolled leaf margins. Two other "textbook" symptoms, small fruit and poor vigor are harder to blame on K alone as they can also be due to a large crop, delayed growing season, several dry years and winter injury (grapes). Although variable, affected sites share one or more related commonalities:

1) HEAVY CROP LOAD - There have been several heavy crops in last 5 years (1987, 1989, 1991). Although grapes and pears are relatively moderate K users versus some other fruits, i.e. prunes, all fruit crops require large amounts to satisfy both vegetative growth and function and fruit needs. Fruit is a major K sink; as per acre yield increases, so does demand. Yield equals number of fruit x weight per fruit, and (in pears) fruit size is known to be directly related to tissue K levels.

2) K-FIXING SOILS - Unlike sandy San Joaquin Valley, affected North Coast sites tend to be heavy clays and clay loams with high cation exchange capacities (CEC's). To correct a deficiency, massive quantities of applied K are needed to overcome soil fixation (adsorption). In most



cases, it must be concentrated in a band and incorporated within the root zone. The return benefit of these buffered soils is long-term potential supply (3-5 or more years). There is also persistent speculation and some evidence that high soil magnesium levels inhibit K uptake, but this factor is undeveloped experimentally in deciduous fruit crops.

3) POOR PHYSICAL ROOT ENVIRONMENT - This is perhaps the most important factor in many cases! Soil K is potentially available, but uptake is inhibited by a restricted, unhealthy, debilitated root system. Depending on the individual site, the primary problem is actually 1) LACK OF WATER (roots only absorb nutrients in the soil solution), 2) TOO MUCH WATER (saturated, anaerobic conditions) and 3) LAYERED AND/OR COMPACTED SOILS which impede both root and water penetration. To make matters worse, these conditions most often coincide with crucial periods of feeder root development and tree/vine demand. Besides direct harm to roots, there are secondary problems of root/crown diseases and winter injury.

CAREFUL OBSERVATION WILL OFTEN REVEAL ANY NUTRIENT DEFICIENCY TO BE A RESULT OF A POOR ROOT ENVIRONMENT. If this is the case, fertilizer will not alleviate the problem. The long-term solution is to modify cultural practices, most significantly water management. Soil profile characteristics which restrict root growth, tend either toward waterlogging or drought, clay layers or rock, and are difficult to manage. Solid-set sprinklers and low-volume systems enable lesser volumes of water to be applied more frequently and uniformly right up to harvest. Flood and furrow systems force heavier, less frequent, less uniform applications with earlier pre-harvest cutoff. Besides improved rooting conditions, the likely advantages of a well-managed solid-set or low-volume system are improved fruit size and long-term tree/vine vigor.

Floor management is also important. Most available K is in the top two feet of soil unless a site has been extensively cut and leveled. Non-tillage, possible with sprinklers and low-volume, encourages rooting where nutrient and oxygen levels are highest.

In summary, K and other nutrient deficiencies are often due to the combined factors of 1) crop load, 2) soil chemistry, 3) soil physical properties and 4) cultural practices (i.e. water and floor management). Growers should analyze all of the above when planning a fertility program. Please contact me for further information or assistance with your situation. Below are critical levels and K fertilizer application rates:

<u>CROP</u>	<u>SAMPLE TYPE</u> <sup>1</sup>	<u>CRITICAL LEVEL (%)</u>		<u>APPLICATION RATES</u> <sup>2</sup> lbs. K <sub>2</sub> SO <sub>4</sub>	
		<u>Deficient under</u>	<u>Marginal</u>	<u>Per plant</u>	<u>Per acre</u>
Grapes	bloom petiole	1.0	1.0-1.5	3-5	1500-2500
Kiwifruit	July-Aug leaf	1.5	1.5-1.8	2-5	1000-2000
Pears	July leaf	0.7	0.7-1.0	15-25	1500-2500
Walnut	July leaf	0.9	0.9-1.2	30-55	1500-2000

1 contact me for more detailed sampling instructions

2 Contact me for information on other formulations and application methods.

### NEW POTENTIAL PEST UPDATE

Chris Twohy, Lake County Department of Agriculture

Ash Whitefly - Ash whitefly, a serious insect pest on a variety of plants including pear, pomegranate and ash, has been spreading rapidly throughout the state since it was first identified in Los Angeles in July, 1988. It was recently confirmed on a pomegranate bush at a residence in Buckingham, the first infestation in Lake County. Since then, we have found it on hawthorne, ash and pomegranate trees in Lucerne, Lakeport and Clearlake.

It is amazing how quickly this pest is building up in numbers in the course of just one season. It is living up to the reputation it earned in other parts of California and in Europe where it originated. In heavy infestations, the whitefly moves in clouds when disturbed, requiring people to wear dust masks for protection. The sucking insect can weaken its host, causing dieback of foliage and a build-up of honeydew and sooty mold.

The good news is the introduction of a tiny wasp which effectively parasitizes the ash whitefly. The California Department of Food and Agriculture (CDFA) has been propagating this excellent biological control insect in their greenhouse in Sacramento and is providing them to the county Agriculture Departments for release into infested areas.

We promptly took advantage of the offer and picked up eleven small ash trees "loaded" with the parasitic wasp and parasitized ash whitefly. We planted them near our new infestations with the hope that the parasite will multiply and spread with the whitefly, keeping the pest at harmlessly low levels.

Apple Maggot - Since CDFA abandoned their apple maggot eradication effort in the various infested North Coast counties in 1987, the Lake County Agricultural Commissioner has regarded the continuation of detection trapping to be very important. Lake County has been at the border of significant infestations of apple

maggot in both Mendocino and Sonoma Counties. Each year from May to November, we maintain approximately 500 all-purpose fruit fly traps. A large number of these are located along the Highway 20 corridor from Blue Lakes to Lucerne, the quarantine area of Lake County where we have found five apple maggot flies over the past five years (1987-present). Two seasons of fruit stripping or spraying all apple and hawthorne trees within 1/4 mile of each find have been successful, to date, in keeping apple maggot at bay.

Western Grapeleaf Skeletonizer - Grapeleaf Skeletonizer is another potential insect problem if introduced into Lake County vineyards. It is already a widespread economic pest in the San Joaquin Valley. The caterpillar feeds on the interveinal portions of grape leaves, leaving the "skeleton-like" veins. The Lake County Agricultural Commissioner added Grapeleaf Skeletonizer to the phylloxera quarantine (Q.C. Circular #5) along with Mendocino, Sonoma and Napa. We have already detected Grapeleaf Skeletonizer on incoming shipments of grapevines from nurseries in the San Joaquin valley.

The Lake County Agricultural Department successfully eradicated Grapeleaf Skeletonizer once before back in 1979 and 1980 in Clearlake where it was established on approximately 25 residential properties.

#### SPRING AND SUMMER WEED CONTROL BEGINS NOW

Heavy weed growth was one result of March-April rains and the delayed growing season. Applying herbicides in the early winter will give a "jump start" on controlling spring/summer weeds, which rapidly grow out of hand just when growers are busy with frost protection and pest control. Once irrigation begins, weed control on our heavy soils becomes difficult to impossible.

Young trees and vines in particular suffer from heavy weed growth. Shifting part of your weed control program to late fall-early winter will:

- 1) conserve early season moisture for crops;
- 2) improve young tree and vine growth potential;
- 3) facilitate vole (field mice) and gopher control;
- 4) ease workload during the busy growing season;
- 5) IMPROVE LONG-TERM WEED CONTROL;
- 6) SAVE MONEY BY INCREASING THE EFFECTIVENESS PER UNIT OF APPLIED MATERIAL.

Ideally, pre-emergent materials should be applied to fairly clean rows (preferably before leaves fall). Post-emergent types can be applied to existing weeds followed by the former some time later. This will extend soil residual later into the spring.

Please contact me about any aspect of your weed management program and for these sources of information:

- Integrated Pest Management for Apples and Pears  
UCANR Publ. #3340      \$30.00 (See Sept-Oct Hort Notes)
- Integrated Pest Management for Walnuts  
UCANR Publ. #3270      \$22.00
- Integrated Weed Management sections of 1991 UCIPM Pest Management Guidelines (grapes and pears)    \$.05/page
- Herbicides Registered for Major Perennial Crops -  
Lake County 1991. (see page 6)
- Susceptibility of Weeds to Herbicides  
(see page 7)
- YOUR PEST MANAGEMENT ADVISOR

AUDIO-VISUAL TREE TRAINING AND PRUNING AIDS (contact us)

English (VHS tapes)

- Orchard Ladder Safety (OSU)
- Pruning Apple and Pear Trees, 5-15 years old (OSU)
- Pruning a Mature Pear Tree (OSU)
- Pruning Mature Walnut Trees (UCCE)
- Pruning Walnut Trees-Early Development Years (UCCE)
- Pruning Fruit Trees (UCCE)
- Training Young Trees (UCCE)

Spanish

- Orchard Ladder Safety (OSU)
- Pruning Producing Pears (OSU) (cassette tape)  
Podando Perales en Produccion
- Pruning Vigorous Older Pear Trees (OSU) (cassette tape)  
Podando un Peral Viejo y Vigoroso

We also have a small but growing collection of videos, cassettes and slide sets on various topics, as well as catalogues/lists from other sources. Grape tapes will be listed in December Hort Notes.

Sincerely,



Rachel Elkins  
Farm Advisor

HERBICIDES REGISTERED FOR MAJOR PERENNIAL CROPS  
Lake County, California 1991

HERBICIDE COMMON NAME	RESIDUAL (months)	WATER-INCORP WITHIN (days)	CROP				
Pre-emergence			Walnut	Grape	Kiwi	Pear	Prune
dichlobenil (Casoron)	4-6	5	-	R	-	R	R
proprionamide (Devrinol)	4-6	7	R	R	R	R	R
dipropylthiocarbamate (Eptam)	1	water-injected	R	-	-	-	-
oxyflourfen (Goal)	2-6	30	R	R	R	R	R
diuron (Karmex)	8-12	30	R	R	-	R	-
pronamide (Kerb)	4-6	14	-	R	-	R	R
simazine (Princep) (not sand, gravel)	8-12	30	R	R	-	R	-
pendamethalin (Prowl)	4-8	7	NB	NB	-	NB	NB
norflurazon (Solicam)	6-12	30	R	R	-	R	R
oryzalin (Surflan)	2-6	21	R	R	R	R	R
trifluralin (Treflan)	2-12	3 must incorp mechanically	R	R	-	-	R
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Post-emergence							
fluazifop (Fusilade)	<1	N/A	NB	NB	-	NB	R
MSMA	<1	N/A	NB	-	-	NB	NB
sethoxydim (Poast)	<1	N/A	NB	R	-	R	NB
glyphosate (Roundup)	<1	N/A	R	R	R	R	R
2,4-D (varied)	4-6 wks.	N/A	R	R	-	R	R
paraquat (Gramoxone)	<1	N/A	R	R	R	R	R

"Every effort has been made to provide correct, complete and up-to-date information. Nevertheless, changes in pesticide regulations occur constantly, and human error is still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide."

NB = non-bearing  
R = bearing

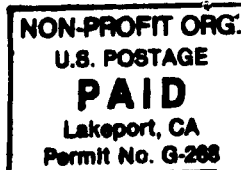
Rachel Elkins,  
Farm Advisor  
October 1991

# SUSCEPTIBILITY OF WEEDS TO HERBICIDES

	Preemergence									Postemergence					
	Casoron	Karmex	Devrinol	Solicam	Surflan	Goal	Simazine	Treflan	Prowl	Roundup	MSMA	Gramoxone	2,4-D	Poast	Fusilade
<u>Annual Broadleaves</u>															
Cheeseweed (Malva)	C	P	P	P	P	C	P	N	N	P	N	P	P	N	N
Chickweed	C	C	C	P	C	N	C	C	C	C	C	P	P	N	N
Clover	P	P	P	N	N	P	C	N	N	C	N	P	P	N	N
Fiddleneck	C	C	C	P	C	C	C	C	C	C	N	P	P	N	N
Filaree	P	C	C	P	N	C	N	N	N	C	N	P	P	N	N
Flax-leaved Fleabane	C	N	N	N	N	N	C	N	N	C	N	P	C	N	N
Goosefoot	C	C	C	C	C	C	C	C	C	N	C	P	C	N	N
Groundsel	C	N	P	P	N	C	C	C	C	C	N	C	C	N	N
Henbit	C	C	N	P	C	C	C	C	C	C	C	C	P	N	N
Horseweed (Marestail)	P	N	N	N	N	N	C	C	C	C	N	P	P	N	N
Knotweed	C	C	C	P	C	P	C	C	C	N	C	H	C	N	N
Lambsquarter	C	C	C	P	C	C	C	C	C	P	N	C	C	N	N
Mustard	C	C	C	P	N	C	C	C	C	N	P	C	C	N	N
Nightshade	C	C	N	C	P	C	C	C	C	C	N	C	C	N	N
Pigweed	P	C	P	P	C	C	C	C	C	C	P	C	C	N	N
Prickly Lettuce	C	C	C	C	C	C	C	C	C	C	N	P	C	N	N
Puncturevine	C	P	N	C	C	C	P	P	P	C	N	P	C	N	N
Purslane	C	C	C	C	C	C	C	C	C	C	N	C	C	N	N
Shepherdspurse	C	C	C	P	N	C	C	C	C	C	N	C	C	N	N
Sowthistle	C	C	C	C	N	C	C	N	N	C	N	P	C	N	N
Spurge	C	P	N	C	C	C	P	C	C	C	P	P	P	N	N
Wild Radish	C	C	N	N	N	C	P	N	N	C	N	C	C	N	N
<u>Annual Grasses</u>															
Annual bluegrass	C	C	C	C	C	P	C	C	C	C	N	P	N	N	N
Barnyardgrass	P	C	C	C	C	P	C	C	C	C	P	P	N	C	C
Crabgrass	P	C	C	C	C	N	P	C	C	C	C	C	N	C	C
Ryegrass	N	C	C	C	C	N	C	C	C	C	N	P	N	C	C
Wild barley	C	C	C	C	C	P	C	C	C	C	N	P	N	C	C
Wild oats	P	P	C	C	C	P	C	C	C	C	N	P	N	C	C
Fescues	P	C	C	C	C	C	C	C	C	P	N	C	N	N	N
<u>Perennials</u>															
Field bindweed	P	N	N	N	P	N	N	P	P	P	N	N	P	N	N
Bermudagrass	P	N	N	N	P	N	N	P	P	C	N	N	N	P	P
Dallisgrass	N	N	N	N	P	N	N	N	N	P	C	N	N	C	C
Johnsongrass	N	N	N	C	N	N	N	N	P	C	C	N	N	C	C

C = Controlled  
 P = Partial Control  
 N = Not Controlled

COOPERATIVE EXTENSION  
U.S. DEPARTMENT OF AGRICULTURE  
UNIVERSITY OF CALIFORNIA  
BERKELEY, CALIFORNIA 94720



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