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COOPERATIVE EXTENSION

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ORCHARD NOTES

JUNE/JULY 1997

WALNUT HUSK FLY FIELD MEETING:

NEW TECHNIQUES FOR MONITORING and SPRAY TIMING

10:00 - 11:30 am

Tuesday, July 1, 1997

Delbert Foster's Orchard on Noble Road (east off Highway 70) in District 10, north of Marysville.

Over the last few years, several researchers have determined when to spray for husk fly based on when eggs are found in the females. Carolyn Pickel, Area IPM Advisor, Janine Hasey, Farm Advisor, and other researchers will demonstrate and discuss these new techniques. During this meeting, you will learn how to sex husk flies, determine if the females have eggs, and learn how to time sprays based on this information. The flies we will use for demonstration will be from the laboratory. I encourage growers and PCAs who have experienced husk fly problems in your orchards to attend. 1.5 hours of PCA credit is pending.

Please call our office if special accommodations are needed.

WALNUT HUSK FLY

Growers who are concerned about or who have a history of walnut husk fly (WHF) should plan to have traps hung in orchards by **late June**. The most effective trap is a yellow sticky panel trap that has no bait in the stickem (no ammonium acetate) but is baited with a Trece Supercharger cartridge of ammonium carbonate. Trece's

traps for this year labeled for walnut husk fly should not have bait in the stickem like they did last year. Use at least two traps per 10 acres placing them in known "hot spots" for husk fly on the north side of the tree in the shade. Traps placed higher in the tree, like mid-canopy, catch more flies than lower traps. Try placing traps higher in the canopy especially if you have seen husk fly damage but have not caught many flies in the past.

There is always great variation between husk fly emergence and first sting (egg laying) between orchards. Egg laying will occur in some orchards in July in our area and in others, not until August. **Every orchard must be monitored separately.** With our latest research, we now can predict the onset of egg laying and effectively control WHF prior to nut damage without using excessive sprays. By dissecting females in the field using a hand lens, we can determine when females have eggs. Once females with eggs are captured on traps, spraying should occur within 10 days. Come to our meeting on July 1 to learn how to do this. We also have a video tape on husk fly biology, management and control strategies on a two day check out from our office.

Treat with an insecticide plus bait. Generally a short residual insecticide plus bait will kill WHF for 10 days. With the egg development period added to this time, there is about 3 weeks of protection after an application. Continue to monitor traps after the first treatment. A second spray may be needed if trap catches increase, eggs are present in trapped females, and harvest is more than three weeks away.

CODLING MOTH UPDATE

This season, codling moth has been quite variable from orchard to orchard. We've had many windy days this season which could account for the erratic flight patterns. Codling moth won't fly with winds more than 1½ miles per hour. Some orchards had a second peak of the first flight but it wasn't area wide. In others, a big increase in trap catches was seen around May 23 or even earlier. Probably in most orchards, this was actually the start of the second flight - it just occurred earlier than the average degree-days (DD) which is at 1060 from the first biofix.

The second flight of codling moth results when the larvae of the first generation complete their development and this year it hasn't always been easy to determine that date. This second biofix can

occur anytime between 800 to 1300 DD once trap catches increase. From this date, begin accumulating degree-days to determine spray timing for the second generation larvae. With a biofix on May 23 (the orchard I am monitoring, not necessarily yours) and using 30 year average temperatures, 300 DD should be around the week of June 8. Use trap catches from your orchard, degree-days, residual from the previous spray and nut damage to determine your spray timing.

Treatment timing will vary somewhat depending on the spray material used. With moderate or high codling moth populations, spray when the majority of egg hatch will occur (250-300 degree-days from the second biofix). With low to moderate populations, low residual or "softer" insecticides can be used. With high populations, use long residual insecticides such as Guthion or two sprays of shorter residual materials to cover the entire hatch period of one month. After each codling moth spray, watch carefully for secondary pest outbreaks of mites or walnut aphid. For walnut aphid, apply control treatments if there are 15 aphids/leaflet and parasitized aphids are not present.

For growers who would prefer not to use organophosphates or pyrethroids, insect growth regulators (IGRs) are available. From our experience, coverage is so critical with these materials that their main use should be for second or third flight control since the foliage has expanded and nut development slowed. They should only be used where codling moth populations are low to moderate and trees are smaller (less than 35 feet). The timing is different for these materials compared to conventional insecticides. Dimilin is an ovicide and actually needs to be sprayed before egg laying occurs (just before the beginning of the flight). Confirm interferes with the molting process by triggering an immature and lethal molt. Time Confirm applications for the beginning of egg hatch which is 200 degree-days from the second biofix.

SPRAY COVERAGE

It is difficult to get thorough spray coverage to the tops of trees over 35 feet tall where often most of the crop is in older, shady orchards. Because of this potential coverage problem, last year I compared Confirm applied by air, ground + air, and ground at different volumes on 25 to 30 feet tall Vinas. Ground applications were made using an engine-driven sprayer at speeds of 1.5 mph. A Huey helicopter was used for aerial applications which were made in 20 gallons of water. Guthion was used for the overwintered generation (first flight) when foliage and nuts were rapidly expanding. Confirm was used for second and third flight control.

The grower standard sprays were Guthion applied two times or Guthion followed by Asana (first and second flight).

The grower standards had the best control followed closely by the Confirm treatments applied by air, in 400 gallons of water, and by both ground and air. In this orchard, Confirm applied by air or in 200 gallons of water or more by ground was successful in controlling a moderate to low population of codling moth. Call me if you would like a copy of the report.

THIRD FLIGHT

As with the second flight, use trap catch data to detect the beginning of moth activity to set the third biofix. This means you need to maintain and monitor your traps all season. This third flight can begin anywhere from 800 to 1300 degree-days with the average being around 1100 degree-days. In moderate to high population orchards and where you find infested nuts in the canopy, spray at 250-300 degree-days after the biofix. Check the preharvest interval of the spray material before applying so harvest will not have to be delayed. The codling moth section of the UC Pest Management Guidelines for walnuts has been updated and revised. It will be available from our office in mid-summer. These guidelines can also be accessed on the Web at <http://www.ipm.ucdavis.edu>.

TRAINING NEWLY PLANTED WALNUT TREES

There are many new acres of walnuts in our area and it is critical to spend the time this first season properly developing the tree trunk. Throughout the summer, encourage all growth into one main shoot that will form the trunk of the tree. Tie it loosely to the stake as it grows. Pinch the growing tips out of competing shoots. Young trees do best with frequent, lighter irrigations ensuring adequate but not excessive moisture. See the article on irrigating young trees to help you determine how much water to apply.

LEAF ANALYSIS

Leaf analyses will help you assess the nutritional status of your trees and provide information to guide your fertilization program. Take leaf samples in July except for pistachio which should be sampled in August. The elements of most concern in our area are nitrogen, potassium and zinc. Any other suspected deficiencies or

toxicities should also be checked at this time. Each sample should represent trees of the same variety, age and rootstock, growing on similar soils. If there are problem spots or certain trees that are doing poorly, take a comparison sample between the poor vs. good trees to help pinpoint the problem of poor growth. Leaf sampling techniques vary depending on the crop as follows:

Walnut - select 25-30 terminal leaflets from spurs or from the middle of moderately growing shoots.

Peach - select 60-80 basal to mid-shoot leaves.

Apple - select 60-80 fully expanded, mature leaves from non-fruiting spurs.

Kiwifruit - select 25-30 mature leaves, just past the fruit on the shoot.

Large blocks can be sampled by taking one leaf each from randomly selected representative trees or vines. Place leaves in paper bags and keep them cool until they are delivered to the lab. Inform the lab if zinc foliar sprays were used since surface zinc must be removed by special washes to more accurately measure the leaf content of zinc. There is a table of critical leaf nutrient levels for reference on page 6. For kiwifruit, we recommend keeping leaf nitrogen at 2.5% or lower to maximize storage potential. We have videos on nitrogen management available for checkout as I mentioned in the last Orchard Notes.

PEACH PEST UPDATE

Continue to monitor for Oriental Fruit Moth (OFM) and Peach Twig Borer (PTB) with pheromone traps until harvest.

Oriental Fruit Moth - Our third biofix for a Yuba City peach orchard we are monitoring was June 4. Once you start catching moths again, spray at 500-600 degree-days from the biofix in your orchard. When fruit is ripening, sprays should be applied at 400 degree-days. For growers using mating disruption, pheromone dispensers should be hung 90 days after the first application which is now.

Peach Twig Borer - Apply sprays at 400-500 degree-days past the second biofix which should occur anytime now. Apply sprays at 300 degree-days when fruit is ripening. For mating disruption, most growers apply their PTB pheromone with the OFM pheromone dispensers to save on application costs. If not applying with OFM dispensers, PTB pheromone dispensers can be applied at 90 days after the April application in July.

Check the pest tracker in our office for the latest update on insect activity.

Cling Peach Rust - The rain we had on June 3 could have been an infection period for rust. The inoculum level has been low and growers have been spraying sulfur which will work in their favor. However, we may see some fruit infections later on susceptible varieties.

CHEMICAL THINNING IN PEACHES

Interested in cutting labor costs for thinning? Some of the prices paid per tree were quite expensive this year. Chemical thinning offers an alternative to hand thinning. Over the past several years, Extension Pomologist Steve Southwick, Jim Yeager and I, have conducted various chemical thinning trials in our area. We've been testing various thinning agents at bloomtime, and also a Gibberellin material called Release LC that is applied in the summer. I will confine my discussion to using Release since the timing to apply this material is June. All tests were done on 'Loadel'.

We found that applying Release in June at a rate of 22.7g a.i./100 gal water/A, resulted in fewer flowers the following spring. The remaining fruit were larger and the number of fruits thinned was reduced by 37% to 45% compared to the hand thinned control. Weight and size at harvest tended to be greater in all the Release treatments than that of the untreated control. Yields of treated blocks were not reduced while thinning time and the number of fruits thinned were substantially reduced by Release sprayed in June. Growers using Release can expect increased tonnage and decreased thinning costs. Growers who decide to use Release should use it on small blocks initially to see how it works for them. After applying Release, you may see some added firmness on 'Loadel' in this years crop, which may slightly delay harvest.

UPDATE IN THE FLOOD ZONE

Lucky for the Meridian area, they seem to have escaped damage from the flooding since the soil drained before root activity began in the walnuts. The Arboga area is another story. To date, we have found aerial *Phytophthora* in peaches, prunes, apples, pears and walnuts. This aerial phase of *Phytophthora* that affects the branches and limbs, appeared to cause the most damage on apples, some of the pears flooded for almost four months, and killed hangers on peaches. Surprisingly, some of the peaches, especially younger trees, bounced back with many new vigorous shoots.

Many of these trees are doing fine as long as they are not suffering from the effects of waterlogging. Unfortunately, several hundred acres of the above crops including kiwifruit are dead due to waterlogging damage. More trees will continue to decline in some of the areas as the hot weather approaches. We will have a better idea of the actual losses at the end of the season although we can expect to see problems over the next couple of years as a result of the flood. Since there was an enormous amount of Phytophthora inoculum from the river deposited onto the soils, water management this summer and fall will be very critical. Try to avoid saturated soil conditions that exceed 12 hours. Try more frequent and lighter irrigations when possible especially where root systems have been damaged.

CALCIUM UPTAKE IN APPLES

For any apple growers who have experienced problems with bitter pit, we have an article on "Maximizing Calcium Uptake in Apples" by Janet Caprile, Contra Costa County Farm Advisor, available from our office.

CROP INSURANCE NOTE

Beginning in the 1998 crop year, crop insurance will be available exclusively through private crop insurance agents. USDA Farm Service Agency (FSA) will no longer sell policies. A listing of local crop insurance agents is available in all FSA county offices.

IRRIGATING YOUNG TREES

This article is by R. Scott Johnson, Extension Pomologist, U.C. Kearney Ag. Center

Irrigating young trees in the first few years of orchard establishment is a critical practice. The goal is to maximize tree growth and root expansion without stressing the trees or waterlogging the root system. Since the roots are constantly growing, it is difficult to know just where and how much water should be applied.

Using the weighing lysimeter at the Kearney Agricultural Center, we have obtained young tree water use values over a three year period. These data were used to develop the numbers shown in the Table on page 5. To apply this information to a given orchard,

make a rough measurement of the 3 dimensions (height, E-W width, N-S width) of an average tree in the field. Multiply these together to give an estimate of tree volume. The table gives estimates of the amount of water used during the months of the season by trees of varying volumes. **Units are in gallons per tree per week.** For instance, a tree with a volume of 200 cubic feet will need 67 gallons of water each week in July. Values within the table may need to be altered for any given orchard because of the following factors.

-Irrigation efficiency. The table assumes high efficiency since our trees were irrigated with multiple drip emitters per tree. If microsprinklers are used, there could be more soil evaporation and water application which goes beyond the root zone; such trees could possibly require 10-20% more water. For most flood or furrow irrigated orchards, application efficiency is usually poor and more water may be required.

-Current weather conditions. Since the table is based on long term temperature averages, abnormally hot or cold spells should be taken into account when scheduling irrigations.

-Soil type. On very sandy soils where water may be leaching beyond the root zone, extra water will likely need to be applied.

-Cover crops & weed growth. The values in the table were derived from trees with no weed growth. Any other plant growth in the orchard will significantly increase the water requirements.

WEATHER AND ET DATA

To help you with your irrigations, current weather and evapotranspiration data (ET) from the California Irrigation Management Information System (CIMIS) and DWR is available through the following web sites:

<http://www.ceresgroup.com/col/>

[http://www.water.ca.gov/cgi-](http://www.water.ca.gov/cgi-bin/dla/programs/cimis/cimis/data/input-form.pl)

[bin/dla/programs/cimis/cimis/data/input-form.pl](http://www.water.ca.gov/cgi-bin/dla/programs/cimis/cimis/data/input-form.pl)

Irrigation scheduling and weather programs are available at:

<http://www-atm.ucdavis.edu/~snyder>

TABLE 1. WATER USE OF YOUNG TREES IN GALLONS PER WEEK

Tree Volume March April May June July Aug. Sept. Oct.

(ft x ft x ft)

10	9*	13	23	30	44	34	22	9**
25	9*	14	24	36	45	35	23	10**
50	10*	16	27	40	49	38	25	11**
100	12*	19	31	45	54	43	28	13**
200	17*	26	40	57	67	54	37	18**
300	22*	33	46	63	72	59	42	23**
400	26*	40	55	74	84	69	50	28**
500	31*	48	61	82	90	76	55	33**
600	35*	54	69	93	101	86	63	38**

* In years of normal rainfall, irrigation in March and April may not be necessary and may actually inhibit root growth.

**These values for late September and October should only be applied in years when temperatures stay high. Once the weather starts to cool down, irrigation should be cut off to reduce the potential for root and crown diseases.

CRITICAL NUTRIENT LEVELS

	Cling Peach	Apple	Walnut	Pistachio	Kiwifruit
% Nitrogen (N)		1.9			
Def. Below	2.4	2.0-	2.3	2.3	1.6
Adequate	2.6-3.5	2.4	2.4-3.2	2.5-2.9	2.2-2.8
% Potassium (K)					
Def. Below	1.0	1.0	0.9	1.0	1.0
Adequate over	1.2	1.2	1.2	1.0-2.0	1.5
% Magnesium (Mg)					
Adequate over	0.25	0.25	0.3	0.6	0.3
% Calcium (Ca)					
Adequate over	1.0	1.0	1.0	1.3	2.0
% PPM zinc (Zn)					
Adequate over	20	18	18	10	15
% Chloride (Cl)⁽²⁾					
Excess over	0.3	0.3	0.3	(?)	1.1
% Sodium (Na)⁽²⁾					
Excess over	0.2	--	0.1	(?)	(?)

Based on July leaf samples except pistachio (August samples). Adequate levels for all orchard crops: Phosphorus (P) 0.1-0.3%; Copper (Cu), over 4 ppm; Manganese (Mn), over 20 ppm.

- (1) K Levels between deficient and adequate are considered "low" and may cause reduced fruit sizes in some years.
- (2) Excess Na or Cl cause reduced growth at the levels shown, leaf burn may or may not occur when levels are higher. Confirm salinity problem with soil or root samples. Critical nutrient levels for other crops are available from our office.

PESTICIDE SAFETY INFORMATION AVAILABLE ONLINE

Cal/EPA's Department of Pesticide Regulation is making pesticide information more accessible by putting its work safety brochures online. Copies will still be available through the Department and the county agricultural commissioners, but having them on a homepage widens the potential audience.

The Pesticide Safety Information Series leaflets are intended to help employers train their workers in pesticide handling and in working where pesticides are used. They cover safety requirements for pesticide use in agriculture and in other work situations. The A series leaflets, which cover the agricultural work place, were recently revised to reflect changes in state and federal worker protection standards. The N series leaflets, now being developed, cover other work settings.

The leaflets are available in English and in Spanish. California regulations require these documents be part of pesticide handler and field worker training. Topics now include:

- Safety Requirements for Pesticide Handlers in Agricultural Settings.
- Pesticide Storage, Transportation and disposal in Agricultural Setting.
- Engineering Controls in Agricultural Settings.
- First Aid and Decontamination in Agricultural Settings.
- Respiratory Protection in Agricultural Settings Summary of Worker Safety Regulations for the Agricultural Settings.
- Laundering of Pesticide Contaminated Clothing Following Exposure to Agricultural Pesticide.
- Hazard Communication Information for Employees Handling Pesticide in Agricultural Settings.

-Hazard Communication Information for Employers with Employees Working in Agricultural Fields.

-Minimal Exposure Pesticides in Agricultural Settings.

-Medical Supervision.

The leaflets can be found in the current DPR publications section of DPR's Web Site (<http://www.cdpr.ca.gov>). They are in Adobe Acrobat PDF format and therefore look virtually identical to the hard copies available from DPR or county agricultural commissioners. An Adobe Acrobat Reader is needed to view these documents on screen or to print them. (This program may be downloaded without charge via a link at DPR's Web Site.)

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