your *Lake County* HORTICULTURAL NOTES

JULY 1993

PREPARE FOR A HEAVY WALNUT HUSK FLY (WHF) SEASON

WHF populations and resulting damage have been high the past couple of years in many orchards. It is thus reasonable to expect a large emergence in 1993. Also, trees are exceptionally vigorous and WHF loves shady, moist conditions.

Following are keys to a successful control program:

1) **TRAPPING** - yellow, sticky apple maggot (AM) traps can be purchased locally. Ideally, they should be "supercharged" with ammonium carbonate (you may buy them pre-charged or do it yourself - contact me for instructions). Place traps as high as possible on the north side of the tree; very shady areas should have an extra trap. Place at least 1 per 5 acres (small orchard) or 5 per 100 acres (large orchard). CHECK TRAPS AT LEAST EVERY THREE DAYS to time the first spray accurately. Write down the catch each time. When a sharp increase occurs, prepare to spray in 7 to 10 days (the earlier timing if populations were heavy last year).

2) **MONITOR FOR STINGS** - Once flies are being caught, begin checking the nuts for stings. Check 10 nuts on the north side of 20 trees, a total of 200 nuts. Females prefer the stem end, but may oviposit (lay eggs) anywhere on the nut. Dark juice flows from the puncture, leaving a tear-drop shaped stain. WHEN STINGS ARE FOUND, **TREAT IMMEDIATELY.**

3) **USE BAIT WITH INSECTICIDE** - Malathion is the only material currently recommended by U.C. However, several other chemicals are registered on walnuts, though not necessarily for WHF. the only registered bait material is Nu-Lure, a liquid protein bait made by Miller Chemical and Fertilizer Corp.

Using bait, only about 25% of each tree needs to be treated, since bait attracts the flies. A low volume wand sprayer should be sufficient. However, in cases with a heavy damage history, increase the treated surface area on each tree. Full coverage is unnecessary if bait is included.

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4) PREPARE TO TREAT AGAIN - Though there is only one generation per season, adults emerge from the soil over an extended period. Currently registered materials will last no more than 10-14 days. If flies continue to be caught in traps, treat no more than 3 weeks after the first spray. Nuts should be covered until husk split.

Please contact me about any aspect of WHF identification, monitoring and treatment.

WALNUT Pest Management Guidelines

Walnut husk fly cont. (12/91)

TREATMENT:

Pesticide (commercial name)	Amount/Acre**	P.H.I.+ (days)	Comments
Before Egg Hatch			
A. NU-LURE BAIT (formerly Staley's Protein Bait No. 7)	1-3 pt		Baited sprays are the preferred treatment and are aimed at killing adults before eggs are laid. Nu-Lure bait attracts flies to spray material and enhances control. If significant egg laying has occurred before treatments, however, adequate control will not be attained.
...PLUS... MALATHION 8EC	1.5-3 pt	0	Malathion can increase mite problems. Alternate row spraying may be adequate with bait. If you do spray alternate rows, use one half the amount of malathion and bait per acre as compared to a full cover spray.
NOTE: The following treatment requires more pesticide than baited sprays for equal effectiveness and is more disruptive to parasites and predators.			
B. MALATHION 8EC	3-4 pt	0	Malathion can increase mite problems.

** For dilute application use with 300 to 600 gal water per acre; for concentrate application use at least 20 gal water per acre.
+ Preharvest interval. Do not apply within this many days of harvest.
* Permit required from county agricultural commissioner for purchase or use.
HS Do not apply after husk split.
Acceptable for organically grown produce.

UC IPM Pest Management Database

MEADOW MICE (VOLE) DAMAGE IN PEAR ORCHARDS

After 43 inches of rain this season, weed growth is heavy. These conditions promote vole damage, especially on young trees. The following was part of a presentation by Dr. Rex Marsh, UC Davis Vertebrate Ecologist, at the 1992 Pest Management Seminar in Ukiah. It is an excellent summary of vole biology and control:

MEADOW VOLES

Meadow voles, Microtus spp., also called meadow mice, can cause severe damage in orchards by feeding on the bark at the base of the trees. Vole populations often develop in orchards or on orchard borders, roadsides and fencelines where grass or other permanent vegetative cover remains year-round. Orchards that have year-round cover crops are most susceptible; meadow voles prefer to live in grassy habitats as opposed to broadleaf herbaceous cover but will eat many types of cover crops.

Meadow voles are small, blunt-nosed, stocky rodents with small ears and eyes, short legs and rather short tails. They usually have dark gray of grayish-brown, relatively coarse fur. When full grown, they are larger than a house mouse but smaller than a rat. Females may produce up to 6 or so litters a year. A few females will breed year-round, but the principal breeding time is during the spring. Voles have a great propensity for rapid population increases, with very high numbers (hundreds per acre) of voles reached periodically (every 6 to 8 years) in ideal habitat. It is during these mouse outbreaks that damage will be most severe and widespread. Meadow voles' home ranges are relatively small, usually less than 10 feet around their burrows.

Damage

Characteristic damage of meadow voles is complete or partial girdling of tree trunks from just below the soil line up as far as they can reach on the trunk, usually no more than 3-5 inches. However, there are exceptions where they climb higher to feed on young trees. Young trees are attached more readily and sustain greater damage than older ones.

Monitoring Guidelines

Meadow voles are usually found first in localized spots marked by numerous 1 to 2 inch wide surface runways running through dense or matted grass, and silver-dollar-sized holes to their burrows. They are active all year, irrespective of weather but do the most damage to trees in winter or early spring. They actively feed both night and day. Deposits of small, soft, brownish feces and short 1 to 2 inch pieces of grass stems along the runways are evidence of their presence. Burrows frequently have numerous openings to the surface -- are short, relatively shallow and contain food and nesting chambers.

Monthly inspections of orchards and surrounding fields starting about mid-winter is essential for spotting vole activity and population increases. Check especially heavily vegetated areas for new vole runways, burrow openings and evidence of bark or grass feeding. Numerous well-used runways, extensive newly-cut vegetation, and many fresh droppings in runways are indicative of a dense population of voles.

Management Guidelines

Vegetative cover provides food and protection from predators, so management of cover is most important for meadow vole control. Adjacent fence rows or properties may be harboring a population of voles. Eliminating the vegetative cover in these areas or providing a 30- to 40-foot wide buffer area will reduce the number of voles invading the orchard. Once vole populations are detected in the orchard, either clean cultivation of the entire orchard, removal of all vegetation from immediately around the trees and/or poison baits are generally the most effective ways to reduce or eliminate damage.

Habitat modification - Cultural practices can significantly affect meadow vole populations. Clean cultivation or band weed control are highly effective in preventing damage by making the habitat next to the tree unsuitable. Weed-free fence rows, roadsides and ditch banks are also important preventive measures. Because voles do not travel more than a few feet from their burrows to obtain food, any significant destruction of their food and cover will cause them to abandon their burrows or die out in that location.

Biological control - Predators such as coyotes, foxes, badgers, weasels, owls and hawks feed upon meadow voles; however, predation is rarely, if ever, a major factor in controlling a rapdily increasing vole population.

Chemical repellents have been tested, but no effective repellents have been found to protect orchard trees from voles.

Trunk guards - Young trees can be protected with cylindrical wire or plastic trunk guards. To prevent voles from burrowing under them, guards must extend at least 6 inches below the soil surface. Meadow voles rarely climb over these guards. However, trunk guards may give a false sense of security because voles may cause damage below them or work beneath them and consume the bark unnoticed behind the guards.

Poison baits - Poison grain baits are very effective in reducing meadow vole populations. For most effective control, bait must be applied in the voles' runways where most feeding occurs. Bait distribution may be done by spot baiting--placing bait by hand in runways and burrow openings--or by broadcasting--scattering bait over the entire infested area if permitted by the label. Broadcasting may be done by hand with a belly grinder type seeder or by vehicle with a tailgate seeder. Broadcast application rates vary, depending upon estimated density of the vole population and the type of toxicant. Both single-dose (e.g., zinc phosphide) and multiple-dose (diphacinone and chlorophacinone) baits are used for meadow vole control. Consult product label for application sites, methods and rates. (**Note from Rachel** - check with the Ag Commissioner for locally allowable materials).

AVOIDING HERBICIDE DAMAGE TO YOUNG TREES
Western New York Fruit Notes, April 1992

(**Note from Rachel** - the following applies to vines also)

Most herbicide damage to young trees can be traced to factors such as drift of fine sprays onto young green tissues, direct spraying of young green tissues, weather factors during or following application, or excessive rates of materials applied to course-textured soils. These factors cannot always be completely controlled, but several steps can be taken to minimize their effects.

DRIFT - if the spray is so fine that you cannot see it, you will not know where it is going. Use low pressure (20-40 psi) sprays and larger nozzles to minimize the amount of fine spray drift. Adding a drift control material to the spray mixture will reduce the amount of fine droplets and help to avoid this problem. Also, tipping the nozzle(s) back slightly will help reduce the amount of fine droplets formed as the spray is delivered. Keep the boom as low as possible without affecting desired coverage. Flat fan or off-center nozzles are generally preferred.

DIRECT SPRAYING OF YOUNG TREES - use a fixed boom sprayer with nozzle arrangements that will place the spray over the desired band on one side of the tree row. Trunk contact is reduced by spraying a band on one side of the row from one side at a time. Materials that act through contact (i.e. Paraquat) and those that are systemic in action (i.e. Round-up) will damage trees when sprayed on green bark. A common practice to prevent bark absorption of herbicides is to paint young tree trunks with white latex paint.

WEATHER FACTORS - do not apply herbicides in windy conditions. Spray thickeners, correct boom and nozzle arrangements and reduced pressures are not adequate to avoid drift in wind.

Excessive rain during or following applications of some residual herbicides can cause damage by washing herbicides into hollows around trees or by concentrating materials washed from higher into lower areas. Also, when tree trunks are wet and drying conditions are poor, more material may be absorbed through the bark than would occur during better drying conditions.

Rapid drying associated with high temperature and low humidity may reduce effectiveness of herbicides that must be absorbed by the grasses and weeds being controlled. Under such conditions, it would be desirable to increase the amount of water used to apply these materials by using larger nozzles.

EXCESSIVE RATES - Careful attention must be paid to calibration of equipment so that you know exactly how much water and how much material are being applied per acre of sprayed area. Rates of some herbicides should be adjusted to account for differences in soil texture and organic matter content. The rate of herbicide

that is satisfactory on a heavy soil or one with a relatively high organic matter content may be excessive for trees growing in coarse textured soils that are low in organic matter content. Always read the label carefully for correct rates and application procedures.

UPCOMING UNIVERSITY EXTENSION (UNEX) CLASSES (call 1-800-752-0881)

Vineyard Water Status: Assessment and Modification for Wine Grape Production.
Wednesday, July 29 9 a.m. - 4 p.m. UC Davis $120.00

Winegrape Variety and Rootstock Identification Workshop
Thursday, July 29 9 a.m. - 4 p.m. UC Davis $120.00

Winegrape Canopy Assessment Workshop
Friday, July 30 9 a.m. - 4:30 p.m. Napa Valley College $100.00

Ornamental Crop Production: A Floriculture Short Course
Tuesday-Thursday August 17-19 UC Davis $295.00

NEW UC PUBLICATIONS (contact our office)

Personnel Decisions in the Family Farm Business
Special Publication 3357 - 61 pages - $6.00

Six case studies show how family considerations can influence decision making and business results in family owned and managed farms. Each case focuses on a different situation - responsibilities and job descriptions, retirement, choosing a successor, displacing a nonfamily employee, linking pay to performance and separation of a family member from the firm - followed by questions and discussion of key points.

1993 UC Farm and Garden Publications Catalog
Free - Also has videotapes and slide sets.

EMPLOYEE SAFETY MATERIALS (contact us)

Cal/EPA Hazard Communication standards; Pesticide Safety Information Leaflets A-8 (handlers) and A-9 (field workers) - audio cassette in SPANISH. $5.00 from Steve Sutter, UCCE, 1720 South Maple Avenue, Fresno, CA 93720.

TIPP Checklist for Ag Employers - contact me for copies

Voice of the Fields, La Voz del Campo - Farm Labor Information Bulletin in English and Spanish. Excellent information on many topics for you and your employees. We have copies or contact La Cooperative Campesina de California, 2101 Capitol Avenue, Sacramento, CA 95816 (916) 442-4791.