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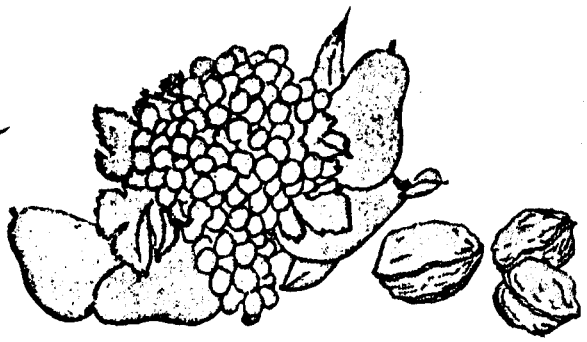

your Lake County HORTICULTURAL NOTES

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JULY 1988

WALNUT HUSK FLY....ONCE AGAIN

July signals the annual husk fly season. The current year's generation of adult flies emerge from their overwintering rest in the soil. Look for earliest emergence in shady, moist areas of the orchard. Adults emerge mainly from early July through September in Lake County. Here is an example of trap catch dates from various areas:

WALNUT HUSK FLY TRAP CATCH DATES
Lake County, 1984 (John Joos)

LOCATION	TRAP PLACEMENT DATE	FIRST CATCH	EARLY PEAK	LATE PEAK
Upper Lake	6/23	7/16	8/ 7	9/26
Scotts Valley	6/23	7/11	8/22	9/ 5
Lower Lake	7/17	7/17	7/31	9/5-12
Middletown	7/18	7/18-24	7/31	N/A

Adults mate and eggs are laid from about 10 - 12 days after emergence. Eggs hatch in about 5 days. Thus the first tiny maggots (larvae) may be seen 2 - 3 weeks after emergence. Larvae feed for 3 - 5 weeks, then drop to the ground, burrow in and pupate for the winter, to emerge the following year (or in two years).

Early and late season damage differs. Kernels and nuts attacked before shell hardening (late July to mid-August) will mold and shrivel, reducing yield. Late-season feeding results in stained shells, reducing quality but not yield. In either case, hulls are dark and mushy inside.

Successful husk fly control depends on proper spray timing to kill adults before eggs are laid in the husks. Once inside, a systemic insecticide must be utilized, which requires a permit from the Ag Commissioner (very hard to get!).

Those of you who treat husk fly regularly probably "know" when to plan to treat. Each year, however, varies with weather, orchard soil temperature, etc. Monitoring with traps gives the best indication of peak emergence and hence, optimal spray timing.

There are two kinds of traps, each with a different purpose.

Most of you are familiar with the sticky, yellow apple maggot (AM) trap. These catch adults as they emerge. The second type of trap, the green sphere (an olive green croquet ball coated with stuckum), catches females preparing to lay eggs. This signals that it's time to spray immediately, generally 2 - 3 weeks after adults are caught in the AM trap. If you use only the AM trap, monitoring nuts for stings is an alternative. Pick the shadiest, dampest area of the orchard and check 10 nuts per 20 vigorous trees. If this is not possible, spray about 10 - 14 days after adult trap catches increase significantly in AM traps.

Control of adult moths is accomplished easily with an insecticide combined with a protein bait. This can be applied with a wand to a portion of every other tree, or every tree in every other row. Depending on fly population, orchard history and nut stage, 1 - 2 treatments are needed. Treatments generally last about 3 weeks. NO TREATMENT IS NEEDED AFTER HUSK SPLIT. Try to avoid having to apply full-coverage systemic insecticides for maggots. Besides the permit conditions, these destroy beneficial insects such as the walnut aphid parasite.

I have checked with local ag supply outlets. All sell AM traps and protein bait (minimum amounts from 1 quart to 1 gallon - bring your own container). AM traps can be "supercharged" with vials of ammonium carbonate to catch more moths earlier. However, this is unavailable locally as far as I know but is from a Chico-area dealer. Green sphere traps can be easily homemade.

If you would like to learn more about husk fly, making/using traps and control, come to our field meeting to be held on July 15 (see announcement). Also, I am happy to work with any grower on monitoring, looking for stings, or deciding when is the time to treat; just give me a call. We also have the following publications at the office, all of which include sections on husk fly.

Walnut Husk Fly in the Home Orchard
(identification, life cycle and control)
Publ. No. 21021 - $1.00

Walnut Pest Management Guidelines
July 1987 - $1.00 (cost of xeroxing)

*Integrated Pest Management for Walnuts
Second Edition
Publ. No. 3270 - $17.00 - 96 pgs.

*Walnut Orchard Management
Publ. No. 21410 - $25.00 - 184 pgs.

*We will order these on request.

WALNUT HUSK FLY FIELD MEETING

WHEN: FRIDAY, JULY 15, 1988
1:00 - 4:00 P. M.

WHERE: IKE HILL ORCHARD
1545 BIG VALLEY ROAD, FINLEY

Thomas Drive exit off Hwy. 29
turn left onto Big Valley Road
orchard is on left side; see meeting signs

SPEAKERS: John Studdert
UC Area Integrated Pest Management Farm Advisor
Sutter-Yuba Counties

Rachel Elkins
UC Farm Advisor
Lake County

TOPICS: BIOLOGY, MONITORING AND CONTROL OF WALNUT HUSK FLY
DEMONSTRATION AND DISCUSSION OF VARIOUS TRAPS

Come learn the latest information on husk fly as well as how to make and modify traps to catch more moths and time sprays more accurately.

LEAF ANALYSIS FOR PEAR AND WALNUT

July is the optimal time to sample trees for nutritional status. At this time, levels of most nutrients are stable in the leaf tissue. It is also the period for which critical values have been established. These are the levels below or above which deficiency or excess occur. Key points when taking samples (your commercial lab will also have guidelines):

- sample typical fully-expanded, mature leaves
- location of leaf is important:
  pear - non-fruiting spur leaves
  walnut - terminal leaflet of the compound leaf from spurs or from mid-shoot
- sample 10 acre blocks or at least different growing conditions, separately (soil type, tree age, etc.)
- sample problem blocks or areas separately and compare results with "normal" blocks.
- avoid atypical trees - replants, odd varieties, etc.

Collect a total of 60-80 leaves from each 10 - 20 acre block, only one leaf per tree randomly distributed. If micronutrients (Zn, Mn, Mg, Ca) have been applied to foliage, the analyses will mask "real" levels. N and K levels will be unaffected by foliar KNO3.

If you'd like help sampling or need more information, give me a call. Here are established July critical levels:

ELEMENT*	WALNUT	PEAR
Nitrogen (N)		
Deficient below	2.1%	2.2%
Adequate	2.2 to 3.2%	2.3 to 2.8%
Phosphorous (P)		
Adequate	0.1 to 0.3%	0.1 to 0.3%
Potassium (K)		
Deficient below	0.9%	0.7%
Adequate over	1.2%	1.0%
Calcium (Ca)		
Adequate over	1.0%	1.0%
Magnesium (Mg)		
Adequate over	0.3%	0.25%
Sodium (Na)		
Excess over	0.1%	0.25%
Chlorine (Cl)		
Excess over	0.3%	0.3%
Boron (B)		
Deficient below	20 ppm	15 ppm
Adequate	36 to 200 ppm	21 to 70 ppm
Exess over	300 ppm	80 ppm
Copper (Cu)		
Adequate over	4 ppm	4 ppm
Manganese (Mn)		
Adequate over	20 ppm	20 ppm
Zinc (Zn)		
Adequate over	18 ppm	18 ppm

*Source: James Beutel, K. Uriu and O. Lilleland, Leaf Analysis for California Deciduous Fruits in Soil and Plant Tissue Testing in California Bulletin 1879. (Berkeley: Division of Agricultural Sciences. University of California, 1983), pgs. 15-17.

A list of commercial laboratories that will analyze tissue samples has just been revised by the Cooperative Extension Diagnostic Laboratory at UC Davis. Contact us for:

California Commercial Laboratories
Providing Agricultural Testing

Special Publ. No. 3024 - June 1988 - $1.00

FIELD RESEARCH - RESULTS OFTEN COME SLOWLY

I ran across this article in the June 1988 issue of the American Society of Horticultural Science Newsletter. It expresses very well the nature and difficulties of field research. It is often frustrating when experiments do not produce fast results, unex-

pected results or even any results! But most enduring "truths" are learned from well-planned, long-term or multiple year experiments, just as intuitive knowledge is gained from many years of observing field conditions. Researchers face the same obstacles of bad weather, pest problems, interfering cultural practices etc., as growers. Increasingly, economic and environmental pressures demand quick technological changes. A good example is pheromone confusion for codling moth to "replace" chemicals. Initial data (1987) was a mixed bag, (encouraging for pears). 1988 trials are progressing well. We are all hopeful but we may pay dearly in the future if premature conclusions are drawn. Planning and patience are the key elements of good field research.

The Inherent Unreliability of Short-term Field Experiments

Werner J. Lipton
ASHS Science Editor

The title of this piece is an unclearly remembered title of an article by an author I do not recall. However, I recall the message very vividly: the vagaries of nature make it impossible to obtain reliable results in outdoor experiments within one or two seasons.

Responses to treatments or responses of cultivars simply may not be the same during seasons when rainfall or temperatures are relatively high as when they are low, or even average. However, not only the levels of these and other factors may be important, but also the degree of deviation and the sequence of the events. Thus, hot followed by cold may elicit responses quite different from those that follow the reverse sequence.

These thoughts were rekindled after finding that some manuscripts that have been submitted to me for review would have been simpler to write, more easily understood, and less likely to have received static from peer reviewers had the conclusions been based on data that had been solidified by several replications in time.

I know from my own experience on testing the influence of preharvest variables on postharvest responses that what is confusing after one or two seasons can become clear and reasonable after three or four. Analogously, differences that seem important in one year become minor ones after repeated tests.

Repeated tests not only tend to avoid shaky or even erroneous conclusions, but also uncover insights and valuable leads for further research—benefits that would not have emerged after only one or two years of research in the field.

The above statements, of course, also apply to experiments conducted in greenhouses or growth chambers. However, the more variables that can be controlled precisely in a test, the more reliable the test. Consequently, two tests conducted in a growth chamber may be as reliable as four conducted in the field, even though the results of the former may not be directly applicable to the field.

With the above dissertation in mind, I would urge all horticulturists who conduct experiments in the field to consider (at least) gathering data for three seasons before submitting their results for publication. In most instances it will improve satisfaction for all involved.

NEWSLETTER SUBSCRIPTION RENEWAL - LAST CALL!

If you do not send your subscription form back (see May issue or call for another one), you will NOT receive an August newsletter. We are purging the mailing list of non-readers and non-existant names. If you wish to continue receiving Hort Notes, please send your form in or contact us for a new one. We want you to stay informed, so help us out. Thanks.

Sincerely,

Rachel

Rachel Elkins
Farm Advisor

RE:jv