GROWERS FIELD GUIDE, May 1997

Mission accomplished!! The insect and disease reference material that I promised is in place at all of the warehouses except Cashmere. Bruce asked me to keep it until he got moved back into the new facilities early in May. If you don't see the binder on or near the counters, ask for it.

The bloom this year is a few days slower than last year in Wenatchee, and the spread between Mattawa and Oroville is more than I have ever seen. This span of growth stages make it difficult to anticipate when and what is going on in your orchard in May and early June. I have given myself as much leeway as possible by generalizing, at the same time trying to preserve some value to the contents. If I've missed the mark too far I would appreciate your comments.

I have freely copied and adapted information from various Research and Extension personnel and publications plus the experiences of the Fieldstaff at Northwest Wholesale for the information presented in this Grower Field Guide. Any errors in presenting that information are entirely mine, please notify me of any errors so that they will not be repeated.

All material usage information supplied in this bulletin is believed to be in compliance with current labels. It is the responsibility of the grower to insure that use of any material is in compliance with the label on the product in his possession! All material rates in this bulletin are based on dilute applications at 400 gallons per acre unless otherwise noted.

If you find the information is this bulletin interesting and useful and are not on our mailing list, you may get on the mailing list by filling out a request form at any Northwest Wholesale warehouse. I am asking for acreage information to help determine actual pesticide usage. This may become useful to the industry in the future when we have to document actual usage verses usage assumed by a bureaucracy in Washington DC.

All of the monitoring aids mentioned in this bulletin and research information on most of the insects and diseases mentioned are available through any Northwest Wholesale warehouse.

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APPLE

Perennial Canker

The bloom time infection shows up in storage as calyx or core rot. Late summer infections will develop the characteristic decay spot with a lighter margin that causes the name 'Bull's Eye' rot. Perennial canker is mostly found in older block of trees that have had a lot of damage to the scaffolding from pruning, sun or winter. Rain and overhead irrigation or cooling will increase the spread of the disease. If you are farming an older block and decay was a factor in your cullage, apply 5 lbs. of either **Ziram WDG** or **Thiram 65W** at or shortly after petal fall. After the calyx closes it is too late. Additional control will be needed mid to late August to prevent lenticle infection from fall rains or overhead irrigation.

White Apple Leafhopper

The first generation emerges from the eggs laid in the bark of the younger wood of the tree shortly after bloom. The early stages usually shelter and feed on the back of the leaf. This feeding is noticeable from the top of the leaf as a white speckling beginning at the base of the leaf and along the main vein. These early stages are easy to monitor by turning over the leaves in the lower center of the tree. The nymph are light colored, wingless and except for the very youngest easily seen without a hand lens. By the time of the first Codling Moth cover they will have developed wings and fly quickly from leaf to leaf when disturbed, landing with enough force to be easily heard. This flight habit distinguishes them from the leafminer which also flies when disturbed but with a slow fluttering pattern and lands silently. If uncontrolled a large population of leafhopper will bleach the older leaves on a tree nearly white and will reduce fruit size and color. On young trees the growth may be reduced.

Carbaryl used for thinning 10 mm or larger fruit is usually adequate for first generation control. A single carbaryl used for thinning at petal fall is too early to give good control of the first generation. If carbaryl is not used for fruit thinning you will probably need to apply either **Thiodan 50WP** @ 4 lbs. per acre or **Provado** @ 3 - 4 oz. per acre before first cover timing to avoid heavy feeding damage.

The first generation of leafhopper lays it eggs in the leaf tissue and dies by early to mid June with the second generation beginning to emerge early to mid August. I'll comment on the control measures for this generation in the August issue.

First Generation Codling Moth

The first cover spray (which is probably the fourth or fifth time you have sprayed your orchard counting thinning sprays), must be timed by the Codling Moth model to be efficient and effective. It usually consists of **Guthion 50WP** @ 3 lbs. per acre for codling moth, **Calcium Chloride** @ 3 lbs. per 100 gallons or 6 - 8 lbs. per acre if you spray concentrate, with aphid control as needed. On mildew sensitive varieties a fungicide (**Rally, Rubigan, Procure**) is frequently added, especially if new tip infections are fairly easy to find. **Captan 50WP** or **Microthiol Sulfur** are also used for fruit finish on Gala, Golden and Fuji. Do not use Microthiol Sulfur if temperatures are above 85 degrees. If substantial rain occurs within 10 days of this cover you will not have residual enough to protect you for a full 21 days and should repeat soon after the rain.

The second cover, applied not more than 3 weeks after the schedule described above, must take into account a higher possibility of needing control of aphid and possibly leafroller (see post bloom leafroller section). Leafminer should be considered separately if possible (see leafminer section). Spider mite populations should be monitored, most orchards are well controlled by predatory mites, but surprises should be avoided whenever possible.

Aphid control is **Provado** @ 3 - 5 oz. per acre with 2 - 4 oz. of **Silwet** per 100 gallons, the higher rate of Silwet normally lets you use the lower rate of Provado. If leafroller control is needed, **Penncap M** will control both Codling Moth and Leafroller but may cause increased pressure from leafminer.

If you are not familiar with most of the predator insects in your orchard, **PNW 343 Beneficial Organisms Associated with Northwest Crops** has good color pictures of some the critters you need to know. It's available at cost at your NWW warehouse.

Post bloom Leafroller

If you had detectable Leafroller damage at harvest last year you will not get season long control from a delayed dormant Lorsban. This spring has been just as cool prebloom as last year so I doubt that you had good conditions for control at pink with a BT spray. Field reports also indicate that the larva development is slow this year. Apply a post bloom BT (**Dipel, Javelin, MVP II**) as soon as the temperature is 65 degrees or more. You may combine that with almost any other material to save a trip through the orchard.

The female Leafroller does not fly very far from where she emerges so low pressure populations are usually very spotty, you must look at several locations in the orchard to determine what you have. This characteristic also works in your favor. When you do a thorough job of controlling the first generation you will not be rapidly overrun from outside pressure.

Less than the best control of the overwintering generation (you could still find an occasional larva) means that you will probably start controlling the first summer generation with the second cover codling moth spray sometime in June. If you achieved very good control (you can see where they were but can't find any live ones) your timing for effective control is probably closer to the second generation of codling moth in July. Unfortunately there is no reliable method of trapping to monitor for either population levels or emergence timing for small (20 - 30 acre) blocks. Unlike the female Leafroller the male will move long distances in response to a pheromone lure, the catch in your trap could be from any one of your neighbors. Keep looking for the first larva to begin showing up on the back of terminal leaves in the upper center of the trees.

It is very time consuming to search for newly hatched Leafroller larva in the center of the tree. My method is to walk slowly along the row looking at the upper terminals against a bright sky. Any thin spot in the leaf caused by the feeding of the young larva will be very easy to see, down to match head size. You need to carry a pole pruner or some other means of getting some of the terminals down where you can examine them, there are other conditions and insects that will tatter or make holes in the terminal leaves. A Leafroller larva will have a shelter of webbing built against one of the major veins of the leaf before it is large enough to roll the leaf. When you find these it is time to begin your control program.

Leafminer

This is a mostly cosmetic, sometimes pest. This year you have it, next year you don't. The first generation is usually unnoticed unless populations are very high. Most of the egg laying is done on the primary leaves, the rapid expansion of the foliage covers these before the mines become visible from the top of the leaf. The next generation will be more visible as the female prefers to lay eggs on the young expanding leaves of the growing shoots. By the time this generation has reached the late tissue feeding.

stage (the mines are tenting up), parasitism should be easy to find unless Lorsban was used at pink for Leafroller or Penncap M was used second cover for codling moth and San Jose scale. You can tolerate 4 - 6 mines per affected leaf at this stage if you can find either parasite larva and pupa or dead leafminer in 25% or more of the mines and will not be using a material that will destroy the parasite population.

If you determine that control is necessary you have two methods of using **Vydate L** that will give you good control. The method that I prefer because it will preserve most of the predator population requires paying close attention to the life stage of the leafminer. When a majority of the adult leafminers have emerged (60% or more) and egg laying is beginning, **apply 1 pint of Vydate L** per acre either dilute or concentrate. (It is relatively easy to determine the percentage of the emergence by counting the pupa cases protruding from the vacated mines.) Properly timed this will kill the emerged adults and greatly reduce the number of eggs available to build the next generation. It will not kill the egg or any larva in the leaf. The parasitic Pnigalio wasp will be just beginning to emerge and most of them will survive to attack the eggs that were laid plus the additional eggs laid by the remaining 40% or less of the leafminers yet to emerge. If you have any quantity of parasites very few of the leafminer larva in the next generation will survive long enough to form a mature mine. Once you have achieved integrated control of leafminer it may be several years before you have a problem with them again if you are careful with the use of Lorsban and Penncap.

Monitor the leafminer from the back of the leaf. The eggs are very small, nearly transparent or lime green. As they hatch the larva will begin to tunnel in the leaf making a thin white line beginning at the edge of the egg, rapidly expanding into an easily visible white spot. The mine will not be visible from the top of the leaf until the tissue feeding stage and the leaf begins to tent up.

To search for the Pnigalio larva you must open the mine. A pair of tweezers works well for this. The Pnigalio larva is white to cream colored and spindle shaped. It feeds on the exterior of the leafminer larva and is easy to see with a hand lens. The Pnigalio pupa begins as a very light gray and darkens to a shiny black, it is ½ to 2/3 of the size of the leafminer larva. If you open flat mines and find discolored or very lethargic leafminer larva that is a pretty good indication that the Pnigalio wasp is active in the orchard.

The other method is the standard timing, wait until the earliest hatching larva of the new generation begin to enter the tissue feeding stage (just visible from the top of the leaf) then apply **1 quart of Vydate L** per acre. This is strong enough to kill all stages of the leafminer except the tissue feeders but will also destroy the Pnigalio wasp which will be mostly emerged by this time. This could also increase problem with integrated mite control by reducing the population of predatory mites.

Post bloom thinning

By the time this is mailed I expect blossom thinning to be over in all but the latest districts. Reports of lightly blooming trees are widespread. Under these conditions I hope you used a strong blossom thinning program. Return bloom is probably not a very high concern, but the ability to remove fruit from a lightly cropping tree with post bloom thinners is diminished. Unless we get ideal weather early in the post bloom thinning period you can expect a lot of double and triples left on the light trees after the June drop.

If you are experienced with post bloom rates, materials and timing that are used in a normal cropping year, don't pull back for the light crop, you should push to the limit of your comfort zone, a little past might save you quite a bit of hand thinning cost.

If you are not experienced or comfortable with chemical thinning you have my sympathy, you are in for a gut wrenching time. Find a neighbor or fieldman who has experience in your area and use at least the maximum rate common for your varieties, lightly cropping trees are very difficult to thin post bloom. You will save money by getting as much of the side fruit off of the clusters as possible before you have to pay to thin it by hand.

Here is a brief explanation of the materials available.

Sevin XLR has had a label change because of fruit damage to Bisbee, Bisbee strains and sports, Red Chief and Vallee Spur when used under cool conditions. The material is still useable but you must accept full responsibility for any adverse results.

Clean Crop and Drexel both have obtained labels that will allow use of **Carbaryl 4L** between petal fall and 10 mm fruit. These materials have not marked fruit in research. I believe that it is possible to get seedless or partially seedless fruit from any carbaryl use if conditions are not favorable for thinning, but that is different from the damage that I observed last year in blocks where Sevin XLR had been used . I urge you to add 1 pint per acre of Nufilm 17 to either of the Carbaryl 4L formulations to increase bee safety. Once the Nufilm has dried, bees will have a very difficult time removing any material from the plant and taking it back to the hive.

Amid-Thin at 3 - 5 mm fruit is useful for removing the late bloom on Golden, Gala, Fuji and is usually combined with Sevin (carbaryl) and sometimes Ethrel. Do not use Amid-Thin on Red Delicious. I would not use it on any other distinctly typey apple such as Criterion or Primegold, it can affect the shape.

Ethrel is commonly used to thin and increase the return bloom on Golden, Fuji and sometimes Gala. This year return bloom will not be a concern in most locations, I would not use it for thinning unless your crop is near normal. If thinning conditions turn out to be questionable and there finally is a concern about return bloom you can use Ethrel at mid summer to increase return bloom without additional thinning.

K-Salt 200 (NAA) is commonly mixed with carbaryl on Goldens and Spur Reds at 10 mm and larger fruit to enhance thinning. I considered NAA to be the material most responsible for removing complete clusters. Under normal cropping conditions this is needed. With lightly cropping trees this may not be desirable, consider a lighter rate of NAA with carbaryl or even skipping the NAA this year and using maximum rates of carbaryl.

I recommend that you read or reread the chemical thinning section of the **WSU Spray guide**. There should be some copies still available at your NWW warehouse. I there are none, have them call me and I will have that section of the guide copied for you.

APRICOT

Mealybug

Usually the first indication that you have a Grape Mealybug problem in your apricot block is a white cottony deposit either in the stem end of the fruit or where two fruits have grown together, visible in the bin at harvest time. The overwintering stage is safely enclosed in a cottony eggs sack under the older bark scales or tucked into pruning wounds. By green fruit time all of the nymphs will have moved out onto the twigs and foliage to feed. If you suspect you have Mealybug scrape away some of the bark scales in a spray sheltered part of several trees to find the white nesting material. Once you find nesting material check the twigs, leaves and especially the stem end of the fruit for the nymphs. Apricots rarely support aphids, if you find areas of honeydew spots glistening on the leaves this early in the season it is an indication that you may have Mealybug, check the leaves, twigs and fruit in and above the honeydew area. Control is a full dilute spray of **Sniper** @ 3 lbs./acre, or **Diazinon 50WP** @ 4 lbs./acre or **Imidan 70 WSP** @ 4 lbs./acre. Make an entry in your diary, you should start control next year at petal fall.

Perfection Spot

Perfection Spot is aggravated by rain, your past history has a strong bearing on how much protection you may need. **Rally 40WP** @ 5 ounces per acre works well, combine it with **Captan 50WP** @ 5 lbs. per acre if the weather is expected to remain wet, especially if Coryneum Blight is a concern. Apply your first protection at shuck fall, a second about 14 days later. Further applications will be required at rainy periods if you have a history of fruit marking from Perfection Spot.

Peach Twig Borer (PTB)

The first PTB catch in the Wenatchee area for 1996 was about mid-May at Rock Island. If you plan to monitor for activity and use the model to time your sprays have your traps in place by early May and monitor them twice per week. Report your first catch to me or your local Northwest Wholesale warehouse and we will update you weekly on the progress of the current generation. The alternative is to apply **Sniper** 21 days before you expect to pick the fruit.

Thinning

In order to grow the large sized apricots that command a premium price you must thin early and ruthlessly. Minimum spacing is 6 inches, 8 inches is better. More than 8 inches will probably reduce your total yield without appreciable gain in fruit size. The sooner you can get the crop load reduced the larger the remaining fruit will get. Begin thinning as soon as the larger apricots are easily distinguished, the smaller fruit does not have to be removed, the seed is dead and it will drop in a couple of weeks.

CHERRY

Mildew Program

Watch for mildew weather**, watch for mildew weather, WATCH FOR MILDEW WEATHER!!!!** This is the major concern for you cherry growers during the month of May and into mid June depending on where you live. Pay close attention to the temperatures and how long the centers of the trees are wet during any rainy period, then use the Mills chart for apple scab to determine if you have had an infection period. If the average temperature and time duration exceeds a slight infection for apple scab by more than 2 hours you should be protecting for Cherry Powdery Mildew. Control before the disease becomes established, it will pay you dividends in less mildew pressure later in the year. There is a Mills Chart on page 21 of the WSU spray Guide. If you don't have it you can pick up a copy of the Mills Chart at any NWW warehouse.

There are no new materials this year, it is very important to use the existing materials as effectively as possible. Following the method described above will have you treating the most vulnerable stage of the mildew (before you can see it). Tank mix with **Microthiol Sulfur or Sulforix** for resistance management.

Apply the first mildew cover at the first infection period or at shuck fall, which ever comes first. Most growers are irrigating by this time, that is more than enough moisture to release spores and many irrigation systems will wet four to five feet up into the tree. That 14 hour overnight water set when it only got down to 55 degrees with a couple more hours to dry the bottom of the tree off the next morning will easily qualify as an infection period! Apply the second mildew cover no more than 2 weeks later to protect the rapidly increasing volume of new foliage. None of the materials are systemic, if the foliage has not been directly sprayed it is open season for any new mildew spores that lands on it. Thorough coverage is essential. You must drive slowly enough for the fan on your sprayer to completely displace **all** of the air within the tree, not just push some mist through the open areas into the next middle where you see it and assume coverage is complete!

Continue to protect yourself at infection periods well into June. Once mildew is established on the foliage and fairly easy to find, 10 to 12 day intervals must be maintained into harvest, especially on the Rainier variety.

Insect protection

Shuck fall is the preferred timing for a general cover with the young fruit now exposed to mildew spores and insect feeding. As the vegetation on the hillsides begin to mature the Green Soldier Bug will move into the orchards in some locations. This particular insect is very shy and hard to find as it is nearly the same color as the leaves and fruit. The damage does not show up until the fruit begins to turn color. **Thiodan 50WP** is the only material that will control this insect, you will also get some suppression of Lygus and Leafhopper. Use Thiodan 50WP at 4 to 5 lbs. per acre. The maximum amount of Thiodan that can be used per year on any crop is 6 lbs. per acre, I hope you didn't use up your allowance pre-bloom.

Foliar Nutrients

Most of the cell division in cherries occurs before pit hardening. To have the maximum influence with foliar applications they should be made at prebloom, petal fall, shuck fall and about 10 days later if the crop is heavy. Mildew and insect materials may be combined as needed. Use Nutra Phos K @ 12 lbs./acre plus Sorba Spray MG @ 1 pint/acre plus Fluid Grade Calcium Nitrate @ 15 lbs./acre**, or if you prefer using liquids** apply Tech-Flo Beta, Tech-Flo Cal-Bor+Moly, and Tech-Flo Sigma @ 2 quarts each per acre combined with 15 lbs. of fluid grade Calcium Nitrate at the same timings.

Cherry Fruit Fly

Emergence of the first fly typically happens about the same time as GA is applied when the fruit becomes light green to straw colored. The potential number of Cherry Fruit Fly increases as the fruit ripens, peaking during or shortly after Bing harvest. Many markets have a zero tolerance for fruit fly infested fruit so a rigorous prevention program is required. The list of acceptable materials is very short.

Diazinon AG500 should **NOT** be used on any light colored cherries to avoid fruit marking. Many warehouses do not want any use of Diazinon on any cherries because of export marketing requirements. For local marketing or home use, Diazinon AG500 will make material rotation easier. The preharvest interval (PHI) is 21 days.

Guthion 50WP, Guthion 3F, Sniper or any other azinphos methyl must have a 14 day interval between sprays. Guthion 3F has a 7 day PHI, all other forms of azinphos methyl have a 14 day PHI.

Sevin (carbaryl) in all forms has a 1 day PHI, but using this material will increase your risk of post harvest mite infestation, don't use it more than once unless absolutely necessary.

Pyrenone is a good fly killer but it does not have any residual control. Initial coverage must be complete. The application rate must be reduced to 80 to 100 gallons per acre to keep the cost reasonable. Harvest may continue without interruption. Consider this material to be the equivalent of an **aerial ULV malathion.**

I have received several questions about Penncap M on cherries, it is **NOT** labeled and therefore not legal.

Control of Cherry Fruit Fly is based on the life cycle. It requires approximately 7 days to emerge, mature and begin to lay eggs. The ideal control schedule is to apply a material every seven days after the first fly emerges with the goal of not allowing any of the flies enough time to mature and begin laying eggs. When infected fruit has been discovered at the packing house it has also usually been determined that the coverage interval has been extended to 10 to 12 days because of poor weather or harvest work. Keep your coverage on time and complete until all of the fruit is harvested, then apply a clean up spray to insure that you start off the next year clean again. I'll remind you about that in the next issue.

Gibberillec Acid

Apply **ProGibb 4%** Liquid (GA) @ 1/2 pint/100 gal. (20 PPM) when the fruit is light green to straw color to delay harvest, to produce a brighter colored, firmer fruit, and to increase size. Apply, with enough water to thoroughly wet the entire tree. **Do not adjust the concentration of the solution in the tank to accommodate the amount of spray solution it takes to wet the trees.** It is better to apply this spray when the cherries are on the lighter green side than to wait until they are turning pink. Straw color is ideal.

The 20 PPM rate is a standard rate for normal vigor trees with a full crop. In blocks where cherry set is reduced, reduce the rate of GA proportionately. e.g. one-half crop use 10 PPM. (particularity Lamberts) Do not use higher rates on excessively vigorous trees as higher rates of GA will tend to increase vegetative growth at the expense of fruit production the following year. **Do not use more than 10 PPM on Rainier cherries**.

The timing for GA applications normally falls within the period that we are applying our first cherry fruit fly sprays. GA has been found to be compatible with all the materials commonly used for cherry fruit fly.

Vaporgard

I have worked with Vaporgard on cherries for the past seven years and personally would not grow a cherry crop without using it. The benefits that I have seen are as follows; increased fruit size (5% to 7%), rain is blown out of the trees easier than untreated trees, rain cracking is reduced under slight to moderate conditions. When rain cracking is severe there is no material difference between treated and untreated. The fruit finish remains bright after application and does not dull in storage. In 1996, treated and untreated fruit picked, hydro-cooled, held in storage and independently evaluated weekly for 4 weeks was indistinguishable after the first week, but the treated fruit was rated as the most attractive at weeks 2, 3, and 4.

There are some serious cautions that must be considered to use Vaporgard successfully. Vaporgard may not be tank mixed with any pesticides, the material must be applied separately. The fruit must be clean when the material is applied. Mildew must be well controlled and the use of heavy residue sprays such as Microthiol Sulfur stopped at least 14 days before any Vaporgard application. A dirty cherry can **NOT** be cleaned up at the warehouse. Rubigan, Rally, Guthion 3F, Benlate and Sevin 4F have not caused residue problems in orchards using multiple Vaporgard

applications in the month prior to harvest, nor has there been any apparent change in the ability to control mildew and cherry fruit fly, nor has any detrimental effect on the tree been observed.

The most consistently beneficial programs I have observed are one gallon per acre applications at about the same time as the GA treatment, followed by another 1/2 gallon 2 weeks later, and a final 1/2 gallon about 10 days after that. There is no preharvest interval required. Complete and uniform coverage of the fruit and foliage is needed, don't use less than 200 gallons per acre. Single application programs should be made 7 to 10 prior to harvest or just before anticipated rain. The material cures with about 1 hour of bright daylight and is completely rainfast after that. Vaporgard will not set up anywhere inside the sprayer that is not exposed to bright daylight but the outside of the machine will be very difficult to clean.

Birds

Bird Shield was introduced last year, we still need to learn how to use it most effectively. Some growers reported good repellency, others did not feel that they gained much. The material smells and tastes like concord grapes, the birds do not like it. The flavor breaks down in bright light and must be completely undetectable before you harvest the fruit. 7 to 10 days are needed for this to happen. The following paragraph is from the label.

Blueberries, cherries and table grapes; Mix one part Bird Shield Repellent with 99 parts of water. Agitate well before application. Apply mixture with a commercial or back-pack sprayer, hand-held hose or pressurized applicator. Begin application when fruit begins to ripen or birds begin feeding on crop. Thoroughly wet all fruit and foliage until solution runs off surfaces. Apply every 6 to 8 days or when odor can not be detected. Repeat as necessary to maintain repellency. Harvest 6 to 8 days after last treatment or after all odor or taste of the product has dissipated (whichever occurs last). Do not apply this product to wet surfaces. Repeat treatment if heavy rains occur within 24 hours of application.

PEACH/NECTARINE

Green Peach Aphid

Green Peach Aphid should have been cleaned up by your dormant oil and Asana spray. If they were not you will need another **Asana** as soon as possible after bloom. Be very alert for mite population increases later in the summer if you apply a post bloom Asana.

Mildew/Coryneum Blight

Nectarines and the mildew prone varieties of peaches will need mildew control at shuck fall, **Rally 40WP** @ 5 ounces per acre tank mixed with 10 lbs. of **Microthiol sulfur**. Coryneum Blight will not be a problem if you have been applying a fall copper spray regularly unless the spring has had several wet rainy periods. The first visible indications of Coryneum Blight on the fruit will be a watery looking spot, sometimes with a tendril of ooze curling out of it as the disease progresses. **Ziram 50WP** is a good protectant, use 5 lbs. per acre applied before the disease is established. Use two **Captan 50WP** applications @ 5 lbs. per acre 10 - 14 days apart if you can see the disease developing on the fruit.

Peach Twig Borer (PTB)

See the Apricot article for information on monitoring Peach Twig Borer. The control timing for Peach and Nectarine if you don't use the PTB model is 7 to 10 days later than on Apricots because there is no need for a pre harvest interval at this time of the year.

PEARS

Petal fall

Petal fall timing is important for Grape Mealy Bug, Leafroller and Alfalfa Greening control. Use **Guthion 50W** @ 3 lbs./acre (Imidan or Diazinon WP at full rates are also acceptable) for Grape Mealybug, Dipel @ 2 lbs./acre for Leafroller, **plus Nutra Phos 24 @ 12 lbs./acre or Nutri-Cal 8%** at 1/2 gal./acre for the calcium source. **Dithane** @ 8 lbs./acre for fruit finish and some Psylla nymph control may be included now, this is as late as you can use this high rate of Dithane. What you need to do for Psylla control will be determined to a large extent by what you applied pre bloom. If you applied Comply, no Psylla control should be needed now, monitor the population and plan on an Agrimek application 3 - 4 weeks later unless Psylla pressure is very light. If you applied Comply and Morestan, Grape

Mealy bug and Alfalfa Greening should be your only concerns now. If you applied neither Comply nor Morestan pre bloom, a petal fall **Agrimek** is important. Add Agrimek to the mixture @ 20 oz./acre along with 1 gal./acre of Volck Supreme oil or another high quality spreader.

In non-Agrimek blocks, monitor the McDaniel mite populations in the center of the trees, you should be able to wait until first Codling Moth cover to apply Apollo.

First Codling Moth Generation

Use the Codling Moth degree day model to time the first spray, if you don't know what Biofix is for your area, us the full bloom date for Red Delicious, it will be very close. A copy of the Codling Moth model is available at your nearest NWW warehouse.

If you keep the first generation of Codling Moth under control you will have much less problems with the second generation later in the summer. Unless you are certain that your pressure is very low, apply two covers to the first generation then hang moth traps in the block and monitor for second generation pressure.

If your last Pear Psylla control was Comply or Morestan prebloom, determine your need for additional control now. This is probably as late in the season as you can expect long term control from Agrimek. As the leaves mature they lose their ability to absorb Agrimek. If you don't need control now and want to wait and watch the population pressure, short term control is possible later in the season with Agrimek or some other materials. If you are not using Agrimek until later in the season, seriously consider the use of Apollo at first cover to stop the mite build up. If you wait until there is a damaging mite population you will need to use a combination of Apollo and Vendex for adequate control.

Guthion for Codling moth control @ 3 lbs. per acre, **Agrimek** for Psylla control @ 20 Oz. Plus 1 gallon of Superior Oil or another high quality surfactant at label rate. **Apollo** for mite control is used at 4 oz. per acre. Begin your summer calcium program with **Nutri-Cal 8%** @ 2 qts. per acre or **Calcium Chloride** @ 4 lbs. per acre.

Depending on the temperatures the first generation of Codling moth lasts for 6 - 8 weeks. A second cover will be needed 18 - 21 days after the timing described above. This is the time to be concerned about the summer generation of Mealybug also**. Penncap M** @ 1 gallon per acre works well to control both Mealybug and Codling Moth and may be tank mixed with **Calcium Chloride** @ 4 lbs. per acre. The alternatives are **Guthion 50WP or Imidan 70WSP** at maximum rates. Guthion is the stronger Codling Moth material. Add a calcium material.

Fire Blight

Secondary bloom on Bartlett will begin 2 - 3 weeks after petal fall and continue for up to a month. Monitor the daily temperatures and compute your risk using the **CougarBlight** model. Managing your risk in this manner will save you time and money verses 'just in case' spraying. It will also preserve the use of the only currently effective material by slowing resistance development.

Copies of the CougarBlight 97F are available at any NWW warehouse.