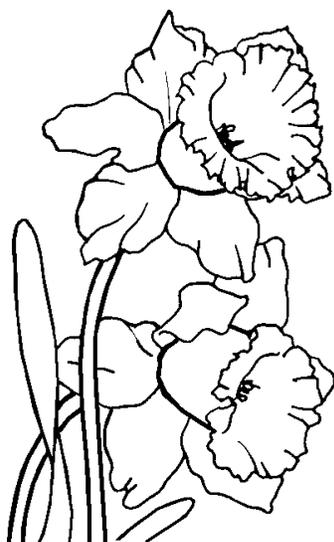


PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

APRIL 9, 1996



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Tree Fruit Fungicide Review

Norman Lalancette, Ph.D., Tree Fruit Pathologist

◆ Foundation for Disease Management

A great many human diseases and maladies are caused by viruses. We've all experienced the common cold or, worse yet, a case of the flu. Hopefully, none of us have had to deal with the Polio virus. Diseases caused by bacteria, such as pneumonia, are also of great concern. However, relatively few pathogenic fungi are causal agents of human disorders.

In contrast to human diseases, the vast majority of important plant diseases are caused by pathogenic fungi. For this reason, growers should have a thorough understanding of the types and capabilities of the fungicides they use to manage plant diseases. Using the correct fungicide at the right time in the proper amount can often mean the difference between a clean, high quality crop and a significant loss in yield or quality. In essence, fungicides form an important foundation for managing tree fruit diseases.

In this and subsequent articles in the *Plant & Pest Advisory*, we will describe and examine each of the fungicides currently available for use on stone and pome tree fruits. The fungicides' spectrum of activity, mode of action, and application information will be discussed. Furthermore, the key diseases that are occurring at the time of the newsletter's publication date will be examined in relation to the chosen fungicide. In this fashion, the fungicide/disease information provided will be "in sync" with your current disease management program.

◆ Ziram 76DF Fungicide

Ziram, whose chemical name is zinc dimethyldithiocarbamate, is a broad spectrum protectant fungicide that can be used for control of both pome and stone fruit fungal diseases. This dual crop capability could be useful for those growers that have both apples and peaches. On apples, it has activity against **scab**, **cedar** and **quince rust**, **sooty blotch**, **fly speck**, **bitter rot**, and **necrotic leaf blotch**. On peaches and nectarines, it is most commonly used for **peach leaf curl**, but also has activity against **scab** and **brown rot**.

Zinc dimethyldithiocarbamate itself is not the compound that is actually toxic to the fungus. Instead, ziram must first break down into its degradation products, which then exhibit fungicidal properties. These products kill the fungus by reacting with its proteins, particularly the enzymes within the cells. This multi-site activity, similar to copper and mercury fungicides, is of extreme practical significance to growers.

SEE FUNGICIDE ON PAGE 2

First, growers need not concern themselves with the development of resistant fungal strains. In fact, ziram has been available for many years with no known reported resistance development. Secondly, the non-specific action of ziram makes it a candidate for mixing or alternating with other fungicides that are at-risk for resistance development.

Ziram 76DF is manufactured by Elf Atochem North America. On apples, it is applied at 6-8 lb/A. On stone fruit, there is a wider range of labeled rates. For **peach scab** and **brown rot**, ziram is applied at 4.5-8 lb/A, while only 3.75-6 lb/A is needed for **leaf curl** control.

◆ Leaf Curl

Ziram is sometimes used in New Jersey stone fruit orchards for control of **leaf curl**, caused by the fungus *Taphrina deformans*. At budbreak, spores of this fungus, called conidia, infect the newly emerging leaves. Infection occurs most rapidly during wet weather with air temperatures near the optimum 68°F, but can also occur during cooler wet periods with temperatures as low as 48°F. Once infection and the fungal colonization of the host tissue has occurred, it is too late for control. Therefore, a single dormant season spray should be applied during the 3- to 4-week period just prior to bud swelling. Or alternatively, a late-season fungicide spray can be applied immediately after leaf fall.

The **leaf curl** fungus survives as conidia on the twigs and on the orchard floor. During the winter and hot dry periods of summer, these conidia form thick-walled "resting cells", which can survive for several years. Thus, the lack of **leaf curl** symptoms during the previous growing season(s) is not an indication of pathogen absence. Annual spraying for **leaf curl** is necessary for continual management of this disease. □

Weed Control in Newly Planted Orchards

Bradley A. Majek, Ph.D., Weed Science

Weed control in new peach and apple orchards is extremely important. Competition with weeds for water, light, nutrients, and space the first year after a tree is planted can affect the survival rate or reduce tree growth the second year. Reduced growth during the years before a tree begins to bear fruit delays bearing and reduces early yields which adversely affects orchard productivity.

Research indicates that trees respond with additional growth to increasing the width of the weed-free strip to 10-12 feet the first year (5-6 feet on each side of the tree). The increased growth occurs the following year, so it is not immediately apparent. Reducing the width of the weed-free strip to 3-4 feet (20 inches on each side of the tree) to save money spent on herbicides reduces growth the following year and delays bearing. Increasing the weed-free strip width to 10-12 feet the first year results in trees that grow more the second year and bear fruit earlier.

Apply residual herbicides after trees have been planted and 1-2 inches of rain has settled the soil, but before weeds emerge. Check the orchard prior to spraying to be sure that no depressions are evident around the trees at the planting hole to collect water or the risk of crop injury will be increased. Calibrate the sprayer to be sure the new trees are sprayed with the correct herbicide rate. Till cultivated fields immediately before planting trees to control emerged weeds. Research has shown that planting trees "no-till" into a previously established **perennial grass** sod killed with Roundup a week before planting results in improved tree growth compared to cultivated orchards.

Residual annual grass control in new orchards can be accomplished with Prowl, Surflan, Devrinol, or Solicam. All four herbicides can control **annual grasses** for the entire season, but certain products are more frequently recommended. Prowl, Surflan, and Devrinol must be applied and be "activated" by rainfall before susceptible weeds emerge, or they may fail to provide adequate control. Prowl is recommended in early spring due to a significant price advantage compared to other products. Solicam is recommended later in the season after the weather has warmed. Weeds that emerge before rainfall "activates" Solicam can still be controlled by "back-action" that can kill emerged **annual grasses** up to an inch tall.

Residual annual broadleaf weed control in new orchards is limited to Goal or Gallery. Both herbicides are excellent products with good crop safety, but are expensive compared to the cost of herbicides recommended for use on established peaches and apples. Goal must be applied before buds "break" or some speckling and/or crinkling of new foliage may occur as a result of spray or vapor drift. Although a great deal of interest has been generated by research using reduced rates of less expensive residual broadleaf weed herbicides labeled for use in bearing orchards, none of the products have been labeled for use in newly planted orchards and should not be used.

Nonresidual postemergence "knockdown" herbicides can cause injury to newly planted orchards. Use of these herbicides, including Roundup, Gramoxone Extra, and 2,4-D are *not* recommended in newly planted orchards. The sensitivity of new orchards can vary, depending on the caliper of the trees planted, the degree of wetting of the trunks,

and the herbicide used. Trees less than one half inch in diameter are most sensitive to herbicides. Avoid allowing postemergence herbicides to contact the trunks of newly planted trees until mature brown bark with layers of dead tissue have developed and buds no longer sprout along the trunk. The use of shields, or solid tree guards can be used to protect trees if necessary.

Roundup is the most dangerous herbicide to use in new orchards due to its translocation (movement) throughout the tree after absorption. Use Roundup prior to planting to control **perennial weeds**, and after all the trees, including replants, are 3-5 years old.

2,4-D is less dangerous than Roundup but should not be allowed to contact the trunk of trees during the first growing season.

Gramoxone Extra is a contact herbicide with limited or no translocation in plants. Young trees may be injured if living tissue is present near the surface of the bark. Buds along the trunk will be killed if treated with Gramoxone Extra. This is most serious when a tree fails to break buds except for a few at the bottom of the tree.

Consult the [Commercial Production Recommendations](#) for rates and additional information. □

Agri-mek Use on Apples

Peter W. Shearer, Ph.D., Tree Fruit Entomology

A federal label has been granted for the use of **Agri-mek** (abamectin) to control **mites** and **tentiform leafminers** on apples. Information recently released by the AgVet Division of Merck, the manufacturer of **Agri-mek**, indicates that this material can control **European red mite**, **two-spotted spider mite**, and **spotted tentiform leafminer**.

Agri-mek 0.15EC is a new material for the apple market although it has been used on pears in many states as a result of Section 18 emergency exemptions. Research conducted elsewhere has demonstrated that petal-fall applications on apple can control the first two generations of **spotted tentiform leafminer** and provide up to six-weeks of control for **European red mite**.

Timing for this material is somewhat important. **Agri-mek** 0.15EC has translaminar properties because it is rapidly absorbed into leaf tissue shortly after application. Thus, this material works best when applied to young leaves and before they harden off. Surface residues disappear very quickly.

The manufacturer claims that **Agri-mek** 0.15EC fits in well with IPM programs. This is due, in part, to the rapid loss of surface residues. Once the material is absorbed into the leaf, only pests that feed on (within) the leaves come in contact with the chemical. After a couple of days, treated leaf surfaces are no longer toxic to natural enemies. However, **Agri-mek** is toxic to several natural enemies if they are hit by the spray or until leaf residues dissipate.

Applications of **Agri-mek** 0.15EC for mite control should be limited to the period extending from petal-fall through six weeks following petal fall. **Agri-mek** 0.15EC should not be relied upon for late season mite control because it has a 28-day preharvest interval and, once again, it works best when applied to younger leaves. *Do not rely upon this product as substitute for Omite.* More information about this product will be provided in future [Plant & Pest Advisory Newsletters - Fruit Edition](#). □

Current Omite Situation

George Hamilton, Ph.D., Pesticides

On April 4, 1996, EPA met with grower and environmental groups to discuss a proposal by Uniroyal that it would voluntarily cancel 10 of the crop uses associated with propargite (Omite). Those uses were apples, apricots, cranberries, figs, green beans, lima beans, peaches, pears, plums and strawberries. The proposal also was to keep any of the remaining uses intact.

On the following day, April 5, 1996, EPA issued a press release announcing Uniroyal's decision to voluntarily cancel the ten propargite mentioned above. This action has been taken because of EPA's imminent Special Review of the material due to concerns regarding unacceptable dietary cancer risks. In the press release, EPA stressed that already treated food was safe to eat. The main concern is for lifetime exposure and the risk to children and infants. In addition, EPA will phase out the tolerances for the affected crops as well.

Uniroyal has announced that it plans to conduct studies to address the concern. Hopefully, these studies will result in a reinstatement of some of the affected crops. Uniroyal has also agreed to stop selling and distributing the product with the old labeling and will be relabeling any product currently in channels of trade. Uniroyal will also be distributing the new labeling and taking back product bought by growers for use on the affected crops. It is not advisable to use existing supplies at this time.

This issue will be discussed further at the 4/18 and 4/23 twilight tree fruit meetings. □

North Jersey Fruit Crop Report

Win Cowgill, Hunterdon County Agricultural Agent

Cool below normal temperatures have delayed bud development significantly in North Jersey. Keith Arnesen, Extension Meteorologist, reports that Growing Degree Day totals, Base 50 since March 1, are averaging near zero. Soil temperatures are averaging in the low to mid 40's across the region and will remain steady. Soils are saturated with soil moisture at 100% of field capacity.

Peaches have had adequate chilling to satisfy their dormancy requirement but now need heat units to progress. Jeff Slifer, Plant and Soils Technician at the Rutgers Snyder Research and Extension Farm in Hunterdon County reports that stone fruit crops are significantly delayed as compared to last year. Checking bloom records from our research plots of apricots and peaches at the farm, he estimates we are at least 10 days behind last year's bloom dates for apricots and peaches. Apricots and peaches should be able to take 28-29°F at this stage of development.

In North Jersey we have had some injury to peach buds on selected cultivars in some sites. Overall most peach growers appear to have a full crop as of this date.

Current observations in Hunterdon County indicate apricots are at pink bud with peaches at silver tip, color just starting to show on some cultivars. Apples are still tight at silver tip, with just some green tips showing on early cultivars. □

Blueberry Insects

Sridhar Polavarapu, Ph.D., Entomology and IPM

◆ Blossom weevil

Blossom weevil damage has not been observed so far in both Atlantic and Burlington Counties. Emergence of blossom weevils is expected in the following 4-10 days at most locations in Burlington and Atlantic Counties. Keep on the lookout for adult weevils and their damage along the field borders, especially along brushy wooded areas.

Blossom weevil overwinters as an adult primarily in wooded areas under debris and occasionally in blueberry fields if they are unkempt and weedy. The adult is a dark reddish brown beetle 1/16 inch long, with a few whitish markings on the wings and a snout about a third as long as the body. Their presence is easily confirmed by tiny brown holes in the unopened blossoms and leaf buds. Adults feed on developing anthers, pistils, and leaf buds. Eggs are laid singly through the feeding holes into the flower. A small, C-shaped grub with brown head hatches from the egg, and feeds on floral parts as it grows. Infested flowers turn purplish, fail to open, and eventually fall to the ground. Pupation occurs within infested flowers, and adults begin to emerge in late May.

Insecticide applications are not recommended unless an average of 5 or more adults are found per bush or at least 1 out of 5 flower clusters have feeding punctures. Consider spraying only border rows along the woods, if populations are small and localized. □

Critical Temperature Charts ***

Apple**									
Bud Development* Stage	1	2	3	4	5	6	7	8	9
Old Standard (F)	16	16	22	27	27	28	28	29	29
Temperature (C)	-8.8	-8.8	-5.6	-2.7	-2.7	-2.2	-2.2	-1.7	-1.7
Ave. Temperature For 10% Kill	15	18	23	27	28	28	28	28	28
	-9.4	-7.5	-5.0	-2.7	-2.2	-2.2	-2.2	-2.2	-2.2
Ave. Temperature For 90% Kill	2	10	5	21	24	25	25	25	25
	-16.7	-12.2	-9.4	-6.1	-4.4	-3.9	-3.9	-3.9	-3.9
**	For Red Delicious, Golden Delicious, and Winesap Approximately 1 F (0.5 c) Hardier; Rome Beauty, 2 F (1.1 c) Hardier; Except after petal fall when all varieties are equally tender.								
*	(1) Silver Tip, (2) Green Tip, (3) 1/2" Green, (4) Tight Cluster, (5) 1st Pink, (6) Full Pink, (7) 1st Bloom, (8) Full Bloom, (9) Post Bloom								

Loans for Disaster Assistance

Jerome L. Frecon, Gloucester County Agricultural Agent

Secretary of Agriculture Dan Glickman recently declared a major disaster in the State of New Jersey based on agricultural damages and losses resulting from the drought weather conditions which occurred between July 1, 1995 to November 13, 1995.

The designation for federal disaster assistance makes emergency loans available to eligible farmers in affected counties to help over production and physical losses. This designation includes every county in New Jersey except Bergen and Hudson.

Emergency loans may be made to eligible farmers to restore or replace essential property, actual production losses, pay essential family living expenses, reorganize the family operation and refinance debts. Loan limits are up to 80 percent of the actual loss with a maximum of \$500,000 per disaster.

Loans for crop, livestock and non-real estate losses are normally repaid from one to seven years depending upon the loan purpose, repayment ability and collateral available as loan security. Loans for physical losses to real estate are normally repaid within 30 years.

The current annual interest rate for emergency loans is 3.75 percent.

Presidential Emergency designations have also been declared for the blizzard winter storm recently experienced between January 6 through January 12, 1996 and for the entire State of New Jersey and for the severe storms and flooding experienced between January 19 and February 1, 1996 in Burlington, Hunterdon, Mercer, Sussex, Warren, Bergen and Passaic counties.

Interested borrowers should also be aware that currently there is a linkage requirement which requires producers to obtain crop insurance where it was available for both the 1995 and 1996 crop years.

Applications for emergency loans must be received within eight months of the disaster designation date. For more information, please contact the N.J. State Farm Service Agency at Masters Professional Plaza, 163 Route 130, Bldg. 2, Suite 2, Bordentown, New Jersey 08505 or your local office. □

Newly Planted Peach Tree Care

Jerome L. Frecon, Gloucester County Agricultural Agent

It is not only very important to get new trees planted as early as possible but also important to take care of them once they are planted. Most trees trained to an open center system should be pruned at about 30" to 36" in height. Other branches should be headed back and later only the 3 to 4 best selected for the framework of the tree. Ernie Christ, Professor Emeritus, Rutgers Cooperative Extension and extension pomologist for 40 years, always emphasized how important it is to care for trees. Ernie always felt a grower should not be satisfied with less than 1000 inches of total growth and should try to get at least 1500 inches. A vigorous tree may get 2000 inches but have narrow crotch angles and multiple shoots arriving from the same growing points.

Fertilizer in new plantings will have been applied prior to planting based on soil test results. Nitrogen application should be side dressed on top of the soil at the rate of .05 to .1 pounds of actual nitrogen. If .1 pound is applied it is best to make a split application with the first after planting and the second in late June or early July. This is most important when trees are planted in sandy soils.

Trees should be watered or irrigated regularly if no rainfall occurs. Take care of those newly planted trees. □

Peaches **							
Bud Development* Stage	1	2	3	4	5	6	7
Old Standard (F)	23	—	—	25	—	27	30
Temperature (C)	-4.8	—	—	-3.9	—	-2.8	-1.1
Ave. Temperature For 10% Kill	18	21	23	25	26	27	28
	-7.5	-6.1	-5.0	-3.9	-3.3	-2.7	-2.2
Ave. Temperature For 90% Kill	1	5	9	15	21	24	25
	-17.2	-15.0	-12.7	-9.4	-6.1	-4.4	-3.9
**	For Elberta						
*	(1) 1st Swelling, (2) Calyx Green, (3) Calyx Red, (4) 1st Pink, (5) 1st Bloom, (6) Full Bloom, (7) Post Bloom						
***	Data from WSU Research and Extension Center, Prosser, WA. By J. Ballard, E. L. Proebsting, and R. B. Tukey.						

Fruit IPM

For Week Ending 4-05-96

Dean Polk, Agricultural Agent

◆ Apple

Mite control and Omite: While this may be a little early to discuss mite control, the events of the past week make it more timely. **Omite has been canceled** for several uses including tree fruit.

Kelthane may also be in trouble. While **Vendex** is still labeled, it has given only spotty control in past years. This in effect leaves us with **no reliable in season (summer) mite control** for 1996. The good news is that we have **Apollo** and **Savey**, and were just notified about **Agrimek** (see Agrimek story). Because of the new label situation, we have an entirely new mite control strategy.

Although Apollo and Savey can give season long mite control when used properly, their use does not mean that we can go ahead and use pyrethroids and early season Lannate or Lannate at high rates, Sevin, or other materials that are harmful to mite predators. Quite the opposite. With no reliable summer miticides, all our mite control is 1) done early and/or 2) done with a suppressive strategy using summer oils, Lorsban and biological control. Early control can include the use of delayed dormant oil at 2% - half inch green and/or 1.5% - tight cluster, or .75% - tight pink. If 4 oz of Apollo is used at tight cluster or 3 oz of Savey is used at Pink, oil is probably not needed provided that egg density is not extremely high, and scale and aphids are adequately controlled. If oil is used with Apollo or Savey, then improved control can probably be expected, but exactly how much improved control is not known and deserves further work. Morestan may also be used at the pink stage, but be aware that Morestan is not compatible with oil. Agrimek will control mites and leafminers.

Provado, Mites and Aphids: Remember also that if using Provado for leafminer, leafhopper and aphid control, additional mite control may be needed. Provado can help build mites in certain situations. While Provado applied at petal fall controls leafminers, leafhoppers and aphids, petal fall may be too late to wait for targeting rosy apple aphid. A number of growers did wait until petal fall last year and used Provado for rosy aphid control with no ill effects. However, if high rosy populations are present, it is doubtful that good aphid control can be achieved with a petal fall spray. Rosy aphids are almost completely hatched by half inch green. Feeding will cause the leaves to curl, and by pink to bloom a second generation may already be starting. Three generations develop on apple before the aphids fly to alternate hosts both in and outside the orchard. The best rosy aphid control is usually achieved with treatments applied from 1/4 to 1/2 inch green. Lorsban 4E and Vydate (and pyrethroids) have all given excellent

control.

Spotted tentiform leafminer (STLM): Adult leafminers are being caught in pheromone traps. STLM overwinter as pupae in fallen leaves. As the spring temperatures warm up, adults emerge and start to lay eggs on the undersides of young leaves. Adults which are being caught now are the first emerging adults which lay these eggs producing the first brood (larvae) found inside leaf tissue. The spring flight will usually peak around bloom, which is when most egg laying takes place. Each mine which is produced by larval feeding will reduce the leaf area by about 5%. While parasites can do much to control early season populations, unchecked STLM populations are extremely difficult to control. There are 3 to 4 generations per year in NJ depending on location. Vydate applied at tight cluster to pink and Provado applied at petal fall have given the most satisfactory control. Trap levels have ranged from 5 to 585 adults/trap this past week.

Redbanded leafroller (RBLR): Pupae overwinter in the ground cover and adults start to emerge at green tip. The spring flight peaks just prior to bloom. Eggs are laid on twigs and limbs and hatch during bloom. This is a relatively easy insect to control with the normal petal fall insecticides. Adults are presently being caught in several locations.

◆ Peach

Oriental fruit moth (OFM): The first OFM adults were caught Friday 4/5 in Camden and Atlantic Counties (Hammonton). The first insecticides due for this insect will be at 200 degree days (base 45) from the first catch (biofix). Normally, the first peach insecticide should be applied at petal fall for cat-facing insects, plum curculio, and possibly green peach aphids. The first OFM spray will fall around shuck split to shuck off.

◆ Insect Trap Captures

Tree Fruit - Southern Counties - Week Ending 4/1

RBLR	1.1	
STLM	20.4	
TABM-A	0.0	
CM	—	
AM	—	
OFM	0.1	
TABM-P0.0		
LPTB	0.0	
PTB	0.0	

Tree Fruit - Northern Counties and Blueberries - Traps being placed. ☐

Changes in Chemical Apple Thinning

Jerome L. Frecon, Gloucester County Agricultural Agent

Volume 15 No. 3 of the Penn State Fruit Times contained some important "changes in chemical thinning recommendations" The first is the change in the rate for the use of Accel to 30 grams ai/acre per application (53.5 fl oz). The second change is that there is again a supplemental label for the use of Vydate L as a chemical thinner on apples. You must have a copy of that label in your possession to use it as a chemical thinner for apples. □

1st North Jersey Twilight Fruit Meeting

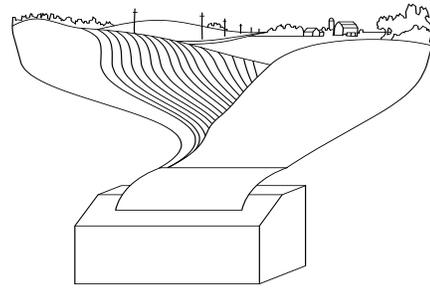
April 18, 1996, 5:30 - 8:30 p.m.
Rutgers Snyder Research and
Extension Farm

Locust Grove Road, Pittstown, NJ
(Hunterdon County)

- Tour of the Research Plots - Win Cowgill, Hunterdon County Ag Agent, and Bill Tietjen, Warren County Ag Agent: Apple Rootstocks, Apple Training Systems, Dwarf Cherry Rootstocks, Peach and Apple Cultivar Trials and much more....
- How to Prepare for a DEP site visit to comply with new Worker Protection Standards - Ed Dager, Snyder Farm Manager
- Insect and Disease Updates - Peter Shearer, Extension Entomologist, and Norm Lalancette, Extension Plant Pathologist
- Weed Control Update - Brad Majek, Specialist in Weed Science
- IPM - Dean Polk, Agricultural Agent, and Ken Petersen, Program Associate
- Current Pesticide Issues - George Hamilton, Specialist in Pesticides

Pesticide credits will be awarded, 2 core and 4 Private and/or 1A

Contact Win Cowgill, Hunterdon County Agricultural Agent, RCE of Hunterdon County, 4 Gauntt Place, Flemington, NJ 08822-9085, (908) 788-1338.



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24 HOURS A DAY

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You can have time-dependent information delivered within seconds.

Documents of Interest:

- ✓ Pesticide Labels
- ✓ Fact Sheets
- ✓ Forms

- 1) The system is easy to use. Dial (908) 932-6767 (use your phone, not the handset on your fax machine).
- 2) The recording will ask you to press a number if you'd like an Index of Documents, or a specific document faxed to you.
- 3) The recording will then ask you for your fax number.
- 4) After you hang up, the document will be faxed to you momentarily.

Blueberry Pest Control Recommendations for 1996

Copies of the "Blueberry Pest Control Recommendations for 1996" can be obtained from The Blueberry Bulletin, published weekly from Atlantic County Cooperative Extension. Contact Dr. Gary Pavlis, Atlantic County Agricultural Agent, Rutgers Cooperative Extension of Atlantic County, 6260 Old Harding Highway, Mays Landing, NJ 08330-1533, (609) 625-0056.

You can also receive a fax copy of the recommendations by calling Rutgers Cooperative Extension FaxInfo-Line at (908) 932-6767 and requesting document #4007. The document will be faxed to you immediately. □

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The user is responsible for the proper use of pesticides, residues on crops, storage and disposal, as well as damages caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact Rutgers Cooperative Extension of your County.

Use of Trade Names: Trade names are used in this publication with the understanding that no discrimination is intended and no endorsement is implied. In some instances the compound may be sold under different trade names, which may vary as to label clearances.