SPECIAL ISSUE:  January 29, 1974

The 1974 Suggested Spray Schedules will be distributed and discussed at the regional meetings listed below. Other topics of interest to fruit growers will also be presented. Ron Meyer, Steve Ries, and Dan Meador will present information at all of the meetings. Chris Doll and other speakers will be on the program at some of the meetings. You are cordially invited to attend the meeting most convenient for you.

REGIONAL FRUIT GROWER MEETINGS

February 5  .  Southern Horticultural Society Meeting, Ramada Inn, Carbondale, 9:00 to 3:00.

February 6  .  Orchard Management Meeting, Old National Bank Building, Centralia, 9:30 to 3:00.

February 13  .  Central Horticultural Society, Holiday Inn, Quincy, 9:00 to 3:30.

February 14  .  Calhoun Fruit School, Farm Bureau Building, Hardin, 9:15 to 3:00.


OTHER MEETINGS OF INTEREST

February 10-13 National Peach Council Meeting, Stauffer's Riverfront Inn, St. Louis.

February 20  .  Purdue Roadside Marketing Conference, Holiday Inn, West Lafayette, Ind.


March 28-29  .  Midwest Peach Meeting, Purdue University, West Lafayette, Ind.
CHECK FOR RABBIT DAMAGE

If you have young trees that are not protected by a rabbit guard or a Thiram-Rhoplex spray, check for rabbit damage.

Stephen M. Ries  Ron Meyer  Daniel D. Meador  Malcolm C. Shurtleff
Assistant Professor  Fruit  Extension  Extension Plant
of Plant Pathology  Entomologist  Horticulturist  Pathologist

The Illinois Cooperative Extension Service provides equal opportunities in programs and employment.
SPECIAL ISSUE: March 14, 1974

The first regular Spray Service Report for the 1974 season will reach you in two weeks.

Unseasonably warm weather has advanced the stage of development well ahead of normal. Hopefully, cooler weather will slow down development, but most of us are caught in a bind in our work. We need to work out logical sequences and priorities for work.

Insect and disease control must have top priority. Fertilization and pruning apples should have second and third priority. We can wait until around bloom time to fertilize peaches, and we can prune peaches up to three weeks after bloom without seriously affecting the trees.

Tree planting can be delayed if the trees can be kept in good condition in cold storage. But do not delay planting if the trees are not in cold storage.

PAMPHLET LISTING PICK-YOUR-OWN FARMS

Attached to this report is a questionnaire on Pick-Your-Own Farms. If the information can be assembled, a pamphlet listing these farms will be printed. Vegetable and small fruit farms as well as apple and peach farms will be listed.

The Pick-Your-Own Farm pamphlet is a new pamphlet. The pamphlet listing apple and peach growers is a different pamphlet. It is being brought up-to-date and will be reprinted.

APPLES

Unseasonably warm weather conditions and high moisture levels in heavy soils favor the infection of the collar rot fungus. This fungus is starting to make new infections at this time of year. To prevent new infections, apply maneb or zineb (2 pounds per 100 gallons of water) as a spray around the tree trunk, covering a radius of approximately 3 feet. This spray will not eradicate old infections. Repeat this spray in September.

Apple scab sprays should begin when trees are at the green-tip stage. Difolatan 4F has received full clearance for use as an SAT (single application treatment) at 5 quarts per 100 gallons of water when trees are at the silver-tip to 1/4-inch-green-tip stage. Application later than the 1/4-inch green may produce leaf injury and fruit russetting. Do not prune trees because of possible allergic reactions, and do not use oil sprays following treatments. Keep Difolatan off from reaching fish ponds, since Difolatan is toxic to fish.
Cyprex at 1/2 pounds per 100 gallons of water or Benlate at 3 ounces per 100 gallons plus 1 quart of oil are also effective against the scab fungus.

Where powdery mildew has been a problem on apples, sulfur should be added to Cyprex sprays for scab control. Benlate applied for scab will also control mildew. Difolatan will not control mildew, and therefore must be supplemented with sulfur or another mildewicide.

PEACHES

For brown rot control on peaches, two bloom sprays (one during the early bloom stage and another during full bloom) are recommended. This is very important if prolonged bloom occurs. Phygon (1/4 pound) and sulfur (3 pounds per 100 gallons) or Benlate (1/4 pound per 100 gallons) are excellent fungicides for controlling brown rot.

INSECTS

It looks as if we will have a normal season—that is, one like we have never had before. Growers in areas A and B will want to get oil applied to apples by the green-tip stage, where a mildewicide needs to be applied early. Oil works well to reduce scale insects and European red mite eggs, and should be used wherever these pests are a possible threat on both apples and peaches. Thorough coverage is most important, and can be done diluted or at low volume. A rate of 2 gallons per 100 gallons diluted or 6 gallons per acre is full dosage. This can be reduced to 1-1/2 gallons at 1/2-inch green or 1 gallon at tight cluster. A second application usually increases control when a calm condition ensues, to improve the side of the coverage that was deficient. Add a systemic phosphate insecticide for aphid control on apples in a later spray before bloom and when leaves are further out.

Plan to manage your ground cover in such a way that some plants will provide a path for predator mites to reach the tree several weeks after bloom. The mites cannot move from ground plants to the trunk or low branches over an expanse of bare ground more than about 18 inches wide.

Assistant Professor of Plant Pathology

Fruit Entomologist Extension Horticulturist Extension Plant Pathologist

The Illinois Cooperative Extension Service provides equal opportunities in programs and employment.
Publicity for Pick-Your-Own Farms

The Division of Markets of the State Department of Agriculture and the Cooperative Extension Service of the University of Illinois are cooperating in the publication of a pamphlet listing fruit and vegetable farms that sell part or all of their products on a Pick-Your-Own basis. The pamphlet will be available upon request. Also it may receive limited distribution at fairs, flower shows, and other public functions where interested consumers may be present.

We believe this pamphlet will help promote pick-your-own sales. Many potential customers are not aware of the produce available for this type of sale.

If you would like to have your farm listed in the pamphlet, please fill out the following questionnaire.

(Please Type or Print)

Name ____________________________________________________________
Address _________________________________________________________
County ____________________________ Telephone ________
Location: (Example--3 miles South of Grove on R. 113) (Area code) (Number)

_____ Open Sundays  ______ Closed Sundays

Check the crops sold U-Pick:

_____ Apples  ______ Squash  _____________ Others

_____ Peaches  ______ Pumpkins  __________________________

_____ Sour Cherries  ______ Lima Beans  __________________________

_____ Plums  ______ Sweet Corn  __________________________

_____ Grapes  ______ Tomatoes  __________________________

_____ Strawberries  ______ Peppers  __________________________

_____ Raspberries  ______ Egg Plant  __________________________

_____ Blackberries  ______ Green Beans  __________________________

Return by March 25 to: Daniel B. Meador
Horticulture Field Laboratory
University of Illinois at Urbana-Champaign
Urbana, IL 61801
The freezes of March 22 to 25 have eliminated the peach crop in Illinois. The southeast Missouri peach area reports a 95-percent kill. Indiana and Kentucky peach growers report the kill is almost 100 percent.

Apple damage was not as severe. In the Anna-Carbondale area, the buds that were in the cluster-bud stage were killed. Many of the buds still in the silver-tip to green-tip stages survived. Summer varieties suffered the most damage. Rome and Golden Delicious suffered the least. If no further weather damage occurs, this area will have a partial crop.

The Calhoun-Jersey county area had considerable bud kill, but enough live buds remain for a partial crop. Pike County reports a 25-percent bud kill—leaving enough live buds for a fair to good crop. At Urbana, Jonathan buds are 95-percent dead; but Golden Delicious has enough live buds for a fair to good crop. Red Delicious prospects are poor to fair.

Adams County reports little or no damage. The report from the Northern areas is the same.

PEACHES

Since there will be no peaches, it is not necessary to follow a full fungicide program for disease control. Spraying to control brown rot is not necessary, unless twig-blight or wither-tip symptoms appear (similar in appearance to fire blight in apple). However, this type of brown rot infection is quite rare in Illinois.

Bacterial spot on peach foliage will devitalize trees if it is serious and is left uncontrolled. Winter-damaged trees must be allowed every chance to regain their lost vigor. If bacterial spot becomes serious, apply Captan and Cyprex at the recommended rates.

APPLES

Initial reports indicate that moderate to severe fruit damage has occurred on several apple varieties. We do not recommend a cessation of fungicide sprays on apples for several reasons. The most obvious one is that apple scab will infect the foliage as well as the fruit. The heavy inoculum carryover from last year (ascospores) will infect new leaf growth. Secondary scab infection will result; and if scab is left uncontrolled, the trees will defoliate. Early defoliation will decrease tree vigor and reduce fruit-bud set for next year. The net result will be weak trees with little or no fruit next year and in succeeding ones.
Other diseases of apple that must be controlled in a non-crop year are fire blight and powdery mildew. If not controlled, these diseases will affect tree vitality and create sources of high inoculum for next year.

As mentioned in the Special Issue of the Spray Service Report of March 14, collar rot of apple should be carefully monitored. Control measures should be applied if necessary. Winter-damaged apple trees are devitalized and are more susceptible to invasion by this fungus, especially if moisture levels remain high in heavy soils.

INSECTS

Many growers have applied oil in Areas A and B. If applied before the silver-tip stage, it will not kill the aphids. Most aphids are hatched by green-tip time, and oil will kill most of them. We did not see any aphids April 25 and 26. Oil may still be applied if mildewicides were not applied before and are not applied with or soon after. Oil is very effective on scale and red mites. Oil may be applied from several directions if necessary to get good coverage. If aphids cannot be found, you may delay until an after-bloom examination to see whether there are then enough to require a systemic phosphate.

Sex-pheromone traps provide reliable information on the populations of codling moths and Oriental fruit moths in orchards, and indicate moth-flight activity throughout the season. Growers who used them for the first time had no difficulty deciding if sprays were needed. This should be useful for young peach blocks to protect terminals from excessive Oriental fruit moth damage. If you are interested, check with your supplier to see if these traps are available. (Suppliers can buy in quantity advantage.) If unavailable, you may contact Dr. Carl Olsen, Zoecon Corporation, 975 California Avenue, Palo Alto, California 94304.

The traps should be hung in the trees just after bloom, two per block when the block is over an acre in size. One trap should be upwind in the block. Within the tree, the trap should be hung at eye level and surrounded by as much foliage as possible. Tend the traps twice a week during emergence. Count and record the number of codling moths each time for each trap. Then remove all insects and debris. If a large number of codling moths are caught, the trap should be replaced. New pheromone caps are expected to last longer. Remember that only the males are captured, and that they emerge first. Females take several days to mature, mate, and prepare to lay eggs. Then it takes several more days before the eggs hatch. New trap designs are being made for 1974. Read and follow the manufacturer's directions carefully.

Northern Illinois growers should also get and use apple-maggot traps, which use a food-bait material that is produced by the trap manufacturer.

PRUNING AND FERTILIZING AFTER THE FREEZE

The peach crop is gone, so this is a good time to do severe pruning on trees that are getting too tall or too wide. Fertilizer needs are less. One pound of ammonium nitrate (1/3 pound of nitrogen) should be enough for mature trees.

Most areas still have enough live buds for a partial apple crop. We suggest reducing the amount of pruning where bud kill was moderate to severe.
Fertilizer rates should be kept at about normal levels. The remaining buds are the smaller, less-developed ones. They will need adequate fertilizer in order to develop.

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POLLINATION OF APPLES

Jonathan and Red Delicious fruit buds are usually further developed than Golden Delicious buds, and can be expected to start blooming 2 or 3 days earlier. In many areas of Illinois, the more-advanced Jonathan and Red Delicious were killed by the March freeze, whereas Goldens suffered less damage. Thus, the usual situation is now reversed, and the Goldens are more advanced than Jonathan and Red Delicious.

This condition may cause cross-pollination problems. Goldens are reasonably self-fruitful, but Jonathans and Red Delicious are not. For even a partial crop of Jonathan and Red Delicious, we need to set the few live buds that remain.

We need to have an adequate supply of bees (1 hive per acre placed in groups of five hives) and live pollen of varieties that are effective pollinators. If the Goldens do not overlap at the blooming stage with Jonathan and Red Delicious, pollen can be supplied by the use of pollen inserts on the bee hives, or bouquets of flowers can be placed among the trees to be pollinated.

DISEASES

The absence of a peach crop in Illinois means that the number of sprays may be reduced. However, a few diseases should be monitored by frequent trips through the orchard. Brown rot can infect young leaves. The infection spreads downward, resulting in a twig blight symptom similar to that of fire blight of apple. Carefully observing the peach trees will allow you to anticipate this potential problem, leaving ample time in which to apply control measures (Benlate) if necessary.

Observations at Urbana indicate that first- and second-year peach wood was damaged by the frosts in late March. Much of this wood will die, providing an ideal environment for perennial canker (Valsa) infection. To help control this fungus, we suggest removing damaged wood during and immediately after the normal bloom period. Peach trees are less susceptible to Valsa infections then.

Remove narrow-angle crotches, all weak and dead wood, and all cankered branches that can be spared. Cut at least 4 inches below a canker. Make all cuts close ones; otherwise, the stubs will not heal properly. Cankered branches should be removed from the orchard and destroyed. Remember that peach trees can be pruned heavily in noncrop years.

After pruning, thoroughly coat each tree with a Diclone 50W spray (1/2 pound per 100 gallons). This spray should be applied the SAME day the trees are pruned.
APPLES

Cedar apple and quince rust can become a serious problem at the pink bud stage. Therefore, scab and powdery mildew sprays should be supplemented with Zineb, or with Dikar used as the fungicide beginning at pink bud and continuing until the second cover spray. About 30 days after the apple leaves unfold, they become immune to attack by this fungus.

If wood in your apple trees was killed by the late frosts, then the vigor of such trees has been adversely affected. This injured or dead wood provides an excellent environment for two apple tree pathogens—black rot and Botryosphaeria rot. Remove all dead, cankered, and infected wood as it appears. Normal cover sprays (Captan, Dikar) should control black rot, but we suggest using folpet (Phaltan) in the fifth and succeeding cover sprays on Golden Delicious to control the Bot rot fungus.

Powdery mildew on apples (especially Jonathans) becomes a serious problem in certain areas of Illinois when warm temperatures (50° to 70°F.) and saturated air conditions prevail. This disease can be controlled with Benlate, Dikar, or sulfur applied at the recommended rates.

Apple scab will continue to be a problem until prolonged wet periods cease. Early control of primary scab is essential in order to prevent this disease from getting out of hand.

INSECTS

Very little will need to be done for insect control this week in Areas A and B. Avoid any danger of killing honey bees. As the peach pruning is finished, make a note for future reference of where the damage is the greatest from lesser peach tree borers. The more mature larvae you find in wounds now, the sooner the first spray should be applied in the period from mid-May to late June.

As red mite hatch occurs, they move to the first available leaves—often the first leaves out of the bud. The mites remain on those leaves until they are nearly full grown, so a good estimate of control with oil can be made by how many or how few can be found. High populations observed at bloom time indicate where to watch the population development within four to six weeks.

In Areas C and D, aphid control should proceed as usual. A systemic phosphate insecticide is the best control during 1/2-inch-green through tight-cluster stages, but may be applied after the bloom stage. Always be alert for unusual populations of leaf-feeding insects, such as apple leaf roller or canker worm, when insecticides are not applied before bloom.
APPLE AND PEACH PROSPECTS IMPROVE IN AREA A

Apples are blooming in Area A, and the bloom is much better than anyone had dared to expect. As one grower put it, "Those flower buds must have come out of the bark, because on some varieties we couldn't find live buds two weeks ago."

All varieties are blooming together--creating excellent conditions for cross-pollination, if good weather for bee activity occurs. The late buds, however, are smaller and weaker than the more advanced buds that were killed. We still don't know how well they are setting.

Some blocks of peaches have a few peaches set on--mostly Redskin, Merrill Hale, and Rio-Osa-Gem. It's too early to tell whether they will stick; but if they do, there could be a small peach harvest in Area A.

STAGE OF DEVELOPMENT

Apples are in late-bloom to petal-fall in Area A, in late-pink to bloom in Area B, in pink to early bloom in Area C, and in green-tip to half-inch green in Area D.

POLLEN SOLD OUT

Pollen companies are completely sold out of apple pollen. No more will be available until after the bloom in the state of Washington.

DISEASES

Apple scab control measures should begin in Area D. Don't apply Difolatan after trees have passed the quarter-inch green stage. Remember that in Area A, if Difolatan was applied earlier, it is now time (petal-fall) to apply another fungicide (Cyprex, Benlate, or Dikar). Continue protective sprays as long as frequent wetting periods and warm weather occur.

In Areas B and C, measures must start for the control of Quince and Cedar apple rust. Dikar, Polyram, or zineb are excellent fungicides for controlling the rust fungi.

Apple powdery mildew control must be continued on susceptible varieties until the third cover spray. Benlate, sulfur, or Dikar are effective fungicides for controlling this disease.

On Jonathan and other varieties susceptible to fire blight, streptomycin should be applied beginning in the late-pink stage and should be continued every
four days for the ENTIRE BLOOM PERIOD, including the late bloom on one-year-old wood. Control of the blossom-blight phase of fire blight reduces the occurrence of shoot blight later in the year. Use 100 p.p.m. if the temperature is below 65°F., and 50 p.p.m. if it is above that. Streptomycin is most effective if applied at a time when slow drying conditions exist, generally between 10 p.m. and 3 a.m.

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No. 5--April 27-May 4, 1974

Control measures for apple scab must continue in all areas of the state. If Difolatan 4F was applied as a single application treatment in Areas A, B, or C, it is now time (at petal-fall) to renew control measures (Cyprex, Benlate, or Dikar).

Apple powdery mildew is basically a springtime disease, and is favored by warm but not hot weather (50° to 70° F.). In contrast to the apple scab and rust fungi, the powdery mildew fungus does not require a wetting period to penetrate and cause disease. Jonathan apple foliage is very susceptible until temperatures of 80° F. are reached; therefore, continue sprays of Dikar, Benlate, or sulfur on susceptible varieties.

Rust control in Area C must start at the pink-bud stage, and be continued until mid-June. Polyram, Zineb, or Dikar will control both quince rust and cedar apple rust. Dithane M-22 Special and Dithane M-45 are also reported to control the rust fungi at 1 to 2 pounds per 100 gallons.

Streptomycin sprays must continue through the entire bloom period. Growers in Area C should begin sprays for five-blight control at 10 percent bloom. Streptomycin is most effective if applied alone and when slow drying conditions exist (at night).

Growers in Area A should begin control measures for the summer diseases. Captan in combination with zineb, Dikar with Triton B1956, or polyram is recommended to control black rot, bitter rot, blotch, and the like.

APPLES

Apples are in petal-fall in Area A, in late-bloom to petal-fall in Area B, in pink to bloom in Area C, and in the tight-cluster stage in Area D.

CROP PROSPECTS CONTINUE TO IMPROVE

Several good pollinating days occurred during bloom in Areas A and B, boosting the prospects for the apple crop. It is too early to tell how many blossoms may set fruit that will survive the normal fruit drop periods, but most growers are expecting a fairly good set.

CHEMICAL THINNING OF APPLES

The freeze reduced or eliminated the need for chemical thinning in many blocks. But some varieties in more favorable orchard sites may need thinning.
Where leaves show frost damage, the concentration of chemicals should be reduced 25 percent. Damaged leaves absorb chemical thinners more readily than undamaged leaves.

Summer varieties should be thinned at petal-fall. For Lodi, Transparent, and Wealthy, a combination of NAA and Sevin is more effective than either material alone. Use Amid-thin for Duchess and other summer varieties.

Fall and winter varieties are best thinned when the king fruit is 10 to 12 millimeters in diameter, and the side fruits are 7 to 10 millimeters in diameter.

Most Jonathans and Red Delicious will not need thinning. If some Red Delicious trees should need thinning, either NAA or Sevin or a combination of these materials may be used. NAA has caused pigmy apples to persist until harvest in some Red Delicious blocks. Where pigmy apples are a problem, use Sevin alone. Golden Delicious is more likely to need thinning. Either NAA or Sevin or a combination of the two may be used. Several growers have had better results with the combination than with either material alone.

Last year at Urbana, we used NAA at half strength with Tween 20 on Goldens, also with and without Sevin. We used NAA by itself without Tween 20 and with Sevin, too. Our best results came from the combination of half-strength NAA plus Tween 20 plus 1 or 2 pounds of Sevin.

For more detailed information on chemical fruit thinning, see Pages 29 and 30 of Illinois Circular 1073, Pest Control and Related Orchard Practices in Commercial Fruit Plantings.

INSECTS

Codling moth pheromone traps should be in the orchard in Area A and should be placed in the orchards in Area B. The season is just slightly compared to the Illinois Fruit Calendar (Circular 1014), but the events described in each note are right on schedule with the stage of development described. Growers in the northern areas should reread the earlier Spray Service Reports, since notes about early stages of development are seldom repeated.

Before bloom, watch for signs of leaf-feeding insects, particularly if an insecticide will not be used. After bloom, see that aphid control has been sufficient and watch again for leaf-feeders such as cutworms that only are on the trees at night.
No. 6--May 4-May 11, 1974

Apples are in the thinning stage of 10 to 12 millimeters in diameter in Area A, in the first-cover stage in Area B, in late-bloom to petal-fall in Area C, and in cluster-bud to pink in Area D.

ALAR AND ETHREL TO INITIATE BEARING

Several growers have asked about the use of Alar or Ethrel or both to initiate flowering on young trees that are slow to start bearing. We have the most trouble with Red Delicious, both spur-type and regular-type. But other varieties are also slow sometimes.

Vigorous growth delays the start of bearing. To initiate bearing, we must slow down growth. Several methods can be used: no fertilizer, branch spreading, scoring, and applying Ethrel, Alar, or both.

Withholding nitrogen fertilizer is the place to start, and this should accompany any other method used. For any upright growing trees (especially spur-types) branch spreading slows down growth of the branches that are spread and helps develop a desirable framework. Scoring the trunk two to three weeks after the normal bloom date helps slow down growth for a few weeks.

The growth-regulating substances Alar and Ethrel will also slow down growth. In addition, they appear to stimulate fruit-bud initiation more than would be expected from the slowdown in growth.

At Urbana, we have used Alar with limited success for initiating bearing. We have not tried Ethrel for this purpose.

Dr. Max Williams, who is with the USDA Experiment Station at Wenatchee, Washington, has studied both compounds alone and in combination. His best results were with a combination of Ethrel and Alar.

On trees with little or no fruit, he suggests 1 pound of Alar plus 1 pint of Ethrel per 100 gallons of water applied three to four weeks after full bloom.

On trees that have a partial crop, delay application to four to five weeks after full bloom. If Ethrel is applied earlier, it may act as a fruit thinner.

Although Dr. Williams' work was in Washington, we would expect similar results in Illinois. We suggest using this combination on a trial basis.
DISEASES

Except for scattered reports of powdery mildew, the disease situation appears to be well controlled at present. Continue sprays for apple scab, powdery mildew, and rust control until hot, dry summer weather prevails.

Moist, warm weather has allowed bacterial populations to increase in overwintering fire-blight cankers. Therefore, the next problem most orchardists in southern Illinois will face is the twig-blight phase of fire blight. Wind-driven rain and insects will spread bacteria from these cankers to growing twig terminals. Infection can result in severe twig blight on susceptible varieties. So, continue streptomycin sprays at 50 to 100 p.p.m. at 4-day intervals during bloom. After bloom, the spray intervals may be extended to 7 days.

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No. 7--May 11-May 18, 1974

Apples are in the first to second cover stage in Area A, in first cover in Area B, in petal-fall to first cover in Area C, and are blooming in Area D. Areas A, B, and C had prolonged bloom periods, so there are wide variations in fruit size on the same tree.

APPLE THINNING DECISIONS

These decisions are especially difficult this year. In a light crop year, we do not want to overthin trees with a good crop. Larger fruit are more resistant to chemical thinners than smaller fruit. You might want to delay thinning until a day or two later than normal.

APPLE DISEASES

Continued wet weather enhances the possibility of severe apple scab. Primary scab infections have occurred in many orchards. Therefore, continue spraying because secondary scab (conidiaspores) will be released, depending on temperature, one to two weeks after initial infection. These summer spores will initiate new scab lesions during wetting periods. The net result can be a severe scab epidemic.

Scattered mildew infections are also being reported. This fungus reduces tree vigor and russets the developing fruit. Control measures must be continued until temperatures reach 80° F. or warmer.

As long as the galls are swollen on cedar trees, spores are being produced. These spores will cause cedar-apple rust infections on nearby apple trees. Usually these galls stop releasing spores when the apples are at the second-cover stage.

STRAWBERRIES

Temperatures as low as 26° to 28° F. were reported in Area D for the morning of May 8, which is approaching critical levels. Near Urbana, thermometers lying on the ground in a strawberry patch were at 25° F. for about two hours. Some blossom kill is expected.

INSECTS

In Areas A and B, codling moth egg hatch can be starting soon. Cool evenings and mornings are unfavorable for the moths and fewer eggs are laid, but the time over which that hatching continues is extended. Plum curculio adults will be out of hibernation and into orchards by this time.
Apple growers should begin closely watching the development of mite populations. Predators will still be in the ground cover, and not in the trees. Make sure that rosy aphids have been controlled. Peach growers should be able to spot wilted terminals caused by Oriental fruit moth larvae if any are active in their trees, as the first ones will be nearly mature by now. Peach growers can also begin watching the emergence of the lesser peach tree borers by looking for pupal cases sticking out of gummy tree wounds. A heavy early emergence of moths indicates that a spray program for borers should be started earlier than usual.
DISEASES

Keep an eye on your peach trees. Watch for a withering on the twig terminals. Brown rot fungus can cause twig blight symptoms. If you observe withered tips we suggest a Benlate spray at 1/4 pound per 100 gallons to arrest the spread of this disease. Removing all dead wood is also desirable. Dead wood that is left in peach trees will harbor the perennial canker fungus.

A sufficient number of heating-degree days and a prolonged bloom period have allowed the blossom-blight phase of fire blight to occur on unsprayed, check apple trees at the Pathology farm.

Rust control measures in Area A can be stopped, but all other areas should continue preventative sprays. Mildew and scab control must be continued until frequent wetting periods and warmer weather conditions occur (80° F.).

ORCHARD FIELD DAY

Plan now to attend the Orchard Field Day of the Illinois State Horticultural Society at the Illinois Fruit Growers Exchange and surrounding orchards near Cobden on Thursday, June 13.

STAGE OF DEVELOPMENT

Apples are in the cover stages in Areas A and B, in calyx to first-cover stage in Area C, and are blooming in Area D.

JERK WATER SPROUTS

In Area A, water sprouts on apple trees are growing rapidly, but are still tender and can be jerked out easily. Doing this is a fast and efficient method of removal. Later, they will get tougher and cutting will be required.

Water sprouts provide a haven for mites, aphids, and other insects. These sprouts make thorough coverage in spraying more difficult and reduce the amount of sunlight reaching fruit-bearing branches.

STRAWBERRY HARVEST STARTS IN AREA A

Growers started the strawberry harvest Monday and Tuesday in Area A. Strawberries were not damaged by the March freeze, and growers are expecting a good crop.
INSECTS

Insect activity has been very quiet, with the cool and wet weather. In Area A, oriental fruit moth should be in the pupal stage and early moths could start emerging soon. In peach blocks that had oriental fruit moths late last season, the trees should be examined now. If the moths are present, the current population could spread to newly planted trees. Spotting damage now will also help judge the threat of damage of the third generation, which normally begins hatching on July 4.

Growers should have spotted mite populations by now, and should keep them under close observation.

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DISEASES

Apple scab lesions are beginning to fruit in Area C on unsprayed crab apple trees. These lesions resulted from ascospore infections two to three weeks ago. The lesions will now release conidiospores (secondary inoculum) for the rest of the year. These spores only require a wetting period of six to eight hours to cause new infections. New lesions will produce more conidiospores in seven to eight days. Therefore, even if you feel confident that you controlled primary scab, we strongly suggest continuing protective sprays, because one lesion can produce millions of secondary spores, as indicated above.

Rust control measures may be stopped in Area A. Control should be continued in Area B, C, and D until the second or third cover. The most reliable method for predicting when rust control measures can be stopped is to closely observe the alternate hosts (red cedar, juniper trees). If the rust galls on these trees are dried up and no longer of a gelatinous texture, then the galls have exhausted the spores which infect apples and protective sprays can be stopped.

A few reports of powdery mildew and fire blight are being received. Powdery mildew ceases to be a problem when apple leaves mature and when hot (80° F.) weather occurs. Septomycin spray intervals may be extended to seven day intervals after all bloom on Jonathans is over. This schedule should control terminal twig blight.

INSECTS

Warm weather will encourage codling moth egg-laying, which was probably very light during cold weather. Egg hatch should be expected to increase about one week after warmer temperatures begin. Oriental fruit moths will start emerging in Area A and after four to five start laying eggs for the second brood.

Plum curculio will be still coming out of hibernation in Area D. Warm temperatures will encourage them to come into fruit trees more quickly than usual. Northern growers can still estimate European red mite populations by looking on the small leaves that come out of the bud.

Aphid populations seem to be light all over the state.
APPLE DROP

Apple drop appears to be heavier than normal in area A. Surprisingly, fairly large apples with several seeds are dropping.

SPRAYS FOR INITIATING FLOWER BUDS

In areas A and B, now is the time to apply Alar or Ethrel or a combination of Alar and Ethrel on young Red Delicious trees that have been slow to start bearing. Use Alar alone at 2 pounds per 100 gallons of water (2,000 p.p.m.) or use 1 pound of Alar plus 1 pint of Ethrel per 100 gallons of water. Refer to Spray Service Report No. 6 for more details.

DISEASES

Reports of the twig-blight phase of fire blight are becoming more common. This disease thrives when weather conditions are reasonably cool (60° to 75° F.) It requires frequent rains, such as those we are having, to spread the disease from terminal to terminal and to aid the bacteria in penetrating healthy tissues. Continue streptomycin sprays until summer. By then, hopefully, the rains will become less frequent and the temperatures will reach 80°F or higher.

Questions keep arising about the effect of Benlate and Benlate + oil on the finish of apple varieties. On Red Delicious and its bud sports there have been reports that Benlate may cause the color to be dull. There also have been a few reports of slight leaf phytotoxicity. At Urbana last year, we noticed no adverse effect of Benlate or Benlate + oil on Red Delicious apple trees.

The effect of Benlate and Benlate + oil on Golden Delicious fruit is given in the accompanying table. These data were taken in Urbana in 1973 at harvest time. The table shows the treatments and explains how the russet ratings were obtained.

These results show that Benlate at 2 ounces per 100 gallons causes more russet on Golden fruit than on unsprayed control trees. This additional russet is real but very slight and is more than offset by the amount of scab control obtained. The fruit of unsprayed trees was 93 percent scabby.

The addition of 1 quart oil to the Benlate at 2 ounces per 100 gallons did not cause very much more russet and was much more effective at controlling scab than Benlate alone at 2 ounces.

Therefore we feel that the slight increase in russet on Golden Delicious is more than offset by the greater degree of control obtained by combining oil with Benlate for scab control.
Results (1973) of Benlate plus oil on the Amount of Russet on Golden Delicious

<table>
<thead>
<tr>
<th>Treatment to 25 gallons (100 gallons)</th>
<th>Average russet rating</th>
<th>Percentage of fruit russeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsprayed</td>
<td>3.80</td>
<td>18.0</td>
</tr>
<tr>
<td>Benlate 50W, 14 g. (1/8 lb.)</td>
<td>4.08</td>
<td>20.8</td>
</tr>
<tr>
<td>Benlate 50W, 14 g. (1/8 lb.) + Superior oil, 1/2 pt. (1 qt.)</td>
<td>4.12</td>
<td>21.2</td>
</tr>
</tbody>
</table>

The average russet rating was obtained by scoring 50 randomly selected fruit from seven trees. Fruit were rated according to the key given below.

0--no russet
1--russet around lenticels on less than half of the apple, approximately 2-1/2 percent of the surface is russeted.
2--russet around lenticels on more than half of the apple, approximately 5 percent of the surface is russeted.
3--all lenticels were russeted and slight "snow" russet between but not connecting the lenticles, approximately 10 percent of the surface is russeted.
4--russet about some lenticels connected, approximately 20 percent of the surface is russeted.
5--approximately 30 percent of the surface is russeted.
6--approximately 40 percent of the surface is russeted.
7--approximately 50 percent of the surface is russeted.
8-12--8-, 9-, 10-, 11-, and 12- were 60, 70, 80, 90, and 100 percent russeted, respectively.

For effective control of scab and mildew, Benlate without oil must be used at the rate of 4 to 6 ounces per 100 gallons. When oil is combined with Benlate, the same disease control can be obtained with 2 or 3 ounces of Benlate per 100 gallons.

INSECTS

Codling moths were being found in low numbers in pheromone traps at Grafton through May 26. At Quincy there appeared to be peak emergence from May 18 through 21, tapering off on May 22. Cool weather then greatly slowed emergence and moth activity. Peak hatch might be expected late in the first week of June.

San Jose scale crawlers will be active in areas A and B. Look among old scale for large plump adult females on new growth near where old scales can be found for new set crawlers. They will be light yellowish-brown in color and soon cause a reddish colored ring to develop in the under bark around where they set.

Watch carefully now for an increase in European red mites, in spite of rainy weather. They are much easier to control at low populations with low rates than waiting until high populations require high rates. Deciding whether control is needed must be based on your experience in the past and on the presence of predators in the trees. It is expected that the predators will still be in the ground cover unless they have used up their food supply.

Lesser peach tree borers are beginning to emerge rapidly. At Belleville on May 23, 21 percent had emerged as moths, 37 percent were in the pupal stage, and
the remainder were in the last two larval instars. Control sprays should be applied soon.

SPECIAL NOTICE--Pesticide Legislation

Worker Protection Standards for Agricultural Pesticides.

The following health standards for worker protection become effective on June 10. These health standards are for farm workers performing hand operations in fields after ground (other than those incorporated into the soil) aerial, or other methods of application of pesticides. Following is a summary of these restrictions:

1. Workers must be given timely warning (orally, by means of posting warning signs, or through material placed on bulletin boards) when working in fields to be treated. The warning should include the fields to be treated that should not be entered without protective clothing, a safe re-entry date, and restrictions in case of accidental exposure.

2. The area being treated must be vacated by unprotected persons.

3. No worker shall enter a treated field without wearing protective clothing until the spray has dried or the dust has settled.

4. Workers may not enter fields treated with the following insecticides without wearing protective clothing for the intervals indicated.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Hours</th>
<th>Chemical</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Azodrin</td>
<td>48</td>
<td>7. Guthion (azinphosmethyl)</td>
<td>24</td>
</tr>
<tr>
<td>2. Bidrin</td>
<td>48</td>
<td>8. Meta-Systox R (oxydemetonmethyl)</td>
<td>48</td>
</tr>
<tr>
<td>3. endrin</td>
<td>48</td>
<td>9. methyl parathion</td>
<td>48</td>
</tr>
<tr>
<td>4. EPN</td>
<td>24</td>
<td>10. Systox (demeton)</td>
<td>48</td>
</tr>
<tr>
<td>5. ethion</td>
<td>24</td>
<td>11. Trithion (carbophenothion)</td>
<td>48</td>
</tr>
<tr>
<td>6. ethyl parathion</td>
<td>48</td>
<td>12. Zolone (phosalone)</td>
<td>24</td>
</tr>
</tbody>
</table>

Note: Trade names are capitalized.

5. Protective clothing must be worn by a worker entering a field to do hand-labor operations before the spray dries or the dust settles, or before the safe re-entry interval times have elapsed for the twelve pesticides just listed. Protective clothing means at least a hat, a long-sleeved shirt, long-legged pants or coveralls, shoes, and socks. Such clothing must be made of closely woven fabric.

6. The above restrictions do not apply to the following:
   a. Mosquito-abatement treatments and related public pest-control programs.
   b. Greenhouse treatments, applied according to label directions.
   c. Livestock and other animal treatments, applied according to label directions.
   d. Treatments of golf courses and similar nonagricultural areas, applied according to label directions.

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This week I thought I might report on Dr. Mike Szkolnik's results in New York concerning the effect of summer oil (60 or 70 second) on fungicide retention on apple trees. All tests were conducted in the greenhouse on apple trees. Therefore, these results must also be confirmed under orchard conditions.

Dr. Szkolnik has found the best practice is to avoid, if possible, the use of an incompatible fungicide next to an oil application. The fungicides compatible with oil for scab protection are: Benlate, ferbam, Cyprex, thiram, Polyram, Dithane or Manzate D, and Manzate 200 or Dithane M-45. The fungicides incompatible with oil include: captan, Kolo-100, Phygon, Dikar, Phybam S, and sulfur.

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Rate per 100 gallons</th>
<th>Retention change</th>
<th>Oil before fungicide</th>
<th>Oil with fungicide</th>
<th>Oil after fungicide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithane M-45 80W</td>
<td>1.5 (lb.)</td>
<td>decrease</td>
<td>c</td>
<td>c</td>
<td>b</td>
</tr>
<tr>
<td>Manzate D 80W</td>
<td>1.5 (lb.)</td>
<td>decrease</td>
<td>c</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>Polyram 80W</td>
<td>2 (lb.)</td>
<td>decrease</td>
<td>c</td>
<td>d</td>
<td>c</td>
</tr>
<tr>
<td>Cyprex 65W</td>
<td>6 (oz.)</td>
<td>decrease</td>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>Glyodex 37-22W</td>
<td>6.4 (oz.)</td>
<td>decrease</td>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>Thylate 65W</td>
<td>2 (lb.)</td>
<td>increase</td>
<td>a</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>Benlate 50W</td>
<td>6 (oz.)</td>
<td>increase</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>captan 50W</td>
<td>2 (lb.)</td>
<td>increase</td>
<td>b</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>captan 50W</td>
<td>1 (lb.)</td>
<td>increase</td>
<td>b</td>
<td>c</td>
<td>b</td>
</tr>
</tbody>
</table>

*Changes in retention: a = 1 - 10 percent  
  b = 11 - 30 percent  
  c = 31 - 50 percent  
  d = 51 - 60 percent

Although this research needs to be proven in the field, it certainly does not substantiate some of the statements of the past, and I feel that growers should be made aware of this new research and the preliminary results. As one can see, there is a drop in retention with the carbamate materials. Correspondingly, if one depended on such materials applied with oil during a period of high apple scab spore discharge (at the pink period), one could run into difficulty if there is a lot of rainfall. Another often-heard rumor is that oil acts as a fungicide. Even 2-percent oil has NO EFFECT on scab control by itself.

We know that oil can increase or decrease the retention of certain fungicides. It seems plausible that since oil increases captan retention (see table above), this may be the reason why captan and oil combinations cause foliage injury. Similarly, the table shows that when oil is applied with Benlate, the retention of Benlate is increased by 11 to 30 percent. Perhaps this increased retention is the reason that Benlate at 3 ounces plus 1 quart of oil per 100 gallons of water is as effective as Benlate alone at 6 ounces per 100 gallons.
Reminder--an Illinois orchard field day will be held on Thursday, June 13 at 9:30 a.m. at the Illinois Fruit Growers Exchange, north of Cobden on old U.S. 51. There will be bus tours to the orchards of Grover Rendelman and Sons and J.J. Boyd and Sons. We hope to see you there.

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Roscoe L. Landell
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No. 12--June 16-22, 1974

This is the last WEEKLY report. The next report will reach you in two weeks.

POISON IVY CONTROL

Now is the proper time to spot spray for the control of poison ivy and poison oak. Ammate is the best material now authorized in orchards for these pests. Ammate has little or no drift or volitization problems. Ivy foliage must be thoroughly wet for good control. Use 71 pounds of 80-percent Ammate or 60 pounds of 95-percent Ammate per 100 gallons of water.

ORDER TREES FOR NEXT YEAR

It appears that a shortage of apple and peach trees will continue into next year. If you plan to plant any trees in the spring of 1975, it would be wise to place your order now. If you can place tree orders two years in advance, the nurseries would be most appreciative and you will be more likely to get the strain and rootstock combination you want.

JERK WATERSPROUTS IN AREAS B AND C

Watersprouts are still tender and can be easily jerked out in Areas B and C. The more advanced sprouts in Area A are beginning to toughen, and will have to be cut out.

PEACH HARVEST STARTS

Bernie Colvis at Chester is now picking Early Rose peaches. Cardinal will be ready next week.

WIND DAMAGE

Strong winds in many parts of Illinois have caused considerable damage to apple trees. The Quincy area had 80-mile-per-hour winds with small hail. Some fruit was blown off the trees and some was badly battered. Young leaves and shoots were injured. In addition, some young trees were loosened in the ground. To tighten such trees, place three or four shovelfuls of sand or pea gravel mounded up around the trunk of each tree. As the tree sways in the wind, the loose sand or pea gravel will fall into the hole and give support.

DISEASES

Benlate has received clearance for use on strawberries as a transplant treatment. Plants may be immersed in a solution of Benlate at 8 ounces per 100 gallons. After immersion, allow the transplants to drain before planting. This
preplant treatment should help control Botrytis crown rot (gray mold) and leaf spot. Results obtained in southern Illinois last year indicated that a treatment with Benlate at transplanting time significantly improved the percentage of plant survival, average plant height, and the number of runners produced by each parent plant. This treatment may help establish plantings which you might make next year.

INSECTS

The Illinois Fruit Calendar mentions that green apple aphids build up about this time in Area A, and we have several reports about increased numbers on fast-growing terminals. There is no concern now about damage, unless the increase continues for several weeks and the aphids begin to wet the tree and fruit below with honeydew, or the growth on young trees is stunted. Hot, humid weather usually allows a fungus disease to control the aphid; but if not, one of the systemic phosphate insecticides will provide good control. Young trees should be checked frequently, especially if they are not being sprayed regularly. Oriental fruit moth hatch of the second generation will be past a peak by now and wilted terminals will soon begin to show in Area A. San Jose scale crawlers may be active now as far north as Area C. If scaly fruit was observed last fall or if infested branches were discovered while pruning, examine the new growth for a new set of scales or small, red rings—which indicate that live scale are still present.

Continue to watch mite development closely. Predator mites will probably be in the trees in most situations by now. Larvae of the lesser peach tree borer were found at all ages on June 3, and the peak hatch is probably occurring in most orchards.

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No. 13--June 29-July 5, 1974

ALAR ON JONATHAN AND RED DELICIOUS

Where Alar is to be used on Jonathan and Red Delicious (and its sports) in Areas A and B, it should be applied now--no later than July 10. In Areas C and D, apply Alar from July 5 to July 20. Use 1 pound per 100 gallons (1,000 ppm), and apply alone when no rain will occur for twelve hours.

Alar on apples serves as a stop-drop material, increasing fruit firmness, improving storage life, and usually improving the color of red-skinned apples. But it also delays maturity about five days.

Since Alar does delay maturity, many growers use it on part of their plantings of Jonathan and Red Delicious to spread out the harvest of these varieties. Do not use Alar on apples to be harvested for the early market--unless Ethrel is to be used on them later.

Alar is especially helpful on apples going into cold storage; also, on Straking Red Delicious. The delayed maturity helps Starking develop more color.

Several research workers report excellent results from the use of Alar, followed by an application of Ethrel just prior to harvest to advance maturity.

ALAR FOR STOP-DROP ON MCINTOSH

Alar is our most effective stop-drop material on McIntosh. By delaying maturity a few days, its use greatly increases the color. Apply 1 pound per 100 gallons during the first two weeks of July.

CALCIUM SPRAYS FOR BITTER PIT

Where bitter pit has been a problem on Red Delicious, two or three foliage sprays of a calcium material may help reduce the losses from thin physiological disease. Use either 3 pounds of calcium nitrate or 2 pounds of calcium chloride per 100 gallons. Add 2 or 3 ounces of a surfactant (B-1956, X-77, etc.) per 100 gallon to improve wetting. Do not mix with pesticides.

If two sprays are to be used, apply one during the first half of July and one in the first half of August. If three sprays are to be used, apply one during the first ten days of July and the other two at three-week intervals.

Where Red Delicious trees have a light crop and are growing vigorously, calcium chloride may be preferred, because it does not contain any nitrogen. Calcium chloride is the material used in tractor tires.
Starkrimson and other spur-type Red Delicious sports appear to be especially prone to bitter pit. Conditions favoring the development of bitter pit include large size fruit, vigorous tree growth, light crops, wet or dry seasons, and excess nitrogen.

**LEAF ANALYSIS**

This is an effective tool in managing the nutritional status of fruit trees. Like any testing program, however, the samples must be carefully taken and processed if they are to adequately represent the nutritional condition of the trees. The ideal time for taking samples is from July 1 to August 15. A sample should be of one variety only—taken from trees that are about the same age and of a similar vigor, appearance, and crop load. For sampling, select trees that are representative of the trees from one variety and in one block.

Leaf-sampling kits may be obtained from the Pomology Division, Horticulture Field Laboratory, Urbana, Illinois 61801. Request one kit for each leaf sample you wish to take. The kit contains instructions for taking, drying, and mailing the samples.

**DISEASES**

Bot rot (also called white rot or Botryosphaeria) is best controlled by applications of phaltan in the fifth and succeeding cover sprays. Phaltan should not be applied before the fifth cover; otherwise, fruit injury might result.

When applying Dikar for powdery mildew control, use 2 pounds per 100 gallons, plus Triton B1956 at 3 ounces per 100 gallons. The label states that this spreader-sticker should be used in the last cover sprays before harvest, but we would encourage you to add it whenever Dikar is applied. Dikar is a complete fungicide and will control all diseases. It is not necessary to add a second fungicide to a Dikar spray.

Fire blight is becoming more prevalent in some areas of Illinois. Frequent, wind-driven rains and unseasonably cool weather help the fire blight disease organism develop. Protection should be continued through July. If a seven-day Streptomycin schedule is not maintained, the trees will become susceptible.

**INSECTS**

Codling moths will be emerging for the second brood in Area A and are at peak hatch in Area D. Apple maggot will also be present soon in Area D, and growers should again be watching for outside sources of the flies.

Mites have been reported building up in limited areas. Growers should make periodic checks over the entire orchard and should watch any spots where populations have increased rapidly.

Oriental fruit moth larvae of the second brood will be out of twigs by now, and the new, emerging moths will start egg-laying during the first week of July. Many damaged terminals would indicate that nearby, young trees should be protected.
The lesser peach tree borer larvae hatched this season are at all ages and the first ones are about to complete their growth. Where the numbers are already high, hatching could be continuous from now through late September. In spraying for protection, the critical problem is to get good coverage on all the wounds. Vigorous growth caused by the lack of a crop only increases the difficulty of getting good coverage.

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DISEASES

The hot, dry weather reported from all areas of the state should check the spread of apple scab and fireblight. However, mildew can develop and start new infections during such weather. At this stage of the season, it is very difficult to contain mildew on trees having a moderate to severe infection. These trees will have extensive overwintering infections, thus a full mildew control spray program should be used next spring starting at the half-inch green stage. During the warm summer months, Dikar or Benlate are suggested for control.

PROCESSED APPLE STOCKS

Stocks of canned applesauce on hand June 1 were 24 percent larger than those on hand a year earlier. Inventories of frozen slices were up 54 percent from the previous year. Processors are not alarmed by the large carryover because the costs of labor, sugar, and other supplies are increasing; thus, the carryover inventory is becoming more valuable. How the carryover stocks will affect demand for processing apples in 1974 remains a question.

CHECK YOUNG TREES

Red-banded leaf roller, tentiform leaf miner, grasshoppers, and other chewing insects can defoliate young trees not included in the regular spray program. Check these young trees periodically and apply insecticides when needed.

INSECTS

No rain plus hot weather equals mites, and that is the concern in Areas A and B. Mites vary from none to severe. Programs applied early using oil plus Dikar look good. Some growers have used Benlate plus oil and suppressed red mites. Oil in season is just as hard on predator mites as it is on red mites and Benlate disturbs the egg laying and eggs of mites, so we will need to watch mite development under Benlate closely. We have had successful mite management with Benlate programs, but we need more experience to learn what to expect. Growers in Areas C and D should also begin a close watch of mite development.

All stages of lesser peach tree borers are present in most orchards. The second generation of moths will soon start emerging.

San Jose scale infestations should be checked again. Female scale give birth to young for thirty days or more. The first ones born can be mature and producing young before the first females have stopped production, so all stages can be present now. A quick way to check infested areas is to look on
new growth near old bark where old scales can be seen. If some scale survived there will be small, reddish rings on new growth where young scale have fed or may still be feeding. When young are produced it is a fairly strong indication of live mammas. Parathion and diazinon are the best chemical controls.

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DISEASES

Fire blight is still a threat in Area C and Area D. At Urbana, terminal buds have set on approximately 75 percent of the Jonathans. Until this bud forms, the terminal twigs are actively growing and therefore are susceptible to new blight infections. Continue preventative sprays at seven-day intervals until all branches form terminal buds.

Selective pruning to remove blight from infected trees is recommended only if the tree is not heavily infected. Large cuts will cause axillary buds to start growing and this new growth will be susceptible to blight. Remove heavily infected branches after the tree becomes dormant.

Preliminary tests of rootstocks for susceptibility to fire blight have been run at Cornell University. Of the more popular rootstocks used in Illinois, M.2, MM.104, and M.7 were found to be most resistant; MM.109, MM.111, and seedlings were intermediate; and MM.106 was the most susceptible. Unfortunately, M.26 was not tested. This type of information should be used in choosing the rootstock for new plantings.

The summer diseases may still become a serious problem if rains occur. Folpet (Phaltan) is the best fungicide to use on apples for the remainder of the season if the disease potential increases. Phaltan in the fifth and succeeding cover sprays will control Bot rot, scab, and the summer diseases without damaging the fruit finish. If a serious disease potential does not develop, then fungicides such as captan or Polyram will be adequate.

INSECTS

Second-generation, lesser peach-tree borer moths have started to emerge at Belleville. All ages of larvae are present. It is especially important in late-season sprays for the orchard manager to make sure the spray is hitting all the gummy areas. With no crop, growth has been vigorous on most trees, making it difficult to hit gummy areas on the upper branches. This is where the higher borer populations will be.

Oriental fruit moth larvae of the third generation have left the stems, and moths will soon be emerging for the fourth generation. Young trees near old, unsprayed blocks may need protection in the next two weeks if many terminals are "flagged" in the old block.

Peach silver mites are making peach leaves look silvery in some orchards. Insect and mite predators are expected to control them in time.
Red mite populations have become severe throughout the state in some orchards. Continue to apply low miticide dosages to low populations that are rapidly increasing until predators are found or until the population increase is less rapid. Use full-dosage miticide on high populations (30 to 60 per leaf of all forms).

July 1, USDA Apple Crop Estimate

(Thousands of 42-pound bushels)

<table>
<thead>
<tr>
<th></th>
<th>1972</th>
<th>1973</th>
<th>1974 (Est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>18,333</td>
<td>17,143</td>
<td>19,524</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>9,524</td>
<td>11,905</td>
<td>11,905</td>
</tr>
<tr>
<td>Virginia</td>
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</tr>
<tr>
<td>West Virginia</td>
<td>5,119</td>
<td>5,357</td>
<td>4,881</td>
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<tr>
<td>North Carolina</td>
<td>5,952</td>
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<tr>
<td>Other Eastern States</td>
<td>11,472</td>
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<td>TOTAL, EASTERN STATES</td>
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<tr>
<td>Other Central States</td>
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<td>TOTAL, CENTRAL STATES</td>
<td>29,751</td>
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<td>44,048</td>
<td>39,286</td>
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<td>California</td>
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<td>12,143</td>
<td>10,952</td>
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<td>TOTAL, WESTERN STATES</td>
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<td>TOTAL, UNITED STATES</td>
<td>140,032</td>
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</table>

1974 QUALITY APPLE CLUB APPLICATIONS

Attached is an application form for the 1974 Quality Apple Club competition. Last year, we used a new grading system and we plan to use the same system with some minor refinements this year. Send your application in before August 25. Judging will start Wednesday, August 28 in Area A.
Application for the
1974 Illinois Growers Quality Apple Club
sponsored by
The Illinois State Horticultural Society
in cooperation with
The University of Illinois Cooperative Extension Service

NAME ___________________________________________ COUNTY ________________________

ADDRESS _________________________________________________

Location of orchard to be judged ________________________________________________

Varieties __________________________________________________________________________

Age of Trees (must be more than 5 years old _______________________________________

A copy of the spray schedule must be provided. It may be attached to this appli-
cation blank or it may be given to the judges at the time of inspection. Inspec-
tion will start August 28 in the southern area and conclude about September 13 in the northern area.

Mail this application to: D. B. Meador
104 Horticulture Field Laboratory
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801
No. 16--August 11-24, 1974

DISEASES

Several reports of fire blight damage have been received from Area D in the past week. Recent rainfall and cool temperatures are responsible for this.

The recent rains in certain parts of Illinois have brought attention to fruit disease problem. Bitter rot in southern Illinois as well as sooty blotch, fly speck, and Botryosphaeria rot throughout the state could cause damage. Phalan, captan, or polyram will control these diseases.

Now is the time to check harvest restrictions relating to all pesticides. Read both the label and supplement A to Circular 1073 carefully. If you have questions, check with your county extension adviser.

STOP-DROP SPRAYS

NAA (napthalene acetic acid) and 2,4,5-TP (color-set, color-fix, and the like) are both cleared for use as stop-drop sprays on apples. Do not confuse 2,4,5-TP with the brush-killer--2,4,5-T.

NAA takes effect in 2 to 4 days and is effective for about 7 to 10 days. Use 15 ppm for fall varieties (Jonathan, Delicious, Golden Delicious), and 20 ppm for winter varieties (Winesap and Rome). Do not make more than two applications. NAA should not hasten maturity.

2,4,5-TP takes effect in about 7 days and is effective for 14 to 28 days. It may speed up ripening if it is applied too early or if the weather is hot. Do not apply 2,4,5-TP on summer varieties or on Grimes. Do not use more than one application at 10 ppm on Golden Delicious. Use 10 to 15 ppm on Jonathan and Red Delicious, and 20 ppm on Winesap and Rome.

Some growers have had good results with a combination spray of NAA at 10 ppm plus 2,4,5-TP at 10 ppm to give both quick and lasting control. Others have applied NAA at 15 ppm followed in 7 to 10 days by the combinations.

With more of our apples going into storage, the choice of stop-drop materials becomes more important. Generally speaking, 2,4,5-TP is thought to shorten the storage life of apples since it tends to speed up ripening. But the later the 2,4,5-TP is applied, the less the effect on ripening. NAA is preferred for storage apples.

For storage apples we suggest delaying the application of stop-drop sprays as long as possible. Then start with two applications of NAA 10 to 14 days apart.
thus giving an effective stop-drop period of 15 to 25 days. If a longer effective stop-drop period is needed on some blocks, apply 2,4,5-TP 4 or 5 days after the second NAA spray.

Trees that were sprayed earlier with Alar should not require additional stop-drop sprays. If the apples on Alar-treated trees do start to drop, either NAA or 2,4,5-TP may be applied.

**ETHREL FOR ADVANCING MATURITY OF APPLES**

With favorable weather conditions, Ethrel will advance maturity of apples. It also increases the color of most red varieties and promotes uniform ripening, thus enabling once-over harvest.

Experience in the last two years shows that the effectiveness of Ethrel is related to temperatures. If several hot days and nights followed Ethrel application, results were disappointing in both color development and ripening. When cooler weather followed an application of Ethrel, Jonathan and spur-type Red Delicious apples colored and matured nicely, permitting once-over harvest. Ethrel matured Starking but did not add much color, so we had some poorly colored mature Starking.

Results with Ethrel on Golden Delicious are mixed. One grower was very pleased with Ethrel on spur-type Golden Delicious harvested for retail sales. In 1972 at Urbana Ethrel caused blotchy ripening of Golden Delicious, but in 1973 we were pleased with our Ethrel-treated Goldens.

Ethrel should be applied 10 to 14 days before the desired harvest date for the treated trees. Do not treat more trees than can be picked during a 2- or 3-day harvest period. Treated apples may get overripe or may fall before you can get them picked.

Ethrel loosens the apples, so NAA or 2,4,5-TP (or both) must be applied with Ethrel. Amchem also suggests using Tween-20 surfactant with Ethrel.

Apples previously treated with Alar may be treated with Ethrel if NAA or 2,4,5-TP (or both) are applied with Ethrel. Alar alone will not prevent Ethrel-treated apples from dropping.

Used properly with intelligent programming, Ethrel can be a valuable material for apple growers. Improper use or poor programming could have disastrous results. As with any new growth-regulating chemical, this one should be used with caution on small test areas until you learn more about its effects.

**QUALITY APPLE CLUB**

The previous issue of this report contained an application blank for the 1974 Quality Apple Club. Fill it out and send it in if you want to enter this year's competition.

**INSECTS**

As spray applications cease or become less frequent, orchard managers can usually know what pest problems to watch for by reviewing their observations of what insects were seen and matching the observations with the thoroughness of
the entire pest control effort. For example, if curculio damage was present last fall and parts of the orchard were lightly sprayed this season, curculio damage could be occurring now in Area D orchards, third-brood codling moth could be starting in Areas A and B, or San Jose scale that were active in early season could be rapidly increasing now. A few moments' reflection and close observation at "most likely" spots where pests could occur can prevent surprise infestations and are well worth the time.

Area D growers should be aware of nearby apple trees. Are they with or without crops? Are they sprayed? No crop or no spraying could encourage apple maggots to fly to your trees, where protection could be required into September.

Peach tree growers should get their last borer application on in the next 2 to 3 weeks. Be sure the trunks are not shielded from spray by thick weeds.

Predator mites will have increased enough to control mites in most orchards, but if leaves are in good shape, if predator buildup was not observed, and if red mites can readily be found, they should be closely watched.

Stephen M. Bies
Assistant Professor
of Plant Pathology

Ron Meyer
Fruit Entomologist

Daniel D. Meador
Extension Horticulturist

Malcolm C. Shintloff
Extension Plant Pathologist

Rocar Randell
Assistant Professor
of Agricultural Entomology
No. 17--August 25, 1974

This will be the last regular Spray Service Report for 1974. It may be necessary to issue a special report occasionally as the need arises. We wish to thank the many growers and specialists who have contributed to the reports each week.

LAST CALL FOR QUALITY APPLE CLUB

If you have neglected to send in your application for the Quality Apple Club, fill out the application blank attached to issue No. 15 of this report and mail it today.

DISEASES

Diseases are generally under control. On apples the summer diseases may require an additional spray. Except in special cases, disease control programs will be close to terminating for the season.

SUGGESTED DATES FOR STARTING APPLE HARVESTS

Dr. Lott has suggested the following dates for starting apple harvest in an average season. Maturity will be about ten days later; ripeness, several days after maturity.

<table>
<thead>
<tr>
<th>Area</th>
<th>Jonathan</th>
<th>Red Delicious</th>
<th>Golden Delicious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union-Jackson Counties</td>
<td>Sept. 1</td>
<td>Sept. 6</td>
<td>Sept. 15</td>
</tr>
<tr>
<td>Centralia</td>
<td>Sept. 6</td>
<td>Sept. 11</td>
<td>Sept. 20</td>
</tr>
<tr>
<td>Jersey-Calhoun Counties</td>
<td>Sept. 8</td>
<td>Sept. 13</td>
<td>Sept. 22</td>
</tr>
<tr>
<td>Quincy</td>
<td>Sept. 14</td>
<td>Sept. 19</td>
<td>Sept. 25</td>
</tr>
<tr>
<td>Lake County</td>
<td>Sept. 24</td>
<td>Sept. 29</td>
<td>Oct. 4</td>
</tr>
</tbody>
</table>

HARVESTING FOR STORAGE

Cold storage can only maintain the quality and condition of apples; it cannot improve them. Storage apples should therefore have special care.

Immature apples do not store well and are especially likely to scald. For the best storage, apples should be mature but not ripe.

Usually the first apples of a variety to be picked do not store well. These first pickings should go to market rather than to storage. The apples picked last do not store well because they usually are too close to being ripe. They should also go to market.
The prime apples for storage are those harvested during the middle of the picking season for that variety. They are mature and are less likely to scald, yet are not ripe and have a good storage life left.

In determining maturity for storage, cut the apples and look at the flesh. It should have lost its greenish appearance, changing to a white or pale yellow. It should not taste "starchy." It should be firm, snappy, and juicy without any grainy texture. Flesh that is starting to show graininess in texture is too ripe for storage.

The logistics of harvest make it almost impossible to bring in every apple at the best stage of maturity. Careful programming will help. Special care should be given to the apples going into storage.

TREATING FOR SCALD

Apples picked at proper maturity and removed from storage by January 15 probably do not need any special treatment for scald. Immature apples and ones to be stored until after January 15 probably should be treated for scald as a safety factor.

Use either DPA or ethoxyquin, applied as a spray or a drench or by flooding before storage. Treat for a few seconds, up to 30. Coverage and scald control tend to be better with fruit and solutions at room temperature than with cold fruit or cold solutions.

MARKETING

The 1974 apple crop is estimated to be 147,000,000 bushels, which is about the same as last year but is considerably less than some of the big crop years we have had in the past. Washington and other western states are down this year, but Michigan and the eastern states are up. We should be able to market this year's average-size crop without serious problems.

PROCESSOR OUTLOOK

Michigan is expecting about 4 million more bushels than in 1973, so Michigan processors probably will not be buying as many Illinois apples as they did last year. The processing plant at Cobden, Illinois, is adding a freezing unit and expects to process at near capacity levels.

The carryover of frozen slices and canned applesauce is greater than the carryover at this time last year. This larger carryover may affect processor demands.

WHOLESALE FRESH MARKET

Crops in the central states are down slightly from last year, except for Michigan. Michigan's big increase makes the crops in the central states slightly more than last year.

The wholesale market should be good during September. It may soften slightly in October when Michigan builds up volume. Michigan's fresh market volume will depend somewhat on processor demands.

RETAIL SALES

Retail sales should be brisk this year. The public is starved for fruit. The Illinois strawberry crop was poor to fair. We had very few peaches, plums, cherries, blueberries, and brambles.
The apple crop in most areas of Illinois is light to moderate, and the consumer demand for apples is strong. Don't be afraid to ask a good price. The public appears to be resigned to the facts of higher food prices. Your costs for fuel, chemicals, labor, and packages have increased considerably. You must raise prices to maintain the same profit level as last year.

Stephen M. Rice  
Assistant Professor  
of Plant Pathology

Ron Meyer  
Fruit Entomologist

Daniel B. Meador  
Extension Horticultrist

Malcolm C. Shorterff  
Extension Plant Pathologist

Roscoe Randall  
Assistant Professor  
of Agricultural Entomology
SPECIAL ISSUE: October 25, 1974

FALL VS. SPRING FERTILIZATION

With average weather in the fall and spring, either late fall or early spring fertilization is satisfactory. A tree root can absorb nutrients any time the soil surrounding the root is not frozen solid. With our moderate precipitation this fall, there should be very little loss of applied nitrogen.

Fall fertilization does have some advantages. The work load is usually lighter in the late fall, and the orchard is not clogged with prunings waiting to be removed.

The nitrogen fertilizer supply continues to be tight. Contact your dealer now, and be ready to accept the fertilizer as soon as it is available. Potash supplies should be adequate. Phosphorus probably is not needed. We have never had an Illinois apple or peach leaf analysis that was low in phosphorus.

ORDER MACHINERY AND SUPPLIES

Sprayers, tractors, and other farm machinery also are in short supply, and there may be a long waiting period between an order and the delivery. If you need a new machine, you probably should place the order as soon as possible.

Supplies of pesticides will vary, as they did this past growing season. The earlier you place your order, the greater the likelihood of obtaining the pesticides you want.

MOUSE CONTROL

The first step in mouse control is to mow closely the entire orchard floor to remove cover. If the mower does not cut all the vegetation around the tree trunks, this should be removed by using hand tools. Then apply poison grain bait on a warm, sunny day when the mice are active. See pages 8 to 11 of Illinois Circular 1073 for more detailed information.

PAINT PEACH TREE TRUNKS

Winter injury to peach tree trunks is usually the most severe on the south or southwest sides. Research shows that winter sunlight warms this area of the trunk to temperatures considerably above air temperatures. When the sun sets, the bark temperature quickly returns to that of the air. This fluctuation is thought to be a major cause of "southwest injury."

Research shows that white paint reflects the sunlight, thus reducing temperature fluctuations. Use white latex outdoor house paint. Oil-base paint will injure the bark.
Dilute the paint with water and apply with a brush or as a spray. For brushing, we like to use two parts of paint to one part of water. Paint the east, south, and west sides of the trunk from the ground up to and including the crotch. Apply on a warm sunny day so the paint will dry before nightfall.

This treatment is most effective on young trees, ones less than eight years old. Older trees have developed heavy outer bark that helps insulate the inner bark from the sun.

**RABBIT GUARDS**

Young trees need protection from rabbits. Mechanical barriers of hardware cloth, plastic, or metal are usually the most effective. The exception would be when crusted snow enables rabbits to reach above the guard. Where deep snow is likely, a spray of a ready-to-use preparation of Thiram is suggested. Spray the trunk and lower branches.

**WINTER MEETINGS**

Plan now to attend the Annual Meeting of the Illinois State Horticultural Society at Augustine’s Ramada Inn, Belleville, January 14 to 16.

- February 4, 1975 - Carbondale
- February 5, 1975 - Centralia
- February 12, 1975 - Quincy
- February 13, 1975 - Hardin
- February 20, 1975 - Martinsville
- February 22, 1975 - LaSalle-Peru

**DISEASES**

Many peach orchards have received only general upkeep sprays in the last two years because of the lack of a commercial crop. Reduced spray programs allow the peach leaf curl fungus spores to survive in larger numbers than in crop years. Therefore, it is especially important to apply a peach leaf curl spray this winter during dormancy. You might try Phygon (dichlorone SOW) for controlling curl, because this fungicide is also considered as effective in controlling peach canker.

Peach canker is one of several causes of gummosis on peach and nectarine trees. The disease is caused by two species of fungi, which invade the tree through wounds caused by insects, freezing injury, and mechanical damage. Leaf drop in the fall causes minute wounds, called leaf scars, where the leaves were attached. The peach canker fungi may infect at these leaf scars and cause cankers. Therefore, each fall after leaf drop, thoroughly spray peach and nectarine trees including the crotches with Phygon SOW at 1 pound per 100 gallons of water. This spray will also control peach leaf curl, as just described.

In the spring, immediately after pruning, apply another Phygon spray; but use only 1/2 pound per 100 gallons of water. Thoroughly cover all wounds and cuts. It is important to get GOOD coverage and to apply the spray the SAME day the tree is pruned.

*Stephen M. Reese*
Assistant Professor of Plant Pathology

*Ron Meyer*
Fruit Entomologist

*Daniel B. Meadow*
Extension Horticulturist

*Malcolm C. Shuttloff*
Extension Plant Pathologist

*Roscoe Randall*
Assistant Professor of Agricultural Entomology