SPECIAL ISSUE: January 29, 1975

Dear Fruit Grower:

You are cordially invited to attend one of the winter fruit meetings listed below. The 1975 Spray Schedules will be distributed at these meetings. Various phases of fruit culture will be discussed. And you will be able to visit with our growers.

Tuesday, February 4.
Ramada Inn, Carbondale
9:00 a.m. to 3:15 p.m.

Wednesday, February 5.
Old National Bank Building, Centralia
9:45 a.m. to 3:00 p.m.

Wednesday, February 12.
Holiday Inn, Quincy
9:30 a.m. to 3:00 p.m.

Thursday, February 13.
Apple Shed, Batchtown
9:45 a.m. to 3:00 p.m.

Thursday, February 20.
Longhorn Cafe, Martinsville
6:30 p.m., "Dutch treat" dinner.

Saturday, February 22.
Holiday Inn, LaSalle-Peoria
9:30 a.m. to 3:00 p.m.

Stephen M. Reigle
Assistant Professor of Plant Pathology

Ron Meyer
Fruit Entomologist

Daniel B. Meadow
Extension Horticulturist

Malcolm C. Suttleff
Extension Plant Pathologist

Roscoe Randell
Assistant Professor of Agricultural Entomology
No. 1--March 30-April 5, 1975

This is the first Spray Service Report for the 1975 season. These Reports will be issued each week until June. From June until September, they will be issued every other week.

FERTILIZERS

You should be completing fertilizer applications on apple trees in areas A and B, and should be starting fertilizer applications in areas C and D.

For peach trees, you may want to split the fertilizer application. Put on half of the fertilizer now, and apply the other half at petal-fall if you have a crop.

PRUNING

Finish pruning apples before switching to peaches. Peaches can tolerate pruning during bloom and up to two weeks afterward. Apples do not respond well to late pruning.

STAGE OF DEVELOPMENT

At this time of year, two or three warm days can push bud development rapidly. Thus, comments about the stage of development are risky. In area A, peaches are in the late-popcorn to pink stage, and apples are in green-tip to half-inch green. In area B, peaches are in the popcorn to late-popcorn stage; apples, in the silver-tip to green-tip stage. In area C, apples are dormant to silver-tip. Peaches have not reached the popcorn stage. Apples are still dormant in area D.

APPLE BUD DAMAGE

We forced some Red Delicious and Jonathan buds here at Urbana and most of them look good, even though some of the inner bud scales were discolored.

PEACH PROSPECTS

During the Midwest Peach Meeting at Purdue last week, reports from most of the peach-growing areas indicated good prospects, except for a few localized areas. But most of us still are not past the danger of spring frost damage.

DISEASES

APPLES

Apple scab season is nearly here. The fungal perithecia are mature and ready to discharge primary inoculum, the ascospores. If you have not tried Difolatan...
4F, you might consider using it this year on a limited number of trees. This fungicide is labeled at two rates, and must be applied at or slightly before the green-tip stage. A rate of 5 quarts per 100 gallons will control scab until calyx. The 3-quart-per-100-gallon rate will control scab until pink. We suggest using the higher rate on varieties that are not susceptible to powdery mildew or the rust diseases, or where these diseases are not a problem. The lower rate could be used on mildew- or rust-susceptible varieties, and will give scab protection until the pink stage. Then a fungicide that controls both mildew and rusts can be supplemented. (See Illinois Circular 1073, Supplement A, the Illinois apple spray schedule.)

Difolatan should save several sprays early in the season. It is compatible with oil. It MUST be applied at or before 1/4-inch green; otherwise, severe phytotoxicity will occur. Oil should not be applied following Difolatan. Check the label.

Another relatively new fungicide recently received experimental labeling for use in Illinois. This material is called Topsin M, and is very similar chemically and in its mode of action to Benlate. Topsin M controls the same diseases as Benlate, at approximately the same rates of application. Initial reports from Missouri indicate that Topsin M is somewhat easier on fruit finish than Benlate. You might try this fungicide on a small block of reds and goldens and compare the fruit finish with that in a similar, Benlate-treated block.

If either fire blight or black rot was a problem on your Jonathans last year, you might consider using a cleanup spray of copper sulfate (4 pounds per 100 gallons of water) when the trees are dormant, or a bordeaux-oil spray when the trees are at the green-tip stage.

PEACHES

Peach growers in areas A and B have passed the point where a peach-leaf curl spray will do any good. Growers in area C may still be able to prevent curl if a Cyprex spray is applied when the leaf buds are still dormant.

If you plan to prune peaches after bloom, you might consider a Dichlone spray within 24 hours after pruning. Dichlone at 1/2 pound per 100 gallons of water is reported to control peach canker if applied on the same day the trees are pruned.

INSECTS

There have been no changes in the early use of oil. Scale populations continue to be present in some orchards. These populations should be controlled with oil. Aphids are always a general and annual threat, requiring an insecticide in some application after silver-tip and before bloom or certainly a careful examination immediately after bloom to see if any are present.

Tarnished plant bug seems to be the main source of early cat facing on peaches in Illinois. These bugs are attracted in large numbers by the bloom, and most leave as soon as bloom is over. Sevin is the most effective insecticide available, but it is very hazardous to honeybees. To avoid killing the bees, make sure you apply sevin at least two full days before the first blossom in the orchard opens.

The new insecticide from Dow, Lorsban 4E, has been labeled for peach tree borer control. The label says to apply 3 quarts per 100 gallons in a dilute spray on the trunk up to the scaffold limbs, and not to apply within fourteen days of
harvest. We have found that 1-1/2 pints per 100 gallons in thorough coverage is adequate for lesser peach tree borer, but this insect is not included on the label.

We have had no word of problems with Red-banded leaf rollers for several years. However, several orchards have had leaf minor problems. Leaf minor moths are actively laying eggs in the pink, so a systemic insecticide at that time kills both the moths and newly hatched larvae.

CORRECTION

An error was made in the February 5 letter to all fruit growers who wished to receive this report. We requested a $2 money order or check to cover postage and publication costs. Our mistake was that we need $3 to cover these costs. Therefore, if you sent only $2, please forward another $1 check to the Department of Plant Pathology, 218 Mumford Hall, Urbana, IL 61801.
No. 2—April 6-April 12, 1975

DISEASES

PEACHES

Growers who have delayed pruning peaches until bloom have a decided advantage in controlling perennial canker. Recent evidence from Pennsylvania suggests that the number of new cankers can be reduced by spring pruning after the buds swell. They found that 5 percent of pruning cuts made during dormancy became infected with Cytospora, while no cuts made at bloom became infected. Therefore, peach pruning should be delayed until the buds begin to swell. Ideally, pruning should be done during full bloom. Always make pruning cuts close, never leave stubs. Apply a fungicide spray (sulfur, dichlone, captan, ferban, or benomyl) as soon after pruning as feasible, and definitely before the next rain. Indiana Extension Service personnel prefer the fungicide dichlone for canker control. Dichlone applied to control canker during bloom will also control brown rot blossom blight. Two bloom sprays (one during early bloom and another at full bloom) are recommended for controlling brown rot.

APPLES

Apple scab season is beginning in areas A and B, where buds are at the green-tip to half-inch-green stage. Now is the time for the first spray. Many factors will influence your choice of fungicides, including retention (the sticking property of material), redistribution (spreading to newly emerged leaves), after-infection activity (Rick-back action), and effectiveness. The accompanying table lists the materials recommended for apple scab control in Illinois and how they differ in retention, redistribution, after-infection activity, and effectiveness.

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Retention</th>
<th>Redistribution</th>
<th>After-infection activity</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benomyl, 6 oz.</td>
<td>Poor to fair</td>
<td>Poor to fair</td>
<td>18 to 24 hours</td>
<td>+++</td>
</tr>
<tr>
<td>Captan, 2 lb.</td>
<td>Fair to good</td>
<td>Fair to good</td>
<td>18 to 24</td>
<td>+++</td>
</tr>
<tr>
<td>Dichlone, 1/4 lb.</td>
<td>Poor to fair</td>
<td>Poor to fair</td>
<td>30 to 36</td>
<td>+++</td>
</tr>
<tr>
<td>Dichlone, 1/2 lb.</td>
<td>Poor to fair</td>
<td>Poor to fair</td>
<td>36 to 48</td>
<td>+++</td>
</tr>
<tr>
<td>Dodine, 3/8 lb.</td>
<td>Good</td>
<td>Good</td>
<td>18 to 24</td>
<td>+++</td>
</tr>
<tr>
<td>Polyram, 2 lb.</td>
<td>Good</td>
<td>Unknown</td>
<td>18 to 24</td>
<td>+++</td>
</tr>
<tr>
<td>Sulfur, 5 lb.</td>
<td>Fair to good</td>
<td>Good</td>
<td>None</td>
<td>++</td>
</tr>
<tr>
<td>Difolatan, SAT</td>
<td>Excellent</td>
<td>Excellent</td>
<td>None</td>
<td>+++</td>
</tr>
</tbody>
</table>

+ = slight; ++ = fair; +++ = good; ++++ = excellent. SAT = single-application treatment.
This table has been summarized from work done in New York. It tells us a lot about choosing fungicides for scab control. For example, the excellent retention and redistribution of Difolatan 4F explains why it can be used as a single-application treatment (SAT). The Table also indicates that dichlone has the best after-infection activity. Infection following a wetting period can be stopped with dichlone up to 48 hours after the wetting period begins. Fungicides with an effectiveness of +++ or ++++ are excellent protectants if applied prior to the wetting period, if they are adequately redistributed to new growth and if they are retained.

If scab infections occur and their development is not stopped within the "after-infection period," multiple applications of dodine or benomyl are thought to suppress lesion development and sporulation.

Another factor that influences an orchardist's choice of fungicide in early season sprays is the severity of other diseases in the orchard. If powdery mildew is a problem, a fungicide that controls both scab and mildew should be used. Benomyl, Dikar, and sulfur will control both of these diseases.

At this time of year, dead wood and prunings should be removed from the orchard and burned. This wood contains the black rot and Botryosphaeria rot (bot rot) fungi. If this wood is left in the orchard, spores will be produced on it that will reinfect the trees.

STAGE OF DEVELOPMENT

A week of cool weather has slowed down development, and the fruit buds are not much further along than they were last week. So far this has been a "fruit grower's spring." In area A, apples are in the green-tip to half-inch-green stage and peaches are starting to show pink. In area C, apples are dormant to silver-tip; peaches are in the late-dormant stage. Apples are dormant in area D.

DEPTH OF PLANTING FOR APPLE TREES

The ideal depth of planting for apple trees depends on the rootstock. Trees on seedling roots should be planted no more than 2 inches deeper than they were growing in the nursery row. This is the case for both spur types and regular types of trees. In past years, some growers have planted spur type Red Delicious on seedling roots very deep, covering a considerable portion of the trunk with soil. This deep planting has caused problems because the spur type Red Delicious trunk does not readily form roots. Planting this type of tree deep does not improve anchorage.

In contrast, trees on Malling and Malling-Merton rootstocks are budded high, so they may be planted deep. Plant these trees so that the graft union is about 3 inches above the normal ground level. After settling from spring rains, the bud union will be about 1 to 2 inches above normal ground level.

The trunks of Malling and Malling-Merton rootstocks readily form roots. Deep planting improves anchorage, prevents the formation of burr knots, and reduces the formation of suckers.

FERTILIZING YOUNG APPLE TREES

Reduce or eliminate applications of nitrogen fertilizer on vigorously growing, young apple trees that are large enough to bear a profitable crop. Vigorous growth is antagonistic to fruit production. Slowing down the growth encourages trees to start bearing.
Insects

Aphids were hatching by March 30 in area A, but there has been little growth during the past week.

A new way of handling pesticides using tiny capsules has been under experimentation for several years. An inert material is used to enclose pesticides in a capsule small enough to formulate them in a water solution and then spray them through regular sprayers. A limited quantity of parathion in capsules is available at the Illinois Fruit Growers Exchange for use under an experimental label. The main advantage is the lower hazard during handling because the insecticide is covered, and is released slowly from the capsule, thus giving longer effective control in the field. This product is known as PenCap M. It might be a good product for a few growers to try on peach insects or on apple blocks that have San Jose scale infestations.

The dimple injury we have had on fruit in some Golden Delicious blocks is caused by the egg-laying of thrips and other insects, such as apple red bug and tarnished plant bugs. The bugs are also capable of feeding on the young fruit during bloom, much the same as they do on peaches, causing the deformities we call "catfacing."

It is rare to see apple red bug, but tarnished plant bugs are quite common—particularly when lots of legumes are near the trees. If you have had consistent dimpling damage with no scars or with scars of up to 1/4-inch in diameter, it could be from thrips or tarnished plant bugs during the bloom period.

Insecticides for control will need to be applied well before bloom in order to avoid killing honey bees. Protecting honey bees from insecticides is discussed on pages 12 through 14 in Illinois Circular 1073, Pest Control in Orchards. We usually do not have much damage when the bloom period is cool and damp; but clear, warm weather is favorable. We know Sevin is effective on tarnished plant bug but also very hazardous to bees, so it should be applied at least 2 days before the first blossom opens. It might be well to spray only a test area of one sprayer load of an insecticide to see if the dimples are reduced in that area. Roscoe Randell will be glad to examine the sprayed and unsprayed areas during bloom or later in the season.
DISEASES

There have been an increasing number of examples of fungicide and bactericide failures in recent years. Pesticides (fungicides and bactericides) that have controlled certain diseases in the past are failing because of a buildup of resistant populations of the target organism. On fruit, there have been reports of streptomycin-resistant Erwinia amylovora (fire blight), dodine-resistant Venturia inaequalis (apple scab), and benomyl-resistant Botrytis cinerea (gray mold of grapes, peaches, and strawberries) and V. inaequalis. Resistance is occurring to dodine, streptomycin, and benomyl because of their highly specific modes of action, versus the rather broad mode of action of the old, conventional, nonspecific fungicides.

Little is known about the reversion rate of fungicide-resistant populations back to fungicide-sensitive ones. Therefore, the wisest approach is to prevent the buildup of fungicide resistance in the first place.

The risk of a resistance problem can be minimized by observing the following precautions:

1. **ALTERNATE PESTICIDES.** Avoid using a single chemical for control all season. Two or more chemicals, both active against the target organism but with different modes of action, should be alternated in serial sprays or tank-mixed.

2. **USE RECOMMENDED RATES.** Avoid reducing rates to the "breaking point," that is, to the point where substantial buildup organism occurs.

3. **CHECK EFFECTIVENESS REGULARLY.** If a chemical appears to be failing, substitute an alternate chemical immediately. Extensive laboratory tests are necessary to determine whether a resistant strain of the target organism is present. Switch pesticides first, then find out if the original pesticide can be used again.

GROWTH STAGES

Peaches are nearing bloom in area A. Two spray applications are recommended for controlling brown rot of peach blossoms, one during the early bloom stage and another at full bloom. It is important to control this fungus early in the season in order to prevent a buildup of inoculum later in the growing season. We currently recommend benomyl (1/4 pound) or sulfur (3 pounds) plus Dichlone (1/4 pound) per 100 gallons. A new fungicide, Topsin M, received an experimental label for use in Illinois this year. It will control both brown rot and peach scab. Perhaps you might consider using Topsin M on a small block this year.

Apples in area A will soon require rust and powdery mildew fungicide applications. Powdery mildew control measures should start when buds are at the green-tip stage. Mildew is most serious on Baldwin, Cortland, Idared, Jonathan, Monroe, and Rome varieties. Control is aimed at preventing new infections, thus
reducing carryover to next year, rather than trying to eradicate the current infections. Benomyl, Dikar, Karathane, sulfur, or Topsin M are excellent mildewicides. Thorough coverage is necessary. Mildew is usually most common in the tree tops, where coverage is difficult to obtain.

The rust diseases require control measures beginning at the pink-bud stage. The more susceptible varieties are Jonathan, Rome Beauty, and Wealthy—although both Red and Golden Delicious can be infected. Polyram, Dikar, Zineb, Manzate 200, and Dithane M-45 are all good rust-control fungicides. A careful choice of fungicide-fungicide combinations is necessary if you wish to control scab, mildew, and the rusts in one tank-mix.

Cool weather has delayed bud development so that it is about in line with the Illinois Fruit Calendar, Circular 1014. On April 9, area A is at note 8; apples, in half-inch green; and peaches, at late-pink. Area B is at note 7; green-tip on apples; and early pink on peaches; apricots, blooming.

INSECTS

Peaches will be moving into a time when insecticides should not be applied to avoid damage to pollinating insects on the flowers.

On apples, aphid populations have been reported as light in some orchards. A few years back, a light aphid population proved to be mostly rosy apple aphids; and some orchards that did not spray for aphids had quite a few knotty apples. Systemic insecticides are generally the most effective for aphid control early in the season.

Some time before bloom, it is a good practice to look through the trees for leaf-chewing caterpillers, such as tent caterpillers, fruit-tree leaf rollers, canker worms (measuring worms), and green fruit worms—particularly if the only insecticide schedule is a short, lasting systemic insecticide. While they will kill leaf-feeding insects, enough insects often remain from high populations to do fruit damage during and immediately after bloom. Leaf-chewing insects will often be more numerous close to heavily wooded areas or near large shade trees, so these are the places to look more carefully by climbing into some of the apple trees.

Remember in planning weed control under trees to check for a way that the predator mites can move through some green growth into the tree. A 4- to 6-inch strip of growth to the trunk, a couple of low-hanging limbs in the outer perimeter, or a narrow strip of bare ground less than 10 to 12 inches will allow the predator mites to move into the trees after they run out of food in the ground cover. This happens three to eight weeks after bloom, depending on the moisture supply and the management practices on the ground cover. Closely mowed ground cover allows less space for prey and also allows predator mites to search out available food more quickly. It would get them into the trees more rapidly, but would allow less time for populations to build up.
STAGE OF DEVELOPMENT

In area A, peaches are in the late-bloom stage, and apples are in the early pink stage. In area B, peaches are starting to bloom and apples are in the tight-cluster stage. In area C, peaches are in the popcorn to early pink stage, and apples are at the green-tip to 1/2-inch-green stage. In area D, apples are dormant to silver tip.

ALAR SUPPLY SHORT

Supplies of the growth regulator, Alar, will be extremely short this year. The manufacturer is not able to obtain one of the basic ingredients. Therefore, they will not manufacture any Alar this year. They hope to resume production next year.

TWILIGHT MEETING

The Nugent-Schapanski Orchard, John Surgeon, manager, will host a twilight meeting Tuesday, April 22 at 6:15 p.m.

SOLUBOR FOLIAGE SPRAYS

Boron is essential for pollen germination. A deficiency of boron has been associated with bitter pit and other corking disorders. We have been suggesting that 1 pound of Solubor per 100 gallons of spray mix be added to a pink spray and an early cover spray. We still think this is good insurance against the possibility of a boron deficiency.

However, there is a possibility of incompatibility between Solubor and the rust-control fungicides—Dikar, Polyram, zineb, Manzate 200, and Dithane M-45. There should be no incompatibility problems between Solubor and Cyprex, Benlate, and captan.

Therefore, to avoid any possible incompatibility problems we suggest adding Solubor to one spray before rust-control materials are needed, and to the fourth-cover spray.

INSECTS

Insect activity continues to be light, except for aphids. A systemic phosphate insecticide should be included in a spray during the green-tip to 1/2-inch-green stage. Growers in areas A and B who applied a systemic phosphate in an early spray report excellent aphid control.

At petal-fall on peaches apply Guthion, Imidan, or parathion to control curculio, stink bugs, and first-brood Oriental fruit moth.
PEACHES

On the Illinois Commercial Spray Schedule for peaches, we recommend the use of Benlate 50W at 4 ounces per 100 gallons of sulfur. Some growers have expressed concern about this Benlate rate because the label recommends 8 ounces per 100 gallons. Observations by Dwight Powell and Steve Ries at Urbana have indicated that 4 ounces is sufficient to control brown rot. However, we attempt to grow peaches at the northern edge of "peach country," and therefore represent a different environment. In areas A and B where brown rot is more severe because of the overlapping harvest of different varieties, the inoculum potential is much higher than in Urbana. Therefore, I believe that in the southern areas, growers might up the rate to 6 to 8 ounces per 100 gallons. The amount of material necessary to control any disease depends on the fungicide, coverage, and time between spray applications.

Sprays for peach-scab control should begin at petal-fall and continue until within 40 days of harvest. Benlate at 6 to 8 ounces per 100 gallons is effective in controlling this disease. Sulfur at 6 pounds is the only other fully labeled fungicide which will control peach scab. The new material, Topsin M, should control this disease.

Ideally, peaches should be pruned at this time in areas A and B. Pruning now has two advantages. First, a heavy crop is set and pruning is an excellent way to thin it out. Second, peach trees are now growing vigorously. Cuts at this time will heal before the perennial canker fungus can become established.

APPELES

During the spring meetings, Steve Ries presented a talk which addressed itself to the effect of various fungicides on apple pollen. This year with a full bloom, he does not think we have to be concerned with fungicides significantly reducing fruit set. We hope to check fungicide effects on fruit set under field conditions this spring.

If apple growers used the reduced rate of Difulatan (3 quarts per 100 gallons) in area A, now is the time to apply another scab-control material (at the pink bud stage). Measures to control rust and powdery mildew should be starting in area B, and continuing in area A.

The table published in issue No. 2 of this report confused some apple growers. That table was included to help growers choose scab fungicides. No single material is perfect. Many possess advantages over others. The total value of a fungicide is reflected in its retention, redistribution after infection activity, and effectiveness. Benlate is not thought to be redistributed or retained as well as some other fungicides listed in the table. Unfortunately, the Benlate-oil combination was not tested in New York or Ohio, and many Extension Service personnel think that oil increases the retention of Benlate. This table was not meant to recommend any individual material, but to help each grower select one for his conditions. The choice should depend on the grower's spray schedule timing, location, stage of fruit development, climatic conditions, and disease potential.

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STAGE OF DEVELOPMENT

In area A, peaches are just past petal-fall, and apples are in full bloom. In area B, peaches are starting the petal-fall stage, and apples are in early bloom. In area C, peaches are in the pink-bud stage, and apples are in the tight-cluster to early pink stage. In area D, apples are in silver-tip.

CROP PROSPECTS

Peaches appear to have full crops on most varieties except for Pike, Adams, and surrounding counties. These counties suffered an almost complete winter-kill of fruit buds.

Apple growers in areas A and B report good return bloom on most trees. The prospects for apple bloom in areas C and D appear to be good.

FRUIT FINISH ON GOLDEN DELICIOUS

Experiments at Urbana and in other areas show that a phosphate insecticide in the petal-fall and first-cover sprays may increase the amount of russet on Golden Delicious. Using lead arsenate in the petal-fall and first-cover sprays does not increase russet.

Therefore, we suggest using lead arsenate instead of a phosphate insecticide in the petal-fall and first-cover sprays on Golden Delicious. Use a phosphate insecticide on all other varieties.

If you do not have lead arsenate on hand and cannot obtain any, you might consider using a fungicide only on Golden Delicious in the petal-fall and first-cover sprays. Then, start a phosphate insecticide in the second-cover spray.

Most Golden Delicious trees are interplanted with other varieties. If the other varieties are sprayed with a phosphate insecticide in the petal-fall and first-cover sprays, curculio should be controlled in the block, even though the Golden Delicious trees did not receive an insecticide. However, growers should watch for activity by red-banded leaf rollers.

DISEASES

PEACHES

Peaches in areas A and B are at the petal-fall stage, and the first-cover sprays are being applied. The diseases requiring control for the rest of the growing season are peach scab and brown rot. Peach scab will require control until 40 days before harvest. Brown rot must be controlled all season long to prevent a buildup of inoculum. The brown rot fungus can infect young, succulent
shoots throughout the growing season, causing a blight and cankers. This fungus can also infect immature peach fruit under certain conditions. Therefore, fungicide sprays should be continued at 14-day intervals until preharvest, when the spray interval should be reduced to 7 to 10 days.

**APPLES**

Growers should apply streptomycin sprays on blight-susceptible varieties to avoid infections during the bloom period and to reduce the buildup of inoculum.

Growers in southern Illinois who used Difolatan this year are reminded that they need to check the label. Depending on the rate you used and the stage of development of the trees, you may now need to apply another scab fungicide.

The right combination of environmental conditions for the development of apple scab or the rust diseases has not yet occurred. The relatively dry spring has not favored development of these diseases. However, we must not become relaxed because a change in the weather patterns may bring frequent wetting periods, and the scab situation could be reversed.

Unlike the scab and rust fungi, which require moisture for spreading and infection, the powdery mildew fungus can infect readily without free moisture. This fungus only requires a high relative humidity and temperatures of 60 to 80°F. The climatic conditions this spring have favored powdery mildew.

**ALTERNATE MIDDLE SPRAYING**

In insect management research on fruit in other states, one of the practices that has been under investigation is alternate middle spraying. Where planting distances and wind conditions are such that spraying both sides of the row middle is possible, every other middle is not sprayed. When the next spray is planned 10 days later in normal, two-sided spray schedules, in order to change to alternate middle spraying you would return to spray the alternate, unsprayed middle on the fifth day after the first middle was sprayed. Since most sprays applied to one side of a tree actually cover 75 to 90 percent of the tree, alternate middle spraying has demonstrated that good pest control can be achieved by delaying the application to the alternate middle one or more days.

Part of the reason for this effectiveness is that the majority of the tree receives fresh supplies of pesticide more often than in two-sided applications. This works quite well for such pests as mobile insects who move through the fresh pesticide. The obvious limitation on how long the interval can be extended is for disease control on the small portion of the tree that is not covered from the opposite side. Once a disease organism such as a rust spore lands on a tree, it is not mobile at all and a pesticide must be at the spot or close enough to be redistributed to the spot in sufficient quantity to stop the organism. Therefore, in times of peak threat from disease organisms, you may wish to cut the interval to just half the normal spray schedule for two-sided sprays. However, during much of the spraying season, the interval for alternate middle spraying can be longer than half that for two-sided application.

The same principle could be applied when spraying must be done from one side only by spraying the opposite side several days later.

The other advantages of alternate middle spraying should be considered, too. First, you could get through the orchard in half the time required for a
single spray; therefore, all the trees would have some fresh pesticide when time is limited between rains or wind storms. Second, while you might have to shift to night spraying to get coverage both directions, you would have only half the driving distance, versus spraying both sides of each row with one-direction spraying.

Give some thought to these suggestions. Alternate middle spraying has not only reduced the total number of sprays applied per season, but also the total time required. This method also improves the survival of predators, which are able to seek areas of low deposits of insecticides.
No. 6--May 4-May 10, 1975

STAGE OF DEVELOPMENT

In area A apples are in the petal-fall to first-cover stage; and peaches are in the shuck-off stage. In area B, apples are in full bloom to early petal-fall; peaches, in the shuck-split stage. In area C, apples are in late-pink to bloom; peaches, late-bloom to petal-fall. In area D, apples are in the green-tip to half-inch-green stage.

THINNING APPLES

In contrast to 1973 and 1974, the apples in areas A and B did not suffer freeze damage this year; and most orchards report at least one or two good pollinating days during bloom. Therefore, fruit set appears to be heavy, and chemical thinning will be needed.

The apples will be more resistant to chemical thinners this year than they were in 1973 and 1974. Frost-damaged leaves absorb chemical thinners more rapidly than normal leaves.

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

We prefer to delay thinning the fall and winter varieties until the king fruit is 11 to 12 millimeters in diameter, and the side fruits are 8 to 10 millimeters. However, some growers have been successful in applying thinners in the petal-fall to first-cover stage.

Tween 20 increases the absorption of NAA. When Tween 20 is used with NAA, reduce the amount of NAA to half the normal rate. Tween 20 has little or no effect on the thinning ability of Sevin.

Younger Jonathan trees usually thin themselves. Mature Jonathan trees may need chemical thinning. NAA at 5 parts per million plus 3/4 pint of Tween 20 is suggested. Apply when the king fruit is 11 to 12 millimeters.

NAA on spur-type Red Delicious may cause pigmy fruit that hangs on the tree until harvest. Thus, it is safer to use 1 to 2 pounds of Sevin per 100 gallons. Apply when the king fruit is 11 to 12 mm in diameter.

For the hard-to-thin Golden Delicious variety, we prefer 10 ppm of NAA plus 3/4 pint of Tween 20, plus 1 pound of Sevin per 100 gallons. Apply when the king fruit is 11 to 12 mm in diameter.

Roy Newman reports good thinning results on mature Rome trees with 7.5 ppm of NAA, plus 3/4 pint of Tween 20, plus 1 pound of Sevin per 100 gallons.
These suggestions should be used as a guide in making your apple-thinning decisions. Modify these suggestions according to your past experiences in each block and variety. Treeage, soil and climate conditions, cultural practices, tree vigor, and timing all influence the effectiveness of chemical thinners.

With prospects for a large apple crop nationwide, it may be more profitable to overthin than to underthin.

**DISEASES**

**APPLES**

The rust diseases require control measures beginning at pink-bud and continuing until the third-cover stage. The disease cycle of the rust fungi is complex, involving two plants (apple and red cedar). At this time of year, spores are being released from cedar trees where the fungus overwintered. These spores originate from bright orange, gelatinous galls that are 1/4 to 2 inches in diameter during rainy periods in the spring.

Control measures include irradiating infected red cedars, and using fungicide sprays (dithiocarbamate fungicides). Check cedar trees in the vicinity of the orchard (up to two miles). If the "cedar apples" are orange and gelatinous, continue spray applications. If possible, remove these infected cedar trees and thereby eliminate the inoculum source for future years.

Powdery mildew is always a problem in some areas of Illinois. Controlling this disease is best accomplished by applying a mildewicide (Benlate, sulfur, Dikar) on susceptible varieties (Jonathan, Rome Beauty, Cortland, and Idared) until terminal growth stops in the summer. Removing infected twigs which are now evident is also desirable.

**PEACHES**

The peach crop is set in most orchards. To bring this crop to market in excellent condition, peach scab and brown rot must be controlled. Sulfur applied in the cover sprays will do this adequately at a reasonable cost. Therefore, sulfur sprays on peaches at 10- to 14-day intervals is suggested until preharvest. Benlate is the best brown rot fungicide currently available; therefore, four weeks prior to harvest switching from sulfur to Benlate and spraying at 7-day intervals might be tried.

If your peach orchards receive hail this year, the immature fruit may become infected with brown rot. As soon as weather conditions permit, apply Benlate. Benlate applied soon after hail should prevent infection long enough for the wounds on the fruit to heal.

Brown rot on nectarines is always a more serious problem than on peaches. Hence, Benlate is recommended for full-season usage.

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STAGES OF DEVELOPMENT

In area A, apples are 10 to 14 days past the petal-fall stage; and peaches have their shucks off. In area B, apples are three to five days past petal-fall; and peaches are starting to shed the shucks. In area C, apples are in late-bloom to early petal-fall; the peaches are just past petal-fall. In area D, apples are in the tight-cluster to cluster-bud stage.

THINNING ROME APPLES

Last week we misquoted Roy Newman on thinning mature Rome trees. We said he had good results with 7-1/2 ppm of NAA, plus 1 pound of Sevin, plus 3/4 pint of Tween 20 per 100 gallons. Roy used 3/4 pint of Tween 20 per 500-gallon tank, rather than 3/4 pint of Tween 20 per 100 gallons. Therefore, his formula was 7-1/2 ppm NAA, plus 1 pound of Sevin, plus 2-1/2 ounces of Tween 20 per 100 gallons.

In their latest newsletter to fruit growers, Purdue specialists say that in their experiments Sevin has produced an overthinning of Rome and Gallia Beauty. They do not recommend Sevin for thinning these varieties. We have not had any experience with Sevin on Rome at Urbana.

TWEEN 20 SUPPLIES ARE SHORT

Dealers report that Tween 20 is hard to find. The Colloidal Products Division of Kalo Laboratories has a product called Regulaid which is supposed to "increase the effectiveness of NAA, Alar, and Ethrel thus permitting lower doses." We have had no experience with this material at Urbana. We will try some this year.

If you can't find Tween 20, use NAA at the full rate. Our experience is that Tween 20 has little or no effect on Sevin.

DISEASES

PEACHES

Many peach growers are experiencing a severe leaf-curl problem this year. There are many possible reasons for its severity.

First, the fungal spores are very hardy and may remain lodged in twigs for two or more years. This fact combined with the recent history of peach...
production in Illinois (no crop, no sprays) means that abundant inoculum was present. A second reason curl is so severe is that cool, wet weather during bud break prevented the maturation of leaf tissues, thus prolonging the time during which infection can occur. A third possible reason that curl is so severe is that the fungicide spray must be applied before the buds swell on a dry, calm day when the temperature is above 40°F.

Diseased leaves will fall and be replaced by new growth. The disease will not spread any further this year.

APPLES

Recent research at the North Carolina Agricultural Experiment Station by Drs. Sutton and Clayton concerns necrotic leaf blotch (NLB) of Golden Delicious apples. NLB occurs throughout Illinois, usually appearing in June or July. NLB is a relatively new malady, first observed ten to twenty years ago. It occurs in most of the major apple-growing areas in the Eastern United States. The symptoms include leaf spotting, followed by a yellowing of the leaves (chlorosis) and a severe defoliation. Only Golden Delicious and its sports are affected. Generally, the leaves on more-vigorous growth (bull canes and water sprouts) are affected first.

North Carolina researchers believe that NLB is not caused by a fungus, bacterium, ozone (an air pollutant), or a nutrient deficiency. They believe that the severity of NLB depends on leaf maturity and special, environmental factors— including soil moisture and air temperature. Therefore, NLB is thought to be a physiological disorder peculiar to Golden Delicious.

It has been our observation in Urbana that NLB is definitely associated with certain climatic conditions, such as inversion layers. Such layers generally provide weather conditions similar to the ones favoring the development of NLB. However, such layers frequently contain high levels of air pollutants. Ozone, one such pollutant, does not cause NLB symptoms; but other air pollutants were not investigated in North Carolina, and they may be the causative factor.

A very interesting observation is that certain fungicides will control NLB. These fungicides were tested in North Carolina, and their effectiveness in 1973 trials is given below:

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Rate (lb./100 gal.)</th>
<th>NLB index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dikar</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Captan</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Benlate</td>
<td>1/2</td>
<td>39</td>
</tr>
<tr>
<td>Dithane M-45</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Check</td>
<td>...</td>
<td>58</td>
</tr>
</tbody>
</table>

Since a pathogen does not appear to cause NLB, it is difficult to assess the role of fungicides in reducing NLB. The effect may be indirect, by altering leaf physiology. Fungicides containing metal ions (Dikar, Dithane M-45, Manzate 200) were the most effective ones. Perhaps growers might try one of the above fungicides on a block of Golden Delicious to see if it reduces NLB. Be sure to leave a few unsprayed control trees or to spray the controls with another fungicide for comparison purposes.
INSECTS

If aphids are not controlled before bloom, a systemic insecticide should be used at petal-fall, since the leaves will be tightly curled and the aphids will be hard to hit. While the aphid populations observed so far have not been high, rosy apple aphids have been easy to find and they do much of the fruit damage. Fruit damage can occur at the petal-fall stage, so control should not be delayed.

Petal-fall and first-cover sprays are important when plum curculio are present, or may come in from nearby wooded areas, or when leaf-chewing insects have not been controlled. These sprays also kill codling moth adults to prevent egg-laying.

During or shortly after bloom is also a good time to check on the effectiveness of oil sprays against red mites. During this time, they are very tiny but can be found on the oldest leaves near the branches. They are usually easy to see in the center of the tree. The more you see at this time, the sooner you need to begin watching their development closely in the period three to six weeks after bloom.

Some of the mites begin to mature between petal-fall and first-cover. They then disperse over the tree and are more difficult to find. Most of the predatory mites remain in the ground cover for several weeks after bloom, and are not much affected by light, thinning sprays of Sevin. It would be best not to mow just before or after spraying with Sevin, as this would reduce the protective cover of the predatory mites.
No. 8--May 18-May 24, 1975

STAGE OF DEVELOPMENT

In area A, apples are too large for thinning with NAA; but Sevin should still be effective if applied in the next day or two. In area B, some varieties are too large for NAA thinning. In area C, apples are approaching the NAA-thinning size. In area D, apples are in bloom.

APPLE THINNING

In areas A and B, Jonathan and Red Delicious appear to be thinning themselves in most blocks. Golden Delicious trees that had a good bloom and are heavily set will need chemical thinning.

Allen Myers applied Amid-thin, 60 p.p.m., at 90-percent petal-fall on Stark-rimsons with heavy bloom, and was pleased with the results.

PEACH THINNING

In area A, peaches are thinning themselves much more than had been expected, considering the heavy bloom and early set. Some varieties will not need mechanical thinning.

JERK WATER SPROUTS

In areas A and B, water sprouts are growing rapidly but are still tender and can easily be jerked out. This is a fast and efficient method of removal. They will toughen later, 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.

DISEASES

APPLES

Primary apple-scab infections are now sporulating on unsprayed trees in Urbana. This means that secondary scab infections may become a problem. These spores (conidia) require a shorter wetting period (6 to 8 hours) to cause infections than do ascospores. New scab infections resulting from these conidia will produce more conidia in seven days. Therefore, it is important to keep a protective
coat of fungicide on apple foliage. There are many excellent protective fungicides; both Benlate and Cyprex are thought to suppress lesion development and sporulation.

Many growers are reporting problems with powdery mildew this year. Blighted blossoms have been observed in area B. Once established, mildew can spread rapidly. Control measures must be continued until the third-cover stage. Thorough coverage is essential; place special emphasis on the tree tops. From about two weeks after petal-fall until early August, powdery mildew begins to invade the buds where it overwinters. Control now will eliminate some of this carry-over. Do not apply sulfur or Karathane when temperatures are 85°F. or above.

There have been no reports of fire blight thus far this year. However, moist and warm weather has allowed bacterial populations to increase in cankers. So, the next problem most orchardists in areas A and B will face is the twig-blight phase of fire blight. Wind-driven rain and insects will move the bacteria from infected blossom clusters and cankers to actively growing shoots. Continue streptomycin sprays at seven-day intervals on susceptible varieties.

Each spring, rain causes "cedar apples" to discharge more rust spores. These "cedar apples" will not exhaust all their spores until the apple trees are at the third-cover stage. Continued spraying is advisable if red cedars are near your orchard (1 to 2 miles).

PEACHES

Recent Extension Service information from Missouri recommends a special fungicide spray to stop secondary peach-curl infections. In our experience, secondary curl infection has been rare and of no economic importance. Very special climatic conditions are required for secondary infection. Such weather patterns are not likely to occur in southern Illinois. Your normal spray program should prevent the unlikely possibility of further spread.

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STAGE OF DEVELOPMENT

In area D apples are in the late-bloom to early petal-fall stage. In areas A, B, and C, apples are in the cover stages.

PEACH THINNING

Peaches are starting to loosen in area A, and are about ready for mechanical thinning. Varieties may be slightly different in terms of the time they loosen. Peaches usually remain loose for ten to fifteen days, then tighten up again when the pit starts to harden.

ALAR-ETHREL TO INITIATE BLOOM ON YOUNG TREES

Last year, we discussed Dr. Max Williams' work at the USDA Experiment Station at Wenatchee, Washington, using Alar-Ethrel to initiate bloom in young trees. Dr. Williams' best results came from using 1 pound of Alar plus 1 pint of Ethrel applied four to five weeks after full bloom. We suggested that you might like to try this treatment on a few trees.

Paul Sussenbach of Pocohantas applied this combination to five rows of Starkrimson. The Alar-Ethrel reduced terminal growth and encouraged fruit spurs. This spring, the bloom on the treated trees was much heavier than on the untreated trees; but at present, the fruit set does not appear to be much better.

Bob Edwards of Poplar Grove treated young Imperial Red and Red Prince Delicious, and slightly older Starkrimson trees. The bloom on the treated Imperial Red and Red Prince is about twice as heavy as on the checks. Treated Starkrimson trees have about 50 percent more bloom than the checks. These trees are in late-bloom to early petal-fall.

At Urbana, our trials on spur Red Delicious and spur Golden Delicious were inconclusive because the check trees came through with a good bloom. The Alar-Ethrel definitely increased the bloom on Law Rome trees. It is too early to determine the fruit set.

Alar is in short supply this year, and you probably will not be able to buy any. Ethrel alone applied four to five weeks after full bloom should have some effect.

DISEASES

Much of southern and central Illinois experienced an "ozone watch" on May 17, 18, and 19. This generally means an inversion layer was present. Such
layers are associated with high pollution levels, and pollution seems to cause Necrotic leaf blotch (NLB) of Golden Delicious. Therefore, please observe your Goldens regularly until about May 29. If leaf chlorosis develops, please send us a sample or, at least, a note confirming the presence of NLB.

Excessive rainfall in parts of areas A and B is encouraging secondary scab infection. Keep a full fungicide program going until dryer weather comes.

Very little fireblight has been reported, either the blossom-blight or the shoot-blight phases.

INSECTS

Warm weather has hurried several events in orchards in areas A through C. The emergence of codling moths is probably complete in the south. A peak was reached in Quincy about May 20. Oriental fruit moth will be maturing and leaving terminal twigs in area A, so now is a good time to watch for wilted twigs to see if the population level is very high. After two years without a crop, the population could have increased. Mites also do well in hot weather. While they probably have not reached a damaging level yet, they may be increasing rapidly; so look in areas where they have been troublesome and have appeared early in past years. The ground cover is still quite green, which means the predator mites probably have not started to move into the trees.

Hot weather also may cause difficulty in using oil with fungicides. The small leaves first out of the buds will turn yellow and drop first if there is damage. Then some of the larger leaves get burn spots on the tips and edges, turn yellow, and drop. Usually, it is very light damage. Hot weather decreases the threat of disease infection, so growers might wish to change to fungicides alone if hot weather persists. The oil suppresses mite populations, including predatory mites, if applications continue after the mites start entering the trees.
STAGE OF DEVELOPMENT

In area D, apples are approaching the size for chemical thinning with NAA. In area A, Redskin, Rio-Oso-Gem, and Redhaven peaches are loose and are ready for mechanical thinning.

HEAVY APPLE DROP

Reports from around the state indicate a fruit drop heavier than normal in some blocks of apples. Jonathan normally has a heavy drop, so chemical thinning sprays are not usually needed. In contrast, Golden Delicious usually does not thin itself with a heavy drop. But this year the drop is heavy in a considerable number of Golden Delicious blocks.

SUMMER ORCHARD FIELD DAY JUNE 12

The Summer Orchard Field Day of the Illinois State Horticulture Society will be held Thursday, June 12, from 9:00 a.m. to 4:30 p.m. The field day will start at Stark Brothers' Nursery, Louisiana, Missouri, and will end at the Carl Penstone Orchard at Griggsville, Illinois.

At Stark Brothers' Nursery we will see "scion blocks," virus indexing blocks, the Louisiana test orchard, cold storage and packing facilities, and production fields.

At the Penstone Orchard we will see 3,000 C-Series interstem trees. Since 1969 Carl has planted 500 to 700 interstem trees each year. This is the largest and oldest planting of C-Series interstem trees in Illinois. If you are interested in this new type of dwarfing stock, you will not want to miss the visit to the Penstone Orchard.

MORE RESULTS FROM ALAR-ETHREL TREATMENT

Last week we reported on Bob Edwards' results from the application of Alar-Ethrel on young Imperial and Red Prince Delicious trees to initiate bloom. The treated trees had twice as much bloom as the untreated trees, but fruit set on the treated trees was light. Bob says the crop on the treated trees at the present time is about the same as that on the untreated trees.

DISEASES

PEACHES

Continue fungicide protection of peach and nectarine varieties to control peach scab until 40 days prior to harvest. Brown rot must be controlled
until harvest. This disease becomes increasingly more serious as the fruit ripens, so spray more frequently as harvest approaches.

APPLES

Primary infections of many diseases have occurred in many orchards. Climatic conditions at this time of year affect disease incidence and severity. Warm summer weather is not ideal for disease development. For example, the wetting period for apple scab infections must be of longer duration when temperatures exceed 75° F.; the fire blight bacterium is less active when temperatures exceed 85°; and powdery mildew infection and growth is reduced by temperatures above 80°. Therefore, if you have controlled primary (spring) infections, the battle is nearly won. If any disease is not adequately controlled at this time, special effort will be necessary to prevent spread and to bring an acceptable crop to market.

Cedar apple rust spore horns should be exhausted in area A, nearly so in area B, and about one week from being finished in area C. Once the cedar apples are finished, control is no longer necessary.

There have been several reports of serious blossom blight in many orchards. This situation is most serious because thunderstorms and strong winds can spread this disease to young terminals where shoot blight can be devastating. Streptomycin sprays should be continued at 7- to 10-day intervals until 50 days prior to harvest.

Bot rot (Botryosphaeria) on Goldens is generally a problem on older trees. Phaltan is an excellent fungicide for controlling this disease. Sprays should not be started until fifth cover to avoid fruit injury.

INSECTS

It is time for the first lesser peach tree borer spray to be applied in areas A and B. At Belleville on May 21 more than two-thirds of the borers were in the last larval instar and the pupal stage. This means that many moths are now emerging to lay eggs. Take special care to make sure spray coverage hits every part of the tree scaffolds where gummy wounds are located. If you do a good job of spray coverage now and again during the third week of August, you will reduce the population and keep it from causing undue damage to the trees. Growers should adopt the same attitude toward this pest as they do toward such pests as Oriental fruit moth and codling moth; that is, keep them out as much as possible; you don't want to allow any to get started in young blocks.

If San Jose scale were discovered on fruit last harvest or if you know an area that has been infested recently, you should examine the trees again soon after the time the third cover spray is applied on apples. If new scale crawlers are being produced, you should be able to find either new-set scale or small red or purple spots on new growth near areas where old scale populations can be seen. If you find this new evidence, you will probably be able to find adult females in the most protected spots among the old populations. This requires the use of a sharp point to lift the covering scale and a magnifying glass to see the scale. Parathion and diazinon are most effective against all ages of San Jose scale.
It is also time to start keeping a careful watch for the increase of mite populations in areas A and B.
No. 11--June 8-June 14, 1975

This is the last weekly issue of the Spray Service Report. The next issue will reach you in two weeks. Next week we hope to see you at the Summer Orchard Field Day of the Illinois State Horticultural Society, Thursday, June 12, from 9:00 a.m. to 4:30 p.m. We will meet at Stark Brothers' Nursery, Louisiana, Missouri, and later visit the Carl Penstone Orchard at Griggsville.

PEACH THINNING

In area A growers should finish mechanical peach thinning in the next few days before the fruit gets tight again on the tree. In area B peaches are loose and ready for thinning. They should be loose in area C in a week or two.

HAIL HITS QUINCY AREA

Golf-ball-size hail accompanied by strong winds hit the downtown Quincy area last week. Fortunately the Graham and Edgewood orchards were at the edge of the hail area, and the hail hitting these orchards was about the size of grains of rice. However, these small hailstones driven by strong winds cut the skin of young apples.

STABILIZING LOOSE TREES

Thundershowers accompanied by gusty winds sometimes cause young trees to become loose in the ground. The easiest way to stabilize loose trees is to mound pea gravel or sand around the trunk.

REMOVE SUCKERS AND WATERSPROUTS TO AID IN FIREBLIGHT CONTROL

On varieties susceptible to fireblight, watersprouts and suckers are especially vulnerable to fireblight infection because of their vigorous tender growth. If a watersprout arising from the trunk becomes infected and the infection extends to the trunk, the entire tree may need to be removed. You can prevent this problem by jerking watersprouts and cutting out suckers.

DISEASES

Weather conditions changed dramatically since our last report. Cooler temperatures, frequent rains, high winds, and reported hail in many areas have been ideal for diseases. Apple scab, fireblight, and wound-invading pathogens (Bot rot, black rot, Valsa canker, peach brown rot) are all potentially serious problems. Accelerate control measures until hot dry summer weather returns. Phaltan is an excellent fungicide for controlling both black rot and Bot rot, but should not be applied before fifth cover on Golden Delicious.

There are many reports of fireblight strikes throughout the state. When twig blight occurs this early and so frequently, it suggests we may have a very...
severe problem this year. Continue to apply streptomycin at 7-day intervals until 50 days prior to harvest. Maybe we can hold the blight situation at an acceptable level.

INSECTS AND MITES

Insect control seems to be good. In years when frequent sprays for disease control are required, insect control is usually good. A few codling moths may still be around in southern Illinois and in areas B and C. Moth emergence probably has not reached a peak in area D. Second-brood Oriental fruit moth will still be hatching on peaches.

Rain and cool weather tend to retard development of red mites. Ground cover is still growing well, and predator mites may be delayed in moving into trees. Pick out areas where red mites normally become severe or show up first and watch these closely, but occasionally look elsewhere. Most growers have had enough years of experience now to know when to rely on predators. Except where there have been outbreaks in the last several years, our impression is that many still use miticides when not really necessary. But experience with your own orchard is your best teacher.

If you have not found any live scale yet and know you had some last season, don't assume you have it beat. Check troublesome areas several more times during the season to avoid surprises at harvest.
No. 12--June 22-July 6, 1975

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.

Apply 3/4 pound to 1 pound of Alar per 100 gallons (750 to 1,000 ppm) on trees with normal vigor. Increase the rate to 1-1/2 pounds per 100 gallons on very vigorous trees. Do NOT apply Alar on trees low in vigor or on trees with an excessive load of fruit. Apply Alar alone when no rain will occur for 12 hours.

Alar is in short supply this year, and you may want to stretch the amount you have on hand. The manufacturers of Alar reports that it is now being shipped to distributors and should be available to growers very soon.

Research in other states indicates that Tween 20 and Regulaid increase the absorption of Alar, enabling lower application rates. Alar at 1/2 pound per 100 gallons (500 ppm) plus 1 pint of either Tween 20 or Regulaid per 100 gallons has given results similar to application rates of Alar alone at 3/4 to 1 pound per 100 gallons (750-1,000 ppm).

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 applied 60 to 75 days prior to normal harvest date followed by Ethrel has proved to be a good combination.

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

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 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 this physiological
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 gallons 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.

DISEASES

Now is the time to become familiar with harvest restrictions relating to all pesticides used on peaches. Check labels CAREFULLY.

Peach varieties that will mature before August 1 should not need any further fungicide sprays for peach scab control. Brown rot control measures should be continued as needed. Benlate is excellent for brown rot and should be applied on a 7-day schedule beginning 3 to 4 weeks prior to harvest.

The recent heavy and wind-driven rains should bring serious bacterial spot problems on peaches. Symptoms on the leaves include angular lesions which fall from the leaf giving a "shot hole" appearance. Severely infected leaves turn yellow and fall to the ground. Fruit infected at this time of year will develop cracks and fissures in the skin, thus allowing brown rot a foot-hold. Some spray programs help control bacterial spot. However, these programs only suppress development of the disease—they do not eliminate it. Captan (1 pound) and Cyprex (1/2 pound) seem to be the most effective spray program for this disease.

Weather conditions are not only ideal for the bacterial spot organism but are ideal for all bacterially caused diseases. This means that we are in for another bout with fire blight. Continue streptomycin sprays! A bacterial disease of less importance may also be more severe this year. This disease, blister spot, can be very severe on Mutsu and to a lesser degree on other susceptible varieties (Red Delicious, Golden Delicious, and Jonathan). There is no known control measure for this disease.

INSECTS

Codling moth is between broods in Areas A and B, is tailing off in Area C, and will soon be reaching peak hatch in Area D. In peach-growing areas, the second-brood Oriental fruit moth larvae are maturing and leaving twigs, so flagged terminals should now be evident.

There have been scattered reports of mite population all over the state in spite of cool, wet weather. Overall, very little control has been required. Apple aphids are favored by the cool weather and may be found on inside fast-growing terminals in some orchards. They do not cause problems on mature trees until they become
numerous enough to drop honeydew on the fruit, which then turns black with fungus growth and is difficult to remove from the fruit. In most years, hot humid weather allows a fungus to reduce aphid populations so that our normal spray schedules gives adequate control.

In Area D apple maggots begin emerging at this time of the year. They move about, feeding in the manner of houseflies for about one week and then begin to seek hosts to lay eggs. They prefer thin-skinned or ripening fruit. Experienced growers watch neighboring unsprayed trees for development, and attempt to either get unsprayed trees cared for or removed. Peak egg-laying generally occurs in the last 2 weeks of August.
APPLE AND PEACH HARVEST STARTS

Lodi apple harvest is now underway in the southern part of Area A. A few early peaches are being picked, but the volume is too small for commercial shipment.

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.

CHECK YOUNG TREES

Red-banded leaf roller, tentiform leaf miner, grasshoppers, and other chewing insects can defoliate young trees. Leafhopper feeding reduces the efficiency of the leaves. Damage to the bark of the young shoots by Buffalo treehoppers can seriously reduce growth. Since young trees are not usually included in the regular spray program, check young trees periodically and apply apple insecticides when needed.

DISEASES

There is little new to report on fruit diseases occurring in the state. We are still receiving scattered reports of the rust diseases, scab, and black rot. These have been controlled in most orchards. Fire Blight and powdery mildew are especially severe this year. The powdery mildew fungus is now invading fruit and terminal buds where it overwinters. Little can be done to reduce bud infection at this time, so resolve now to do better next year.

Fire Blight has run "amuck" through many orchards. Further spread of this disease can be slowed if hot weather prevails and streptomycin (watch the harvest restriction) is applied regularly. This disease will cease being a problem when rapid growth stops and the terminal bud sets. If cool, rainy weather reoccurs, fire blight will become very active again.
The summer apple diseases (flyspeck, sooty blotch, black rot, bitter rot, bot rot) require control for the remainder of the season. Many fungicides are effective; and the spray intervals can be extended to two or three weeks, depending on weather.

Ozone watches occurred on June 22 and 29 in many areas of the state. Watch for Necrotic Leaf Blotch (NLB) on Golden Delicious leaves. Please report to Steve Ries (U Horticulture Field Lab, Urbana, Illinois 61801) if NLB occurs. Include the date you observed it and a copy of your recent spray program. Thanks!

INSECTS

July 4 is usually the time we see the beginning second brood hatch of codling moth, the second brood emergence of adult plum curculio, and the third brood hatch of Oriental fruit moth in Area A. Codling moths and Oriental fruit moths usually reach their peak hatch about one week later. Area D is usually a week behind Area A, and Area C about 1-1/2 weeks later than Area B.

A thorough search of your orchard should reveal the presence of insect damage that occurred earlier in the year and, therefore, what population levels will need control at this time. Aphids have been reduced by fungus disease and predators. A few severe mite populations were observed last week. Peach growers who have had mite problems in the past years should look closely now to see if controls will be required before harvest. Growers who have had scale problems should check trouble spots several more times during the remainder of the season. Peach growers who apply three borer sprays should check harvest restriction dates to make sure the mid-season spray goes on in time. All peach growers should plan ahead carefully to make sure a borer application gets on after harvest. Good coverage of wounds, rough bark, and gummy areas is most important.

1975 ILLINOIS GROWERS QUALITY APPLE CLUB

We are enclosing an application for the 1975 Illinois Growers Quality Apple Club. We have had inquiries concerning judging procedures. For the results of previous years' judging, consult the Transactions of the Illinois State Horticultural Society. In recent years, the pest-damage factors become increasingly less important as the amount of pest damage decreased. The original aim of the club to encourage better pest control was no longer needed. Now, the total management of all production factors seems to be the criterion for judgement. Since an entomologist, plant pathologist, and pomologist have teamed up to judge the orchards in the past and since these three areas of speciality have been the ones most required for help in production, the judging has continued to be done near the end of field production and is made in the field.

To make the results somewhat like the requirements for packaging fruit, U.S. fruit grades excluding color are now used. The fruit are thus separated into five categories, and an arbitrary standard of points is used to arrive at a score of the fruit itself. But other management practices are so very important in the final result that some other means of comparing orchards had to be developed by the judges over the past years. These include such practices as pruning and sanitation, and the total management over the years that determines such things as uniformity of the orchard and the fruit. Then there are factors which are and are not manageable, but still result in the fruit finish at harvest. Some of these are obviously and unavoidably tied to human judgement, and so are rated in six categories and each graded from 1 to 10.
The fruit score should reflect what is there in terms of how the grower can grade it out. The rating score is the judges' opinion of how you compare with your fellow growers in getting the production-management job done. The fruit-count score and management factor score together give us a score that rates your crop and orchard against other orchards we judge, and selects a top grower each year. The tour is a good time for the inspection team to evaluate what happened during the season and a challenge in terms of what we can do to help growers achieve even better management and produce a really great crop in the great State of Illinois.

Stephen M. Rieg
Assistant Professor
of Plant Pathology

Ron Meyer
Fruit
Entomologist

Daniel B. Meadow
Extension
Horticulturist

Malcolm C. Schuittoff
Extension Plant
Pathologist

Hocoe Randall
Assistant Professor
of Agricultural Entomology
PEACHES

The peach harvest in Area A is in full swing. There are no time restrictions concerning the use of Benlate on peaches and nectarines. Benlate gives outstanding control of brown rot if applied on a seven-day schedule prior to harvest. Benlate will not control *Rhizopus* rot, therefore Botran is recommended for use in the hydrocooler water.

We believe that it is very important to control brown rot on varieties that mature early. If brown rot is not controlled on early peaches, inoculum (fungus spores) can build up and be easily spread to adjacent, later-maturing varieties.

APPLES

Necrotic leaf blotch (NLB) symptoms are appearing in certain upstate areas. They have had several ozone alerts this summer, with accompanying inversion layers. If you are observing a yellowing of leaves followed by defoliation on Golden's, please write, send leaf specimens, and include a copy of your recent spray program.

Powdery mildew is still causing considerable damage in tree tops in Areas A and B. Emphasis must be placed on tree-top coverage and on complete wetting. Chris Doll reports that mildew is controlled in orchards which were sprayed dilute, possibly because the leaves are wetted more evenly.

Reports of resistant strains of *Venturia inaequalis* (apple scab) to Benlate are appearing in various Extension Service publications from other states. This problem has only been reported in southern Michigan. Dr. Alan Jones at Michigan State University has found two different orchards with resistant scab fungus. Both orchards have been on a complete Benlate program for three years. This type of spray program places extreme selection pressure on the scab fungus. As we discussed in Issue No. 3 of this year's newsletter, it is much wiser to alternate pesticides and to check effectiveness regularly. If you feel that a pesticide is not performing adequately, substitute an alternate material immediately. Then send a sample to us so we may verify resistance.

Growers in Illinois may be able to avoid fungicide tolerance only if they evaluate their current disease-management programs and educate their fellow growers about potential problems. Each grower should ask himself the following questions: Do I use one material or group of related materials exclusively? Do I use the recommended rates? Do I alternate sprays with different types of fungicides? Only by careful appraisal of our own management practices and evaluation of other's mistakes can Illinois growers avoid similar problems in Illinois.
INSECTS

The hatch of second-brood codling moths will begin soon in Area C, and should be reaching a peak in Area B. Third-brood Oriental fruit moths and red-banded leaf rollers appear at the same time as the second-brood codling moth and plum curculio.

Keep watch in any orchard area where you have not seen mite populations stabilize. If you watch mite populations closely, you will usually see them begin to increase rapidly and then even-off and remain at a low level when predators are controlling them. If you have not seen any red mites, predators may be controlling them; but there is also always the potential for a sudden increase unless you have actually seen these predators. The best practice is to make a few close observations periodically, in order to avoid surprises. There is no such thing as a "normal" season, and this one has had its own surprises.

In the northern part of the state, watch for a greater-than-normal pressure from apple maggots. Populations will be increasing now, and will continue to increase until late August.

Stephen M. Rieb
Assistant Professor of Plant Pathology

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Daniel B. Meador
Extension Horticultrist

Malcolm C. Shultoff
Extension Plant Pathologist

Roscoe Randell
Assistant Professor of Agricultural Entomology
APPLE CROP ESTIMATE

The USDA estimate for the 1975 apple crop is 228,100,000 pounds (173.4 million bushels). This is 13 percent above the 1974 crop.

<table>
<thead>
<tr>
<th>Central states</th>
<th>1974</th>
<th>1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>79.0</td>
<td>112.0</td>
</tr>
<tr>
<td>Indiana</td>
<td>38.2</td>
<td>88.0</td>
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<tr>
<td>Michigan</td>
<td>670.0</td>
<td>720.0</td>
</tr>
<tr>
<td>Missouri</td>
<td>53.0</td>
<td>58.0</td>
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<tr>
<td>Other central states</td>
<td>262.4</td>
<td>309.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>1,287.6</td>
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<table>
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<tr>
<th>Eastern states</th>
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<td>North Carolina</td>
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</tr>
<tr>
<td>Pennsylvania</td>
<td>480.0</td>
<td>550.0</td>
</tr>
<tr>
<td>Virginia</td>
<td>373.4</td>
<td>450.0</td>
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<td>Other eastern states</td>
<td>742.5</td>
<td>861.5</td>
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<tr>
<td><strong>Total</strong></td>
<td>2,779.9</td>
<td>3,221.5</td>
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<table>
<thead>
<tr>
<th>Western States</th>
<th>1974</th>
<th>1975</th>
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<tbody>
<tr>
<td>California</td>
<td>440.0</td>
<td>460.0</td>
</tr>
<tr>
<td>Washington</td>
<td>1,775.0</td>
<td>1,900.0</td>
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<tr>
<td>Other western states</td>
<td>345.0</td>
<td>413.0</td>
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<tr>
<td><strong>Total</strong></td>
<td>2,560.0</td>
<td>2,773.0</td>
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</table>

**United States total**

<table>
<thead>
<tr>
<th>1974</th>
<th>1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,442.5</td>
<td>7,282.1</td>
</tr>
</tbody>
</table>

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 15ppm 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 combination.

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 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 about 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.

Ethrel is most effective when the days are sunny and pleasant (temperature below 86° F.) and nights are cool (temperature below 63° F.) It is NOT effective when hot days and warm nights follow its application.

The best results in Illinois have been on Jonathon and spur-type Red Delicious. Ethrel matures Starking but does not add much color, so it is not suggested on Starking. Results with Ethrel on Golden Delicious have been variable.

Ethrel should be applied 10 to 14 days before the desired harvest date for the treated trees. On a specific application day, 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 apples, so NAA (15 ppm) or 2,4,5-TP (15 ppm) or a combination of NAA (10 ppm) plus 2,4,5-TP (10 ppm) must be applied with the Ethrel. Amchem also suggests adding a surfactant (Tween 20, Triton B-1956, X-77P) at the rate of 2 ounces per 100 gallons.

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.
Ethrel-treated apples should go to market promptly instead of into prolonged cold storage.

DISEASES

Growers should check labels on all pesticides currently used in their apple orchards and abide by all harvest restrictions. Benlate, Captan, Phalan, and sulfur have no time restriction between the last application and harvest. Zineb has a 15-day restriction, Dikar and Dithane M 45 have 21-day restrictions, Polyram a 30-day restriction, and Streptomycin a 50-day restriction.

The threat of fire blight is nearly over for this year. Terminal buds on Jonathan are forming in Area C. When these buds form, trees are no longer very susceptible to blight. Control for next year depends upon a careful pruning of all infected wood during dormancy. If blight was severe in your orchard this year, a clean-up spray of copper sulfate or Bordeaux at bud break next spring might be considered in addition to streptomycin sprays during bloom.

Powdery mildew has run its course. The fungus has invaded buds where it will overwinter. Growers with powdery mildew troubles should resolve now to control this disease next year.

Only the summer diseases now pose a serious threat to this year's harvest. Continued control is suggested for black rot, bitter rot, fly speck, sooty blotch, and Bot rot.

Growers in New Zealand reported a Benlate-tolerant strain of Venturia inaequalis (apple scab) last year. A recent conversation with Don McKenziel of the New Zealand Export Board indicated that the Benlate-resistant strain is also resistant to many other systemic fungicides commonly used there. Topsin M, a relatively new fungicide to Illinois growers, is of the Benlate type. Therefore, if you plan to alternate fungicides next year, which we recommend, don't alternate Benlate and Topsin M.

INSECTS

Second-brood codling moth will be reaching peak hatch in Area D, and growers in both Area C and D should continue to be aware of the possible threat of apple maggot. It is possible for maggots to become a problem further south than normal with the abundant rain that has been occurring during early and mid-season the past two years. A good indicator is to check unsprayed trees near your orchard.

In areas A and B peach harvest is well under way. Growers with both peaches and apples should be careful to keep apple mite populations under observation. Predatory mites would have moved into trees by now and if many red mites are present, you should see predators or have a miticide ready. We have had no reports of spotted mites.

Peach growers should be aware that lesser peach tree borers will soon reach a second peak in moth emergence and egg-laying. August 1 is a good target date for a borer spray on all trees with no fruit, and the other varieties should be covered immediately after harvest is complete. Don't send just anyone out to put on that spray; thorough coverage is the most important factor in keeping borer numbers low.
A last reminder for apple growers who have had San Jose scale--look in the thickest trees in areas where scale have been observed to make sure they have not been building up again. If you have a control problem, you should be able to readily find red or purple spots on water sprouts or other new growth and fruit near areas where old scales are located. These areas are usually the hardest to hit with a sprayer and the hardest to get to and examine.

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This is the last regular Spray Service Report. Additional issues will be sent as needed.

**LAST CALL FOR QUALITY APPLE CLUB APPLICATIONS**

Quality Apple Club inspections will start on Monday, August 25 in southern Illinois. If you wish to enter the competition and have not sent in your application, do this so we will receive the application by August 22. If you have mislaid the application form, use a blank sheet of paper or call us.

**SUGGESTED DATES FOR STARTING APPLE HARVESTS**

For the past several years, we have been listing Dr. Lett's suggested start-of-picking dates for an average season. Maturity will be about 10 days later, with ripeness several days after maturity. We think these dates are still valid for getting high-quality apples on the supermarket shelves.

<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**

Holding apples in cold storage can only maintain their quality and condition, but it cannot improve them. Therefore, storage apples should 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.

The first apples of a variety to be picked usually 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 generally are too close to being ripe. These 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 will 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 but 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. These can be 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.

THE WHOLESALE MARKET OUTLOOK

The USDA estimate for the 1975 apple crop is 13 percent above the 1974 figure. The eastern, western, and central states are expected to have more apples this year. With this larger crop nationwide, what are the market prospects for Illinois apples?

Fortunately, most Illinois apples go to the fresh market instead of going to processors. Carryover stocks of canned and frozen apple products are higher than last year; thus, the processing market probably will be dull. A prime reason for the larger carryover is a consumer switch to more fresh produce. Sales of fresh fruits and vegetables were up last year, but sales of TV dinners, canned and frozen fruits and vegetables, and cake mixes were down.

Growers in the two big processing states, New York and Michigan, may have to divert some apples from their normal processing market to the fresh market. If this happens, the fresh market may be temporarily depressed. However, that should not occur until the latter part of October or in November.

Washington is expecting a good crop. But they have found it more profitable to store most of their apples, and usually do not ship in volume until December. Our major competitor for the early market is North Carolina, where they are expecting only 2 percent more apples than last year.

Thus, the market prospect for Illinois apples looks good--especially during the major part of our marketing season.

THE RETAIL MARKET

Retail sales at the orchard, through sales, stands, and pick-your-own, continues to increase in popularity. This sales year should continue the pattern.

Last year, faced with a light to moderate crop and increased costs, prices were raised considerably. This year with a larger crop to move, perhaps we should consider keeping prices at last year's level rather than raising them again.
DISEASES

Apple diseases generally are under control. The summer diseases may require additional sprays. Except in special cases, disease-control programs are close to terminating for this season, especially in Areas A and B. Watch harvest restrictions.

INSECTS

By this time in the season, insect control is usually well under control, or the problems are known except where growers have gotten too busy in one part of the orchard and have forgotten another. A few reminders might help. Mite populations are usually stabilized by now, except for Area D. A fast-rising population of red mites was observed in one part of an orchard while another part of the same orchard had very good predator populations.

In peach country, while the harvest is being finished, remember to go by a few apple trees and give them a friendly pat on the trunk so they know you are not neglecting them. At the same time recall the scale, codling moth, mite, and leaf-roller situation to see if you ought to take a look here or there. Codling moths could be appearing for the third brood in Area A. And what about the borer situation on the peach trees? Will you get them covered? It's a long time from now until October when the borer hatch stops.

In the northern half of the state, apple maggots can become a real problem if you aren't watching. This is the time of the year when commercial orchards usually get outside visitors because spraying has stopped and nearby neglected trees aren't checked.
SPECIAL ISSUE: December 9, 1975

Plan now to attend the Annual Meeting of the Illinois State Horticultural Society January 13-15, 1976. This year the meeting has been moved to the Holiday Inn in Collinsville.

The meeting starts Tuesday night January 13 with a buffet dinner and informal program. A full program of speakers is scheduled Wednesday morning, Wednesday afternoon and Thursday morning. The annual banquet will be held Wednesday night.

SECTIONAL AND AREA MEETINGS

Also put on your calendar the most convenient of following sectional and area meetings.

February 3  Ramada Inn, Carbondale
February 4  Old National Bank Building, Centralia
February 10  Place to be arranged, Calhoun County
February 11  Holiday Inn, Quincy
February 17  Longhorn Cafe, Martinsville
February 21  Holiday Inn, LaSalle-Peru

APPLE DISPLAY

Last year at the annual meeting we had an apple display featuring apples grown in several areas of the United States. This year we plan an Illinois grown apple display.

You are encouraged to bring apples for display, especially new strains and varieties, unusual varieties, and old varieties not now commonly grown. Bring enough apples of each variety or strain to select a plate of 5 fruit for display.
FERTILIZING APPLES

Fall or early winter may be a more convenient time than spring for applying fertilizer to apple trees. We are usually busy with pruning, planting and other tasks in the spring.

Apple tree roots remain active in unfrozen ground. So as long as the ground remains unfrozen, fertilizer can be applied.

FERTILIZER SUPPLIES ARE UP AND THE PRICE IS DOWN SLIGHTLY

If you haven't baited for mice yet, you should do so as soon as possible. If you did bait this fall you should check your orchard periodically for signs of mouse activity during the winter. And you may want to spot treat any areas where activity is found. If your orchard borders a wooded area you may need to apply more bait to the rows bordering the woods.

Close mowing destroys cover and aids predators in catching mice. Don't put your mower away for the winter until you have mowed all of your orchard.

DISEASES

Pruning is about to begin. Proper pruning practices and good orchard sanitation is a primary control measure for two diseases (black rot or frogeye leaf spot and fire blight).

Black rot overwinters in mummified fruit and in dead wood. To reduce the carryover of this fungus, prune out all dead wood, remove all dead trees, and remove all mummified fruit. Dead wood and prunings must not be left in the orchard. It should be burned. A single dead twig the size of a pencil can have 10 or more pycnidia per inch. Each pycnidium can produce as many as 1,500 spores.

Fire blight was severe in many orchards in Illinois in 1975. At the base of each infected twig there is a small canker. Prune out ALL infected twigs. Make pruning cuts well below any fire blight canker. Remember that
one canker can supply sufficient inoculum (bacteria) to start a blight epidemic next spring.

When pruning make all cuts close. Do not leave pruning stubs. These stubs die back and become a source of black knot and Botryosphaeria rot inoculum.

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Malcolm C. Shuttelf
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