Vol. 2 August, 1944 No. 8

KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

THE PRE-HARVEST HORMONE SPRAY

By A. J. OLNEY

The value of a hormone spray for prevention of pre-harvest drop of apples seems to be well established for varieties subject to fruit drop just before the apples are mature enough to harvest. These include Red Delicious, Paducah, Rome, Jonathan, and Stayman. In tests in 1943 on these varieties in commercial orchards, the sprayed trees dropped 3 to 5 bushels per tree fewer apples than the unsprayed trees. The fruit on the sprayed trees developed good color and size, while much of the dropped fruit was poorly colored and under-sized and had a low market value. These sprays made a handsome profit for the material and labor expended.

It was also found that the fruit on the sprayed trees could be picked over a longer period. On some trees, the smaller and greener apples at harvest time were left to mature and picked later. These apples developed good color and size. Thus, small green culls were made to develop into No. 1 apples.

Some varieties rarely drop their fruit prematurely. These include Golden Delicious, Gano, Winesap, and Black Twig. On these varieties hormone sprays usually are not profitable and they may be undesirable. In one trial on Golden Delicious the fruit could not be picked without breaking the spurs until the fruit was over-ripe.

The hormone may be obtained from dealers in spray materials and it is sold under various trade names, such as Fruitone, Stop Drop, App-L-Set, Niagara Stik, and others. It should be used at the strength recommended by the manufacturer. The use of a spreader sticker helps the effectiveness of the spray. One quart of summer oil or one-half pound of soybean flour to 100 gallons of spray is suggested.

The spray should be put on thoroughly and heavily with good pressure, about ten days to two weeks before harvest time, or as soon as sound fruit begins to drop. Its effect lasts ten days to three weeks. Usually one spray is recommended, but where harvest labor is scarce the picking season may be extended for a week or two by a second spray just before the time of the normal harvest. Of course, fruit that hangs on the tree too long may become soft and overripe and lose market value.

The hormone material may be combined with a lead arsenate or fixed nicotine spray for codling moth if a serious emergence of third-brood develops in September and a late spray is necessary. It has also been found that these materials can be applied effectively in the form of dust, and commercial dust mixtures are available.

PEACH AND PLUM FRUITING TESTS—1944

W. D. ARMSTRONG and
C. S. WALTMAN

Kentucky is greatly in need of peach varieties that are hardy enough to resist both winter bud-killing and cold and frost injury during the blossom period. Weather during the winter of 1943-1944 was such that practically no peach fruit buds were killed by cold in Kentucky. This condition along with the heaviest fruit bud formation in recent years combined to produce the heaviest and showiest bloom within the memory of many commercial growers. Due to warm weather in mid-winter the blooming period was earlier than usual. In late March and early April, however, the weather was unsettled,

with several cold spells and frosty periods a week to 10 days apart during the peach-blossoming period. Each of these cold periods took a toll of blossoms; so that on some sites the entire crop was wiped out. In other locations and sections some varieties came through with practically a full crop. In general, the southern section of the state suffered heavier than the northern part; since temperatures were about the same, yet the southern section was further advanced. These conditions proved an excellent test of cold resistance by blossoms.

The variety test orchards both at Lexington and at Princeton showed some very interesting trends and performances by the various varieties, that indicated their ability or inability to set a crop of fruit in the face of disastrous spring frosts and freezes during and shortly after the blossom period. Although at this writing harvest is some time off for most varieties, it is now possible to estimate the size of the crop the various varieties have set. In order to pass this information on to the growers as quickly as possible some of these ratings are listed below. A fuller report will be worked up after harvest.

The ratings on the varieties at Lexington are given first. The varieties are divided into groups according to the size of crop they are considered to be carrying.

Full crop: Mayflower, Arp Beauty, Raritan Rose, Golden Jubilee, Marquette, South Haven, Sun Glo, Halehaven, Vedette, Viceroy, Mamie Ross, Veteran, July Elberta, Persian and Hunter Nectarines.

Three-fourths crop: Polly, Triogem, Afterglow, Oriole, Sun Gold, Belle of Georgia, Valiant, Fertile Hale, Harpole Late Yellow and Sure Crop Nectarine.

One-half crop: Hardee, Othelle, Goldeneast, Red Bird, Elberta, Niles Elberta and Hiley.

One-fourth crop: Candoka, Redelberta, Summercrest, Sunhigh, Golden Globe, Ambergem and Rivers Orange Nectarine.

One-eighth crop: Newday.

No crop: Gold Aflame.

The June 15 ratings at the Substation at Princeton are as follows:

Full crop: South Haven, Veteran, Viceroy and Dr. Burton.

Three-fourths crop: June Elberta, Oriole, Sunbeam, U. S. V. 9-60, Vedette, Halehaven and Colora; also Bruce, Munson and America plums.

One-half crop: Othelle, Fair's Beauty, Marigold and U. S. V. 1-72.

One-fourth crop: Early Rose, Ideal, Georgia Belle, Early Red Free, Mamie Ross, Alton, Golden Beauty, U. S. V. 9-93, Rio Oso Gem, Afterglow, Ambergem, Missouri 50 and South Haven No. 20.

No crop or only an occasional peach: Gold Aflame, Golden Jubilee, Dixigold, Early Hiley, Raritan Rose, Cumberland, Fireglow, Triogem, Summercrest, Goldeneast, Golden Globe, Sunhigh, White Hale.

BLOSSOM BLIGHT OF PEACHES

The blossom blight type of injury of peaches has become very widespread over western Kentucky during the last few seasons and was probably more destructive in 1944 than any year previously. This trouble has generally been more prevalent on the Red Bird and Champion varieties, but in 1944 it developed alarmingly in several Elberta plantings and was especially damaging in an Elberta orchard at Henderson where it had not been a factor before.

This blossom-blight trouble is caused by an early season brown rot infection that enters and kills the blossom and many small twigs and spurs on affected trees. The affected blossoms and small twigs turn brown, have a scorched appearance, and eventually dry up; often leaving a small canker with a bit of wax at the location. This blossom blight stage of brown rot has been recognized for several years by Experiment Stations in the central states. Several of these states recommend a wettable sulfur spray in the pink bud stage just before blossoms open. Several other states recommend liquid lime sulfur at strengths of 1½ to 2 gallons per 100 gallons of water applied in the late pink bud or very early blossom stage. It is generally considered that the lime sulfur application is

far more effective than wettable sulfur in preventing this trouble. Kentucky spray letters since 1942 have recognized this disease and recommended a pink bud application. A number of growers in the Paducah section used the wettable sulfur spray in 1943 with varying results. In 1944 several growers applied the 1½ to 2 gallons of lime sulfur per 100 gallons of spray when their peaches were in the advanced pink bud stage and obtained considerably better control than previously. No report of spray injury has been had and no evidence of spray injury has been seen from the use of the lime sulfur at that stage of peach leaf development. As is known, the weather is cool and there is very little peach foliage yet developed prior to the peach blooming period. Consequently, it is safe to use the weak lime sulfur spray at that time. However, lime sulfur sprays should never be applied to peach trees after the blossoming period.

Where serious, this blossom blight stage of brown rot will heavily reduce the number of blossoms and the size of the crop, and will help carry over infections that can later attack the fruit prior to and as ripening begins. The pre-harvest brown rot sprays and dusts generally start three weeks to a month before each variety ripens, with a second application applied about two weeks before harvest begins. In some quarters, it is considered beneficial to add lime to these pre-harvest wettable sulfur sprays in order to help correct some of the delayed arsenical injury to the foliage which often shows up late in the season as a result of the sprays applied at the shuck-fall and 10-day periods.

Peach growers are urged to be on the alert for this blossom blight trouble and, if it has been a factor in the past, to spray in 1945 to prevent it.

LEXINGTON STRAWBERRY YIELDS—1944

C. S. WALTMAN

Strawberry yields at the Experiment Station Farm, at Lexington, in 1944 were much lower than for even an average year. These low yields are accounted for largely by the growing conditions of the 1943 summer. Rainfall was exceptionally low during the summer of 1943 following a late, very wet spring and, as a result, plant growth of all varieties was poor. As might be expected, Blakemore produced more plants under the dry conditions than any other variety and its yields were nearly equal to those of 1943.

Over a period of several years, Blakemore and Premier have been the most consistent producers, but the yields from these varieties in both 1943 and 1944 were lower than are usually obtained. The Tennessee varieties and several others fell far short this year of their very good yields in 1943. Further tests are being carried on with all varieties, with the exception of Dresden, which, in tests covering a period of three years, has not proved to be a variety worthy of further trials under central Kentucky conditions. Starbright, likewise, appears to show but little promise. The quality of the fruit is excellent, but plant growth, even in favorable years, is too limited and yields are too low to warrant its recommendation. In most seasons, Catskill will produce exceptionally well, but the results in 1944 prove quite conclusively that under conditions of inadequate rainfall in the first growing year, it will not measure up to expectations.

The double rows of Blakemore which showed the highest yields of any variety in 1944, were grown in the following way. A double row of plants was set with the plants one foot apart in the rows and the rows one foot apart. Then similar pairs of rows were set four feet apart. All runners were removed from the plants at approximately two-week intervals throughout the summer, so these plants were actually grown in a hill system.The berries were exceptionally nice and the yield as shown by the table, was 55 crates more per acre than for the Blakemore grown in the matted row.

The following table gives the variety yields, comparisons and dates of harvest for 1943 and 1944.

Strawberry Yields—1944 and 1943
(24-Quart Crates per Acre)

Variety	Yield 1944	Yield 1943	Ripening Date 1944	Ripening Date 1943
Blakemore	115.3	130.3	5/20–6/8	5/28–6/11
Blakemore (double rows)	170.2	.....	5/19–6/8	.....
Premier	107.9	87.4	5/20–6/6	5/31–6/11
Catskill	74.6	240.5	5/22–6/8	6/1–6/16
Dresden	55.0	137.2	5/25–6/8	6/1–6/14
Culver	85.1	134.0	5/22–6/8	5/31–6/12
Fairfax	54.2	247.8	5/25–6/8	5/31–6/16
Starbright	12.1	134.0	5/25–6/3	5/31–6/14
Tennessee Shipper	66.6	273.7	5/20–6/8	5/28–6/14
Tennessee Supreme	51.1	251.0	5/20–6/5	5/28–6/14
Tennessee Beauty	77.9	255.2	5/25–6/8	6/2–6/16
Gandy	17.0	156.0	5/29–6/8	6/8–6/16
Aroma	36.1	.....	5/26–6/8	.....

STRAWBERRY WEEVIL IN KENTUCKY

By P. O. RITCHER
Dept. of Entomology and Botany

Reports have been coming in that the strawberry weevil was on the increase this year and caused considerable damage to patches in the Bowling Green area. The insect responsible is described in this article so growers may be more familiar with its habits and control.

The strawberry weevil is a very small snout beetle about 1/10 inch long. It is dull red to blackish in color, often with a dark spot on each wing cover. The weevil is a native insect breeding on wild strawberries, common cinquefoil, red bud, blackberries and dewberries. Since all of these are abundant in western Kentucky, it is probable the infestation in our strawberry patches moved over from the wild hosts.

Adult weevils appear shortly before strawberries begin to bloom. The female lays an egg in an unopened bloom and then cuts the stem below so that the bud soon falls to the ground. The egg hatches into a grub which completes its development in the fallen bud.

The insect is partial to early varieties. Aromas are rarely injured. The fact that the insect ruins the early blooms means the loss of the early large berries which ordinarily bring the best prices. In other states where trouble has been had with strawberry weevil, they recommend several dusts such as (1) lead arsenate 1 part, and hydrated lime 4 parts; (2) lead arsenate 1 part, and gypsum 9 parts; and (3) cryolite. In some cases liquid sprays are also used. The growers choice of what to use will depend on what is available at the time. Treatment should be made before the blooms begin to open, as this is when the beetles first appear.

PRINCETON STRAWBERRY YIELDS—1944

W. D. ARMSTRONG

At the Substation at Princeton, the 1943 strawberry plantings made a fairly satisfactory growth. Getting off to a good start during the cool, wet spring, they were not seriously affected by the dry weather later on. The planting consisted of a major variety test of four replications of Aroma, Blakemore, Tennessee Beauty, Tennessee Shipper, Tennessee 393, Massey, and Morgan. There were also single plot plantings of such varieties as Fairmore, Maytime, U. S. D. A. Blakemore, New York 7821, Tennessee Supreme, Tennessee 381, Tennessee 230, and ten U. S. D. A. seedlings.

The late frosts and freezes of early April caused some slight damage to early blossoms; however, on the morning of May 7, when the late blooming varieties were white with bloom, a sharp frost and freeze caused marked damage to these upturned, exposed blossoms and small fruits. At that time the earlier blooming Blakemore had set much of its fruit and most of the developing berries were down under the foliage. Even so, with temperatures of 28 and 29 degrees all over western Kentucky and with ice and heavy frost in spots to the Tennessee line,

much damage was done to all varieties of strawberries and in the Paducah section some growers estimate the yield on late blooming varieties was reduced at least one-third. This freeze coming just one week before Blakemore harvest started, froze completely many half-grown berries and froze the cheeks of many others causing these berries to be lopsided. Late in the picking season a majority of berries picked showed varying degrees of frost-catfacing and deformity. The above is a partial explanation as to why some of the late varieties gave such low yields in 1944 and why nearly all varieties gave much smaller yields than normal.

The table below gives the 1944 yields in crates per acre, for the varieties harvested from first year plots at Princeton.

Variety	Plot replications	Crates per Acre	Ripening season
Blakemore	4	176	Early
Aroma	4	63	Late
Tennessee Beauty	4	93	Late
Tennessee Shipper	4	96	Medium Early
Tennessee 393	4	111	Early
Massey	4	27	Late
Morgan	4	6	Late
Maytime	1	159	Early
Tennessee Supreme	1	142	Early
Tennessee 230	1	97	Early
Fairmore	1	90	Early
Tennessee 381	1	53	Early
New York 7821	1	124	Early
U. S. D. A. Blakemore	1	224	Early

Here it will be seen that the Blakemore gave the highest yields of all varieties. These are two of the yellows resistant strains of this variety. It should be pointed out that in commercial fields some yellows is gradually appearing in these strains and growers are urged to keep their planting stock free of yellows by removing all yellow plants as they appear. Tennessee Beauty, Tennessee Shipper and Tennessee 393, promising new commercial varieties, did not come up to the Blakemore variety this season but greatly out-produced Aroma, the standard late variety in western Kentucky.

Maytime, Tennessee Supreme, Tennessee 230, Fairmore, and New York 7821 are showing promise as varieties for home and local markets.

Massey and Morgan, late sorts, gave very low yields in comparison with all others.

A PROMISING CONTROL FOR CEDAR AND QUINCE RUST

W. D. ARMSTRONG

Because of the many red cedar trees scattered over Kentucky, the problem of cedar apple rust is quite a factor in many home orchards and in some commercial apple orchards. This was especially true during wet springs such as those of 1943 and 1944. There is also another similar disease that is closely related to cedar apple rust, known as quince rust. Cedar rust occurs as small, bright, yellow spots on leaves and has yellowish, small, raised, warty areas on apple fruits which are fairly easily recognized as rust spots, very often near the calyx end. On the other hand, quince rust causes a heavily wrinkled and badly distorted area on the fruit, near the stem or calyx, giving a water soaked appearance to the area, causing many young fruits to become badly deformed and to fall. These areas do not have the typical symptoms of rust spots. Infected fruits continue to fall throughout the growing season with usually a number remaining on the tree until harvest. These are usually worthless because the brownish disease growth extends to the core of the apple.

Both cedar apple rust and quince rust overwinter mostly on the red cedar and related trees, and during the early spring rains spores are developed and carried to nearby apple trees, generally about the time of the apple blossoming period. Cedar rust spores develop in the so-called cedar apples on the cedar trees. During the early spring rains these absorb moisture and devolep into large orange-like balls with masses of spores extending from them. On the other hand, quince rust appears as yellow cankers on the small twigs

and limbs of the cedar tree. If present, both of these types can be easily found on cedars during the early spring rainy season.

The usual spray materials such as lime sulfur and wettable sulfurs applied during the pre-blossom and calyx periods have generally failed to control these two diseases and the amount of injury from them has been chiefly dependent on the amount of rain during March and early April. The new fungicide material, known as Fermate, has given good control of both apple scab and cedar rust in some recent tests in Missouri and other states. This spring a small amount of the material was obtained for trials at the Western Kentucky Experiment Substation at Princeton. The material did not arrive until time for the pink spray and was then used in the pink spray, full bloom spray, calyx spray, and in the first and second cover. Applications were between April 3 and May 5. The frequent sprays during that period were needed because of the frequent and heavy rains and ideal scab and cedar rust infection conditions that existed. In one test the Fermate was used at the rate of 1½ pounds of Fermate and 1½ pounds of lime per 100 gallons of mixture. On the other plots a mixture of 3 pounds of wettable sulfur and ½ pound of Fermate per 100 gallons was used. The sulfur plots that were used for comparison received 2 gallons of liquid lime sulfur in the pink bud stage and 6 pounds of wettable sulfur per 100 gallons during the other sprays mentioned. All plots had received lime sulfur sprays in the delayed dormant and pre-pink stage.

Shortly after the calyx period a number of small quince rust infected apples were noticed on the straight sulfur plots while it was difficult to find even one in the Fermate plots. It was soon noticed that the number of infections in the sulfur block were quite numerous and were causing many young fruits to drop. During late May and early June the dropped fruits under several of these trees were picked up, classified, and counted. Up to June 8 the trees that had been sprayed with the wettable sulfur and Fermate mixture had an average of 85 fruits per tree fallen from the effects of quince rust. On the other hand, the trees that had the straight sulfur program had an average of 554 quince rust infected drops; or 6½ times as many as the Fermate plots. These tests are being carried out on Stayman, Red Delicious, and Winesap varieties. Additional counts will be made through the season, as well as harvest records in order to get a complete picture of the trials.

The reduction of early season infections and drops by use of the Fermate is very interesting and represents an important saving of fruit. The Fermate sprayed trees also have much less cedar rust leaf spotting than the others. Apple scab has also been well controlled to date in the Fermate plots and the final results of these tests are awaited with much interest.

KENTUCKY STATE FAIR, 1944

After skipping two years, the Kentucky State Fair will be resumed in 1944. Because of war work being carried on at the fair grounds the fair will be held at Churchill Downs this year and the dates for it are from Monday, August 28, through Monday, September 4.

Of special interest to fruit men and to a large part of the public, in general, will be the exhibit of Kentucky grown fruits. In the past, these exhibits of apples, peaches, pears, grapes, plums, crab apples, walnuts, hickory nuts, pecans, and pawpaws have attracted wide attention. With a good fruit crop in the state this year the fruit exhibit should be outstanding. The limiting factor will be the general rush and shortage of labor among fruit growers.

Due to the earliness of the fair this year (August 28), peaches and grapes should show to special advantage. In view of this, special classes, have been added for the best peck and best half bushel of Elberta, Hale, and any other variety. Also, a sweepstakes ribbon and award has been added this year for the **best basket of peaches.** The usual exhibit of the best plates of peaches and best climax basket of peaches is being continued. The fine peach

crop in the state this year should afford some striking peach exhibits.

The grape variety collection has been reduced to five varieties because of the increased difficulty in filling the old ten variety class. Also, because none was exhibited during the past few years, the plate classes for Agawam and Brighton varieties have been discontinued. Prizes will still be offered for the best plates of Niagara, Caco, Catawba, Delaware, Concord, Moore's early, Worden, and any other variety. Also, the awards for the best 3-quart and 12-quart climax baskets.

The apple exhibits will again likely furnish the bulk of the fruit display. Plate and tray classes for the main Kentucky varieties will be continued, as will the collection of best plates of ten varieties and best 3 summer and best 3 fall varieties. Bushel prizes will be offered this year for best bushel of Delicious, Golden Delicious, Grimes, Jonathan, and any other variety. Due to the earliness of the fair the bushel basket classes of Winesap, Stayman, and Rome have been discontinued for this year; as have the trays of Winesap and Rome.

The feature apple exhibit will again be the 20 tray and 20 plate class made up of at least three varieties this year instead of five. This fact will make it easier for the growers to get together their requirements for this class. There has always been keen competition in this class between growers from the Louisville - Bedford section and growers from the western Kentucky area of Henderson and Mayfield.

Great interest is again centered about the individual growers' booths where all kinds of fruit and products produced on the fruit farm or vineyard are displayed. Since this feature was started in 1939, it has been very colorful and popular.

Professor C. S. Waltman of the University of Kentucky will again judge the fruit entries. Mr. W. W. Magill, Extension Horticulturist, will be on hand much of the time to assist growers with their exhibits and discuss fruit proglems. W. D. Armstrong, Superintendent of the fruit department will be on hand before and during the fair to be of all possible service to exhibitors and the public, in general. Where growers cannot be present, their fruit will be placed for exhibit if it is sent in to the fair. Fruits that ripen considerably ahead of the fair that need refrigeration should be carefully packed and shipped by prepaid express to The Kentucky State Fair, Churchill Downs, in care of The Merchants Ice and Cold Storage Company, Louisville, Kentucky. Such shipments will be stored under refrigeration at no expense to the grower and be delivered to the fair grounds before the opening of the fair. The fruit superintendent should be notified of such shipment.

All old exhibitors are invited to return to the fair with their exhibits and new fruit growers and exhibitors are invited and welcomed to join the others to compete for a part of the $570.00 in premiums offered in this department. Inquiries regarding the fruit exhibit should be sent direct to The State Fair Office, Louisville, Kentucky or to W. D. Armstrong, Experiment Station, Princeton, Kentucky.

HINTS AND OBSERVATIONS

By W. W. MAGILL

Field Agent in Horticulture

45 Cents Well Spent

Every homemaker in Kentucky is hungry for peaches and she has plenty of empty cans. Does she know you have a peach crop in prospect? No doubt she **thought** the spring freezes killed your peach crop. See your local newspaper editor at once and pay him his price for the following ad: "Tree ripened peaches at our orchard in July and August. Prices reasonable. Watch for our later advertisement. John Doe. Orchard near (give town and road.)"

It Might Have Been You

Two weeks of Jury service costs apple growers $4,000! It was between green tip and pre-pink bud stage of growth on Red Delicious. The spray motor went bad to the extent that the farm laborers could not make the necessary repairs and adjustments. They failed to get the lime sulphur solution applied in time to control apple scab. Conservatively speaking, it cost the owner 2,000 bushels of Delicious.

Agricultural Experiment Station
of the
UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY
Thomas Cooper, Director

FREE—ANNUAL REPORT OR BULLETIN OR REPORT OF PROGRESS

However, every cloud has a silver lining. He has a fine crop prospect for Winesap, Stayman, Rome and Gano.

Sorry—But Too Late

The bob-tail orchard mice completely girdled 40 valuable ten-year-old apple trees in February in an eastern Kentucky orchard. The owner immediately distributed poison in his orchard. Just another case of "filling up the well after the calf fell in."

No Berries—No Pay

The $7.80 per crate for 1944 strawberries failed to benefit the 2,000 former Kentucky berry growers who had neglected to plant the usual acre in the springs of 1942 and 1943. Even ¼ acre properly cared for could have bought several bonds now.

Tennessee Shipper

A plot of 1/10 acre of Tennessee Shipper strawberries in Jefferson county made a yield of 21 crates in 1944 berry harvest; or 210 crates per acre. Premier in the same field made a yield of 170 crates—or 40 crates per acre less than the Tennessee Shipper.

Post-War Planning

Mr. Apple Grower: There is ample space on your farm for an additional planting of 100 trees of the varieties that have **Paid-Off** for you in the past. Ten years from now they will be valuable property and a dependable old age pension. Think it over,