



# KENTUCKY FRUIT NOTES

## SUMMARY OF TEST RESULTS ON THE CONTROL OF STRAWBERRY INSECTS--1950

J. G. Rodriguez and W. D. Armstrong

Investigations in the control of strawberry insects this year were directed at evaluating the performance of a number of insecticides and combinations of insecticides against the strawberry crown borer and the strawberry weevil.

### Strawberry crown borer

This snout beetle has caused heavy losses in Kentucky; it overwinters under litter in or near strawberry fields and in the early spring it begins feeding on foliage and laying eggs. The eggs hatch into legless grubs that soon eat into the crown, where they bore tunnels until they emerge again as adult beetles during the summer. Plants thus infested are a total loss.

Test plots to conduct the work were located in Jefferson county in a strawberry field that had been planted near an infested patch two years previously. Ten insecticide treatments and an untreated check, each replicated five times, were randomized over the test field. A row 30 feet long was considered a replicate.

Treatments were applied on April 17 and results were recorded on April 28. All dusts were applied at the rate of 30 pounds per acre. As determined by the number of leaves showing feeding punctures per 20 feet of row per replicate, the most effective treatments were: parathion, 2 pounds of 15% wettable powder per 100 gallons (sprayed until foliage was thoroughly wet); 2% parathion dust, 2 1/2% aldrin dust, and 5% chlordane plus 5% DDT dust mixture. Where these treatments were used, there were averages of 7.4, 7.6, 7.6, and 8.4 punctured leaves, respectively. Treatments less effective

were 1 1/2% lindane dust, 10% and 20% toxaphene dusts, and parathion, 1 pound of 15% wettable powder per 100 gallons, these averages being 11.6, 15.4, 10.2 and 11.0 punctured leaves, respectively. The untreated check plots had an average of 23.6 punctured leaves per 20 feet of row.

While the numbers of punctured leaves appear small, a small number of crown borer adults will give rise to a large infection of grubs which will injure and kill a large number of plants by their boring and feeding in the crowns.

#### Strawberry weevil.

This snout beetle deposits its eggs in the unopened blooms and then girdles or cuts them, causing the buds to die and fall to the ground. The egg soon hatches and the grub eats the unopened bud, pupates, and emerges as an adult weevil. In years past, this weevil has caused extensive damage in Kentucky. Furthermore, its damage may not be fully realized; a poor crop is often thought to be caused by a poor setting or other factors when close examination would reveal serious weevil damage.

Tests were conducted in McCracken county in the strawberry plantings of Mr. A. L. Cunningham. Ten different insecticides, or combination of insecticides, were tested as sprays or dusts. These included DDT, chlordane, lindane, toxaphene, aldrin, parathion, benzene hexachloride, and a chlordane plus DDT mixture. The treatments were applied on April 18, during early bloom and counts were made about a month later. The dusts were applied at the rate of 30 pounds per acre.

It was found that only a light population of strawberry weevils infested this field; 11.1 per cent of the buds were cut in the untreated check plots. Of the dusts, 1 1/2% lindane, 5% chlordane plus 5% DDT, and 2 1/2% aldrin were the most effective, reducing the bud-cutting to 4.8, 5.8 and 5.5 percent buds cut, respectively. The fact that the infestation was relatively light prevents the drawing of many conclusions from the data. However, the results were in line with work done in 1949 when heavy populations of strawberry weevils were widespread.

With both pests, the 5% Chlordane-5% DDT dust mixture was among the better materials tested. Growers have been getting good commercial control with this mixture, but the tests for better control materials will continue.

#### ORCHARD MICE

W. W. Magill

Orchard mice continue to be very destructive to apple orchards throughout Kentucky. During late September, Mr. L. C. Whitehead, of the U. S. Rodent and Wildlife Control, spent 10 days with me inspecting Kentucky apple orchards from Fulton to Maysville and in every orchard examined we found orchard mice plentiful and ready to girdle the trees just as soon as they finished eating the drop apples. If you are not familiar with how to determine whether or not mice are present in your orchard, here is a simple way. Look for runways under a small pile of orchard mulch, such as grass, weeds, straw, under an old basket or field crate; or the slick runways may be in the open,

down under the growth of lespedeza or bluegrass. If you find a fresh runway, you may know you have orchard mice.

### Bait traps

Many apple growers have found bait traps very useful and economical. The simplest way to prepare and use bait traps is as follows; split a roll of heavy 3-ply paper roofing. You can do this easily with an old saw while the paper is in the roll, or you can unroll it and use your pocket knife or "roofing snips." Then cut the long strips of roofing into squares 18 in. by 18 in. Take these squares of paper to the orchard and lay them directly over the mouse runways and leave them there. Ten days later, carefully raise one corner of the "traps" and where you find a fresh runway, place a teaspoonful of the poison bait, consisting of either strychnine-treated oats, or apple, or sweetpotato cubes treated with zinc phosphide.

You can purchase these specially prepared poisons from your local orchard supply firm, or you can write to me at the Experiment Station, Lexington, and I will send you a quantity of the poison, at cost.

I visited some orchards of Polly Eades, Transparent, and Golden Delicious varieties where the owner had picked over 20 bushels of No. 1 apples per tree in 1950 that had sold for \$3 a bushel, or \$60 per tree, and to the owner's surprise, the mice had girdled the trees completely this fall. A good livestock man would pay a veterinarian for services and sit up all night doctoring a sick cow worth less than the mature apple tree, yet the little mouse was not considered to be a problem - until it was too late.

### "WET FEET" IN KENTUCKY PEACH ORCHARDS - 1950

W. W. Magill

More peach trees were lost from "wet feet" in Kentucky in 1950 than the total loss in any five-year period from 1924 to 1949. Yet there is no mystery concerning the cause of this tree loss. Let us forget peach trees for the moment to think back and study the weather record. For example, Kentucky had 45 inches of rain during the first seven months of 1950, and this amount is the average rainfall for an entire year. The following figures give some round-number facts on Kentucky rainfall from November through May:

<u>Month</u>	<u>Above or below Normal</u>
November, 1949	2 inches below normal
December, 1949	2 inches above normal
January, 1950	8 inches above normal
February, 1950	2 inches above normal
March, 1950	1 inch below normal
April, 1950	1 inch below normal
May, 1950	3 inches above normal

In southwestern Kentucky the rainfall exceeded that around Lexington and some other areas of the state. Thus, with the waterlogged soil, a normal peach tree growth was prevented and the peach foliage turned yellow in May or early June and the peach roots died, causing death of the trees. Many trees also looked very weak and sick all through the season and it is

suspected that a great many of these will die or continue in a stunted condition for a number of years. This season again proved the value of having peaches on well drained orchard soil.

Some peach growers of Kentucky were of the opinion their tree losses were caused by spraying with some of the newer insecticides such as BHC and chlordane. However, we feel this was not true, for we have made many field observations that bring out the fact that many trees one and two years old died, that had never been sprayed except with dormant spray; also many trees died in some orchards not sprayed in 1950 because of a crop failure.

Personally, I well remember the spring of 1924 when we had a similar rainy season. Many trees died that spring and many amateur growers thought their losses were due to treating young trees with P. D. B. However, complete check-up of many Kentucky orchards brought out the fact that "wet feet" in March, April and May was responsible for their losses.

Twenty-five years before peaches were produced commercially in southwestern Kentucky, the Southern Illinois commercial peach growers had developed the idea that special drainage was necessary in the orchards. They cultivated their peach soil so that the area at the peach row was ridged to the extent of some 6 to 8 inches higher than the middles between the rows. Local terms such as "bedding to the middles" described this procedure, which was done with a road grader at the time of the last cultivation. Or it may be done with a break-plow by opening up a furrow 10 inches deep between the peach rows in a direction that will allow the surface water to drain from the orchard. Modern orchard terracing will serve the same purpose.

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#### STRAWBERRY VARIETY PERFORMANCE - 1950

W. D. Armstrong

Recent strawberry variety trials at the Western Kentucky Experiment Substation have been limited to the most promising commercial shipping varieties and strains and to varieties resistant to red stele root-rot disease. Blakemore and Tennessee Beauty remain the leading commercial varieties, with Tennessee Shipper third. In recent years, the yield on Aroma has dropped off alarmingly. This, along with the fact that the Aroma berry is soft, a poor shipper, and not a good freezing berry, has almost eliminated this berry from commercial production in Kentucky.

Temple and Fairland, two varieties resistant to red stele root rot, have also produced satisfactorily, approaching in yield the three variety leaders mentioned above. Under more limited tests, Vermilion, a new red-stele-resistant berry from the University of Illinois, also looks promising. Temple, Fairland, and Vermilion are not quite firm enough to be top quality shipping berries but they are satisfactory for local use and short hauls, and deserve tests in areas where red stele is a problem.

Tennessean, a new berry, was just named and introduced by the Tennessee Experiment Station. The first plants of this were sent out for trial in 1948 as Tennessee 965. This is a bright, long, early berry, about with Blakemore and is a heavy plant maker, equal to or surpassing Blakemore. At Princeton, the yields have been greater than Blakemore the last two years.

However, it was not considered a fair comparison since it now seems that the Blakemore plants were infected with a virus disease. The Tennessean is not a patented variety; hence, there are no restrictions to plant distribution.

Armure is a new variety from the University of Missouri. The first plants of this were obtained in 1950 and will bear in spring of 1951. It has made an excellent row of plants but it has considerable leaf spot this fall. It is reported to be a midseason berry and has given some outstanding yields in Missouri, where it originated. It is being watched with great interest.

### Plant Growth

The 1950 growing season was very favorable for growth of strawberry plants, grass, and weeds. Where growers were able to keep down grass and weeds, their strawberries made greater runner formation than in many years. This over-crowding of plants could easily cause the berries to be smaller in 1951 and brings up the fact that many Kentucky strawberry growers could profitably do some plant thinning most every year. This problem needs to be studied.

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### STRAWBERRY YIELDS AT LEXINGTON IN 1950

By C. S. Waltman

During the past several years considerable difficulty has been experienced from red stele root rot of strawberries on the Experiment Station grounds. The fungus causing this trouble is carried in the soil and it appears to be capable of living for several years even though no strawberries are grown on the land.

The Experiment Station strawberry planting made in the spring of 1949 was purposely placed on land known to be infected with red stele. The varieties chosen were several of the common ones grown in the state, together with some kinds known to possess red stele resistance. The planting consisted of fifteen varieties replicated six times and included the red stele resistant kinds of Temple, Fairland, and Sparkle.

The yields of all varieties in 24-quart crates per acre, in order of production, follow:

Catskill -----	145.03	Tenn. 866 -----	61.36
Temple -----	137.77	Robinson -----	51.35
Sparkle -----	128.71	Tenn. Beauty --	57.24
Fairfax -----	123.76	Premier -----	34.69
Tenn. Shipper -	84.82	Fairpeake -----	27.46
Fairland -----	72.61	Blakemore -----	23.11
Swanee -----	68.22	Midland -----	12.98
Tenn. 863 ---	65.63		

It should be pointed out that although the soil used in this test was known to be infected with red stele disease, it also may have carried other diseases and pests that contributed to the low yields. Also, symptoms of virus disease was observed on some of the plants.

The plants were purchased from a reputable nurseryman and they appeared to be in good condition when received, with the exception of Fairpeake and Midland, and these made a poor stand.

The plants of Catskill, Temple, Sparkle and Fairfax, the four varieties that produced the best yield, did not show the stunted growth typical of red stele disease but the yield was disappointing in a year of abundant rainfall. All other varieties except Fairland, a red stele resistant variety, were severely stunted.

Catskill and Fairfax are not rated as resistant to red stele and no explanation is offered for their apparent resistance to that disease. Further tests should be made before planting them, for this purpose.

Temple and Sparkle made a fine stand of plants that appeared to be vigorous and healthy. In other trials on clean soil these varieties were found to produce good yields; thus, it appears that Temple and Sparkle are worthy of trial on soils where red stele is present. The fruit of Temple is of good size and quality and should be suitable for shipment.

Sparkle is less vigorous than Temple and it has less upright habit of growth.

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#### PEACH VARIETY REPORT, 1950

W. D. Armstrong

In 1950, many peach fruit buds were killed by a very sudden drop in temperature in early January. Later, numerous frosts and freezes just before and during the bloom season reduced the crop prospects still more. Under these conditions, only the better peach locations, and the orchards with the strongest buds or hardiest varieties, came through with peach crops. Also many orchardists learned all over again how difficult it is to care for a part-crop. Many growers started in with nearly a half crop but these kept on dropping until at harvest time no fruit was left. Delayed cold injury, water-logged soil, insect injury, and brown rot were responsible for these crop losses.

In general the Elberta crop was light, being medium to nearly full in only the choicest locations. Redhaven, an early yellow freestone, produced as heavy as any in most plantings. Georgia Belle again proved its hardiness by coming through with a good to heavy crop in a number of locations. Others that showed hardiness at the Western Kentucky Experiment Station at Princeton were, Erly Red Fre, Marigold, Raritan Rose, Cumberland, Alton, and Veteran. Those producing an acceptable part crop at the above location were Dixired, Jerseyland, July Heath, Ambergem, Fair Beauty, Viceroy, Vedette, Mammie Ross, Hiley, and South Haven. Halehaven failed to set a crop in most locations. This variety has in some other years failed to set a crop

when cold weather has been experienced on the spring following a heavy crop year. This heavy yielding variety has to be given excellent care for it to come back year after year with a crop.

## GRAPES, 1950

In a limited grape variety trial at the Western Kentucky Experiment Substation at Princeton, Fredonia and Concord were again the outstanding varieties. Concord, as is generally known, is the standard eastern black grape variety widely adapted over the United States and is outstanding for juice, jelly, and eating fresh. Fredonia is a newer black variety that ripens about two weeks ahead of Concord. Fredonia is a large, good-quality, heavy bearing grape that is proving well adapted to Kentucky in Experiment Station and private plantings. These two varieties work well together furnishing fresh fruit over a longer period than either would alone. Two or three vines each of Fredonia and Concord, in an arbor or along a fence row, would supply the average home (in town or country) with their grape needs. If the vines are placed out in the open or on a high location with free air circulation, the black rot disease will often be of no concern and spraying will not be needed. For commercial plantings, however, a spray program is required in most cases.

For best results, all grape vines should be pruned each year. For suggestions on this, see your county agent or write to the College of Agriculture and Home Economics at Lexington.

## THE PEACH TREE BORER AND DDT

W. D. Armstrong

The peach tree borer is now generally considered to be the worst insect pest causing injury to the peach trees themselves. In general, peach tree borer attacks over Kentucky have been very heavy the past several years and serious injury has been caused where control has not been adequate. The old established paradichloro-benzene (PDB) treatment has not given satisfactory control generally, because much damage is often done by early borers before time for treatments (September and October). And also, late borer adults have often laid eggs on the trunks above the mounds after treatment has been made. It is generally considered that the borer adults that lay the eggs are flying and laying eggs from late June through September or later.

There are now several peach orchards in Kentucky where DDT has been used successfully for three years (1948-1949-1950) to control the peach tree borer. This has been accomplished by three trunk spray applications one month apart, on July 1, August 1, and September 1, applied carefully to the trunks from the crotch down. In Kentucky, the amount of material used has generally been two to three pounds of actual DDT (4 to 6 pounds of 50% wettable powder) per 100 gallons of water.

These sprays kill the adult borers (a wasp) that lay the eggs and also the young newly-hatched borers, before they become deeply imbedded in the bark. Recent inspections have shown that the DDT sprays will not kill the

larger borers that have become imbedded when the first spray is delayed until about September 1. It is therefore very important, as with other sprays, to have proper timing.

Growers who have properly used the three DDT trunk sprays have been well pleased with results and are in favor of this treatment rather than the older, slower PDB method.

Peach orchards at the Experiment Stations at Lexington and at Princeton were among the large number that had DDT trunk sprays in 1950. Dr. J. G. Rodriguez of the Entomology Department is conducting cooperative spray tests for borer control at several orchards and results from these will be available before the borer control season of 1951.

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### APPLES ALL SUMMER IN KENTUCKY

W. D. Armstrong

Kentucky home owners, farmers, or fruit growers can have good apples all summer by growing good trees of properly selected varieties. Also the earlier the variety ripens or becomes usable the quicker it can be removed from the trees and thereby avoid the late summer insects whose attacks are usually worse than the early summer attacks. Where there are no late apples the third brood of codling moth cannot develop.

There are earlier apples and good ones too, but one of the best early varieties is Lodi. This yellow apple will attain usable size a week or so before Yellow Transparent, the early apple stand-by for many years. Lodi will also attain greater size, will hang on the tree longer, will bear more regularly, and will not blight as badly as Yellow Transparent. However, if you should prefer Yellow Transparent instead, you would still have a good apple.

Polly Eades is the next variety. By the time the Lodi apples are all gone, fruits of the Polly Eades will be ready for use. In fact, at the last picking of Lodi or Transparent, the Polly Eades fruits are often larger. This is a large, smooth, roundish, green apple that becomes golden yellow if allowed to remain on the tree or if kept in cold storage for awhile. The fruit is very similar to the old Maiden Blush, but the tree and fruit are easier to grow, being less subject to blotch. Polly Eades, as well as Lodi, is resistant to apple scab and is one of the smoothest, most attractive apples grown. Of special interest and value is its unusual ability, for a summer apple, to be kept on cold storage for some weeks. This has proved on occasions to be of great benefit in orderly marketing of the fruit of this variety. Polly Eades is a true Kentucky variety, originating in Henderson county. It is a regular annual bearer of large apples and is ready for commercial harvest over Kentucky during July.

August brings us ripe fruits of Paducah variety. This is another native Kentucky variety, having originated from seed of Rome Beauty variety, Paducah. It resembles Rome Beauty in appearance, and is often referred to as Early Rome Beauty or Summer Rome Beauty. Like Rome Beauty, Paducah



blooms late. Planting Rome Beauty nearby to pollinate Paducah, has greatly increased the Paducah yields. Paducah is also a regular, heavy bearer and could be used fresh until Grimes and Jonathans are ready.

Yes, Lodi, Polly Eades, and Paducah can assure one of excellent cooking apples all summer. The first two are reasonably good eating apples, and Paducah is an excellent eating apple.

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#### THE PURCHASE DISTRICT FAIR FRUIT SHOW, 1950

Mayfield was the scene this summer of one of the most outstanding district fair fruit exhibits ever held in Kentucky. The fair was held August 15-19 and the exceptional number of high class apple entries was a real testimonial to the fine support given to the fair by the Graves county orchard men. The county agent and assistant county agents were responsible for contacting the growers and rallying support for the fruit exhibits as well as for many of the other agricultural exhibits. Graves county has for a long time rated as one of the very best apple producing counties in Kentucky and Graves county apple growers also boast a long record of wins at the State Fair in previous years. Apple growers in other counties of the purchase district are invited to join in the exhibit in future years.

In the single tray class the following number of entries competed by varieties: Black Ben Davis, 1; Red Delicious, 11; Grimes Golden, 5; Paducah, 6; Stayman, 6; Golden Delicious, 15; any other variety, 7. In the plate competition there were the following number of entries by varieties: Red Delicious, 12; Paducah, 10; Grimes Golden, 6; Stayman, 6; Golden Delicious, 12; Black Ben Davis, 1; any other variety, 10. This heavy competition in the single tray and single plate classes was greater than is often seen at the State Fair fruit exhibits. This is further evidence that this Western Kentucky Purchase District Fair Fruit Show was really an outstanding exhibit and that the Graves county section is truly an apple producing region.

Some of the orchardists who competed and helped make the fruit show were Leonard Overby & Son, Sid Holloway & Sons, Herbert Holloway & Sons, Tom Hamilton, Dr. D. W. Doran, G. W. Story, C. B. Mathis, T. A. Hamilton Jr., and Mrs. Rollie Oglesby.

The fruit exhibit was judged by W. D. Armstrong and the winnings were well scattered among the contestants, but with this keen competition in both plates and trays, an entry had to be of finest quality to win. The sweepstake tray was of Golden Delicious exhibited by C. B. Mathis, a new grower.

## HINTS & OBSERVATIONS

W. W. Magill

### WADDLING WEEDERS

Thanks to a Maryland strawberry nurseryman for the new and very appropriate name for geese in a first-year strawberry field. Maryland growers find three geese per acre satisfactory, but in Kentucky where crabgrass grows so well, we prefer seven geese per acre. You would be surprised how many Kentucky berry growers are now using the "Waddling Weeders" to a great advantage.

### STRAWBERRY VARIETIES

The Tennessee Beauty variety of strawberries is rapidly gaining popularity - both for commercial sales and for the home garden. In 1950, it outyielded both Blakemore and Premier. So, again, we thank the Tennessee Agricultural Experiment Station for their contribution to our Kentucky strawberry industry.

### A PROMISING NEW PEACH VARIETY

The Redhaven variety of peaches scored a "home run" this year on every fruit farm where it was under trial. Its market and consumer acceptance were excellent. It proved to be very hardy, ripening with Golden Jubilee. It deserves a place in all new peach plantings.

### COLD STORAGE BERRY PLANTS BEST

All demonstration tests of the past two years comparing strawberry plants which had been dug in December, January, or early February, and held in cold storage at a temperature of 33-34 degrees until planted in late March or April as compared to freshly dug plants, have favored the cold storage plants. The storage plants grow off better and start runner formation earlier in the season.

Using such storage plants will also prevent crown borer because the plants are dug before the borer eggs have been deposited on the berry plant.

### PREPARE STRAWBERRY LAND IN DECEMBER

The strawberry grower who prepares his land in December for his spring planting of berries can take advantage of the weather and set his plants in March. Early planting generally gives better stands and starts earlier growth. This may increase your yield 20 to 40 crates per acre.

### PARATHION POPULAR AS A SPRAY CHEMICAL

Everyone that I know of who used Parathion in Kentucky in 1950 was more than pleased with the results. No ill effect to the spray crew has been reported. However, don't get careless! Parathion is a killer, if used improperly.

### PLANTING NEW TREES

The successful fruit grower annually pulls out some "Boarder Trees" and plants some new trees.

### DUSTING STRAWBERRIES

The dusting of spraying of Kentucky strawberry fields at the beginning of the bloom season has passed the experimental stage. Ten dollars spent for dust and labor may return you 15 to 75 extra crates per acre.

### ORCHARD MICE

Poison your orchard mice before they kill some of your best apple trees. Bait stations are very popular. See more complete story in this issue.

### GET NITROGEN FERTILIZER NOW

Nitrate fertilizer is available "NOW," and it may not be available next spring.

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Articles for "Kentucky Fruit Notes" are assembled under the direction of W. D. Armstrong, Horticulturist, Kentucky Experiment Station, who is located at the Western Kentucky Experiment Substation, Princeton, Kentucky.