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KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

THE BULLETIN

This is the fourth issue of Kentucky Fruit Notes, a new bulletin series of the Experiment Station, devoted to the best interests of fruit production. We have had several comments on the first few issues and will appreciate frank criticisms and statements concerning this bulletin, as we want it to serve the berry and fruit growers well.

We are revising the mailing list and urge that all of those that are getting the bulletin who have not already done so to use the request form in the back of this issue and send it in so that they will be retained on the mailing list to receive the bulletin if they find that it contains material of interest to them.

We have received a number of lists from county agents in response to a letter sent them. We urge that other county agents and vocational agriculture instructors send in such lists, for it seems that in each county there should be from 1 to 100 persons who would profit by the information in Kentucky Fruit Notes if they knew that it is available free to those who wish and request it.

We want this bulletin to be a publication of and for the grower; and we hope growers will continue to contribute articles dealing with their horticultural experiences, especially along the line of some particularly successful practices, varietal behavior, or some practice that they have found to be very unwise. For I am sure that in fruit growing it is of as much importance to know what not to do as it is to know what to do.

W. D. ARMSTRONG, Editor
Horticulturist, Ky. Experiment Station

NOTE DATE FOR ANNUAL MEETING OF FRUIT GROWERS

The 83rd annual meeting of the Kentucky State Horticultural Society, College of Agriculture cooperating, will be held at Lexington, Kentucky, Wednesday and Thursday, January 25 and 26, in conjunction with the Farm and Home Week. Strawberries and other small fruits will be the subject of one day's discussion. Fruit problems and pest control will be discussed at a night meeting and on one of the day programs.

Yellows-Free Blakemore Strawberries

The Blakemore strawberry was introduced by the U. S. Department of Agriculture about 1930. Dr. George M. Darrow in charge of the small fruit work was instrumental in developing the variety and has been closely associated with it since. This variety has gained tremendous popularity due to its fine fruit characters, heavy yields and wide adaptation. It has become the leading variety in some sections, recently replacing Klondike as the main variety in Tennessee.

In Kentucky there is considerable acreage of the Blakemore

variety and it is being regarded favorably as an early shipping berry. Some growers use it entirely and an off-hand estimate recently set the Blakemore at from 15% to 20% of the acreage in western Kentucky.

Yellows Disease Shows Up

This variety is subject to a yellowing condition of the foliage on some plants. These yellowed plants seemed to be less productive and the new plants originating from them were affected in the same manner. The population of these yellow plants in some fields is high, decreasing the yields and the value of the variety.

Recognizing the serious damage the Yellows disease was doing to the Blakemore variety much work has been done with selections and study to rid the variety of it. The greatest headway was made in isolating several strains of the variety that are practically free of the disease.

Yellow-Free Blakemores in Tennessee

One of the finest strains of disease-free Blakemores is located in Western Tennessee. One grower has had a strain of this variety for six or seven years that has shown no yellow plants. Dr. Darrow inspected this planting last spring and found no yellow plants. This is known as the McUmber strain. Another strain of Yellows-free plants tested in Georgia is also doing well in west Tennessee and showing no Yellows. Several fields of these berries were personally inspected recently and were found to be of a uniform dark green color.

Plants Available

There is an adequate supply of these two superior strains of Blakemore plants available for planting at regular commercial prices if ordered early. Orders should be sent in as soon as possible and at latest by January 15. A large number of these plants were sold in the fall of 1937-38 to strawberry growers and will be in production in 1939. With this volume of Yellows-resistant plants available at reasonable rates, any grower expecting to use the Blakemore variety should consider these Yellows-free plants for their new plantings.

If interested, growers can secure from their county agents or the Experiment Station the names of parties having these plants for sale.

PREPARE NOW FOR SETTING STRAWBERRIES IN 1939

W. W. MAGILL
Field Agent in Horticulture

If you should ask a dozen of the best strawberry growers in Kentucky the best method and time for preparing land for strawberries, you would doubtless get at least 10 different answers—and all may be correct. In other words, there is no one particular way that land must be prepared. However, many strawberry growers will agree that early spring setting—in February, if possible, is the ideal time to plant berries and that two acres set during late February or early March have a chance of outyielding three acres which are planted after the middle of April.

I know of a number of fields now where peas or beans have been turned under while green and this land will be left in the rough until late November or December at which time it will be worked down thoroughly and small ridges thrown up which will constitute the rows for planting next spring. If the land is rolling, naturally the rows should be run on the contour. The grower who follows this sys-

tem can take advantage of the first few days of good weather to plant out his berries. Invariably the group of growers who follow these methods produce yields in excess of 150 crates per acre, year in and year out, and certainly this type of grower is sure to keep ahead of the crown borer, for he will dig his plants in advance of the egg-laying season.

MULCH FOR STRAWBERRIES

W. W. MAGILL
Field Agent in Horticulture

Do you already have the straw available for mulching your strawberries? If so, where do you have it stored? A little attention given to this last simple question may save you hours of labor in your berry field. Have you ever had the experience of having wheat or cheat grow wild in your patch in early spring such that it was necessary to either pull it out or mow it just ahead of the picking season? I recall seeing a splendid patch of strawberries in Fleming County that was so contaminated with the spring growth of cheat that it required two men 8 days to pull it out. A small section of the patch which was left was practically choked out, and only a very light yield resulted. One corner of this particular berry field, representing about one-fourth acre, had been properly mulched with straw from a different source that contained no cheat seed, showing the contrast of clean straw against contaminated straw. Perhaps you can obtain your mulch, if not available on your own farm, from a nearby neighborhood straw stack. Why not haul this mulch at once, get at least one ton per acre and pile it around the edge of your field in a shallow wind row so that a reasonable amount of fall rains will thoroughly wet it? This moisture will naturally cause any grain or weed seed to start growth and be killed when the straw is spread so that your land will not be contaminated. If you are using baled straw, you can accomplish this purpose by breaking one wire on the bale, which will allow the straw to spread open in a fan shaped manner and take in sufficient water to sprout the grain before the mulch is applied to the patch.

WATCH FOR FIELD MICE INJURY IN ORCHARDS DURING WINTER

Note.—The following article is a digest of a paper by Mr. G. C. Oderkirk of the U. S. Biological Survey on Field Mouse Control, appearing in the October issue of Hoosier Horticulture.

With the approach of winter it is well to consider the field mice in orchards and take steps to reduce the infestation and the injury to as low a point as possible. As we know, the injury from field mice comes from their feeding on the roots of fruit trees and on the trunk near the ground level during periods through the winter when other food is scarce or not available.

"The present year has been quite favorable for most rodents. There has been a heavy growth of vegetation which has not only provided them with ample food but furnished them protection from predatory birds and other natural enemies. The infestation of mice has not appeared consistently high in the orchards examined to date although in a few they are numerous enough to inflict considerable injury should weather be severe during the winter. The apparent answer is to apply control methods as a regular practice regardless of the abundance of mice.

"Last winter there was some severe surface injury to fruit trees in a few orchards largely due to rank vegetative growth immediately about the trunks of the trees. A few growers mulched heavy and paid no attention to the mice that harbored in the mulch, resulting in girdled trunks and some root injury to trees.

"Abrupt change of weather during the winter, reducing the supply of food for mice and forcing them to girdle trees has frequently occurred when the mouse population has been at a low point. A sleet storm followed by a heavy snowfall, completely blanketing the ground and abruptly cutting off the supply of food for mice, is an example of a condition that frequently occurs. Obviously when this happens the damage would be greater if the infestation is high in the orchard, but severe injury can be inflicted by comparatively few mice if they are obliged to feed on trees for a period of several days.

"Be wary of mouse damage if a heavy natural growth of vegetation or a mulch is allowed to remain within the area in which the tree roots radiate. At this time of the year mice tend to colonize and restrict their movement. One cannot be too careful from now until later next spring in making periodical examinations of the orchard to learn the extent of the infestation. In walking through the orchard, part the matted grass or other vegetation at intervals and determine how numerous the trails made by mice may be, and if they are being used. If used, one can ordinarily find fresh droppings along their runways and they also keep the trails open and free of g r a s s and other obstructing growth.

"Injury by mice that feed on the surface of the ground can be practically eliminated by taking away their protective cover in an area of two to three feet from the base of each tree. If it is necessary to leave a natural vegetative growth or mulch close to trees, which obviously attracts mice, it is advisable to use poisoned baits to destroy the animals."

Control:

Strychnine baits have been used as a poison with good results because strychnine is very toxic to field mice, and when carefully used as recommended there is little likelihood of other animals getting poisoned. It is advisable to use bait stations in orchards where other animals are apt to take some of the poison if it is exposed openly. Also the feeding stations are helpful in keeping the baits protected and in a palatable condition for longer periods.

Feeding stations can be made by using light weight asphalt building paper that is waterproof. Tar paper should not be used, as the tar might repel the mice. The feeding stations are made by cutting the paper in sections 9 by 13 inches. These are rolled into tubes 9 inches long so that each tube is 2 inches in diameter and the walls are two layers thick. The tubes are then held in shape with strings or paper clips.

"These stations should be baited with a tablespoonful of poisoned grain or with three or four small cubes of poisoned vegetable bait and placed in active mouse runways.

"Only one poison station is needed near each tree. If there is little or no natural cover of weeds, grass, or mulch near some of the trees, the stations may be placed in parts of the orchard where mice are likely to be more abundant.

Always try to place the stations in active mouse runways, covering them lightly with grass, weeds, or straw so that mice will be attracted to them. If there is little grass or other cover near a tree, and it is the desire of the orchadist to give each tree protection with the bait, a station may be placed about four feet from the tree trunk and covered with straw so that any mice in the vicinity will be attracted to it and will readily find the poisoned bait.

"If weather permits, it is well to inspect the stations during the winter and rebait them. This may not always be possible because of the depth of snow, or other conditions. However, considerable injury by mice occurs late in winter and early in spring; and it cannot be too strongly emphasized to closely examine the orchard at that time and bait thoroughly where mice are known to be present.

"Following are the formulae for preparing the vegetable and the grain baits:

Rolled Oats Bait:

Mix together, dry, 1/8 ounce of powdered strychnine and 1/8 ounce of baking soda. Sift the strychnine-soda mixture over 1 quart of rolled oats, stirring constantly to insure an even distribution of the p o i s o n through the grain. Thoroughly warm the poisoned rolled oats in an oven and sprinkle over them 6 tablespoonfuls of a mixture of 3 parts of melted beef fat and 1 part of melted paraffin, mixing until the oats are evenly coated. When the grain is cool it is ready for use. *Caution*: In heating the rolled oats be careful that the bait is not scorched, as this renders it unpalatable.

Vegetable Bait:

Cut 3 quarts of sweet potatoes or carrots into one-half inch cubes. Mix 1/8 ounce of powdered strychnine and 1/8 ounce of baking soda and, using a pepper box, sift this over the freshly cut bait, stirring the mixture constantly to distribute the poison evenly. Use the bait while it is fresh."

A NEW LEAD TOLERANCE ON APPLES

Recent releases from the Treasury Department and the U. S. Department of Agriculture bring the information that due to the results of certain tests that have been made relative to the toxic effect of lead arsenate taken internally upon the human body there will be an increase in the tolerated amount of lead as spray residue on apples. The tolerance of .025 grain of lead per pound of fruit is the new figure instead of .018, the old tolerance.

This action was taken after quantities of arsenate of lead in excess of the present tolerance had been consumed on food by humans over a period of time without any apparent injury or evidence of accumulated poisons in the system.

We quote from a part of the communications:

"In the light of this advice the Department will not institute action under the Food and Drugs Act against fruit containing 0.025 grain per pound of lead, or less. The tolerances for arsenic and fluorine have not been changed." (Signed) H. A. Wallace, Secretary of Agriculture.

This information will be welcomed by apple growers who ship fruit to other states. It has been rather difficult to meet the old lead tolerance and still adequately control the codling moth. The old

tolerance for arsenic of .01 grain per pound of fruit was not changed, for this is more easily met than the old lead tolerance. The tolerance for fluorine is the same as for arsenic and is not affected by the lead change.

HARVEST FESTIVAL OF ROBINSON EXPERIMENT SUBSTATION, QUICKSAND, KENTUCKY

The thirteenth annual Harvest Festival of the Robinson Experiment Substation was held on the station grounds at Quicksand, September 29-30. This festival has become an annual event of much importance to eastern Kentucky and is considered as a district or sectional state fair for eastern Kentucky.

Premiums were offered for the following: home needlework, handicrafts, sewing, canning, pies, cakes, candies, hay and grains, fruits, vegetables, hogs, cattle, poultry, 4-H club exhibits, and a baby contest. There was a large and warmly contested horseshoe pitching contest, the winner receiving a cash prize of $7.50.

Dr. Frank McVey of the University of Kentucky and Dean Thomas P. Cooper were in attendance and in charge of the general program. Mr. Roger Jones, superintendent of the station, was manager and saw that the program was carried out in every detail.

The number of exhibits exceeded those of former years, and many fine products were shown as the results of the year's work. In the fruit department, which was larger than usual, some of the highest quality and most highly finished fruit was on exhibit. Apple varieties showing special high quality were Rome Beauty, Stayman, York, Golden Delicious, and Grimes. There was also fine quality in Red Delicious, Winesap, and Black Ben apples. Competition in the fruit department consisted of separate sections for commercial orchards and home orchards. Plate exhibits of each of the following nine varieties, Rome Beauty, Ben Davis, Winesap, Stayman, Delicious, Black Ben, York Imperial, Grimes Golden, and Golden Delicious were made. There was also a commercial orchard entry of ten trays and for the best roadside market package. The ten-tray commercial class was won by Mr. R. H. Harris of Winifred, Kentucky. Second place went to Mr. Fred Van Hoos of Mingo, Kentucky.

The fruit crop in this section was light as in most sections; and the fruit that had been sprayed showed fine quality; while some of the home orchard exhibits that had received no pest-control treatments were of a low grade being unsound and of poor appearance.

An educational exhibit of the various insect and disease injuries to apples caused much comment and was of much interest to many of those in attendance.

The potato and vegetable departments were very large this year, and some very fine and high-quality products were exhibited in these departments.

There was considerable discussion by visitors of the possibilities for the fruit industry in eastern Kentucky, and many questions were asked which showed that there is increasing interest in better fruit growing and better orchard practices in that section of the state.

ITEMS OF INTEREST

Lime in Soil

Most fruit and vegetable crops grow best in a slightly acid soil.

Good plant growth requires the presence of lime in the soil; but lime should be added with caution, for overliming is not easily corrected.

Available Potash

Most Kentucky soils contain an abundance of potash, but only a small percentage is in soluble form and available to plants. The amount of soluble potash is greater when the organic matter content of the soil is maintained at a high level. In Ohio a larger amount of soluble potash was found in untreated soils where fruit crops had been mulched for several years than on unmulched soils that had been treated with potash fertilizers.

Drainage

Poorly drained orchard soils during the rainy season just past have caused damage to many fruits. With peaches in these soils the leaves turned yellow then dropped off, leaving the trees weak and ill-prepared to stand the coming winter and to mature a good crop next year.

Apple Spot Injury

In apples there has been some appearance of stippen on the fruit which is noticeable as slightly sunken spots. The trouble is sometimes called bitter pit, but the affected areas are not always bitter. The cause is ascribed to disturbed water relations within the fruit and seems to occur when the soil is either too dry or too wet. The only remedy known is to correct the moisture conditions in the soil.

Moss on Fruit Trees

Moss on fruit trees usually is an indication of lack of vigor or an adequate spray program.

PREPARATION FOR WINTER SPRAY WORK

As was mentioned in the October issue, it is a fine policy to overhaul the spray equipment and have it in readiness for the winter spray work. Besides this, the cautious grower also sees to it that he has an adequate supply of spray materials on hand to give his trees a complete and thorough spraying Records show that one of the most frequent reasons for failure to get adequate protection from spray applications is the failure to use enough spray material per tree to completely cover the tree. The importance of careful and complete coverage, hitting each twig and spur particularly in the top of the tree, is also generally recognized but often poorly executed.

The grower generally recollects the number of tanks of spray material that his trees required the previous season and bases his this year's spray needs on that amount.

KENTUCKY AGRICULTURAL EXPERIMENT STATION
LEXINGTON, KENTUCKY

I AM receiving Kentucky Fruit Notes, and wish to have my name left on mailing list. .....

I AM NOT receiving Kentucky Fruit Notes, but wish to have my name put on mailing list. .....

This bulletin is to be free of charge.

I am particularly interested in: Berries.....

Apples....., Peaches....., Other Fruits.....

Name.....

Address..... County.....

In order that growers can compare the amount of spray material they are using per tree we are publishing below the approximate amount of spray material found to be adequate for covering apple and peach trees of various ages in full foliage.

Based on the above information, a grower can ascertain whether or not he has been using an amount of spray material that is generally considered adequate to cover trees the age of his. The above information is also helpful in figuring the number of gallons of spray material needed to spray an orchard and, hence, helpful in figuring the amount of spray materials that would have to be bought for the spray season.

SPRAY MATERIAL NEEDED PER TREE IN FULL FOLIAGE:

Age of Trees	Apple Trees	Peach Trees
1 to 3 years	¼ to ½ gallon	¼ to 1 gallon
3 to 5 years	½ to 2 gallons	1 to 2 gallons
5 to 6 years	2 to 3 gallons	2 to 2½ gallons
6 to 8 years	2½ to 4 gallons	2½ to 4 gallons
8 to 12 years	3 to 5 gallons	3½ to 5 gallons
12 to 18 years	5 to 8 gallons	4 to 6 gallons
18 to 25 years	8 to 12 gallons	4 to 6 gallons
25 years and older	12 to 15 gallons	

Table from Va. Bulletin 131, 1938 Revision.

ORDERING NURSERY STOCK

On most berry and fruit farms there is a need for at least some additional nursery stock each fall; either for resetting vacant places or for new plantings. The grower that gets his order in early stands the best chance to get the variety and quality of plants he orders. Below we publish the number of plants that are required to plant an acre set at various distances.

Distance	Plants Per Acre
3′x3′	4840
6′x6′	1210
7′x7′	889
20′x20′	108
25′x25′	69
30′x30′	48
35′x35′	33
40′x40′	27

RECENT BULLETINS OF GENERAL INTEREST

How to grow strawberries in Tennessee. E. M. Prather. (Dept. of Agri., State of Tenn. Circ. No. 3. 1936.) Nashville.

Pollination and fruit setting. A. E. Murneek. (Mo. Agr. Exp. Sta. Bul. 379. 1937.) Columbia.

The "Graduated Space" method of thinning apples. H. P. Gaston and G. L. Ricks. (Mich. Agr. Exp. Sta. Spec. Bul. 281. 1937.) East Lansing.

Strawberry fertilizer studies in Maryland. W. E. Whitehouse and A. L. Schrader. (Univ. of Maryland, Agr. Exp. Sta. Bul. 403. 1936.) College Park.

The oriental peach moth in Virginia apple and peach orchards. W. J. Schoene, L. R. Cagle, M. L. Bobb, and R. N. Jefferson. (Virginia Agr. Exp. Sta. Bul. 308. 1937.) Blacksburg.

Cultural systems for the apple in Ohio. C. W. Ellenwood and J. H. Gourley. (Ohio Agr. Exp. Sta. Bul. 580. 1937.) Wooster.

Beekeeping in Kentucky. W. A. Price. (Ky. Ext. Circ. 288. 1937.) Lexington.

Chemically treated bands for codling moth control. A. M. Woodside. (Virginia Agr. Exp. Sta. Bul. 315. 1938.) Blacksburg.