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KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

STRAWBERRY MULCH MEETINGS

During the month of March field meetings were held in each of the six strawberry mulch experimental fields. The meeting at the H. Olges farm in Jefferson County was held on March 2. The meetings in southwestern Kentucky were held during the week of March 27–31. Three of these fields are in McCracken County and are located on the farms of J. T. Warner, Route 6, Paducah; Lester Harris, Route 2, Kevil; and Frederick Beyer, Route 2, Paducah. One is in Marshall County and is located on the farm of Mr. J. L. Brien, Route 6, Benton, Kentucky, on Highway 68. The experimental field in Graves County is located on the farm of Mr. J. L. Overby, Route 5, Mayfield, Kentucky. All of these men are well known in their respective communities, and those interested in visiting the fields for observations of the plots that have been mulched at different times and with different amounts of mulch will find that there are many who can direct them to any of the above fields if they inquire. To further identify these experimental fields small signs have been prepared which are displayed near the road at each farm, stating that experimental work is being conducted there in cooperation with the Kentucky Agricultural Experiment Station.

Each of the above field meetings was well attended by a number of interested growers; and it was very interesting to compare the 1-ton, 2-ton, and 3-ton mulch applications that had been put on in December and February. In most cases the March mulch applications were made during the meeting; and the difference in thickness of mulches on the 1-ton, 2-ton, and 3-ton plots was of general interest and caused considerable comment. At this last mulching it was found that the 1-ton application could be applied generally over the row and over the middles; however, with the 2-ton application only a small amount was put over the row with a larger portion between the rows; and with the 3-ton application still a larger amount was required to go between the rows. These heavier applications offer more protection to the pickers and should serve to hold considerable moisture in case the season turns off dry.

Of the plots that had been mulched in December and February it was found necessary to rake off considerable straw from the top of the rows with the 3-ton application and a bit less with the 2-ton applications. This extra straw was raked to the middles and tramped down. In most cases it was necessary to move only very little or none of the straw from the rows where an early application of 1-ton had been made. It was noticed that the plots receiving 2- or 3-ton applications were a bit slower leafing out than the plots that had received no mulch or a 1-ton application. There was

much speculation among growers as to how much later the heavy mulch applications would cause those berries to be. Also it was pointed out by some that in holding back some of the blooms the heavy mulch might protect those plots from late freeze or frost injury.

On most of the patches where there was any ridging of the rows there was noticed considerable washing of soil away from the roots of the plants on the edges of the ridge. This was more noticeable on first-year patches than on second-year patches where the foliage and growth was thicker. One patch where the rows run up and down the slope and are quite highly ridged showed severe washing of soil away from the plants and showed considerable root and crown injury where the soil had been washed away and the crown of the plant and the base of the roots had been exposed to the hard freezes of late winter. A certain amount of this injury could also be laid to heaving by frost; but as we have had a rather mild winter, most of this was laid to the washing of the soil, especially when it was noted that under the earlier mulch in the same field this soil washing had not taken place and the plants were well bedded in the soil and looked to be in fine condition.

The threat and danger of using fresh straw was brought out again in some of the plots that had been mulched early. There was a good stand of young wheat coming up in spite of the fact that the bales had been broken open and allowed to be wet and sprout by the fall rains before applying the mulch. In other plots the straw had been brought fresh from the barn or the stack, and some wheat is coming up there also. This emphasizes again the importance of the use of old straw or insuring the germination of the wheat seed before applying the mulch.

A complete set of harvest records will be kept on these plots showing the dates of harvest and the trend as to earliness and lateness of each of the plots, as well as the size of the berries. This information, when tabulated, will be of great interest and will show the trends of such treatments during the present year. More records covering other seasons of different conditions will, of course, be needed before any definite conclusions can be reached as to general recommendations based on this work.

WHITE GRUBS WANTED

Every year strawberry growers have trouble with grub worms and want to know how to get rid of them. The truth is that Experiment Station workers are at a loss to answer such questions, since no one in this country knows much about the grub worms injuring strawberries.

Dr. P. O. Ritcher of the Experiment Station has studied white grubs as sod pests for several years and is beginning a study of grubs as strawberry pests. He is trying to find out the kinds of grubs that injure strawberries. He is studying their life cycle, and trying to find out what crops strawberries should follow to avoid injury.

Every grub found in a strawberry patch may not be a kind that feeds on berry plants. Some grubs feed only on manure or other organic matter in the soil. Other grubs may be feeding on weeds. The only way to find out the kinds of grubs injuring berries is to watch for dying plants

and then dig down and get the grubs that are feeding on those plants.

Dr. Ritcher asks that growers watch for grub injury and send in any grubs found killing plants so they can be identified. Grubs will remain alive if placed in moist soil in a box or can. They should be sent to the Department of Entomology and Botany, Experiment Station, Lexington, Ky.

PLUM CURCULIO WARNING AND CONTROL OR JARRING FOR CURCULIO

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

Kentucky fruit growers are well acquainted with the curculio that attacks plums, peaches and cherries. Spraying with lead arsenate is the standard control measure and kills many adult curculios when applied soon after peach shuck-fall and again two weeks later. Some growers apply these sprays without regard to whether or not curculios are present. Other growers, however, practice "jarring" to find if they have curculios in their orchards and whether or not any sprays are needed. Many more growers should adopt this valuable practice.

Jarring is done by spreading a large canvas or cloth sheet on the ground under a peach limb or tree. The limbs are then struck several quick blows with a padded mallet or the end of a "2x4" padded with a piece of auto tire casing. Adult curculios are small, brownish-black snout beetles about 3/16 of an inch in length with roughened wing covers. If present, jarring causes them to fall to the sheet where they may be counted, recorded and destroyed.

Jarring works best early in the morning before 8 o'clock while it is still cool and the curculios are numb and inactive. Early in the season jarring should be done on plum trees or on peach trees located at the edge of the orchard near fence rows or woods. If curculios are found in these favorite spots, then jarring should be continued on selected trees over the orchard. By doing this any grower can easily follow the movements of the curculios and find out how abundant they are and if spraying is necessary. When jarring indicates they are present generally, spraying should start in the part of the orchard in which they are found first. If possible, growers should combine zinc sulfate and lime with any lead arsenate spray applied to peaches (see Experiment Station spray schedule). The correct formula is 3 pounds of lead arsenate, 3 pounds of lime and 2 pounds of zinc sulfate to 100 gallons of water. Growers unable to obtain zinc sulfate may use 2 pounds of lead arsenate and 6 pounds of lime to 700 gallons of water.

Many years ago, before curculio sprays were invented, growers controlled curculios by daily jarring of every tree in their orchards. Some orchadists invented so-called "curculio catchers" consisting of cloth frames on wheels that could be run under each tree and struck against the trunk. Growers who have only a few trees and wish to avoid spraying are urged to try daily jarring as a control measure for curculio.

Picking up drops. In addition to jarring, picking up drops can often be used as a control measure in small plantings. In the Georgia peach belt, where labor is cheap, the gathering and destruction of drops is an important method of

curculio control even in large acreages.

Drops the size of a pea or larger should be cut open in the sections of the orchard where curculios were found to find out how many curculio grubs are present and when drops should be gathered. Drops should be collected once or twice a week for as long a time as cutting shows that the curculio grubs are present. Drops may be destroyed by burning, burial several days in the soil or by submerging drops in water for a week or more.

In certain years there is a second generation of curculio in Kentucky and curculio grubs injure peaches just before harvest. Picking up and disposing of large drops during and after harvest will help reduce the following year's population of curculio.

Seasonal notes. It may be of interest to growers that curculios were first found in 1939, in Graves County, near Mayfield on April 15 and 17 and at Princeton in Caldwell County on April 18. At this time, shucks were beginning to split on Elberta.

SOFT GROUND vs. NECESSARY SCAB SPRAYS

By

J. M. HARVISON, Harvison Orchards, Bowling Green, Ky.

Our orchards are located on a type of soil such that during spring months of frequent rains it is next to impossible to drag a spray outfit through the orchard. It is not unusual for the outfit to sink to the axle. Yet during such weather, apple scab—which happens to be our outstanding pest in growing clean apples—is spreading rapidly. Our failure to control the "Apple Scab" during the two weeks before blossom results in a crop failure. Two seasons during the past five years we have kept our crop relatively free of apple scab by using a portable-stationary spray outfit. We have certain permanent drive roads throughout the orchard on the higher land and which carry a heavier sod. We keep the spray outfit on the roadways and connect our spray hose so that we have one lead of hose 150 feet long. By means of this long hose we are able to spray 30 trees without moving the spray outfit. Naturally, this slows down our spray operation; but we find it highly practical as compared to losing a crop of apples, waiting for the ground to get firm.

We are in the process of improving our water supply system for spraying and plan to mount a large cheap tank on the highest point in the orchard, then by gravity allow the water to flow into smaller elevated tanks distributed through the orchard. We have picked up several hundred feet of used one-inch iron pipe and a used force pump at a very small cost. The pump will be mounted near a spring that furnishes an abundant supply of water and the water forced into the large elevated tank on the hill. Incidentally, the same water system will give us a liberal supply of running water in our house, barn, and pasture fields. We believe it is more economical to allow water to flow into the kitchen by gravity than it is to carry it in a bucket.

The ability to apply 3 extra 200 gallon tanks of spray material per day, through the use of a more convenient water system, we believe will return us over 100% each year on the small investment necessary in making these improvements.

A READER'S COMMENT

All of our family are horticulturally minded and look forward to the monthly copies of "Kentucky Fruit Notes." I am keeping a special file for them and have already had occasion three times to look up the detailed facts of some of the articles. No one can succeed very long in his profession without using scientific information in solving his own problems. —J. M. H.

PICKING, PACKING, TRUCKING, AND SHIPPING STRAWBERRIES

By M. P. NICHOLS,

County Agent, Muhlenberg County

Editor's Note.—This is the second time we have been privileged to publish some of the good material on strawberry activities put out by Mr. M. P. Nichols. The other article was in the December-January issue and was entitled **The Three "W's" and How of Mulching Strawberries.** Mr. Nichols is one of our very active county agents in behalf of the strawberry industry, and it has been largely through his energetic efforts coupled with the cooperation of fine growers that the strawberry industry in Ohio County and Muhlenberg County has been developed, as Mr. Nichols was agent in Ohio County before moving to Muhlenberg. This is the type of timely instruction and information that Mr. Nichols sends out to his growers, and it seemed to us that this was of wide enough interest and of sufficient importance to pass on to all of our readers for what good they might receive from it. We would like to have comments from our readers on this type of information and articles.

1. Just enough mulch should be on to hold moisture and keep berries clean. Any large weeds should be cut off smooth with ground but not pulled now. Drain low places so rains will run off quickly.
2. Provide a good, light, six-quart handy for each picker.
3. Engage 12 or 15 pickers for each average acre.
4. Quart, handy, and crate tickets in different colors save the time required to keep record of quarts picked.
5. Keep two pickings of complete empty crates ahead. Keep them dry and clean.
6. When an Aroma has just become entirely pink is the most ideal time to pick. Only a few in a quart may have small white places on them when inspected.
7. Pick clean one-half of both rows to the right and left of you as you go along between them.
8. Berries rotting in patch make others rot, so pick all defective and put in cull box.
9. Start picking as early in the morning as you can. If there is a heavy dew you could wait until part of this is off, more on account of pickers than berries.
10. Never pick in the afternoon unless forced to by rain.
11. At the beginning and end of the season with normal weather the entire patch may be picked every other day. But most of the season and especially during hot or rainy weather they must be picked **every** day.
12. In picking, grasp berry stem under thumb nail and with forefinger of either hand, palm down; thumb and finger to be against the calyx with the berry pointing downward.

Raising the hand, shear off the stem over the thumb nail, leaving about one-half inch of stem with berry.

13. Place berries in quart box gently; handle gently.
14. Use a six quart handy keeping it ahead of you as you pick Pickers fill all from bottom up, at same time. That is, start to fill all quarts at once and keep filling all quarts together.
15. Pile each quart up, since they are loose and corners are not full.
16. If it rains when you want to pick, **go at it as soon as they are dry.** If many have gotten too ripe, have pickers go over patch and get those out of way before picking for shipping.
17. One or more, if necessary, of the six quarts in each handy should be marked with a leaf as a cull box and pickers are paid for this whether full or not.
18. Pickers should grade them as they pick. Never touch a berry unless absolutely necessary. Handling a berry ruins it for market.
19. Cull berries are green ones, over-ripe (Dark red all over, or calyx brown), cat faced, hollow, those eaten upon, dirty, rotten, hearted, and bruised berries.
20. If any picker cannot be taught to pick clean and properly and grade the berries as they are picked, it is very unprofitable to have him in the patch.
21. A packing shed or good shade near a house or clean barn is absolutely required. Do not pack berries near manure or other attraction for flies.
22. Handies of berries must not be allowed to set in sun after picking.
23. Keep cool and from rain and dust.
24. Check on questionable quarts by turning over carefully into another empty box.
25. Facing and packing, a most particular task, is usually done by the grower's wife.
26. Corners of the quarts are carefully filled out and large and smaller berries so placed as to make an even surface. But no special attempt should be made to hide the stem and calyx of the berries.
27. The level of the berries should be about one-half the thickness of good sized berries, above the top of each quart box.
28. Be sure that every quart is set in crate properly. Many berries are badly crushed when each quart is not set in just right.
29. The dividers should be placed with long strips down, on top of each layer of quarts in crate. A few berries may have to be moved so these three strips don't crush them. When crates are filled, berries will extend about 1 in. above top of crates. More is required for long, rough hauls. Gently shake, put on last divider.
30. Have crate setting on something firm and smooth. The top should not be nailed on until time for truckman. Nail one end in place and gently press down other end until it touches the end frame. Now put a nail in other end. The middle of the lid will be sprung up. Always set crates level and solid.
31. Be sure that label on end is right side up. Grower's name should be stamped once on end of frame above label and once on top of crate. Never stamp name on label.

32. If hauled in wagon, place a few inches of straw or something soft under them.
33. Never stack crates one above other without strips between ends to bear weight.
34. Every grower should see his truckman and deliver berries to road so they will not have to wait in sun and dust.
35. Write on slip of paper the number of empties the truckman should bring back.
36. Try to have your truck reach the shipping point by noon. If you miss the truckman get them to the station somehow. Never try to hold berries over, as they'll be rejected. Exchange part crates with neighbors to make full crates.
37. Instruct your truckman what to do with your berries if rejected.
38. If berries are rejected, learn what the cause was so it can be corrected. The common causes are—too ripe, too green, dirty, or short pack.
39. We are glad to help you, and it pays our sales agent to get a high price.
40. Study these sheets carefully and keep for reference. If you still have berries rejected, the County Agent will call at your patch if he can find time.

TERRACED PEACH ORCHARDS

W. D. ARMSTRONG

In the last few years there has been an increased acreage of peach orchards set on terraced land. This has been brought about by the severe erosion that has taken place in many orchards set in straight rows on rolling land where cultivation has been carried on up and down the hill rather than on the contour. It has also been brought about by the additional attention towards terracing and the saving of our soils from washing under the programs sponsored by the Soil Conservation Service and the Extension Service.

Large plantings have been made on terraced land in the rolling sections of Georgia and South Carolina, as well as in several other states. Several new plantings of peaches on terraced land have been made in Kentucky. Attention was called to one of these, which is located on the farm of Dr. D. W. Doran of Mayfield, in an earlier issue of this bulletin. Another such young orchard is on the farm of Mr. S. C. Holloway of Sedalia. A few additional plantings have been made. These plantings will be watched with considerable interest by orchard men who are studying ways and means of getting good peach tree growth and yet manage their soil in such a way as to prevent serious erosion.

An additional small peach orchard was set during March on the grounds of the Western Kentucky Experiment Substation at Princeton. This is chiefly a variety test block where it will be possible to gather some information on the cultivation and growth of a young terraced orchard, as well as to learn the varietal adaptability of a number of the new and promising varieties which were planted. The trees in this orchard were planted with one row on top of each terrace, the trees being placed 25 feet apart in the row. Where there was enough room between terraces for one or more additional rows of trees contour lines were run parallel to the terraces and 25 feet above or below the terraces. Three double furrows were thrown to each of these contour lines to make an additional so-called tree ridge, and trees were

planted on this ridge the same distance apart as on the terraces. These tree ridges help carry the water falling between them and take some of the load off the terraces. All of the cultivation is to be done on the contour with the terraces and none up and down the slope. A number of the problems connected with growing orchards on terraced land will be encountered with this orchard, and it is hoped that by the study of these problems some information can be added to the general knowledge of this type of orchard culture in Kentucky.

Orchard Terracing Bulletin

There is considerable thought and work being exerted along the line of terraced orchard culture and growth by the U. S. Department of Agriculture, Soil Conservation Service, and a number of the various state Experiment Stations and Extension Services. Within a few years there should be a number of new publications dealing with this subject. At present one of the best bulletins dealing with this system of orchard management is Bulletin No. 97 entitled "Orchard Terracing" of the Clemson Agricultural College, Clemson, South Carolina. Those interested in going into this problem further can no doubt receive this bulletin upon application.

INSECT PARASITE LIBERATIONS

In the fight to control some of the serious insect pests man is in many cases enlisting the services of other insects which feed and prey on the harmful insect pests.

In co-operation with the Federal Parasite Laboratory of Moorestown, New Jersey, two shipments of parasites were recently received by the Experiment Station. One of these was released in the Experiment Station orchards at Lexington, Fayette County; the other was released in the orchard of H. E. Beyer, Paducah, McCracken County.

This particular parasite is a wasp (Gambrus Stokesii) which parasitizes the pupa stage of both the oriental fruit moth and the codling moth, two of our most serious pests. Some previous liberations of parasites have been made and are under observation. Other shipments of parasites are expected and growers having acute insect problems are invited to correspond with the Experiment Station and it is possible that some further co-operative parasite liberations can be made.

FRUIT PACKAGE NOTICE

"Of importance to fruit growers is a new regulation of the Federal Food and Drug Act, effective June 25, which demands that every container of fresh fruits and vegetables shall contain the "name and place of business of the manufacturer, packer or distributor," together with "an accurate statement of the quantity of the contents in terms of weight, measure or numerical count." Berry or other containers of one quart or less are exempt; however, the large container in which they are transported must be marked as above, and in addition must show the number of small containers packed in it and the quantity of contents of each such small container or cup."

—American Fruit Grower