

KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

Supplies and Equipment

Wartime shortages of labor, baskets, fertilizers and some spray materials seem to be getting more acute all of the time. The same goes for repair parts and repair work.

All needed materials for the 1945 crop should be ordered and accepted at once. Baskets, fertilizers, and some spray materials, if stored in a good, dry barn or shed, will carry over to 1946 in good condition and will be on hand when needed. To meet present demands and conditions it is becoming more and more necessary to place orders well in advance of time of use. This applies to us all.

KENTUCKY STATE HORTICULTURAL SOCIETY

The 88th annual meeting of the Kentucky State Horticultural Society, the College of Agriculture and Home Economics cooperating, was held at Mayfield, Kentucky, on January 18. A large group of highly interested fruit and berry producers were on hand, and entered into the discussions. Dr. M. J. Dorsey of the Horticulture Department, University of Illinois, and Prof. L. F. Steiner, Federal Entomologist from the Vincennes, Indiana, Codling Moth Laboratory were the two featured out-of-state speakers. Dr. Dorsey gave a very interesting discussion of some peach production problems. A general write-up of his talk is published in this issue, and each peach man is urged to read it carefully.

Prof. Steiner gave a report on their 1944 experiments with DDT against codling moth and presented some other valuable codling-moth-control information. A summary of Prof. Steiner's discussion follows:

"The new insecticide DDT has been extensively tested against the codling moth at Vincennes, Ind., during the seasons of 1943

and 1944. In a large-scale test DDT sprays at 1 pound per 100 gallons were more effective than the standard nicotine bentonite program (1 pint of nicotine sulfate (40 percent nicotine) per 100 gallons), and in small-plot field tests DDT at 1 lb. per 100 gallons gave much better control than the standard lead arsenate program (4 and 3 pounds per 100 gallons).

"DDT is a very effective supplement or fortifying agent when added in small quantities to lead arsenate or nicotine bentonite, and can be used in split schedules ahead of or following sprays of lead arsenate or nicotine bentonite. It can be used effectively with summer oils and with bordeaux mixture.

"Owing to variations in the physical properties of different lots of DDT received for testing, the results have varied considerably. Much remains to be done to develop formulations most suitable for codling moth sprays.

"At certain dosages in the range required for codling moth control DDT is very toxic to important predators of the European red mite and the common red spider. Under favorable weather conditions in DDT-sprayed plots the mite population has built up to extremely destructive levels in record-breaking time.

"DDT is very effective against apple leafhoppers and has shown promise in the control of several species of apple aphids.

"Much more experimental work must be done before general adoption of DDT by growers is desirable. There are no indications that a supply will be available for general use in 1945."

A panel discussion was led by Mr. W. W. Magill, which brought out some good pointers on brush thinning of peaches, picking fruit on a bushel basis, pruning, spreading

**CIRCULAR OF THE KENTUCKY AGRICULTURAL EXPERIMENT
STATION, LEXINGTON, KENTUCKY**

fertilizer, rodent control, and opportunity for early apples in Southwestern Kentucky, pointing out the high returns of early ripening fruit and the shorter fight necessary against codling moth.

Dr. P. O. Ritcher discussed the fruit-insect situation of 1944 and warned that actual results in insect control were usually in proportion to the actual effort and wisdom used in applying control measures.

W. D. Armstrong discussed the 1944 and 1945 spray service program and the 1944 results with fermate spraying for the control of quince rust and cedar apple rust on apples. The fermate sprays gave excellent control of these two diseases that are often bothersome in orchards having wild red cedar trees near by. The material is available only in small quantities in 1945, but supplies should be ample in the post-war period.

Resolutions were passed regretting the recent death of Mr. Fred C. Van Hoose, Paintsville, Kentucky, Mr. B. L. Karcher, Jefferson-town, and Mr. O. Piper of Clinton, Kentucky, three of Kentucky's outstanding fruit growers and horticulturists.

Mr. Herman Yopp, Paducah, Kentucky, was re-elected president, Mr. William Fegenbush, Louisville, Ky., and Dr. D. W. Doran, Mayfield, were also re-elected vice presidents. Mr. Wendell Van Hoose was elected vice president in the place of his father, the late Hon. Fred C. Van Hoose; Mr. W. W. Magill, Lexington, Ky., was re-elected secretary-treasurer.

PRODUCING AND HANDLING THE PEACH CROP

M. J. DORSEY

Department of Horticulture
University of Illinois, Urbana, Ill.

Judgment is required on the part of the peach grower to properly handle some of the variables which occur in harvesting the peach crop. We are familiar with most of the extremes encountered. There are variables in the bud set, in the winter killing of the buds, in the quantity of fruit buds removed in pruning, in the set at bloom, and in the drops, to mention a few. It would take pages to treat all of the

factors in detail, so at this time, primary emphasis will be placed upon those which lead to the excess crop.

Under normal conditions, most peach varieties produce more buds than are necessary for a crop. This excess is carried through to full bloom whenever the fruit bud killing has been light. When the fruit bud set has been heavy, winter killing, up to as much as 50 percent of the buds, may not be very evident at bloom. Then again, an exceptionally heavy bloom, when conditions for pollination and fertilization are unfavorable, may not result in as heavy a set of fruit as a lighter crop of buds. The end result of a heavy bud set or a heavy bloom, however, cannot really be foretold until the three natural drops are pretty well over. At the end of the third, or June drop, the grower can make a fairly accurate estimate of the crop excess he will have to deal with that particular season.

After a careful review of the relationship between the bearing capacity of the tree, and the relation between the size of fruit and number of peaches per tree, it has been estimated at the Illinois Agricultural Experiment Station that approximately 1,200 peaches per tree at maturity is a safe tree load. With this number as a base, the grower can determine the excess crop he has to deal with in thinning by counting the peaches on a typical tree.

Bloom Thinning Versus Later Thinning

On account of the shortage of labor during the last two or three seasons, there has been considerable interest in reducing the thinning costs. Experimental attempts have been run to reduce the crop during bloom by the so-called brush thinning method, or by cutting the excess crop down after the extent of the June drop is evident by various limb-tapping devices. Either of these methods can be used to reduce the excess crop load, but under northern conditions, especially when the bloom period is early, most growers would probably be reluctant to thin as early as bloom. However, while bloom thinning shows great promise not only in reducing costs, but also in enabling the grower to take full advantage of an early removal of the crop excess, we need

more experience with this method, variety for variety, in different sections of the country. In the late spring frost regions, the limb-tapping method has some advantages because of the greater certainty of reducing the crop load to the proper limits. It may be predicted, however, after more experience with these new methods of thinning, that the old hand methods will be greatly improved upon. These new methods, therefore, promise to become marked advances in reducing production costs.

The Excess Crop

The excess crop load comes to a climax at harvest. Experiments at the University of Illinois show that the effect of thinning upon size at maturity is marked, even when done up to within six weeks or so of harvests. Therefore, some reduction, in the crop, which appeared to be quite light earlier in the season, can be made late rather than not at all. Late thinning may even take the form of a limb release type of adjustment, in case the crop seems to be too heavy on some of the larger limbs, by pulling off the smaller or injured peaches rather than allowing the entire crop to remain only to break the limb as the fruit load becomes heavier.

Even Picking

As the crop comes up to maturity, some peaches ripen considerably ahead of others. Among the first to color are those with the split pits, especially in the outer and upper parts of the tree. It is difficult with experienced help to get picking done at an even stage of maturity, but when inexperienced help only is available, the grower has increased trouble in this direction. Some pickers continually pull off peaches representing the entire range of maturity on the tree. There is considerable loss in volume or yield in picking this way because peaches at all stages of maturity enlarge as long as they are left on the tree. The foreman, therefore, has a very responsible position in supervising the work of a picking crew, and it is at this point that the peach grower must face two very important factors. In the first place, starting with the earliest stage at which peaches are normally picked, the carrying capacity gradually falls as maturity is approached. On the other hand, consumer acceptance

rises as the fruit matures to tree- or even soft-ripe peaches.

In order to obtain greater carrying capacity and thus reduce the loss between the packing shed and the retail counter, there has been a heavy reliance upon picking peaches when they are more or less immature, that is, when the background color is still greenish instead of yellowish in cast. While this practice has been of fairly long standing and has seemed to be necessary for the basket trade, it should not be overlooked that carrying capacity in peaches can also be obtained or increased through temperature control. That is, tree-ripened peaches may be shipped as far in pre-cooled, iced shipments, as fruit picked at a lower degree of maturity but sent to market in uniced shipments. A recognition of this fact will make it possible to take advantage of the greater consumer acceptance of peaches picked when firm-ripe or tree-ripe. The basket trade should be brought to realize the advantage of picking no earlier than firm-ripe; that is, when the background color begins to assume a distinct yellowish cast.

Distributing the Harvesting Load in the Orchard

A general recognition among peach growers that there is a need for a greater range of good varieties both before and after the Elberta season, is gradually coming to the fore. Such varieties are already in the making in the various breeding projects at the state and government experiment stations. It will take time to get experience with these new introductions and to determine the best ones, but in the end, varieties at least as suitable as Elberta may be expected to appear, starting early in the season and continuing as late as the oriental fruit moth will permit peach production in the different sections. This will require considerable readjustment in the various producing areas, but this trend is already well in evidence.

As we come into the spring months of 1945 with all regions set for a crop, special care should be taken this season to raise the quality rather than the quantity of the crop. The experience last year with so many small peaches and green picking should stimulate action this year in: (1) limiting the crop load

by thinning so that, assuming good cultural care, the major part of the production will be in the more acceptable sizes—i.e., certainly above 2 or even $2\frac{1}{4}$ inches; (2) picking should not be started before the most advanced peaches are firm-ripe—i.e., when the background color of Elberta is assuming a distinct yellowish cast; and (3) taking greater advantage of adequate temperature control in shipment or in storage.

These are the three basic approaches to handling the peach crop because small peaches are reduced to a minimum, greater advantage is taken of the ripening swell of the peach and thus the increased yield, and finally, public acceptance is more active with firm-ripe, tree-ripe, or even soft-ripe peaches.

LITTLE PEACHES EXPENSIVE

Thinning time will soon be upon us. We will have to get it done some way. If the peach crop sets according to bloom, there will be a "grape-shot" crop unless it is thinned. Some work was done at South Carolina Experiment Station in Food Industries with the idea that there may be a great increase in canning of Eastern freestone peaches after the war. Some of the findings may be of interest to growers selling peaches for home canning. It was found that it required **more** time to prepare **less** canning stock as the size of the peaches became smaller. That was nothing new, but the figures are interesting. For example, it required 150 man-hours to pack 100 cases (24 No. $2\frac{1}{2}$ cans each) of 2-inch peaches, but only 81 hours to pack a like amount of $2\frac{1}{2}$ -inch peaches. Also, 2-inch peaches produced only 32.6 cases per ton while $2\frac{1}{2}$ -inch peaches produced 43.5 cases per ton. On the basis of 1942 wages and prices, it cost \$1.77 to put up a case of 2-inch peaches and \$1.37 for $2\frac{3}{8}$ -inch peaches. It was stated that use of small fruits for canning is justified only when price is low enough to off-set increased labor costs and smaller output of canned goods. Usually the larger, better-grown fruits have been much better quality. Maybe these figures show why the housewife prefers larger peaches for canning.—**Maryland Fruit Growers' News Letter.**

NATIONAL PEACH COUNCIL MEETING

On February 21-22 the National Peach Council held its second annual conference at St. Louis. Nineteen peach-producing states were represented by one or more men. These states were Arkansas, Colorado, California, North Carolina, South Carolina, Illinois, Indiana, Kentucky, Maryland, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Washington. These states represent approximately 86 percent of the average national peach crop, or 50 million bushels out of the average total of 58 million bushels.

The conference worked hard for the two days and discussed many features of the peach industry. The fair and diligent manner in which all sectional problems were considered gave evidence that the group is really national in nature and is working for the best interests of peach men and consumers the country over. It was agreed that peach consumption the country over could be increased enormously if riper, high-quality fruit were more generally available to the consumer. Recent tests showed that customers would take riper fruit at a higher price in preference to green peaches. The spoilage was also less in the riper fruits because they moved out quicker, while the greener fruit was not taken, and remained to shrivel.

The importance of having more high-quality peach varieties, so that these varieties could be available to spread the peach season over a greater period of time, was stressed. Progress in developing earlier, high-quality varieties by several states and the U. S. Department of Agriculture was reported, and the impression was that further great improvement in varieties could be expected soon. The importance of high standards in grading and packing fruit was stressed as a necessity in gaining, keeping, and extending consumer confidence.

Crop Outlook for 1945

All states reported a medium to heavy bud set with no winter injury to date, and prospects for a very heavy peach crop in 1945 if favorable weather prevails. All states also reported commercial plantings

had been getting excellent care recently and were in fine condition. The labor and supply situation was described as serious for 1945. In most states recent new plantings had been enough to maintain the normal production, with some states showing a fair increase.

Recommendations

The group went on record as not being in favor of price ceilings on peaches, due to the extremely perishable nature of the crop and the short period in which it had to move to market. However, if ceilings are imposed, it was advised that they be not less than those of 1944 and that increased costs in labor, containers and other supplies for 1945 be recognized. It was also recommended that ceiling regulations should recognize proper differences in grades, to discourage the 1944 practice of selling culls to consumers at top ceiling prices.

The National Selective Service was called on not to draft key agricultural workers, but to abide by the spirit of the Tydings Amendment. The Office of Labor in the War Food Administration was called upon to re-double its efforts to supply agricultural labor for the heavy demands of harvesting the 1945 peach crops, and that part of this labor be made available to processors of food, and to extend and regulate the services of prisoners of war. The conference also went on record in favor of uniform truck-operating laws among states, in order to aid in the free movement of peaches to market by elimination of state barriers.

The constructive work of the conference made it clear that the peach industry is very fortunate in having a council of this nature to cope with the many problems facing the industry. This work is very important now, but it is generally thought that the Council will be of greater value to the industry in the postwar period. Mr. D. B. Perrinne of Centralia, Illinois, was re-elected president of the National Peach Council and Mr. Carroll R. Miller, of Martinsburg, W. Va., was re-elected secretary-treasurer. Kentucky representatives at the conference were Mr. Frank Street of Henderson, Ky., and W. D. Armstrong, Princeton, Ky.

A NEW BULLETIN

Of great interest to all thinking peach men is a new 100-page bulletin just published by the Illinois Experiment Station, Urbana, Illinois. The title is "Tree Conditioning the Peach Crop" and it is written by Dr. M. J. Dorsey and Dr. R. L. McMunn. This bulletin is a comprehensive report of a number of years work on the "study of the effect of thinning and other practices on size and quality of fruit."

This important work is discussed under the following headings: Tree Conditioning and Size of Crop, Growth of the Fruit, Types of Thinning, Growth Response to Thinning, What Determines Best Time to Thin, Combination Cultural Treatments, The Final Swell, Shipping and Storage Qualities as Related to Time of Picking, Soft Suture, General Summary, Conclusions and Recommendations. There is also an extensive review of literature and a number of literature citations.

Every peach grower would profit from carefully reading and studying this bulletin. Dr. Dorsey, the senior author, gave Kentucky peach growers an excellent discussion of peach production at the Kentucky State Horticultural Society meeting at Mayfield, Kentucky, on January 18, 1945. Also, Dr. Dorsey has written a report on this talk and it is being published in this issue of Kentucky Fruit Notes under the title of Producing and Handling the Peach Crop. You are urged to read it over and over.

STRAWBERRY FIELDS

Post-Harvest Treatment

W. D. ARMSTRONG

For two consecutive years, 1943 and 1944, simply cultivating the middles after harvest gave the highest strawberry yields in the field renovation project. Additional records are being taken in 1945. This work required a minimum of labor and gave high yields of large berries.

The scarcity of farm labor makes it necessary for every workable shortcut to be used. However, it is just as important as ever, or more so, to actually do the things that will promote high yields and high quality rather than to let things

drift and get smaller yields of small berries.

The Tests

The tests have been rather simple comparisons of three general types of after-harvest strawberry care, mainly the following: (1) Scratch cultivation of middles just after harvest and continuing through the summer with no real effort at narrowing the fruiting row; (2) heavy barring-off of the fruiting rows to a 6-inch width followed by cultivation the remainder of the season, and (3) no cultivation at all, with weeds mowed above the strawberry plants several times during the season.

Table 1.—1943 and 1944 and 2-Year Average of Renovation Plots in 24-Quart Crates per Acre.

Treatment	Yield		Two-Year Average	Berry Size
	1943	1944		
No. 1 Middles scratch-cultivated	159	160	160	Medium-large
No. 2 Heavy barring off—July 1 and cultivated	122	113	118	Large
No. 3 No cultivation—mowing weeds only	142	117	130	Small
Heavy barring off June 1	135			Large

These records show the scratch-cultivated plots to be far ahead of the barred-off and also the noncultivated plots. While berry size was largest in the barred-off plots, those of the scratch-cultivated were almost as large and a high percentage of them graded No. 1 berries. On the other hand, the noncultivated plots produced very small berries with practically the whole crop grading No. 2 after the first picking. However, where berries are sold for quick-freeze purposes, size is not as great a factor as yield.

Either early or late barring-off required by far the greatest amount of labor both at the time of the initial working and for the follow-up cultivation. Crabgrass was also much worse in these barred-off plots; for by reducing the shade, the grass came in more readily. It

will also be seen that early June barring-off is much more fruitful work than waiting until a month later, as so many people do.

Where cultivation work is started immediately after harvest, it is much easier to do before the usual drought, weeds and grass have made such a heavy start.

By using certain types of tools, one can start cultivating the middles without first removing the mulch. In 1944 one Paducah strawberry producer adjusted his new tractor cultivator, or tiller, so that two shoes would run to each middle, working two middles at a time. By running the tractor two trips per middle, a finished job was performed without handling any old mulch. In this way strawberry work was done in a few hours that would have taken almost a week of hard mule work.

In addition to simply cultivating the middles, close mowing of all strawberry foliage immediately after harvest gave good results in 1942-43. Many growers also use this system and like it well. On some seasons, however crabgrass has come up thick in the heavily mowed plots and caused trouble.

In summing up, this work shows to date that simply scratch-cultivating the strawberry middles, starting immediately after harvest, is apt to promote the heaviest yields the following year. Heavy barring-off and working out requires a great amount of labor, and summer drouths, often results in failure to re-establish a good fruiting row. The later the work is started the greater the reduction in yield, usually. Letting the strawberry patch go uncared for after harvest, except for weed mowing, reduces seriously the size of berries but often gives a total yield higher than heavy barring-off.

THE WINTER OF 1944-45

The winter has been wet and generally cold in Kentucky but not severe. The cool weather continued through February and held fruit buds back in a very dormant condition much longer than usual. Due to the absence of sub-zero weather generally there was practically no fruit bud killing on peaches, nor has there been cane killing on raspberries or blackberries.

The alternate freezing and thawing caused considerable heaving

and spewing in unmulched strawberry fields, and the frequent hard rains caused much soil loss by erosion from these fields. The near-zero weather of December also caused considerable injury to unmulched strawberries. Additional harvest records will be taken in 1945 on the mulch project comparing early December mulched plots with plots mulched in late March or early April (the latter purely a picking mulch).

The unseasonal and continuous warm rainy weather during the most of March caused one of the most rapid flower bud and leaf growths in years. Peaches started blooming in the southern part of the state by March 15 and in northern Kentucky by March 25. Apples were generally in bloom over the state by April 1 with some plantings almost ready for the calyx spray by then.

The fruit bud set on peaches, pears, plums and cherries is heavy and the blossom set on apples is somewhat scattered from orchard to orchard and between varieties. If the weather cooperates, 1945 could be a heavy fruit year in Kentucky.

CODLING-MOTH BANDS

P. O. RITCHER

It cannot be emphasized too strongly that growers cannot expect to control codling moth in problem orchards in Western Kentucky by spraying alone. Thorough and timely spraying with the best materials available is important, but this must be supplemented by other control measures such as screened packing sheds, opening up trees so spray can penetrate, lowering the tops of tall trees, thinning off defective fruits, breaking up clusters, scraping trees and banding.

Right now is a good time for growers to give some thought to banding in connection with their program for 1945. Not only is this a good idea for those with problem orchards, but it is also a profitable procedure where codling moth is not yet serious. Many growers with the cleanest orchards find it profitable to scrape and band the orchard regularly.

Banding is one of our oldest sanitary control measures. Many years ago, growers were tying sacks such

as burlap around apple trees to catch the codling moth larvae that were looking for places to cocoon. More recently growers used strips of tar paper or corrugated paper. Since these bands were untreated, it was necessary to go over the bands every 7 to 10 days and kill the worms, otherwise they would pupate and the moths emerge.

In the last 15 years, treated corrugated paper bands have been developed that will kill almost all the larvae entering them. Beta-naphthol is usually the killing agent used. Such bands are good for one season only and should be removed and burned before the following spring. Beta-naphthol is a caustic material and will burn skin or eyes if it comes in contact with them. Handle treated bands with canvas or leather gloves.

For banding to be most effective, trees should be well scraped to remove other hiding places for the worms and force them to seek shelter in the bands. All rough bark should be removed, using tools such as a short hoe or a mower section fastened to a short handle. A canvas should be spread around the base of each tree to catch the scrapings which should then be collected and burned. To scrape the trunk and scaffold limbs of the average tree ought not to take over 20 minutes.

Since many larvae spin-up in punky wood and in split branches and crotches, some pruning and other work will be necessary to remove these hiding places. All prunings should be removed from the orchard and burned, as well as any other debris and litter on the ground, such as old baskets and picking crates, fertilizer and insecticide sacks, and large weed stems.

In Kentucky, bands should be put on trees by June 1, if we are to catch the first worms leaving the apples. Bands should not be put on young smooth-barked trees, since there is some danger of trunk injury by the Beta-naphthol.

One band should ordinarily be sufficient for one tree. Use 2-inch bands if codling moth is not severe, 4-inch bands if codling moth is a real problem. The band should be placed around the trunk about 18 inches to 2 feet from the ground and fastened in place with staples or tacks. Too many growers try to

get by with one fastener. Bands should fit tightly all the way around. This means several tacks or staples to snug the band into depressions in the trunk.

Growers will be amazed at the number of worms caught in bands. Sometimes as many as 1,000 or more worms will be found in a single band. Even 10 or 15 worms per band is well worth while when caught in the early season, since each worm destroyed then greatly reduces the number of second and third-brood worms.

LET TRANSPARENT APPLES MATURE BEFORE HARVEST

R. V. LOTT

University of Illinois

"Satisfactory prices will probably prevail throughout the Transparent harvest season. To obtain the greatest return from the crop, the grower should allow the fruit to reach optimum maturity before harvest. The rapid increase in size and quality as the fruit nears maturity greatly increases yield and consumer acceptance. Investigations by the Horticulture Department have shown that as Transparents increased from 2 to 2¼-inches in diameter the weight increased 35 percent, sugar content increased 15 percent, and acidity decreased 5 percent. Fruits 2⅜ inches in diameter had 55 percent greater weight, 22 percent more sugar, and 15 percent less acid than 2-inch fruits. The 2½-inch fruits had 85 percent greater weight, 25 percent more sugar and 20 percent less acid than the immature 2-inch fruits. Early picking of small immature fruit is obviously done at great sacrifice of yield and quality.

One result of the shortage of labor in 1943 was that a very significant part of the crop reached proper maturity before harvest. Some growers waited until the fruits were mature before beginning harvest and obtained a large-size, high quality product. The use of hormone sprays to hold the fruit on until it

has reached optimum maturity helps to obtain the full benefit from increasing size and quality as the fruit develops to maturity."

HINTS AND OBSERVATIONS

By W. W. MAGILL

Peaches were in full bloom in the Experiment Station Orchard at Lexington, on April 4, in 1944. Apples were showing tight bloom clusters on Red Delicious. That night the temperature reached 16 degrees, according to a maximum-minimum thermometer hanging in a peach tree. It was cloudy all night, snow fell several times during the night and we had an inch of snow on the ground the next morning. We had a good crop of all varieties of peaches, apples, cherries and plums.

This year of 1945, peaches were in full bloom on March 26; apples were in full bloom on April 5. That night the temperature went to 22 degrees. It was clear all night. The crop of peaches apples and sweet cherries are now practically a "wipe out."

A Good Year to Make Observations

Many Kentucky peach growers found their orchards in full bloom with no dormant spray applied, due to the early spring and abundance of rain and mud. Some growers, realizing they had a heavy carry-over of scale, went ahead and applied an oil spray, feeling the risk of scale injury was a greater risk than possible danger from oil spray. We will all watch the results with great interest.

Apple Scab vs. Mud

With ideal weather in the pink bud condition for apple scab development, some growers found it impossible to drive a spray outfit through their orchards, because of eight inches of mud. One grower I visited bought 200 feet of spray hose and connected it onto his old 60-ft. hose to make a semi-stationary sprayer out of his portable sprayer. He got the job of controlling apple scab done.