

KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

POST MORTEM ON 1945 INSECT AND DISEASE TROUBLES

Fruit grower experiences in 1945 indicates that most insects and diseases did not learn that the war was over. Many diseases were worse than usual and fruit insects got more than their share of the peach and apple crop. Now that these pests are lying low for a while, it should be a good time to take stock of 1945's battles and prepare for 1946.

INSECTS

Codling Moth. Carry-over of worms from 1944 was heavy with little winter mortality. Early warm weather caused moths to begin emerging unusually early but cool weather the latter part of April and first half of May greatly prolonged the emergence period and delayed hatching. All this combined to make the first brood late and as a result Yellow Transparents were unusually wormy at harvest time.

The lateness of the first brood attack meant that extra first brood sprays were needed, sprays which in many cases were not applied. As another result of the late first brood, second brood emergence was also late, not becoming heavy until late July. Hot dry weather during late July, August and early September was very favorable for codling moth and the effectiveness of arsenical deposits was reduced. As a result, in western Kentucky, second and third brood worms really "went to town" on the apple crop and the only worm-free crops were in young orchards or in old orchards where effective spraying was continued up to September 1. Even eastern Kentucky orchards had more worms than usual and growers will need to intensify their efforts in 1946 if they are to keep heavy populations from developing. Several Henderson growers had

striking success in controlling codling moth with DDT spray programs. One orchard often called "main headquarters for codling moth south of the Ohio River," produced practically a worm-free crop. Thanks to DDT. Less than half a mile away, on the same property, where DDT was not used, there were 20 to 30 worms to the apple.

All indications are that we will have another large carry-over of codling-moth worms this fall to cause serious trouble again next year. This fact will make scraping of trees, removal of broken and extra high limbs, filling cavities, and orchard clean-up very important this winter and spring.

There will certainly be serious discussion of ways and means to improve spray programs and many will want to try DDT. This year also again demonstrated the fact that in western Kentucky apple growers must keep up control measures until harvest time whether growing early or late apples. The producer of late apples, of course, has the longest fight.

San Jose Scale. Due to the hot, dry season of 1944, scale multiplied enormously and by the winter of 1944-45 there was a heavy population in many Kentucky apple and peach orchards. The mild very wet winter and unusually early spring of 1945 kept many growers from getting on their dormant sprays and others got them on late or did not get good coverage. All these factors resulted in much live scale in 1945 and this multiplied considerably during the growing season, causing much damage to fruit and trees alike.

A number of peach growers, alarmed at the spread of scale, applied summer oil sprays, either just after harvest or both before and after harvest, in an attempt to kill the "crawlers." In any case an effective dormant spray program this winter is an absolute "must"

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in most Kentucky orchards if permanent injury is to be avoided.

Curculio. Unusually warm weather late in March and in early April caused overwintering curculios to appear quite early but they did not appear in numbers except on the outside rows of a few problem orchards. This early, spotty appearance of adults, plus early peach development along with cold weather during much of April was confusing to growers and made effective timing of sprays difficult.

Late curculio injury to ripening peaches developed in a few problem orchards. In one Henderson orchard, for example, the Elberta crop ran about 10 percent wormy while a small block of Hales near a ravine was 50 percent wormy. Jarring and rearing records suggest that much of this late injury was due to delayed first-brood attack rather than a true second brood. In general, growers who followed a full spray program came through with very good curculio control. This season adds more evidence to the belief that western Kentucky peach growers, in general, need to include the month-before-harvest dust or spray in the control program.

Much arsenical injury to peach foliage resulted this year from the early lead arsenate sprays for curculio control. Defoliation was so serious in some orchards that many growers are considering the use of more dust applications in the future, which seem to cause much less injury.

Oriental Fruit Moth. Twig injury on peaches was hard to find early in the season but by the middle of June, when twig collections were made for parasite studies, wilted twigs were rather abundant in many western Kentucky orchards. Harvest counts indicate that oriental moth damage was unusually severe this past season, running as high as a fourth of the Elberta crop injured. In one orchard, however, where the beneficial parasite, **Macrocentrus ancylovirus** Rohwer is well established, only 3-percent damage was found. Unfortunately most attempts to colonize this parasite in our orchards have failed.

More damage from oriental moth has increased the demand for some

satisfactory spray or dust control. Spray tests with DDT in Kentucky this year give real hope that we have at last found a way to whip this pest. Details of the tests will be printed in the next number of the Fruit Notes.

Cat Face. Cat-facing of peaches was not much of a problem this year. Counts made in several orchards indicated less than 5 percent damage.

DISEASES

All in all, the 1945 season was probably the worst disease year within the memory of most Kentucky fruit growers. Of the major fruit diseases, apple scab, peach scab, cherry leaf spot, brown rot on peaches and plums, fire blight on pears and apples—all were generally serious and caused very severe damage to the 1945 fruit crop. Bitter rot, usually another serious apple disease in Kentucky, did not develop to the degree that other diseases did. Black rot of grapes caused some serious local losses but was not generally as prevalent or as destructive as the other diseases mentioned. Peach leaf curl was serious in a few unsprayed orchards while apple cedar rust and quince rust caused unusually heavy losses in apple orchards that were near large growths of red cedar and in sections where these diseases are prevalent.

Diseases in general were encouraged by the very wet, early spring and summer which combined conditions favorable for their development and unfavorable for effective spraying. Total loss of a number of apple crops from scab, total defoliation of many sour cherry plantings from cherry leaf spot, complete loss of some peach crops from brown rot and the 100 percent specking or freckling of other peach crops from peach scab brought out just how destructive these diseases can be and warned every grower that in such years none but the best control measures can be expected to succeed. In spite of these serious disease conditions, a number of growers were able to produce exceptionally clean and high-quality crops of fruits. Needless to say, all of their initiative and resources were required, for excuses did not pay off, and these men are due a great deal of credit.

WHAT ABOUT RECONVERSION?

A. J. Olney

Everybody is talking about "reconversion" and the great changes that are to take place in the near future. Exactly what these changes are to be, no one is able to say. However, the fruit interests have always been alert and can be depended on now to make such changes in their business as the circumstances require. Perhaps no better illustration of this fact could be given than the report of the action of a group of horticulturists in the Eastern States, who met to consider the reconversion problems on fruit production for that area. The group was composed of eminent authorities and included the following:

Dr. W. W. Aldrich, U. S. Dept. of Agriculture

Dr. R. D. Anthony, Pennsylvania

Prof. J. S. Bailey, Massachusetts

Prof. M. A. Blake, New Jersey

Prof. C. H. Blasberg, Vermont

Prof. A. J. Farley, New Jersey

Dr. J. H. Clarke, Vermont

Dr. O. W. Davidson, New Jersey

Dr. W. S. Flory, Virginia

Mr. F. A. Gilbert, New Jersey

Dr. J. H. Gourley, Ohio

Dr. A. J. Heinicke, New York

Prof. A. L. Kenworthy, Delaware

Dr. S. A. Pieniazek, Rhode Island

Mr. C. H. Steelman, Jr., New Jersey

Here are their recommendations:

1. Remove orchards which are unprofitable either because of age, unfavorable soil or climatic conditions, or undesirable varieties.

2. No increase in the present total commercial production of tree fruits seems desirable under the apparent marketing conditions. New plantings should be made only to maintain present production and to secure a proper succession of plantings.

3. More thought and study should be given by many fruit growers to the possibilities of some diversification in their revenue aside from one kind of fruit.

4. Growers are advised to give more attention than previously to the selection of the site and soil for any new tree planting and to the best land use on their own farm.

5. No varieties should be commercially planted without a searching investigation by the grower of their merits from the standpoint of both tree and fruit qualities and particularly with respect to their adaptability to the locality where they are to be planted.

6. Better varieties are needed in most districts.

7. Plant well-grown, vigorous, healthy, virus-free trees with uniformly strong, congenial rootstocks.

8. An increase in the yield per acre of a good grade of fruit is imperative.

9. Every effort should be made in cooperation with public and private agencies to reduce the complexity and cost of production and marketing.

10. The growers need to assume more responsibility for the condition of fruits as delivered to the consumer.

These recommendations were made specifically for the Eastern States, but we, in the midwest, may well give them careful study.

It is evident that these men were concerned about the possibility of over-production if an expansion of the fruit industry should occur during the next few years. The recent price level tended to encourage expansion and considerable planting would have taken place if nursery stock and labor had been available. Of course, some planting will be required to maintain production.

The individual grower must decide whether new plantings are needed to maintain his program or would contribute to expansion. If expansion and over-production should develop, profits will become low and those who are situated best will suffer least. It will be noted that some of the recommendations are designed to prepare growers to overcome hard times, if a depression should come. Whatever the times, it is always good business to eliminate factors that tend to reduce profits.

In the future more attention will

be given to the quality of the products that reach the consumer than has been customary heretofore. Fruit growers should not overlook the trend in this direction.

The welfare of the fruit industry depends on the action of all the individuals that comprise it. What can we do to help? The recommendations listed give us something to think about.

RABBIT-REPELLENT PAINT

Several states, including Michigan, Ohio, Virginia and Illinois, are using and recommending the following rosin-alcohol rabbit-repellent paint for young fruit trees. The material is easily made at home and the needed ingredients are generally available.

Materials and mixing: Dissolve 7 lbs. of crude, pulverized rosin in 1 gal. of ethyl alcohol. A cheap grade of denatured ethyl alcohol is satisfactory. However, wood (methyl) alcohol is not satisfactory for it will not dissolve the rosin. (Ohio suggests 1 lb. of rosin to 1 pt. of alcohol.)

Mix the alcohol and rosin in a container with a tight top so as to prevent evaporation. If the container is set in a warm room and shaken occasionally, the rosin should dissolve in 24 hours. **Warnings are issued not to use heat to hurry the process because of the danger of fire.**

Application: Apply the paint with a small paint brush and only when the bark is dry. Paint the trunk and small limbs up as far as a rabbit can reach above the expected snow-line (about 2 ft.). One application will give protection all winter. With the first snow or wetting, the covering turns white. This change is to be expected and does not change the effectiveness of the treatment. The size of the trees and the height of treatment determines the amount of material used. One gallon generally treats 125 to 200 2-year-old trees.

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A prepared rabbit-repellent paint made by a special formula is available by purchase from the District Agent, Rodent Control Section, U. S. Dept. of Interior, West Lafayette, Indiana.

ORCHARD MOUSE CONTROL

This bulletin has published much material from time to time on the damage caused by orchard mice (meadow and pine mice) and instructions for their control. This warning is as important and timely now as ever.

The accepted and effective poisons for orchard mice are (1) strychnine-treated grain baits and (2) zinc phosphide-fruit or vegetable baits. The first of these baits can be bought ready for use while the zinc phosphide is purchased ready to be mixed with the cut fruit. These materials can be purchased and detailed instructions obtained, if needed, from the College of Agriculture, Lexington, Kentucky or the Rodent Control Division, U. S. Dept. of Interior, West Lafayette, Indiana.

PRINCETON STRAWBERRY YIELDS 1945

W. D. Armstrong

Repeated April frosts were the main drawback to the strawberry yields at the Western Kentucky Experiment Substation at Princeton, Kentucky in 1945. All varieties suffered considerable blossom killing at various times with the late blooming varieties probably suffering the greatest loss.

Strawberry Yields in 24 Quart Crates Per Acre for 1944 as First Year Harvest and 1945 as Second Year Harvest at Princeton Substation

Variety	Replications	1st Yr. 1944	2nd Yr. 1945	Ripening Season	Firmness
Blakemore	4	176	120	Early	Firm
Aroma	4	63	55	Late	Soft
Tennessee Beauty	4	93	118	Late	Firm
Tennessee Shipper	4	96	88	M. Early	V. Firm
Tennessee 393	4	111	104	Early	Firm
Massey	4	27	15	Late	Firm
Morgan	4	6	12	V. Late	Soft
Maytime	1	159	76	V. Early	M. Firm
Tennessee Supreme	1	142	101	Early	M. Firm
Tennessee 230	1	97	51	Early	M. Firm
Fairmore	1	90	57	Early	Firm
Tennessee 381	1	53	75	Early	Firm
N. Y. 7821 U.S.D.A.	1	124	76	Early	Soft
Blakemore	1	224	150	Early	Firm

The yields here given for 1945 and for the second crop year in this planting. For comparison, the 1944 yields, when the plots produced their first crop, are also shown. It is noted with interest that the only varieties showing a 1945 increase as second year plots over 1944 yields as first year plots are Tennessee Beauty, Tennessee 381 and Morgan. This is the second time that Tennessee Beauty has shown the tendency to be a heavy producer during the second crop year.

In the group of early to early mid-season shipping berries Blakemore held a considerable lead over all others including Tennessee Shipper. Year in and year out, Blakemore is hard to beat as a commercial shipping berry. Tennessee Shipper is showing great promise as a companion variety and on certain years has roundly outyielded Blakemore. However, the opposite is also true on numerous occasions. Experience at Princeton and in commercial fields near Paducah has shown that Blakemore suffers heaviest from early frosts while Tennessee Shipper suffers more from late frosts, because of their early and later blossoming time respectively. Also, experience at Paducah during the summers of 1943 and 1944 gave strong evidence that Tennessee Shipper will not stand a summer drought following its first harvest, worked out or not worked out, as well as Blakemore. The variety has a place, however, and further limited trial commercial plantings are encouraged. Tennessee 393, an unnamed selection, continues to produce well and show promise. This is a firm, high quality berry slightly darker in color than Tennessee Beauty that has given consistent high yields at this station. Tennessee Supreme continues to yield well, as does Maytime, but these two are darker berries suitable mostly for home use or cold packing.

Of the late berries, Tennessee Beauty is by far the best. During most years since 1939 and under identical conditions, it has doubled the yield of Aroma, the now standard late commercial shipping berry of Kentucky. Tennessee Beauty is also much firmer, more attractive, of better quality than Aroma and also produces a better row of plants, generally. A number of crates of

this variety were shipped to market under commercial refrigeration in 1945 and they were entirely satisfactory as a shipping berry. Massey, a dark, red high quality, late berry has consistently been a low producer. Morgan, a variety received for trial from Tennessee, has had virtually a crop failure both years it has fruited here.

In the testing of yellows-resistant Blakemore strains, the McUmbers yellows-resistant stock received direct in 1939 showed one small spot of yellow plants in 1944 and no more in 1945. The U. S. D. A. strain of yellows-resistant plants obtained also in 1939 has shown no yellow plants, to date. Both strains seem very satisfactory but need close watching so that any yellows infected plants can be removed as soon as they show up.

STRAWBERRY GROWERS, FALL MULCHING PAYS!

W. D. Armstrong

Since the fall of 1938, strawberry mulching trials have been under way in western Kentucky. Harvest records have shown a consistent gain in favor of fall mulching over spring mulching each year, except in the 1939 harvest. This is explained by the fact that the winter of 1938-39 was one of the mildest on record and mulching protection was not needed by the berry plants through the winter. During most winters, however, weather can be expected that approaches 15° to 20° above zero by Christmas and temperatures that go to zero or below sometime during the remainder of the winter.

The average yearly increase for early December mulching over spring mulching or no mulching has been 30 crates per acre. When one considers the price that berries have brought for the past 3 seasons, this increase amounts to a handsome profit. The greatest increase recorded was following the sub-zero weather of 1940. During that period temperatures went to 10-15° below zero with no snow on the ground and fall mulched plots averaged 80 crates per acre more than non-mulched plots. This same contrast held for mulched and non-mulched fields over the district. In addition to heavier yields through winter

protection of the plants, the mulch that spreads to the middles also helps prevent soil loss through erosion. The main objection to fall mulching among growers is the fact that they often get a stand of wheat, cheat or rye over their fields from mulch spread in the fall. This can be largely overcome by proper handling of the material.

SUGGESTIONS

Where possible, cleanly threshed straw, free of seeds, should be used. Where chaffy or seed infested straw is used, the bales should be spread over the fields on their sides with one or both wires clipped so as to absorb the fall rains and germinate all seeds before spreading time. Straw used from a stack can also be spread about so as to be wet by the fall rains; or be forked over so that most of the seeds drop out.

AMOUNT TO APPLY

In the Paducah section tests have shown that 1½ to 2 tons of straw per acre give about the best results on ordinary years. In the Greenville and Bowling Green section 2 tons should be about right while around Louisville and Covington, 2 to 2½ tons should be about right.

TIME TO APPLY

No set date for mulching can be stated. The plants should be allowed to harden up by fall frosts and light freezes. However, as a rule, the mulch should be on hand and available by late November or early December. By that time the entire state frequently has cold spells with temperatures as low as 10-15° above zero. The best suggestion seems to be to spread strawberry mulch in Kentucky when temperatures threaten to go as low as 15-20°; for it has been established that considerable damage to the strawberry crown is caused by those temperatures especially in late November or early December before the plants have become fully hardened.

So, in general, it seems the time to spread strawberry mulch in Kentucky varies from late November on through mid-December, **depending on the weather.**

Very early fall mulching is not advisable because it is desired for

the plants to harden up and develop as much as possible before the mulch is applied.

Old, second year fields generally do not benefit from mulch as much as new, first year plantings.

THAT 1945 KENTUCKY FRUIT SEASON

The 1945 season was a real problem year for Kentucky fruit men. Fruit diseases were the worst in years and insects had to be watched carefully. The spring was one of the wettest on record and the labor shortage made it necessary for each man to solve his problems in his own way. Most of them did a superb job of it. Prices, in general, were good but production costs were also high.

The winter of 1944-45 were generally cold but not considered severe in Kentucky, with the result that there was very little dormant winter injury to fruit buds. A warm rainy March, however, brought about one of the earliest blossom periods in years and much of the fruit in the state was in bloom by late March or early April. This was followed by a series of serious frosts and cold spells during April and early May. Some of these frosts and freezes caused light to heavy fruit losses in various parts of the state. Heavy general damage was done on April 5, 6, and 7, and small damage about April 17-19 and again April 27-May 1.

The freezes and frosts of April 5, 6 and 7 caught many apples, pears and peaches in northern, central and eastern Kentucky in full bloom and virtually wiped out the crop in many orchards and low locations. In some orchards, as in the Experiment Station orchard at Lexington, fruit was borne in the tops of peach and apple trees but none in the lower 2/3 of the trees.

In most southern and western Kentucky peach orchards a full crop of fruit was set on virtually all peach varieties, and the apple set varied from orchard to orchard. However, the apple crop as a whole was heavier than in 1944, and that favored Kentucky, due to the generally short national apple crop—the shortest in 20 years.

Strawberry blossoms were also injured over the state by the repeated

frosts in April. However, enough survived to produce a good crop in most sections, as a whole. Also, due to the long blooming season and the cool moist picking season, strawberries were picked and shipped over a longer period than on any previous year.

LABOR

Labor was the most critically short item in the production, harvesting, and marketing of the 1945 Kentucky fruit crop. In general, it took all concerned, old and young alike, and long hours to get the job done. Due to the slow, cool strawberry ripening season most of this crop was saved. The heavy peach crop in western Kentucky presented a tremendous thinning problem that surely would not have been worked out without the general use of the various systems of hose thinning and limb tapping. The labor saving features of these new thinning practices caused them to gain wide use this year and made a large contribution to the production program.

The peach harvest labor problem was spotted. A number of growers solved these problems by their own initiative with the benefit of certain local situations. In the Henderson section the large crop was harvested and packed chiefly by prisoner-of-war labor and the crop was saved. In the Paducah-Mayfield section, where an earlier local decision had been made not to establish a branch prisoner-of-war camp, needed harvest labor was not available and a considerable portion of the crop was lost for want of picking and packing crews. Prisoner-of-war labor also harvested a major part of the large Henderson county apple crop. Other sections solved their less pressing apple harvest problems and saved their crops with the exception of some Yellow Transparent crops that had to be harvested in a comparatively short time.

PRICES

All prices received for 1945 Kentucky fruits were generally at or near the ceiling for good, first grade, commercially packed products that moved into the general market. The grower ceilings (wholesale)

were: strawberries \$7.80 and \$8.80 per crate, peaches \$3.66 per bushel and apples \$3.85 per bushel. There were numerous local market gluts and breaks, however, that were brought about in many cases by local labor shortages, poor distribution of local surpluses and, an abundance of low-quality home-orchard products.

1945 STATE FAIR FRUIT EXHIBITS

The amount and the quality of fruit exhibited by Kentucky growers at the Kentucky State Fair, held September 2-8 at Churchill Downs, was a distinct credit to the Kentucky fruit industry, considering the serious disease, insect, and labor situation. The general public was amazed at the size, color and beauty of the exhibits. Dr. C. S. Waltman of the University of Kentucky, judged the fruit exhibits, and W. D. Armstrong, Princeton, served as Superintendent of the Fruit Department.

First Prize in the feature 20-tray apple exhibit, consisting of 3 or more varieties, went to J. W. Fegenbush, Buechel, Jefferson County; Second went to C. R. McCollom of Henderson, on fruit from his Hillcrest Orchard at Sturgis in Union County; Third went to Mr. S. C. Holloway, and Fourth to Mr. H. M. Holloway, both of Mayfield, in Graves County.

In the booth display, top honors again went to the Fegenbush Orchards, Buechel, while second went to Mr. H. M. Holloway, Mayfield, and third to S. C. Holloway, Mayfield. The Holloways were welcome new exhibitors in the fruit department. Their exhibits were put up by their two young fruit-growing sons, Robert Allen, the son of H. M. Holloway, and Claxon, the son of S. C. Holloway.

The Lester Harris orchard of Kevil, McCracken County, again sent up some high quality apple exhibits for the bushel, tray and plate entries. In addition to winning a number of first and second place ribbons, this orchard won Sweeps-takes honors for the best bushel of apples, with Golden Delicious, and for the best plate of apples, with Starking.

Top honors in grapes and Sweepstakes for the best basket and best plate went to Joe Bray and Sons Orchards of Bedford, in Trimble County.

Mr. Joe Bray and Sons also won top honors with their fine peach exhibits and Sweepstakes honors for the best basket and best plate of peaches. Second in the peach exhibit went to Mr. Fred J. Wirth with a nice exhibit. He also won Sweepstakes honors in pears.

Mrs. D. C. Witherspoon of Anchorage, Jefferson County, won top honors with her collection of 5 pear varieties, and several first prizes on her separate variety plates.

DDT NOTICE

DDT, the valuable new insecticide, has received such sensational publicity that many people have been led to believe that it will solve all insect problems. This, of course, is not the case, however, for while it is very effective against a number of common and harmful household pests, including flies, fleas, lice, bedbugs and termites and such orchard pests as the Codling moth, it is known to be harmful to certain vegetable crops, such as beans and melons, and to kill certain predator (or beneficial) insects. Also, orchard tests have shown that the material has to be used about as frequently as other control measures if success is to be had. Doubtless, DDT will make a large contribution to the good of mankind, but we need to know more about it. In this connection, much work was done in Kentucky and over the nation in 1945, and much more will be undertaken in 1946.

In 1945 DDT tests, carried on in commercial orchards, by the Kentucky Experiment Station, excellent control was obtained with the Oriental fruit moth in peaches and the codling moth in apples. These results will be reported in the next issue of this bulletin, as well as the summaries of some other work. Be sure to look for this report.

ONLY 3 FRUIT NOTES THIS YEAR

Instead of the usual four numbers of the Kentucky Fruit Notes per year, there will be only three in 1945. No August number was issued this year.

HINTS AND OBSERVATIONS

W. W. Magill

Hungry World

The War is over but the world is still fruit hungry. Fresh fruit prices are likely to hold their own with staple food prices.

Big Bad Wolf

Apple Scab. As usual this was production problem No. 1 in Kentucky apple orchards in 1945. Yet some growers had less than 1 percent of scab at harvest time.

Ceiling Prices

Three dollars and eighty-five cents September apple ceiling with an unusual demand for apples was not profitable to the grower who let scab and codling moth take his crop.

Necessity vs. Invention

The short pole with a 12" spray hose method of thinning peaches was really a "find." One Kentucky commercial peach grower covered the subject when he remarked "necessity is the mother of invention." It reduced thinning labor 75 percent.

Split Nitrogen Applications

Timely split applications of nitrogen fertilizer during the spring and early summer paid large dividends in Kentucky peach orchards in 1945.

D.D.T. Experiments

DDT experiments in Kentucky in 1945, to control severe cases of codling moth and Oriental moth, were almost a "knockout." You will want to hear it discussed at our Winter Fruit Meeting. (There is still "plenty" to be learned about it yet).

Lead Injury to Peaches

Arsenate of lead sprays caused too frequent damage to peach leaves and twigs this year. More than two curculio sprays in early spring are likely to cause injury any year. Orchards which were dusted had less injury.

Let Him Know

Your local supply merchant may not know you need and want a sprayer or sprayer parts, this winter. Better talk it over with him this week.