The Control of the Major Insect Pests and Diseases of Peaches

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Continually recurring annual losses which should have been profits have been the lot of the Southern Indiana peach grower as the result of a complex arising from two insects whose attack has been severe for years. Attempts at the control of one or both of these pests have resulted in injury to the foliage and in turn impairment of fruit quality. Certain phases of this problem are not at all well understood. In fact, not until this fall does the way seem clear in the matter of the certainty of being able to grow choice crops of peaches every year.

Of the diseases and insect pests the grower has to consider, it is well known that peach leaf curl and San Jose scale may both be controlled by one and the same dormant spray application.

The tarnished plant bug, stink bug and possibly a few other sucking insect species attack the crop from about the time the blossoms fall in the spring until the fruit is half grown. Often much damage is done by these "bugs". The misshapen peaches resulting from attacks from these insects are spoken of as "cat-faced". Heretofore there has been little or nothing which could be done to prevent this injury except to cultivate the soil to destroy the sod and fence row growth where the attacking insects find cover. Clean cultivation as recommended would, in thousands of rolling or hilly orchards be extremely hazardous from the standpoint of soil erosion.

In tests this year we have found that the product known as Chlordane will completely control the insects causing cat-facing. This material injures plants little or none and though peach trees were not sprayed with it, sod areas around the orchard were sprayed and it was found to kill remarkably well for a period of two weeks or longer.

More serious, however, than cat-facing are the losses caused by the plum curculio. Through consistent and correctly timed sprays of acid lead arsenate this insect may be satisfactorily controlled, though the soluble arsenic in the spray often ruins the peach foliage. Lime has long been used to prevent arsenic injury but in general as used it has not been satisfactory. This is probably because not enough was used and certainly in many instances the lime was so old it was no longer hydrate but rather calcium carbonate. In the past an application of nitrate to the trees has been recommended when severe foliage injury makes its appearance but if the weather is dry when

the injury occurs and if it remains dry for a few weeks or longer the nitrate is not made available to the trees.

In 1946 and 1947 three sprays of acid lead arsenate were used to control the curculio. With each spray 16 pounds of freshly hydrated lime per 100 gallons of water were included and a week after the second and third lead arsenate spray a special spray of 16 pounds of lime alone in 100 gallons of water was used. Such lime applications may be withheld until foliage injury makes its appearance. In two of the lead arsenate sprays zinc sulphate was added to aid in the control of *Bacterium pruni.* All of these applications, and indeed, all applied during the season were made by using a Bean gun with a pressure of 550 pounds per square inch. Thus five sprays were used against the curculio, against the incident foliage injury accompanying the sprays and to control *Bacterium pruni.* In addition to this the dropped peaches were picked up and destroyed periodically. The foliage on this block of trees remained dense, dark green and beautiful throughout the season.

The orchard is a sod culture one and this makes conditions more favorable for the winter carry-over of the curculio and for the Oriental fruit moth. The latter insect has hitherto been uncontrollable with sprays where the infestation became heavy. This year, however, and for the first time, the insect was controlled by five applications of DDT (12 ounces actual DDT per 100 gallons of water; the material was put up as a 50 percent wettable powder). These sprays were applied five days apart beginning about 25 to 27 days before harvest. The first application included an inside-out spray and an outside-in one with the latter from the tower. The last four were from the outside-in only and the spray tower was used. The pressure as before was 550 pounds per square inch. No foliage injury of any kind. could be detected as the result of this pressure.

Thus all the insects and diseases which take a heavy toll of the crop in most Southern Indiana orchards have been discussed with the exception of brown rot. Under this program in 1947 brown rot was of no consequence and not a single operation of any kind, other than the picking up of the dropped peaches, was applied against it.

The crop of peaches produced during this study was of the Gage Elberta variety. They were harvested between September 7 and October 1 and they packed 96 per bushel. The figures below show the state of the insect and disease attack at harvest as compared to a neighboring crop of midseason Elberta. This commercial orchard is less than a mile from the one where these studies were made. The midseason Elberta variety had at least the average number of sprays or dusts for curculio control and for the Oriental fruit moth and considerably more than the average number for brown rot which disease caused severe losses notwithstanding. The difference is striking, indeed, and to be able to produce crops of fine quality as simply as done through these studies will be a step toward the advancement of the fruit industry.

Variety	Insect-free	Oriental fruit moth	Curculio	Brown rot
Midseason Elberta ...	55%	23.70%	13.3%	19.8%
Gage Elberta	96%	2.50%	1.0%	1.0%