
CAUSE AND PREVENTION OF CATFACING, A PEACH-FRUIT MALFORMATION

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As reported in a previous issue of the *Proceedings* (Fenton, Whitehead, and Brett 1945), the catfacing peach-fruit malformation is caused by the feeding punctures of the tarnished plant bug, *Lygus oblineatus* (Say), at about the time the young peach begins to emerge from the shuck shortly after the blossoming period. Other species of insects may also cause this condition (Woodside 1946), but in Oklahoma in most years the tarnished plant bug is chiefly responsible. Since the publication of the first report, considerable additional information has been obtained on the following phases of this problem: Prevention of the malformation by spraying peach trees before and after blooming; host-plant succession of the causative insect; and incidence of the disease in Oklahoma.

1945 SPRAYING TEST

A spraying test was made in 1945 in a block of 86 bearing peach trees in the orchard belonging to the Department of Horticulture at Perkins, Oklahoma. There were 19 varieties represented. Previous work had shown no apparent varietal influence on catfacing and, since some of the varieties are less susceptible to destruction of fruit by freezing, their presence gave greater odds on some peach fruit being available for sampling to evaluate results of the treatment.

The spray formulations used and dates of treatment are shown in Table I. *Gesarol AK 40* is a water-dispersible powder containing 40 percent DDT. *Gesarol Summer Oil* contains 20 percent DDT. Both materials were furnished by Geigy Company Incorporated, 89-91 Barclay Avenue, New York. Each treatment was randomized and replicated three times. Each plot consisted of not over nine trees in three rows of three trees each. The sprays were applied with a power sprayer at 600 pounds pressure, using a 4-nozzle spray broom for the first treatment and a spray gun for the second. Approximately 3 to 4 gallons of spray were applied per tree.

The effect of the treatments was measured by examining 200 fruits in each plot whenever possible, or 600 per treatment per examination. These plots were too small to evaluate the effects of the treatment properly, owing to infiltration into the spray plots by the bugs, which are strong fliers. By the time DDT could act as a residual spray, damage was already done. None of the treatments caused appreciable reduction in percentages of catfacing (Table I). Part of the increase in percentage of catfacing after April 17-18 may have been caused by stink bugs, although comparatively few of these bugs were observed. Dimpling of peach fruit as described by Woodside (1946) was observed on a few fruits but was not counted as catfacing.

1946 SPRAYING TEST

Infestation of the tarnished plant bug in the Perkins orchard was too low in 1946 to run another test there. A heavier bloom infestation was found in the Verser Hicks orchard near Tulsa, so this orchard was used. Because of the migratory powers of the insect, an entire block of 228 bearing trees was sprayed, with from 52 to 68 trees in each of four plots. The plots were not replicated nor randomized. The material used consisted of a water-dispersible 50-percent-DDT powder. The trees were sprayed with a power sprayer at 600 pounds pressure on March 29, using one spray gun.

To evaluate the effect of the treatments, peach fruits were examined from trees in the center of each plot on April 25 and May 7, respectively. From 400 to 450 fruits were examined per plot per examination. The formulations used and results obtained are shown in Table II.

Because of the light infestation, any evaluation of treatments is subject to error. However, all of the DDT sprays except the lowest concentration reduced the amount of catfacing. No injury was observed from the DDT sprays. It would appear that 4 pounds of 50-percent water-dispersible powder is the minimum to obtain a reduction in the percentage of catfacing.

HOST-PLANT SUCCESSIONS

Counts made in 1944 showed that tarnished plant bugs infested peach trees from the time they began to bloom until the shucks fell. Samples were taken from various crops and weed associations during 1944 and 1945 to determine host plants. These data are shown in Table III. From April to early July most of the bugs were found in hairy vetch and a species of evening primrose (*Oenothera lactinlata*). Because of the much greater quantity of vetch, which was planted as an intercrop among the peach trees, this was the most abundant host plant. The primrose, however, lived for several weeks longer. Beginning with August, a common weed known as mare's tail (*Erigeron canadensis*) was the most important weed host. Some breeding was observed in alfalfa during both years but most of it was in a field infested with weeds. The bugs were found breeding to a limited extent in such weeds as pigweed (*Chenopodium* spp.), lamb's quarters (*C. album*), heatsease (*Polygonum* spp.), and horse nettle, (*Solanum carolinense*). Such crops as cowpeas, mung beans, tepary beans, sesbania, peanut, cassia beans, sweet clover, and lespedeza were of little importance as host plants.

INCIDENCE OF CATFACING IN OKLAHOMA

In 1945, 33 orchards were inspected in nine counties and 9.6 percent of the fruit was found to be catfaced. In some orchards it was impossible to separate hail injury from catfacing, so the average given is somewhat high.

Thirty-four orchards in six counties were inspected in 1946. An average of six percent of the fruit was catfaced.

TABLE I

Effect of DDT sprays on reduction of percentage of catfaced peach fruit, Perkins, Okla., 1945

Plot No.	Formations used and dates applied	Percentage of catfaced fruit					
		Apr. 17-18	Apr. 26	May 2	May 11	May 18	
1	March 30 Gesarol AK 40 2 lbs. per 100 gals. water	April 2 —	2.9	11.8	9.2	14.8	16.7
2	Gesarol AK 40 2 lbs. per 100 gals. water	Gesarol Summer Oil 2.5 qts. per 100 gals. water	0.5	8.8	6.7	11.9	13
3	—	Gesarol Summer Oil 2.5 qts. per 100 gals. water	5	7.7	6.7	12.1	15
4	—	—	1.6	12.6	9	18.3	18.9

TABLE II

Comparative effectiveness of four concentrations of 50-percent water-miscible DDT in preventing catfacing of peach fruit, Tulsa, Okla., 1946

Plot No.	Amount DDT (50-percent powder) to 100 gallons	Percentage of catfaced fruit		
		April 25	May 7	Mean
1	2 lbs.	7.2	9.1	8.15
2	4 lbs.	6	3.5	4.75
3	8 lbs.	4.75	4.0	4.4
4	16.74 lbs.	4.5	5.5	5.0
Check	—	9.1	9.1	9.1

TABLE III

Average number of nymphs of the tarnished plant bug per collection on four host plants, Perkins, Oklahoma, 1944 and 1945

Host Plant	April-May	June	July	Aug.	Sept.	Oct.
Vetch	41	158	3	—	—	—
Evening primrose	39	28	3	—	—	—
Mare's-tail	—	11	3	173	513	28.5
Alfalfa	2	3	11	36	0	0

No evidence was found to indicate any correlation between catfacing and the type of cover in an orchard. Cover crops are necessary in sandy soils to prevent wind erosion and on heavier soils on slopes to prevent water erosion. If the cover crop is a legume it also has value in adding

nitrogen to the soil. The tarnished plant bug is strongly migratory so it is possible that infestation of mare's tail in the immediate vicinity of the orchard could account for catfacing the following spring. This would explain the lack of any correlation with conditions present in the orchard at the time inspections were made.

LITERATURE CITED

- Fenton, F. A., F. E. Whitehead, and C. H. Brett. 1946. Studies on the cause and prevention of a peach disease in Oklahoma, known as catfacing. Proc. Okla. Acad. Sc. 25: 34-38.
- Woodside, A. M. 1946. Catfacing and dimpling in peaches. J. Econ. Ent. 39 (2):158-161.
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