

APHIDS AND ANTS ON FRUIT TREES.

S. D. CONNER, Purdue University Agricultural Experiment Station.

As an amateur horticulturist I have had quite a lot of trouble with aphids on fruit trees, particularly those trees around the residence. Year after year I have seen the young, growing shoots of the apples, cherries and peaches literally covered with various kinds of aphids until the young leaves curled up and stopped growth. Without doubt the growth of the young trees has been very much set back and the vitality of the trees sapped. I have used nicotine sprays with more or less success, but it takes eternal vigilance and many expensive sprayings to keep them down.

In observing the habits of the aphids I have noticed the well-known fact that ants were very much in evidence wherever the aphids were present. I, of course, had been told that the ants did no damage to the trees, but nevertheless I hated to see them profiting from such a pest as the aphids, so in the early spring of 1917 I purchased a can of tree tanglefoot and applied a two-inch band of this sticky material about one-fourth inch thick around each tree, for the purpose of keeping the ants and any other crawling insect off the trees. Well, I stopped the ants and, much to my surprise, I had no aphids on the trees. The aphids have wings, but they did not seem to use them to good advantage, for wherever there were no ants there were no aphids. Some weeks later I noticed on an apple tree some aphids and, looking closer, I saw some ants. I examined the sticky band on the tree trunk and found that some tall grass had bridged it over, allowing the ants to get up the tree, where, I presume, they carried the aphids. I removed the grass, sprayed the tree with nicotine and had no more aphids on that tree. It appeared to me that my young trees made a much more vigorous and sustained growth than they ever did before.

Among other trees I banded was a sour cherry standing near a fence. The tanglefoot was applied high to this tree. A water sprout that came out below the tanglefoot was soon completely covered with black aphids, while not an aphid was to be seen above the band until some weeks later, when the limbs near the fence, becoming heavy with fruit and new growth, sagged and touched the fence. Then ants and aphids appeared on that side and gradually spread all over the whole tree. I watched my trees all summer, and so long as I kept the ants off the trees I saw only a few scattering aphids. I saw one good colony

of aphids, on a peach tree, that must have obtained a foothold by flying. This colony was destroyed by means of nicotine spray, and I had no further trouble with that tree.

At intervals during the summer the sticky band had to be freshened. I used a band about two inches wide and from one-eighth to one-fourth inch thick. None of my trees seem to have been injured in the least at the end of a year and one-half. The experience of 1917 was repeated with practically the same results in 1918.

It may be wondered why, if the aphids can fly, they did not get on the trees above the sticky bands. In reading Farmers' Bulletin No. 362, U. S. Department of Agriculture, on "The Common Mealy Bug and Its Control in California," I ran across a good explanation. Ants were found to carry and protect the mealy bugs in the same way they do the aphids. Woglum and Nuels in this bulletin say: "Remarkable results have been secured by keeping the Argentine ant off of trees infested with mealy bugs by banding with a sticky mixture. In 1915 and 1916, trees that when first freed from ants were infested severely with the mealy bug became commercially clean without exception within a period of six weeks to three months." It seems that the ant not only carried but protected the mealy bug from its natural enemies, the brown lacewings and a ladybird beetle.

It seems logical to suppose that the same relation would exist between the aphids, the ants and the enemies of the aphids, such as the ladybugs. Although the mealy bug does not fly, as does the aphid, the fact remains that the aphid, like the mealy bug, seems to depend upon the ant for protection and cannot long survive the attacks of its enemies when this protection is withdrawn.

One entomologist told me, "You keep the aphids off your trees and the ants will not bother you." But I say, "Keep the ants off and you will not be bothered with aphids." It is much easier to work from the ant end of the game than it is from the aphid end.