

LEAF APHIDS (APHIDIDAE, HOMOPTERA) -
AN IMPORTANT PROBLEM IN SUNFLOWER
GROWING IN NORTH-EAST YUGOSLAVIA

The investigation of the occurrence and distribution of leaf aphids (Aphididae) on sunflower was conducted in Voivodina (the north east part of Yugoslavia) which is the main region of growing this crop. The studies began in 1969 and intensive work was done from 1972 to 1975. Some 450 sunflower fields were checked. To determine the occurrence of leaf aphids, 10 places per 10 plants were diagonally analysed or 100 plants in total. The evaluation of the severity of attack was done after the scale from 0 to 5.

Several species of leaf aphids occur on sunflower, above all Brachycaudus helichrysi Kalt. and Aphis fabae Scop., the first mentioned being more important as the pest of this crop. Šutić D. found also A. evonymi F. and A. gossypii Glow. on sunflower in Yugoslavia.

Leaf aphids are met on sunflower during the second and third decade of May, then in June and partly in July. A severe attack can still occur in late May (on 31st May 1974 it was found that 86% of plants were attacked) or in June. The largest number of plants are usually attacked in June and then the density of population reaches its maximum.

Leaf aphids occur every year on sunflower fields, but their distribution and severity of attack vary depending on the density of flying individuals, weather conditions and activity of natural enemies. From time to time there are severe attacks on large areas as it was recorded in 1957, 1959, 1965, 1972 to 1975 and particularly in 1974. A. fabae Scop. prevailed

in 1972 and 1973 and B. helichrysi Kalt. prevailed in 1974 and 1975. In the last four years leaf aphids were met in June, practically on every field under sunflower, with the following average number of infected plants: 53% in 1972, 50% in 1973, 98% in 1974 and 58% in 1975 (Table 1).

The intensity of attack in 1973 in comparison to 1972 was considerably lower and an extensive attack occurred much later. We can say that 1974, in the whole postwar period, was the year with the most severe attack of leaf aphids on sunflower, covering the whole Voivodina (mass curling of leaves and considerable loss were recorded). During the last four years about 65% of plants were attacked on average in June.

During 1974 the dynamics of infection and density of B. helichrysi Kalt. were investigated on 16 sunflower fields in Novi Sad surrounding. The average results were: on 19th May 62% of infected plants and 19 leaf aphids per plant, from May 22 to 29, 67% and 41 leaf aphids, from June 4 to 9, 83% and 52 leaf aphids, from June 23 to 30, 97% and 168 leaf aphids, from July 3 to 10, 58% and 96 leaf aphids, 14 July 35% and 57 leaf aphids, and from July 25 to 28, 0% and 0 leaf aphids.

Leaf aphids belong to the group of the most important pests of sunflower in the north-east Yugoslavia and at the end of spring they represent the main enemies of this crop. They attack the aboveground parts of plant but mostly leaves in button. The top part of plant is most often and most severely infected although it can happen that the whole plant is attacked. As a result of tissue sucking leaves curl more or less and are deformed, so that plant grows with delay. In the period of buttoning leaf aphids settle on the upper side of unopened head, but they can be met on the open sunflower heads too. B. helichrysi Kalt. species attacks regularly the youngest and top leaves (in the

Table 1

Occurrence and Distribution of Aphididae on Sunflower in
North-East Yugoslavia (1972-1975)

| Year | Date of check | No. of analysed fields | No. of attacked fields | Attacked plants in % | |
|------|---------------|------------------------|------------------------|----------------------|---------|
| | | | | infection variation | average |
| 1972 | 1-10. VI | 84 | 100 | 7-100 | 53 |
| 1973 | 2-16. VI | 27 | 90 | 7-60 | 15 |
| | 23-27. VI | 36 | 100 | 12-100 | 50 |
| 1974 | 14. V | 11 | 100 | 8-75 | 40 |
| | 31. V | 17 | 100 | 16-100 | 86 |
| | 4-8. VI | 24 | 100 | 90-100 | 98 |
| | 18-23. VI | 31 | 100 | 89-100 | 97 |

Table 1 (continued)

| 1 | 2 | 3 | 4 | 5 | 6 |
|------|-----------|----|-----|--------|----|
| | 17. V | 13 | 100 | 37- 86 | 60 |
| | 31. V | 18 | 100 | 26- 84 | 56 |
| 1975 | 10-22. VI | 76 | 100 | 25-100 | 58 |
| | 7. VII | 18 | 100 | 11- 54 | 26 |

Table 2

Size of Infection by *B. helichrysi* Kalt. During May, on
Different parts of Sunflower Fields of
180-200 ha

| Locality | Date of check | Attacked plants in % | | |
|------------|------------------|----------------------|-------------------|--|
| | | edge of field | 50 m from edge | 100 m from edge 200 m from edge |
| Srbobran | 14. V 1974 | 94 | 40 | 16 |
| B. Sokolac | 17. V 1975 | 100 | 30 | 14 |
| B. Sokolac | 31. V 1975 | 94 | 80 | 54 |
| B. Palanka | 17. V 1975 | 94 | 90 | 86 |
| Srbobran | 23. V 1975 | 76 | 54 | 34 |
| | | | | 7 |
| | | | | 4 |
| | | | | 20 |
| | | | | 70 |
| | | | | 26 |

diseased plants the pigment content per leaf area decreases while the intensity of respiration increases) and in the period of buttoning it settles on the head.

Sunflower fields near small tree plantings or small forests are usually more infected by leaf aphids than the fields far removed. Weedy sunflower fields are more attacked by A. fabae Scop. than the fields without weed. Leaf aphids more frequently attack plants at the edge of field than the crops in the middle of plot. In early June 1973 A. fabae Scop. attacked 42% of plants at the edge and only 9% of plants in the middle of field. The examples for B. helichrysi Kalt. are shown in Table 2.

More severe infection by B. helichrysi Kalt. occurs at early sowing but later sowing of sunflower, as the measure for reducing the losses, cannot be recommended because it leads to reduction in yield. Chemical control of leaf aphids should be performed on the basis of systematic investigation of their population on sunflower, taking account of weather conditions and natural enemies. It seems that one or two treatments conducted in May at the edge of large fields would be sufficient. Possibly one more treatment of the whole crop can be effected in June.