

STUDIES ON CURLY TOP EPIDEMIOLOGY IN SUGAR BEET FIELDS

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Epidemiology was studied in connection with agronomic evaluation of a series of curly top resistant sugar beet varieties. Randomized arrangement of many times replicated plots was used. Dates of planting and dates of thinning were varied and on half of the field curly top virus was introduced by extensive release of viruliferous leafhoppers in advance of the natural infestation.

Studies were also made on the relation of 8" and 20" spacing to the rate of curly top infection, yield and sucrose percentage with varieties varying in resistance as follows: a susceptible European brand; a variety of intermediate resistance, U.S. 33; and a highly resistant variety, No. 619. Under the conditions of the tests, the wider spacing was relatively unfavorable for the susceptible variety; the wider spacing gave poorer results with the variety of intermediate resistance; but with the highly resistant variety the wider spacing was advantageous.

A GENERAL DISCUSSION OF THE BEET LEAFHOPPER

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The beet leafhopper, or "white fly" is a tiny insect, somewhat less than  $\frac{1}{2}$  inch long, varying from gray to greenish yellow in color. So far as we know, this insect is native to the western part of the United States and northern Mexico, where it is found breeding upon many desert weeds.

Most of the desert breeding plants of the beet leafhopper are short-lived spring annuals living in areas where the heaviest rains fall during winter and early spring. These plants mature and dry rather early, and the leafhoppers are forced to move to other green vegetation. The dispersal areas are usually cultivated and irrigated regions, where green food is available during the summer. The larger known breeding and dispersal areas are:

- (1) The Central Columbia Area.
- (2) The Southern Idaho Area.
- (3) Utah, Nevada, and Northwestern Arizona.
- (4) California.
- (5) Southern Arizona.
- (6) Western Texas and Southern New Mexico.

In all except the last two of these areas, the chief breeding plant is Russian Thistle. Other plants are involved to a limited extent, but extended studies and experimental control work have demonstrated that Russian thistle is a key plant.

The principal spring hosts vary widely in the different breeding grounds. Filaree is important in Oregon and Washington; native mustards in Idaho; while filaree, native plantains, and peppergrasses make possible the