

Effects of Root Diffusates of Various Nematode-Resistant and -Susceptible Lines of Sugar Beet (*Beta vulgaris* L.) on Emergence of Larvae from Cysts of *Heterodera schachtii*

CHARLES PRICE AND ARNOLD E. STEELE¹

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Certain selected breeding lines of sugar beets have a considerable degree of resistance to the sugar-beet nematode, *Heterodera schachtii* Schmidt 1871. A test was undertaken to determine if this resistance was due to lack of production of the nematode-hatching factor.

Root diffusates of four lines of nematode-resistant and two varieties of nematode-susceptible sugar beets were tested by the method reported by Golden (1)². Two hundred-ml quantities of root diffusate were leached from 5-inch pots containing 3 plants of a single breeding line or a commercial variety of sugar beets growing in sterilized soil. All diffusates were diluted 1 to 10 to facilitate detection of slight differences in hatching effect. Treatments were replicated 4 times in individual Syracuse watch glasses, each of which contained 40 cysts. At weekly intervals the nematode cysts were transferred to clean watch glasses containing fresh treatment solutions, and the emerged larvae preserved in 5% formalin until counted. Samples which contained large numbers of larvae were aliquoted to expedite counting. Results were analysed for statistical significance by the analysis of variance method.

The numbers of larvae that emerged in the various diffusates were not significantly different. Nematode-resistant lines averaged 10,390; 9,200; 8,410; and 7,990 larvae per replication, whereas the two susceptible varieties averaged 9,060 and 8,130 larvae per replication. The total number of larvae emerging in 4 replications of tap water treatment was 3,090. That is, diffusates of all resistant lines tested contained about the same amount of hatching factor as the susceptible beets. Obviously, resistance in these lines is not due to lack of hatching factor.

Literature Cited

- (1) GOLDEN, A. M. 1958. Influence of leaf diffusate of sugar beet on emergence of larvae from cysts of the sugar-beet nematode (*Heterodera Schachtii*). *Plant Disease Repr.* 42: 188-193.

¹ Research Agronomist and Nematologist, respectively, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, Salinas, California.

² Numbers in parentheses refer to literature cited.