

GREENFIELD, SCOTT D.\*, R. W. WHITMORE, and S. P. BRIGGS. American Cyanamid Company, One Cyanamid Plaza, Wayne, NJ 07470. - Red River Valley, ND sugar beet root maggot control using terbufos in heavy pressure situations.

The sugar beet root maggot, *Tetanops myopaeformis* (Roder) is the most destructive insect pest of sugar beets in the Red River Valley, ND. Trials were established on eight fields to determine the economic benefit of using terbufos in heavy population areas. Terbufos was applied modified-in-furrow, and rates used were commensurate with field location and condition. Stand counts and root ratings were conducted throughout the season, and yields were recorded. Sugar content was analyzed by the American Crystal Sugar Company. All fields had an increased yield from terbufos treatment, with one being eight times that of the untreated. Sugar content was increased significantly in all terbufos treatments.

SMITH, GARRY A. USDA, Agricultural Research Service, P.O. Box 5677 - University Station, Fargo, ND 58105 - Development of a biopesticide targeting the sugarbeet root maggot.

The development of a biopesticide for control of the sugarbeet root maggot (*Tetanops myopaeformis* Röder) is a major project of the USDA-ARS Fargo sugarbeet unit. Three basic phases of the project have begun at the laboratory: 1) development of a bioassay, 2) identification of appropriate bacterial gene vectors, and 3) identification and isolation of the gene for use in transformation. Associated with phase 1 is the development of a laboratory rearing method for the root maggot to complete the life cycle under controlled conditions. Phase 2 includes identification and characterization of endophytic and rhizospheric bacteria. Phase 3 involves the insertion of entomocidal genes into a vector such as Agrobacterium for transfer to the plant genome or the transformation of endophytic or rhizospheric bacteria for introduction to the plant and ingestion by the insect larvae. Gene products of interest are being selected for expression of high insecticidal activity with low mammalian and plant toxicities.