

Research Report

Sugarbeet Conference, Fort Collins, Colorado

February 5, 6, 1974

Prepared by B. J. Landis, December 6, 1973

- A. Location of Project: Western Region  
Oregon-Washington Area  
Yakima Agricultural Research Laboratory  
Yakima, Washington
- B. Work Reporting Unit Title: Insect Pests of Sugar Crops
- C. Work Reporting Unit: No. 10900
- D. SMY's for Past Year at Location: 0.8 SMY
- E. Names of Scientists in Project at Location:  
Last year: B. J. Landis and G. Tamaki  
This year: G. Tamaki

F. Mission of Research:

To develop knowledge on the biology, ecology, life-history, alternate host plants and natural enemies of insects and mites attacking sugarbeets, and to develop methods for their control - particularly aphid and leaf-hopper vectors of virus and viruslike diseases.

G. Objectives of Research:

To determine the relative effectiveness of various insecticides, particularly those with systemic activity, for control of the insect and mite pests; to evaluate the relative effectiveness of various parasites, predators and diseases for control of the pests and to search for resistance to the pests in PI introductions.

H. Research Accomplishments:

The elimination of alternate weed hosts of the green peach aphid and beet western yellows in deep drains by winter burning reduced spring populations of aphids and allowed less spread of the yellows disease in adjacent beet fields. Phorate was found to be particularly effective against aphids and a 3-application program, properly timed, was adopted by all sugarbeet growers in the Walla Walla, Wash. area. Monitor and Orthene were also found effective against aphids but Orthene encouraged unusually large populations of the twospotted spider mite. Dyfonate was found to be the most effective of the short-lived, nonresidual insecticides for control of wireworms on sugarbeets.

I. Impact of Research Accomplishments on Science and General Public:

The recommendation of the 3-application phorate program by Washington State University and the Utah-Idaho Sugar Company resulted in an increase of yields and sugar content within 3 years - after 100% grower compliance with the program was achieved. The use of Dyfonate on new land for control of dryland wireworms has protected stands of sugarbeets that might otherwise have been so decimated as to require replanting. The drain-burning project was cooperatively financed by a grower organization and by the Sugar Company for one year. Although successful, it was later discontinued because of problems with financing.

J. Obstacles to Achieving Objectives:

Reluctance of Environmental Protection Agency to register some effective insecticides on beets, or to permit a more efficient method for application of a registered material. Inability to either reduce dosages or number of applications of efficient aphicides to conserve natural enemies and still control the aphids sufficiently to prevent yellows spread. Budget and personnel constraints limit scientific effort on all but highest priority problems.

K. Future Plans and Needs:

There is need for 1 SMY on sugarbeet insect control work in eastern Washington. Secondary field plot screening of candidate insecticides for control of aphids and a complex of 4 to 6 less serious insects should be continued. The twospotted spider mite is a serious pest during midseason and a chemical control should be developed. Dieldrin is no longer used with Captan to treat sugarbeet seed and a satisfactory substitute should be found. A new pest of beets, the potato scab gnat, is now established in the beet-growing area of eastern Washington. Measures should be developed for control of this insect. The extent of infestation of sugarbeets by the sugarbeet root maggot in Washington should be developed for control of this insect. The extent of infestation of sugarbeets by the sugarbeet root maggot in Washington should be determined and if areas of economic damage are located, satisfactory control measures should be developed.