

Research Report

Sugarbeet Conference, Fort Collins, Colorado

February 5, 6, 1974

Prepared by J. E. Duffus, January 17, 1974

- A. Location of Project: Western Region  
Northern California-Nevada Area  
U. S. Agricultural Research Station  
Salinas, California
- B. Work Reporting Unit Title: Improved Sugarbeet Varieties and  
Production Practices
- C. Work Reporting Unit: 10710
- D. SMY's for Past Year at Location: 1 SMY
- E. Names of Scientists in Project at Location: J. E. Duffus

F. Mission of Research:

To develop knowledge of the nature of the virus or virus-like diseases and pathogenic agents causing major damage to sugarbeet in California and the west.

G. Objectives of Research:

Studies are aimed at a better understanding of the nature of the viruses, their separation and identification with respect to pathogenic strains through host range, vector relationships, and serological techniques, and through chemical, morphological and physical characteristics of the pathogenic entities.

Etiology and epidemiology, as well as damage assessment, are important phases of the objectives.

H. Research Accomplishments:

The disease, virus yellows of sugarbeet, first recognized and described in Europe in the 1930's has been shown to be a complex of serious diseases and at least five previously undescribed viruses were involved. Crop and weed hosts, strains of the viruses and primary sources of inoculum have been determined. Assay techniques for artificial feeding and serology as a diagnostic tool for viruses persistent in their vector have been developed. These techniques have made possible relationship studies between viruses of different groups and geographical areas.

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

The development of an understanding of the beet yellowing complex has had a direct bearing on the efficiency of breeding methods for the development of tolerant varieties and has resulted, along with the knowledge of epidemiology, in important increases in sugarbeet yields. Serological procedures have enabled a direct comparison of a number of supposedly unrelated viruses and have linked viruses of widely separated plant groups and widely separated geographical areas.

J. Obstacles to Achieving Objectives:

A working knowledge of sugarbeet and other viruses in different geographical areas such as eastern United States, South America, and Europe would be desirable.

K. Future Plans and Needs:

Present studies will be continued to fulfill the stated objectives.