who loses his beets every year by blackroot plowed 2 inches deeper this year and had no blackroot except where the plow was lifted at the ends of the field. One grower lost his beets 3 years straight on corn stubble fields. The soil is quite acid. In one fieldman's territory every case of blackroot but one was overcome. Tho one lost was the only one not promptly worked.

SUMMARY

The data given tends to support past studies as to the bad results from beets too close together in the rotation and as to the value of proper drainage and a high level of fertility.

This year's work indicates that the beet crop can usually be saved unless bad weather prevents the use of prompt, modern corrective measures. To date we have learned little more than how to direct our future investigations. We hope that continued observations will further illuminate and define the subject.

ROOT-ROT SURVEY 1938-39 GREAT WESTERN TERRITORY

By A. C. Maxson1/

The 1938 and 39 surveys covered 1482 fields infected with some form of root-rot exclusive of seedling rots (black-root) and the rot associated with phosphate deficiency (black heart).

The diseases recorded were:

Disease	% of total cases
Rhizoctonia	75.37
Fusarium	21.25
Pythium	0.61
Unidentified	2.77

The root-rot caused by Rhizoctonia is the only one considered in this report. In this study alfalfa, potatoes, beans, cabbage, peas, and sugar beets were classed as hosts of Rhizoctonia. Small grains, sorghum and cane crops and corn are considered non-hosts.

Combining the years 1938 and 39, the relation of the cropping scheme to the damage (estimated) caused by Rhizoctonia was determined for host and non-host crops.

Where from one to four host crops preceded the sugar beet crop the damage was 4.84%. When the same number of non-host crops preceded the sugar beet crop the damage was 4.41%.

One or more successive beet crops preceding the one studied resulted in a loss of 5.04%. The same number of other host crops preceding caused an estimated damage of 4.18%.

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These figures indicate a positive relation between host crops in general and damage caused by Rhizoctonia root-rot. They also indicate a closer relation between sugar beets as preceding crops and the occurrence of Rhizoctonia than between this disease and other host crops.

A comparison of small grain and corn show the latter to be more effective in reducing Rhizoctonia than the former. One or more successive small grain crops were associated with a damage of 4.52%, while a like number of successive corn crops resulted in a loss of 4.07%.

The preceding loss figures are small and the differences are also small, however, we believe that they indicate real trends and suggest cultural means of reducing losses due to Rhizoctonia root-rot. This belief is based on the fact that similar relations are indicated year after year in these studies.

BORAX AS A CONTROL FOR HEART ROT OF SUGAR BEETS[1]

R. L. Cook[2]

Heart rot of sugar beets was first attributed to an insufficient supply of soil boron by Brandenburg (1) of Germany in 1931. For years prior to that date the disorder had been classed as a disease and many attempts had been made among European investigators to isolate the causative organism.

Since Brandenburg's experiments were reported, other workers both in Europe and in this country have verified his findings that heart rot is caused by a deficiency boron. Kotila and Coons (4) reported the presence of heart rot in Michigan beets in 1935. A study of symptoms of the disorder and the results of preliminary field surveys and experiments were reported by the author (2) in 1937. Since that date many Michigan farmers have learned to recognize heart rot, and some state that they have experienced losses from this cause for many years. It is the purpose of this paper to report further progress in the experiments performed to determine the effectiveness of borax as a control for heart rot of sugar beets.

Occurrence and Symptoms of Boron Deficiency

For the benefit of those not acquainted with the break down of sugar beet tissue caused by an insufficient supply of boron, it seems advisable to briefly review the subject from the standpoint of soil characteristics on which the disorder occurs and plant symptoms exhibited.

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