

Table 1

Number of applications made and material used in control experiments at Buhl, Idaho, 1937

Exp. No.	Plot No.	Spray material applied	Number of applications	Date of applications
	1	Control or untreated	-	-
	14		-	-
1	2	Kerosene 20 parts	2	6/4-10
2	6	Oil 10 parts	3	6/4-10-17
3	10	Free nicotine 2 percent	4	6/4-10-17-23
4	3	Derris 2 pounds	2	6/4-10
5	7	Aresket 6.4 ounces	3	6/4-10-17
6	11	Water 50 gallons	4	6/4-10-17-23
7	4	Kerosene 20 parts	2	6/4-10
8	8	Oil 10 parts	3	6/4-10-17
9	12	Pyrethrum 1 part	4	6/4-10-17-23
10	5	Nicotine sulphate 1 quart	2	6/4-10
11	9	Summer oil emulsion 1 gallon	3	6/4-10-17
12	13	Water 100 gallons	4	6/4-10-17-23

VARIETAL TESTS FOR RESISTANCE TO SUGAR BEET NEMATODES

F. V. Owen, Gerald Thorne, and C. W. McBeth -
U. S. D. A.

Several attempts have been made during the past ten years to select sugar beets resistant to the sugar beet nematode. Efforts to compare these selections with standard varieties encountered considerable difficulty because the first selections were not made from curly-top resistant varieties. Experiments in 1935 and 1936 were particularly disappointing because curly top developed in the experimental trials resulting in greatly reduced yields, and the added effect due to nematodes was difficult to measure. In 1935 selections for nematode resistance were made from U. S. #1 and U. S. 34 which are known to possess curly-top resistance. The U. S. #1 selection was evaluated in 1937 in comparison with 14 other curly-top resistant strains.

No particular nematode resistance was observed with the selection from U. S. #1 and neither did any of the other 14 varieties show any marked nematode resistance. The more vigorous varieties appeared to give relatively better results under the nematode exposure, but the statistical interactions were not found to be significant.

ALFALFA RESISTANT TO THE STEM NEMATODE

Gerald Thorne, U. S. D. A.

An unusual illustration of nematode resistance in alfalfa was found on the Utah State Agricultural College varietal test plot near Midvale, Utah, in

1936 and 1937. This plot had inadvertently been established on an old alfalfa field which formerly was heavily infested with the alfalfa stem nematode, Ditylenchus dipsaci. Among the many varieties planted was one known as Turkestan 19304 which was found to possess almost perfect immunity to stem nematode while adjoining plots of Utah Common, Grimm, Ladak, etc. were severely damaged.

Efforts to find nematode resistant sugar beets have been unsuccessful but the fact that nematode resistance does occur in certain crop plants gives us hope that some day a nematode resistant beet may be discovered.

LIST OF GENETIC FACTORS AND CHROMOSOME MAP OF THE R CHROMOSOME
IN BETA VULGARIS

F. V. Owen and F. A. Abegg, U. S. D. A.

Fourteen characters in Beta vulgaris have been found to be inherited through simple Mendelian factors. Eight of these factors are in one linkage group and hence it is assumed that these are located on one chromosome. The chromosome presumably carrying this linkage group may be designated as the R chromosome from the factor R for red pigment. Most of the factors are either color genes or mutations for abnormalities. Special interest has been centered on a factor of self fertility; one is identified with bolting, or the annual character; and another conditions the degree of curly-top resistance.

THE INHERITANCE OF CURLY-TOP RESISTANCE IN BEETS

F. A. Abegg, U.S.D.A.

Resistance of beets to the curly-top disease is conditioned by a partially dominant factor C. Groups of plants resembling the resistant and susceptible parental strains were recovered in F_2 . The postulation of the C factor is strongly dependent on a linkage with the crown color factor R. Red and white F_2 classes differed significantly in both foliage symptoms and root weights. F_3 data support the existence of the R-C linkage is generally applicable to various degrees of resistant types selected from the U. S. No. 1 and U. S. No. 12 varieties.

GENETICS OF SELF-FERTILITY AND SELF-STERILITY IN SUGAR BEETS

F. V. Owen, U.S.D.A.

Sugar beets may be classified into three classes with regard to self-fertility: Highly self-fertile, intermediate, and strongly self-sterile. Environmental conditions influence the expression of these heritable tendencies. Under special conditions selfed seed can even be secured from strongly self-sterile plants, but this is not associated particularly with health and vigor.