

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

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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

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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.