CONTROLLING FLAX WILT BY SEED SELECTION.¹

E. C. STAKMAN, H. K. HAYES, OLAF S. AAMODT, AND J. G. LEACH.

INTRODUCTION.

Statistics of the United States Department of Agriculture² show that the principal area of flax production has in the last half century moved steadily westward from Kentucky and Ohio to the present area including Minnesota, North Dakota, South Dakota, and Montana. These figures show also that the annual production of flaxseed in this country is steadily declining. The average yearly production for the years from 1900 to 1909 inclusive was 25,966,700 bushels. For the next seven years, from 1910 to 1916 inclusive, the average production was only 17,155,71 bushels. In Minnesota the average yearly production from 1902 to 1909 was 5,322,000 bushels, while from 1910 to 1917 the yearly average was only 3,051,125 bushels. The conditions were similar in Iowa, North Dakota and South Dakota.

Since flax does not compete with weeds as well as some other crops do, new land is especially desirable for flax production. This would, in a measure, account for the above facts. It is very reasonable to suppose, however, that flax wilt is at least of equal or even of greater importance in causing this decrease in yield as well as the migratory movement of the crop. It is well known that when flax is grown for a number of successive years on the same soil, this soil becomes so heavily infected with the fungus causing flax wilt (Fusarium lini Bolley) that a profitable crop cannot be grown. Soil in this condition is usually spoken of as being “flax-sick.” It is easy to conceive the effect this would have on the total flax production, directly by reducing the yield and indirectly by discouraging its culture. The gradual movement of the center of production to new lands is a natural sequence.

THE ROLE OF SELECTION IN CONTROLLING WILT DISEASES.

Bolley (1, 2)³ first discovered the true nature of flax wilt and devised methods for its control. Crop rotation and seed treatment were

¹ Published, with the approval of the Director, as Paper 179 of the Journal series of the Minnesota Agricultural Experiment Station, University Farm, St. Paul, Minn. Received for publication August 17, 1919.
³ Reference is to “Literature cited,” p. 298.