

LEAFSPOT RESISTANCE BREEDING PROGRAM

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Plant Industry Station

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Objectives

Dewey Stewart stated that their primary objective had been the development of L.S.R. hybrids, and that more recently emphasis was being placed on combining leaf spot resistance with resistance to root rot. In this program, yield of sugar per acre is of course an important criterion inasmuch as varieties must perform well when disease is not severe.

Methods Used

1. Have always tried to use F. hybrids.
2. Have used pseudo-self fertility, which made it possible to throw inbreds together and get a fair degree of crossing.
3. Inbreds themselves must be good performers because under this system they get about 25 percent selfing.
4. In testing combining ability they have tested against synthetic check.
5. The poly-cross method has been used not only by Stewart but also by Culbertson, Bochatahler, and Hogaboam in the leaf spot resistance breeding program.

Recent Shift in Program

1. More recently they have been developing M.S. material and also M.S. equivalents of inbred lines.
2. Have made some combinations of curly top and leaf spot resistance. Good resistance to both diseases has been obtained, but to date yield has been poor. These varieties can be improved by selection.

Problems and What is Needed for Future Program

1. Wants to use the true self fertility gene. The pseudo-type is not satisfactory.
2. Male sterility has made it possible to realize the full benefits of true self fertility.

3. Must test material for O-type of male sterility.
4. Need work on developing a tester and the testing of combining ability on a cooperative basis.
5. Believes that tester should be susceptible to the diseases being bred against, e.g., a L.S.R. susceptible or a black root susceptible as the tester makes it simpler to get a reading of the true worth of an inbred for these characters.
6. We need species hybrids to bring in new characters.