

AN UNUSUAL ROOT INJURY ON JERSEY-TYPE SWEETPOTATOES IN 1962

E. M. Hildebrand and Charles Drechsler¹

During 1961 a type of root injury characterized by relatively shallow black lesions was observed on the Jersey Orange variety of sweetpotato in eastern Maryland near Salisbury. A quantity of the diseased material was received on April 24, 1962 and examined. The symptoms ranged from pits, simulating soil rot caused by actinomycetes, to spots and rings of the girdling type around the roots. This injury had never before been encountered by the writers and an attempt was made to determine its cause.

Some of the roots were bedded in sterile sand in the greenhouse on May 6 for the production of sprouts for propagation. About 3 weeks later 50 sprouts were planted in sterile soil in 4-inch pots for the production of roots. The roots were harvested on November 5 and over 50% of them bore distinctive black spots and girdling lesions (Fig. 1) which were generally of a more severe character than those on the mother roots. This experiment demonstrated the disease was communicable from bedded roots to their sprouts and from the plants to their own roots in the greenhouse.

During 1962 the weed control sweetpotato plot at Beltsville employed three Jersey-type varieties: Yellow Jersey, Orange Little Stem, and Big Stem Jersey. At digging time in early October such a large percentage of the roots of all three varieties had black lesions that the entire crop was discarded. Figures 2 and 3 show the lesions on the Yellow Jersey and Orange Little Stem varieties.

Several fungi were recovered from the lesions on the diseased roots. Among these, Rhizoctonia was most prevalent.

Some of the diseased roots of Yellow Jersey and Orange Little Stem from the above 1962 sweetpotato plot were bedded in sterile sand on November 11, 1962, to produce sprouts for another root transmission experiment, which was concluded 5 months later on April 15, 1963. Fifteen sprouts of each variety were planted in sterile soil in 4-inch pots. At the end of the experiment all of the plants had some diseased roots, thereby providing further evidence that the causal fungus is root-borne. Fifteen sprouts of each variety were also grown in sterile sand, which received liquid fertilizer weekly. The roots on all of the plants in this experiment were severely injured. In some instances injury to the fibrous roots was so severe as to preclude the formation of fleshy roots. Apparently sand as a growth medium tends to promote the type of root injury here concerned.

Numerous isolations have been made from the affected roots. Among the several fungi isolated from the root lesions, Rhizoctonia was most prevalent.



FIGURE 1. Black root lesions on Jersey Orange sweetpotato during 1962 in the greenhouse.

¹Pathologist and Mycologist, respectively, Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

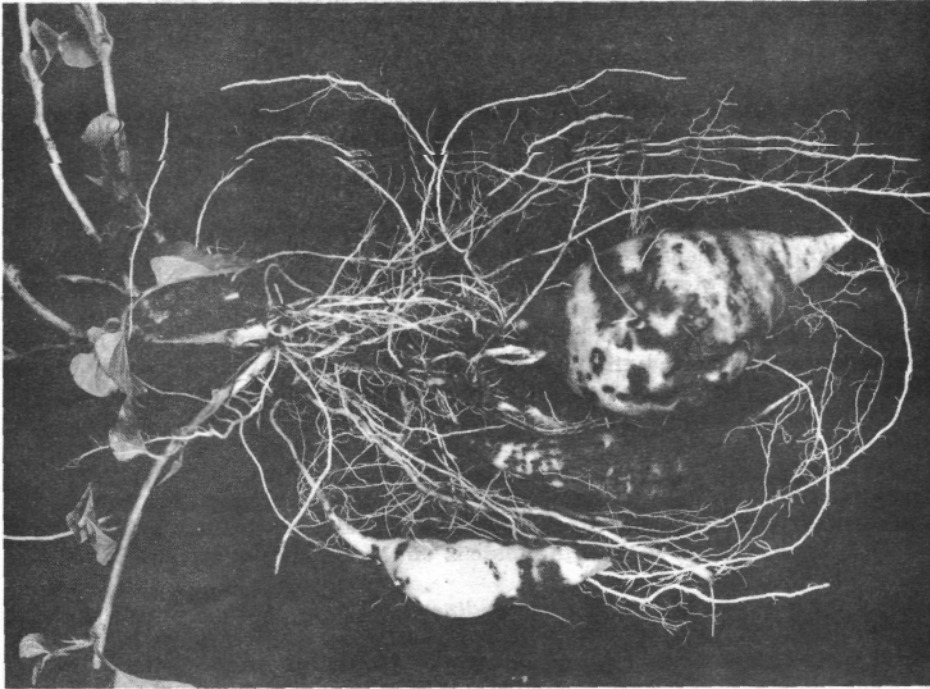


FIGURE 3. Symptoms of the pronounced root injury on Orange Little Stem sweetpotato at Beltsville during 1962.

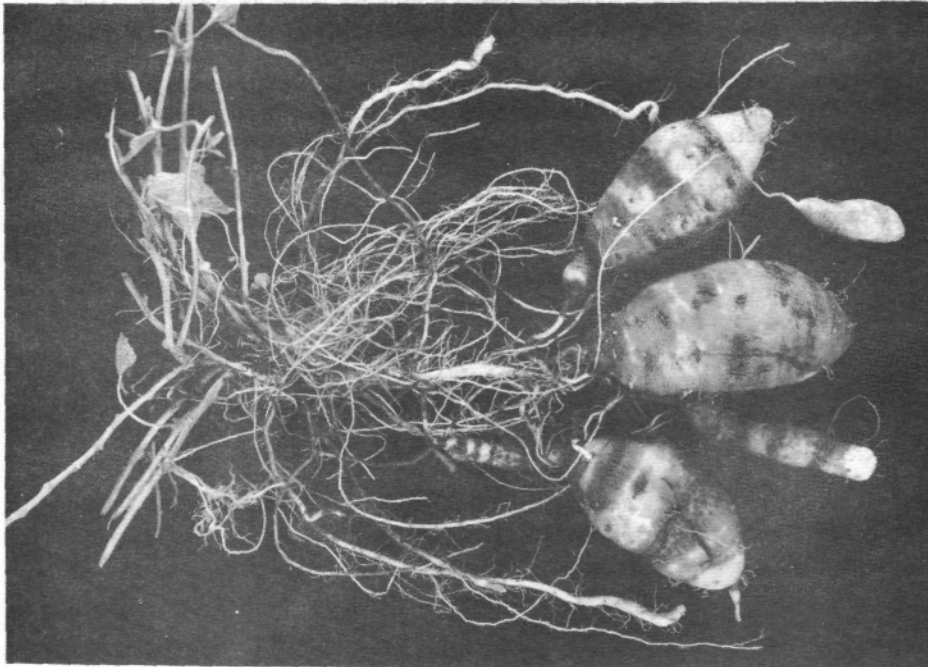


FIGURE 2. Symptoms of the pronounced root injury on Yellow Jersey sweetpotato at Beltsville during 1962.

The 1962 growing season was dry, which apparently favors *Rhizoctonia*. The root condition described here occurred widely in the sweetpotato-growing States during the past season and to a limited extent on varieties besides those of the Jersey type. Specimens were received from New Jersey of an apparently identical condition on Yellow Jersey in that State. Investigators of peanut and tobacco diseases also observed much more *Rhizoctonia* injury than usual during 1962 and also associated it with the drought.

Controlled greenhouse experiments are underway to establish further its etiology and to develop control measures for this type of root injury.

CROPS RESEARCH DIVISION, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, BELTSVILLE, MARYLAND