THE EFFECT OF THREE- AND FOUR-YEAR ROTATIONS
ON COTTON ROOT-ROT IN THE CENTRAL
TEXAS BLACKLANDS

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SINCE 1888 (1), rotation of cotton with nonsusceptible crops has been recommended for the control of the cotton root-rot disease. From that time various tillage practices and 2-, 3-, and 4-year rotations (2, 3, 7, 8, 9) have been tried to determine their effect in decreasing root-rot as well as in increasing crop yields.

Scofield (7), using data from a number of different rotation combinations at the San Antonio, Texas, field station over the 8-year period 1912-19, inclusive, concluded that, "the control of root-rot is not to be found through any ordinary system of crop rotation."

Ratliffe (2), however, using the same system extended through 1932, stated that, "in these experiments 2-year rotations of cotton with nonsusceptible crops have proved of very little value in the control of root-rot, 3-year rotations appear to have been slightly more effective, while in 4-year rotations the disease has been effectively checked though not eliminated." It is noted, however, that in these rotations there was very little root-rot at the beginning of the experimental period and the various plats did not have a uniform infection.

Reynolds and Killough (3) concluded from an 11-year study of 2-, 3-, and 4-year rotations at the Temple, Texas, Substation that in every case root-rot was decreased and cotton yields increased. In a four-year rotation of cotton, cowpeas, corn, and wheat, only 4.8% of the cotton plants died from root-rot as compared with 30.7% for cotton planted continuously. Cotton yielded 101% more lint cotton in this rotation than did that grown continuously on the same land. It should be taken into consideration in this case, however, that there was considerable difference in both yields and root-rot on these different areas at the beginning and before the various rotations had completed the first cycle.

In 1927, the Temple Substation was moved to a new site on land more typical of the Blackland region. The purpose of the present paper is to give the results of root-rot studies in 3- and 4-year rotations on this station from 1928 to 1936, inclusive. In these studies the percentage root-rot, cotton yields, and the distribution and viability of sclerotia are given.

DESCRIPTION OF SCLEROTIAL STAGE

The cotton root-rot fungus, Phytophthora omnivorum (Shear) Duggar, attacks over a thousand other wild and cultivated plants besides cotton. Grains, grasses, and all other monocots, are characteristically immune. Some dicots are immune, and those tested thus far vary in degree of susceptibility. The disease is

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2Plant Pathologist, Substation No. 5, Temple, Texas.
3Figures in parenthesis refer to "Literature Cited", p. 680.