EFFECT OF NITROGEN AND PHOSPHORUS ON THE YIELD AND ROOT ROT RESPONSES OF EARLY AND LATE VARIETIES OF COTTON

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LOSSES occasioned by the attack of the root rot fungus, Phymatotrichum omnivorum (Shear) Duggar, are severe in certain of the cotton-producing sections of Texas and other areas of the Southwest. The literature pertaining to the field and laboratory investigations on various phases of the root rot disease has been reviewed in recent years by Streets (11) and by Rea (7). The possibility of minimizing the losses from root rot in cotton through the use of nitrogen and phosphorus fertilizers in conjunction with early- and late-maturing varieties of cotton has been investigated in the present study.

LITERATURE

Commercial fertilizers were used by Reynolds and Rea (8) on root rot infested soils in Bell County, Tex. Increased yields resulted, particularly from fertilizers containing phosphoric acid, but the margin of increase was not considered profitable. More extensive investigations of the use of fertilizers with cotton in the blacklands of Texas are reported by workers of the former Soil Fertility Station of the U. S. Dept. of Agriculture, located at Austin, Tex. (1, 2, 4, 5, 6). Their work indicates that the dominant need of the soils of the Houston series is for nitrogen, while that of the Wilson series is for phosphate. The tendency for nitrogen fertilizers to decrease root rot and for phosphate fertilizers to increase root rot is most pronounced on the Wilson series, while on the Houston series the trend is the same but to a lesser degree. The results of chemical analyses of various portions of the cotton plants (2) indicated that the differences in mortality of cotton secured in fertilizer experiments on certain Wilson soils are associated with outstanding differences in the total nitrogen and the total P₂O₅ content of the root bark.

It has been pointed out by Rogers (10) that a high early or mid-season kill of cotton by root rot results in a markedly decreased yield, and that fair yields may