EFFECT OF IRRIGATION TREATMENTS ON STEM ROT SEVERITY, PLANT DEVELOPMENT, YIELD, AND QUALITY OF RICE

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In a previous publication, Tullis and Cralley (7) mention draining prior to maturity as a promising method for the control of stem rot of rice caused by Leptosphaeria salvinii Catt. These observations were limited to the variety Supreme Blue Rose. Since that time additional experiments have been conducted to determine the effect of various irrigation treatments on stem rot severity of several rice varieties and on tillering, plant height, yield, and milling quality. Jones (4) has shown that different irrigation treatments affect rice yields. Tisdale and Jenkins (6) recommended draining as a control for straighthead of rice, and Isely and Schwardt (3) recommended draining for the control of rice water weevil.

MATERIALS AND METHODS

The experiments reported herein were conducted at the Rice Branch Experiment Station, Stuttgart, Ark., on plots which up to 1933 had grown 19 crops of rice during the preceding 24-year period. In the course of the experiments, rice was grown on the plots in alternate years, one series of experiments on stem-rot-infested and the other on stem-rot-free land.

STEM-ROT-INFESTED PLOTS

In the stem-rot-infested series, the experiments were set up in a block arrangement, using triplicated or quadruplicated 1/50-acre randomized plots. In order to obtain a more critical comparison of the effects of the various irrigation treatments on disease severity, a disease index value was computed for each treatment. The method of computing this index has been explained previously (1).

The irrigation treatments were as follows: (a) Soil kept moist but not submerged during the entire growing season; (b) soil irrigated normally until the first part of August, then kept moist but not submerged for the remainder of the season; (c) soil irrigated normally until the last part of August or first part of September, then kept moist but not submerged for the remainder of the season; (d) soil irrigated normally until August 15, then kept moist but not submerged until September 1, then irrigated normally for remainder of the season; and (e) normal irrigation. Normal irrigation consisted of submerging the soil 2 to 3 inches deep for about 3 weeks when the plants were approximately 6 inches in height, permitting the land to dry for 2 weeks, then applying water to a depth of 4 to 6 inches.