

PROCEEDINGS...

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The Agricultural Experiment Stations  
and Agricultural Extension Services  
of Arkansas, California, Florida, Louisiana,  
Mississippi, Missouri, and Texas; and  
the Agricultural Research Service,  
the Economic Research Service,  
the Cooperative State Research,  
Education, and Extension Service, and  
other participating agencies of the  
U.S. Department of Agriculture; and  
cooperating rice industry agencies

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not been studied for rice grown in Louisiana. An experiment on the relationship between yields of rice and density of rice water weevil larvae on water-seeded rice was conducted at the Rice Research Station in Crowley, Louisiana. Rice was seeded 13 May by hand using pre-germinated seed at 151 kg/ha (135 lb/acre). The experimental design was a split plot with the main plots being applications of cypermethrin at 0.28 kg (AI)/ha (0.25 lb [AI]/ha) or no applications of cypermethrin. Treatments within main plots were 0.00, 0.22, 0.45, 0.67 & 0.90 kg (AI) of carbofuran per hectare. Treatments of cypermethrin were applied at 1 week intervals beginning 5 May for 6 weeks. Treatments of carbofuran were applied 3 days after permanent flood on 1 June. Permanent flood was established 29 May. Densities of rice water weevil larvae were sampled weekly from one week after permanent flood through four weeks after permanent flood. Yields were determined at harvest. The relationship between rate of carbofuran and standardized yield was examined using regression to determine if carbofuran had a stimulatory effect on yield. In addition, regression was used to quantify the relationship between standardized yield and average larval density, standardized yield and larval density on each sample, and average larval density and rate of carbofuran. The rate of carbofuran was not found to effect yield when rice water weevils were controlled using cypermethrin. A significant relationship was quantified between larval density and standardized yield. Economic injury levels were developed from this relationship, market values and management costs.

#### **Cultivar Resistance to Aggregate Sheath Spot, *Rhizoctonia oryzae sativae*, in Uruguay**

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Aggregate sheath spot (ASS), caused by the fungus *Rhizoctonia oryzae sativae*, developed into a major rice disease in Uruguay. Sheath blight (SB), caused by the species *Rhizoctonia solani* is not present in the country. Short-season and dwarf cultivars are more susceptible to SB but it is not clear if resistance mechanisms are similar for both diseases. Some breeding lines had shown moderate to high resistance to ASS in yield plots. In order to evaluate resistance to this disease, a group of tolerant breeding lines and check cultivars were included in a field trial with and without artificial inoculation with the ASS pathogen.

The trial was conducted in the 1994/95 growing season and was arranged in a CRBD with split-plot. Inoculated and check (non-inoculated) plots were assigned to main plots. The pathogen was grown in a 2:1 rough rice:rice hulls medium and inoculation was done 57 days after planting with 100 ml per cultivar (subplot). Grain yield, milling quality and ASS Degree of Severity Index (DSI) were recorded.

Statistical analysis of grain yield and DSI data detected significant differences between inoculation treatments, among cultivars and for the interaction of both factors. Milling quality was not affected by the disease. Inoculation increased the average DSI from 24.2 to 54.4% and reduced the average yield from 9.13 to 8.39 t/ha. As indicated by a significant interaction, cultivars had different reactions to inoculation. The high-yielding short-season cultivar INIA-Tacuari showed the highest DSI in check and inoculated plots, 44.1 and 87.5, respectively, and grain yield was reduced 17.3%, from 10.49 to 8.68 t/ha. The breeding line L 1130 showed high resistance to the disease, with no grain yield reduction and DSI of 29.1% in inoculated plots. Grain yield of the line L 1172 was not affected by inoculation despite of an increase in the DSI late in the season. Its DSI was 13.1 and 64.1 in check and inoculated plots, respectively. Bluebelle also showed good resistance; its grain yield was not affected by the disease but was lower than those of L 1130 and L 1172.

The study confirmed an adequate resistance level of some cultivars under high disease pressure. The breeding lines L 1130 and L 1172, that have desirable agronomic traits and yield, are being used in crosses with high-yielding susceptible cultivars as INIA-Tacuari. The resulting progenies may be used for more detailed genetic studies.