

OCCURRENCE OF HOJA BLANCA AND ITS INSECT VECTOR,
SOGATA ORIZICOLA MUIR, ON RICE IN LOUISIANA

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Summary

Surveys were made for hoja blanca and its insect vector, *Sogata orizicola* Muir, in Louisiana rice fields in 1959. Both were found in a number of fields in several parishes for the first time in Louisiana and for the first time in major rice-producing areas of the United States.

Hoja blanca (white leaf), a potentially destructive rice disease, was found in a number of Louisiana rice fields in 1959. The disease had been found in Florida in 1957 (2) and in south Mississippi in 1958 (3).

Sogata orizicola Muir, a fulgorid, is the vector of the virus causing hoja blanca (1, 4). This insect was not reported for the United States until 1957, when the disease was found near Belle Glade, Florida.

As the finding of hoja blanca near Belle Glade, Florida in a limited rice-producing area represented the first occurrence of a potentially serious disease in the United States, eradication measures were initiated by the Plant Pest Control Division, United States Department of Agriculture, and the Florida State Plant Board. Similar control measures were employed in 1958 upon finding the disease and insect vector in Hancock County, Mississippi. The 1958 disease and vector surveys were negative in Arkansas, Louisiana, Texas, and Mississippi except for the two locations in Hancock County.

RESULTS OF 1959 SURVEYS

Extensive cooperative surveys were planned for 1959 in a meeting held at Beaumont, Texas on June 16, 1959, attended by representatives of the United States Department of Agriculture, State experiment stations, and state regulatory agencies of the four southern rice-producing States. Later, the surveys were initiated by personnel of the Plant Pest Control Division in cooperation with the other agencies in each of the four States. The field survey crews collected insects from rice with sweep nets and preserved questionable specimens, chiefly fulgorids, for examination by an insect taxonomist. Fields with rice plants exhibiting disease symptoms similar to those of hoja blanca were checked by a plant pathologist who examined leaf specimens or made later inspections of the field. While abnormal plants with leaf coloration similar to that associated with hoja blanca were frequently found, definite identifications were based on only typical, advanced foliage symptoms.

On August 3 hoja blanca was identified in three rice fields in St. Tammany Parish near Covington, Louisiana, in which *S. orizicola* was collected on July 23. St. Tammany is adjacent to Hancock County, Mississippi, where the disease and vector had been found in 1958.

After the finding of hoja blanca and *S. orizicola* in St. Tammany Parish, the rice-producing section along the Mississippi River was extensively surveyed. As shown in Table 1, the vector was first collected in this area on August 10 and then later in each of the parishes. Later in the season *S. orizicola* was found in St. Landry, Evangeline, St. Martin, and Vermilion parishes in southwest Louisiana and in Madison Parish in the northeast part of the State.

As shown in Table 1, *S. orizicola* was collected in 14 parishes and hoja blanca was identified in 11 of these. The disease and vector were always associated providing plant-growth conditions were favorable for symptom development. Failure to find hoja blanca in three of the parishes, Evangeline, Vermilion, and St. Martin, was attributed to unfavorable conditions late

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Table 1. Louisiana parishes where *hoja blanca* and *Sogata orizicola* were found in 1959.

Part of State and Parish	1959 Rice acreage ^a	Date of initial finding		Fields infested	
		<i>S. orizicola</i>	<i>hoja blanca</i>	number	acreage
Southeast					
St. Tammany River and Teche	150	July 23	Aug. 3	3	135
St. John	720	Aug. 10	Sept. 10	2	651
St. James	2,968	Aug. 12	Sept. 10	9	2,672
Iberville	1,877	Aug. 14	Sept. 11	5	1,224
Lafourche	395	Sept. 11	Sept. 24	1	206
Terrebonne	146	Sept. 11	Sept. 24	1	69
Assumption	531	Sept. 15	Sept. 24	2	131
Ascension	1,696	Oct. 1	Oct. 27	1	245
St. Mary	2,866	Sept. 28	Oct. 27	4	558
St. Martin	3,547	Nov. 2	b	3	363
Southwest					
St. Landry	15,276	Sept. 23	Sept. 25	11	1,418
Evangeline	39,940	Oct. 2	b	5	253
Vermilion	102,964	Oct. 22	b	1	60
Northeast					
Madison	775	Oct. 16	Oct. 28	1	60
Total				49	8,045

^aRice acreage in the United States, 1959. Rice Journal 62(10): 28-29, 1959.

^b*Hoja blanca* not found.

in the season. In late October plant growth was scanty because of grazing by cattle as well as unfavorable growing conditions. Many of these were stubble fields.

Figure 1 shows 14 infested parishes listed in Table 1 in relation to the principal rice-growing areas of Louisiana, Arkansas, Mississippi, and Texas. Two infested counties in Mississippi, Hancock and Harrison, and Palm Beach County, Florida are also included.

The objective of the survey was to determine at the earliest possible time the distribution of *hoja blanca* and the vector in the southern rice area. Experience early in the survey indicated that the vector can be found more readily than the disease. Theoretically, and on the basis of observations on the disease and insect counts in several fields, only a few insects, or possibly only a single viruliferous female, migrate or are blown into a field. Later, one or more small areas 10 to 15 feet across with a fairly high percentage of diseased plants and relatively high insect populations, particularly nymphs, are found in the field. Such limited infected areas are difficult to locate in 40- to 200-acre fields and constitute a practical limitation to routine surveys of a large number of fields. But, by the time *hoja blanca* symptoms are well defined, even though confined to limited areas within the field, the insect vector has completed one or possibly two life cycles and spread over much of the field. Thus, chances of finding the vector were better than finding the disease in routine surveys of large fields. For this reason and because of some difficulty encountered by field survey crews in identifying disease symptoms, emphasis was placed on vector surveys. The fields with *S. orizicola* were later examined for the disease. As a result the vector was collected prior to finding the disease, as shown in Table 1.

On the basis of planthopper populations and stage of development of disease symptoms, the field of initial infestation in Louisiana was probably in St. Tammany Parish. As the *hoja blanca* symptoms observed on August 3 appeared on the two top (youngest) leaves and panicles, infection probably occurred in early June. The distribution of diseased plants and planthopper population indicated that the vector had completed two generations, each of approximately 30 days, by August 3. Several of the fields in other parishes showed a pattern of scattered diseased plants which indicated the initial entry of several viruliferous planthoppers.

After collection of *S. orizicola* in rice fields in St. Tammany Parish and each of the other fields, insecticides were applied by airplane at fairly heavy rates. Phosdrin (1-methoxycarbonyl-1-propen-2-yl-dimethylphosphate) at 0.5 or a mixture of malathion at 1 pound plus DDT at 1 pound per acre was used, depending upon stage of maturity of the rice. The spray applications were continued at 10-day intervals as long as any *Sogata* specimens were collected a few days after spraying. In most of the fields none could be collected 1 or 2 days after spray-

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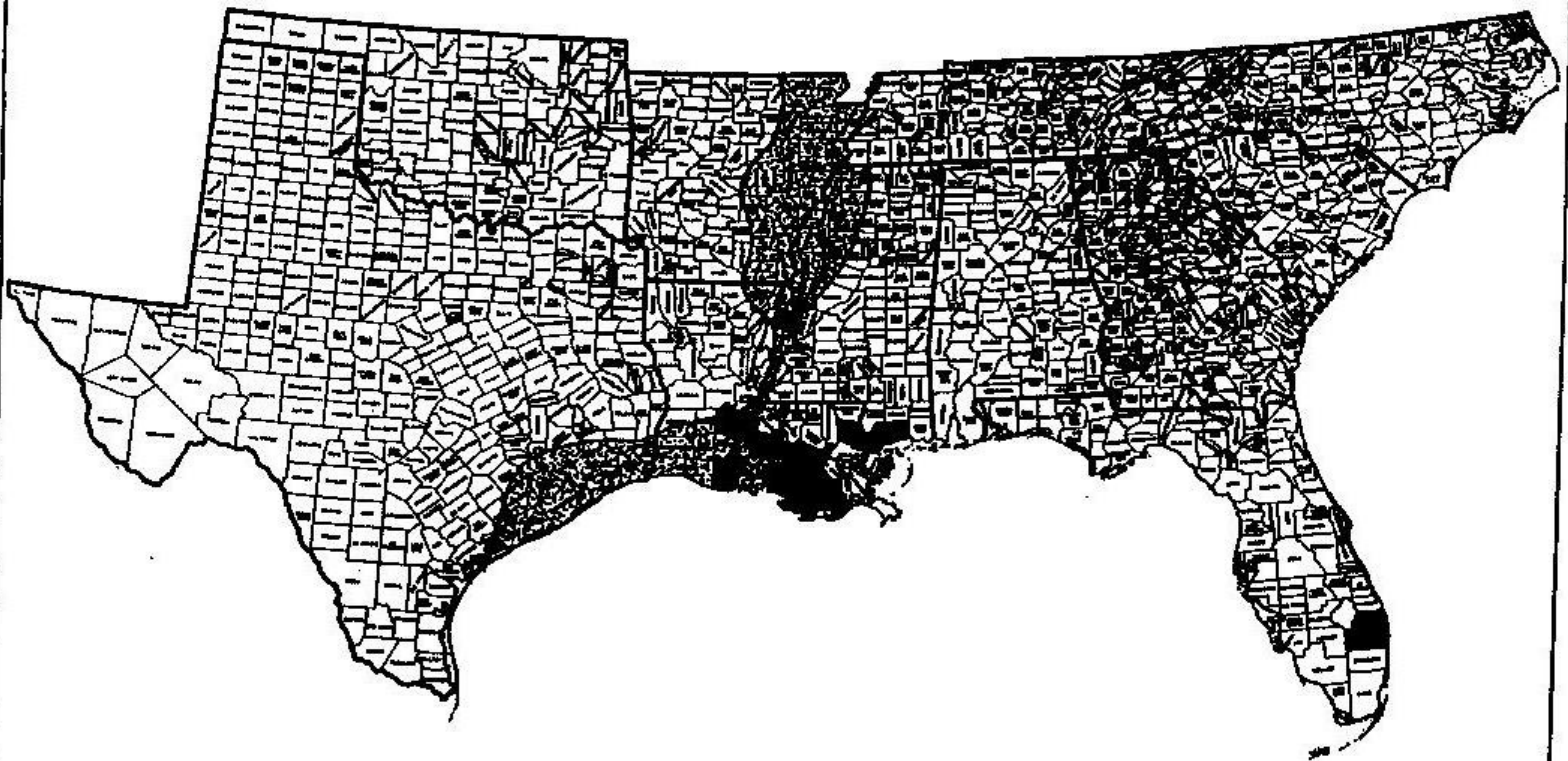


FIGURE 1. Relation of infested areas (in black) to the principal rice-producing area in southern States.

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ing, but a few appeared several days later necessitating additional applications. The insecticides gave excellent practical control but were not satisfactory for eradication.

DISCUSSION

Environmental conditions during the summer and fall in Louisiana are favorable for the multiplication and spread of *S. orizicola*. Observations indicate that the planthoppers became established in early June in rice in St. Tammany Parish and possibly also in the river section. The source of the infestation is not known. Although the best known methods for controlling the vector were used, a few of the vectors were still present in some fields when killing frosts occurred, during the week of November 1. Whether this species is capable of surviving the winters in Louisiana is not known.

As with other pests capable of fairly rapid multiplication and spread and eluding early detection in newly infected fields, the control measures used for *S. orizicola* were not as successful as desired. Drastic reduction in population was achieved and it is believed the measures used prevented a more rapid spread of the insects.

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