SMALL PLOT ASSESSMENT OF INSECTICIDES AGAINST THE SUGARCANE APHID

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Seven insecticide treatments were evaluated for control of the sugarcane aphid in a randomized complete block design with five replications in a field of second ratoon LCP 85-384 sugarcane located on a farm near New Iberia, LA. Pre-treatment aphid counts were made (31 July) prior to test initiation. Insecticide treatments were applied on 31 July to 3-row plots (6 feet x 20 feet) using a CO_2 sprayer mounted on an all-terrain vehicle with 8005 flat fan nozzles (one per row) delivering 10 gpa at 35 psi. For each sampling date, aphids were counted on the third leaf down from the whorl of 10 randomly selected plants from the center row of each plot. Data were analyzed with ANOVA and means separated with LSD.

There was no significant difference among pre-treatment counts on 31 July. On 3 August (3 DAT), all treatments had significantly fewer sugarcane aphids than the check. On 14 August (14 DAT), the imidacloprid, Capture, Furadan, and Fury treatments had significantly fewer sugarcane aphids than the check.

Table 1. Results of small plot insecticidal test for control of the sugarcane aphid, Melanaphis sacchari (Zehntner).

		Mean Number of Aphids per 10 Leaves[a]		
Treatment/Formulation	Rate (oz/A)	Pre-treatment[b]	3 DAT	14 DAT
Imidacloprid 4F	1.5	239.6a	12.2b	2.2b
Asana XL	6.0	324.0a	17.0b	33.0ab
Capture 2EC	6.4	520.8a	48.0b	5.4b
Karate Z	1.92	566.8a	58.0b	18.8ab
Furadan 4F	8.0	676.2a	75.2b	1.8b
Baythroid 2E	2.1	613.0a	87.60b	10.6ab
Fury 1.5EC	3.37	594.8a	113.8b	6.8b
Check	--	194.6a	275.4a	60.6a
LSD		592.1	159.3	99.5

[a]Means within a date followed by the same letter are not significantly different ($P<0.05$, LSD).
[b]Counts on 31 Jul are pre-treatment counts prior to application of insecticide.

SMALL PLOT ASSESSMENT OF INSECTICIDES AGAINST THE SUGARCANE BORER

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Eight insecticide treatments were evaluated for season-long control of sugarcane borer in a randomized complete block design with six replications in a field of first ratoon HoCP91-555 sugarcane at the LSU AgCenter Sugar Research Station, St. Gabriel, LA (Iberville Parish). Insecticide treatments were applied to 3-row plots (6 feet x 30 feet) using a CO_2 sprayer mounted on an all-terrain vehicle with an 8005 flat fan nozzle (one per row) delivering 10 gpa at 35 psi. Prior to test initiation, Lorsban 15G (15 lb/A) was applied on 10 June to suppress fire ant predation on the sugarcane borer (SCB) larvae. Initial treatment of novaluron was made on 9 July when 3% of the stalks were infested with SCB larvae in the leaf sheaths. All other insecticide treatments were made on 17 July when SCB infestations reached the Louisiana Cooperative Extension Service recommended threshold (5% of the stalks infested with SCB larvae in the leaf sheaths). Second applications of all treatments were made on 19 August when re-infestation reached 5% in the Confirm 2F treated plots. SCB damage was assessed by counting bored internodes and the total number of internodes per stalk from 120 randomly selected stalks (20 stalks/plot) in each treatment (1 November). Data were analyzed with ANOVA and means separated with LSD.

All insecticide-treated plots resulted in less than 10% bored internodes (economic injury level) and were significantly less than the untreated check of 30.6% bored internodes. With adequate rainfall conditions, borer infestations were normal during the summer of 2002. Experience with SCB tests shows that the most reliable results are obtained when the untreated check approaches at least 25% bored internodes, which was easily surpassed in this test.

Table 1. Results of small plot insecticidal test on (SCB) *Diatraea saccharalis* (F.), St. Gabriel Research Station, 2002.

Treatment/ Formulation[a]	Rate (oz/A)	% Bored Internodes[b]
Fury 1.5EC	3.37	2.9b
Baythroid 2E	2.10	2.9b
Intrepid 2F	4.00	2.8b
Confirm 2F	8.00	2.8b
F0570 0.8EC	3.20	2.4b
Karate Z	1.92	2.0b
novaluron (3% Threshold)	12.00	1.8b
novaluron (5% Threshold)	12.00	1.7b
Check	--	30.6a
LSD		2.87

[a]All treatments were applied with Latron CS-7 at 0.25% vol/vol.
[b]Means within a column followed by the same letter are not significantly different ($P<0.05$,LSD).

MONITORING MOVEMENT OF THE MEXICAN RICE BORER TOWARD SUGARCANE AND RICE IN THE UPPER TEXAS RICE BELT AND WESTERN LOUISIANA

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Pheromone trap sampling for the Mexican rice borer (MRB), *Eoreuma loftini* (Dyar) (Lepidoptera: Crambidae), was continued during 2002 adjacent to sugarcane or rice fields in Southeast Texas and Southwest Louisiana. These cooperative studies between Texas A&M and the LSU AgCenter were initiated in 2000 to define the insect's range and assess its potentially increasing threat to Louisiana.

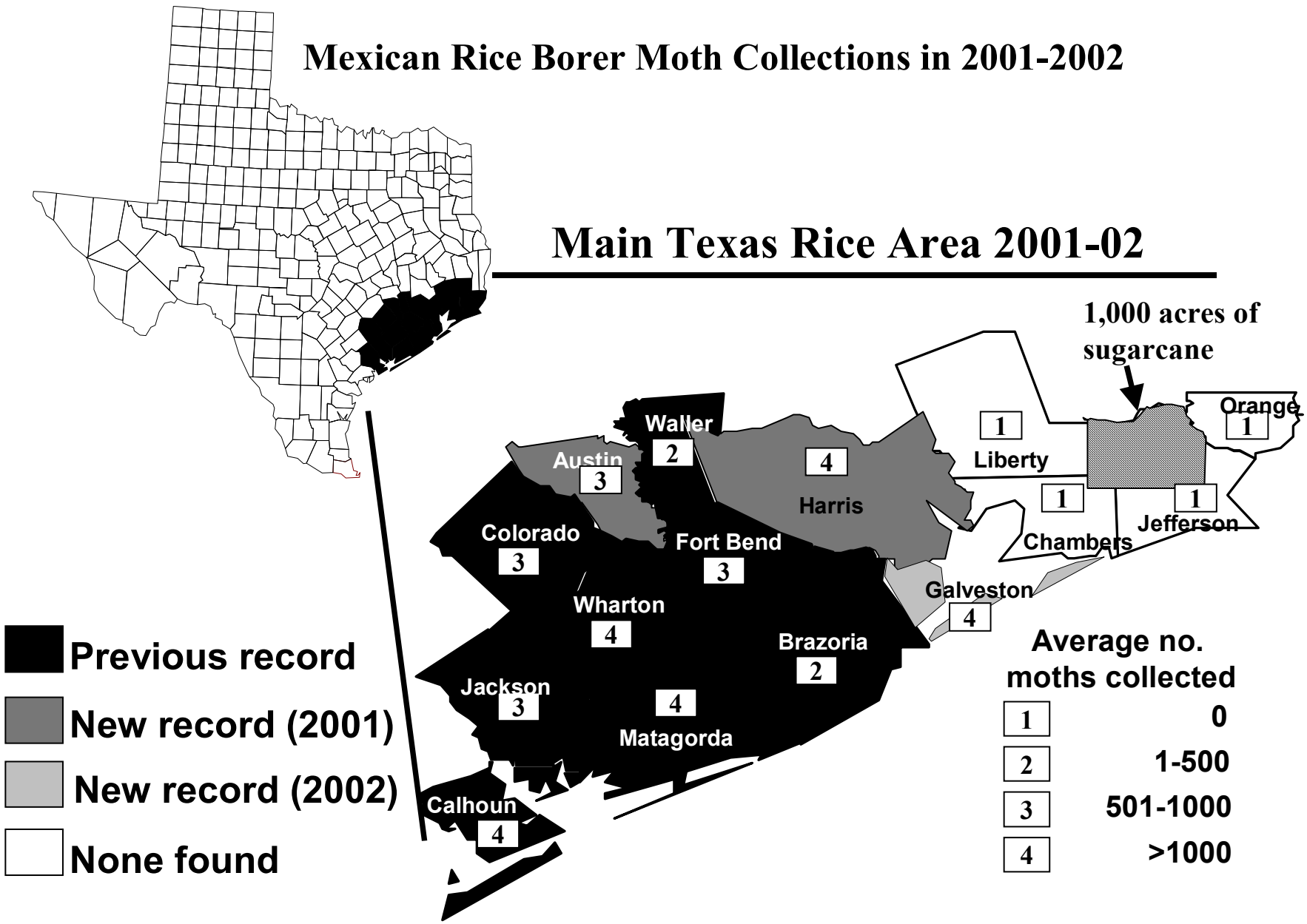
In May 2002, two bucket-type pheromone traps were set up in each county of the Texas Rice Belt (Chambers, Liberty, Jefferson, Orange, Waller, Harris, Austin, Colorado, Fort Bend, Wharton, Brazoria, Galveston, Jackson, Matagorda, and Calhoun). Extensive monitoring was also conducted in two western Louisiana parishes (Calcasieu and Jeff Davis) adjacent to sugarcane fields. Traps were additionally placed at three sugarcane mills in Iberia and St. Mary parishes. The synthetic female *E. loftini* sex pheromone (Luresept®) was used as lure and periodically replaced every four to six weeks. An insecticidal strip (Vaportape ® II) was placed in each bucket to kill all trapped insects and prevent them from damaging each other. Insecticidal strips were replaced every eight weeks. The traps were attached to a metal pole at a height of 3 to 4 feet above ground. Traps were monitored every week from May to November in 2002 in Texas and every six to eight weeks from June to December in Louisiana. Trap collections were placed in plastic bags and frozen for identification and enumeration.

MRB was found in the newly infested county of Galveston in Texas (See Figure). The insect is still not known to occur in Louisiana, but now appears in relatively high populations within 50 - 60 miles of the new sugarcane production area near Beaumont, Texas, and 120 miles of sugarcane in Southwest Louisiana. In addition to extensive participation by Texas Rice Belt county agents, western Louisiana sugarcane parish agents, personnel from both the Texas Department of Agriculture (S.S. Nilakhe) and the Louisiana Department of Agriculture and Forestry (Tad Hardy) supervised collection efforts.

Table 1. Pheromone trap collections of Mexican rice borer (Eoreuma loftini) moths in Southeast Texas during 2002[1].

Texas Counties	May	June	July	August	September	October	November	Total
New Discovery								
Galveston	74	258	255	560	253	777	131	**2308**
Previously Known Counties								
Austin	-	85	32	128	155	-	113	**523**
Brazoria	424	1108	281	248	434	1021	206	**3722**
Calhoun	211	374	510	440	604	1570	736	**4445**
Colorado	298	224	274	135	415	1554	383	**3283**
Fort Bend	-	375	49	77	-	-	-	**501**
Harris	416	923	362	541	797	2452	314	**5805**
Jackson	728	424	258	77	141	359	-	**1987**
Matagorda	26	42	47	75	85	207	49	**531**
Wharton	44	256	84	120	176	734	505	**1919**
No MRB Collected								
Chambers	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Liberty	0	0	0	0	0	0	0	0
Orange	0	0	0	0	0	0	0	0

[1]Number of moths per two traps per month. Moths were removed from traps twice weekly; pheromone lures and insecticide strips replaced monthly.


Mexican Rice Borer Moth Collections in 2001-2002
Main Texas Rice Area 2001-02
1,000 acres of sugarcane
Waller
2
Austin
3
4
Harris
1
Liberty
Orange
1
1
1
Jefferson
Chambers
Colorado
3
Fort Bend
3
Galveston
4
Wharton
4
Brazoria
2
Jackson
3
4
Matagorda
Calhoun
4
Previous record
New record (2001)
New record (2002)
None found
Average no. moths collected
1 0
2 1-500
3 501-1000
4 >1000

RESISTANCE TO THE MEXICAN RICE BORER AMONG LOUISIANA AND TEXAS SUGARCANE VARIETIES

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The Mexican rice borer (MRB), *Eoreuma loftini* (Dyar), is a potentially serious threat to rice and sugarcane in Texas and potentially also to Louisiana. The MRB was first detected in the Lower Rio Grande Valley (LRGV) of Texas in 1980 and very rapidly became the dominant pest of sugarcane. By the end of the decade, its range had expanded into the rice production area of Texas. The MRB, now the major insect pest of sugarcane in the LRGV of Texas, represents more than 95% of the LRGV sugarcane stalk borer population in Texas. With MRB established only 50-60 miles from new sugarcane production near Beaumont, Tx, the invasion of Louisiana sugarcane fields in the near future is expected. Efforts are under way to develop more adequate management strategies in both Louisiana and Texas.

Relative resistance to MRB was determined among Louisiana and Texas sugarcane cultivars based on plant damage as well as their contribution to the production of borer populations on an area wide basis. The four commercially recommended Louisiana sugarcane cultivars CP 70-321, LCP 85-384, HoCP 85-845, and HoCP 91-555 were planted on 2 October 2000 in a randomized block design with five replications at the Weslaco Center annex. An additional cultivar, NCo 310, commercially produced in Texas (formerly a major cultivar in Louisiana), was planted as an MRB susceptible check. A second experiment was planted on 3 October 2001, also with five replications in a randomized block design at Ganado, Tx. Treatments in this test were the sugarcane cultivars NCo 310, CP 70-321, LCP 85-384, HoCP 85-845, and HoCP 91-555, plus the candidate Louisiana cultivar HoCP 96-540. Criteria for resistance assessment at the end of the season included percent bored internodes as well as adult emergence holes, which would be used to determine the relative impact of each cultivar on the potential area wide buildup or reduction of MRB populations. One of the newer cultivars, HoCP 85-845, appeared to lose a portion of its resistance under heavy MRB infestation pressure, indicating its value only in moderate to low infestation conditions. Cultivar CP 70-321 was the most resistant. Results from both locations indicated that cultivars HoCP 91-555 and LCP 85-384 were significantly the most susceptible cultivars when considering both criteria, even more so than NCo 310, traditionally the most susceptible cultivar commercially produced in Texas.

Table 1. Injury by E. loftini to five commercial sugarcane cultivars, resultant survival of older larvae inside the stalks, and moth production at Weslaco, TX, 2001-2002.

Cultivar	% Bored internodes		Relative survival[a]		Moth emergence/ha[b]	
	2001	2002	2001	2002	2001	2002
HoCP 91-555	13.84a	9.84a	0.089a	0.050a	15071a	7868a
LCP 85-384	12.06ab	6.48ab	0.111a	0.112a	17052a	13994a
NCo 310	9.03abc	6.40ab	0.047a	0.091a	4926b	5483a
CP 70-321	7.63bc	4.15b	0.040a	0.167a	3805b	6225a
HoCP 85-845	5.29c	4.94ab	0.034a	0.083a	3038b	4197a
F[c]	2.82	3.58	2.00	0.97	4.33	0.60
P > F	0.060	0.029	0.144	0.4510	0.0146	0.668

Means within the same column followed by the same letter are not significantly different (P>0.05; Tukey's [1955] test).

[a] Based on a ratio of *E. loftini* exit holes to bored internodes.
[b] Estimated as the product of the mean number of exit holes and the number of stalks per hectare.
[c] Degrees of freedom for F values were 4, 16.

Table 2. Injury by E. loftini to five sugarcane cultivars, resultant survival of older larvae inside the stalks, and moth production at Ganado, TX, 2002.

Cultivar	% Bored internodes	Relative survival[a]	Moth Emergence/ha[b]
LCP 85-384	67.46a	0.225a	112255ab
HoCP 96-540	62.45ab	0.200a	105590ab
HoCP 91-555	57.53b	0.363a	165097a
HoCP 85-845	47.23c	0.150a	62669b
NCo 310	36.15d	0.166a	53057b
CP 70-321	28.32e	0.171a	39140b
F[c]	34.01	1.23	2.12
P > F	< 0.0001	0.3307	0.106

Means within the same column followed by the same letter are not significantly different (P>0.05; Tukey's [1955] test).

[a] Based on a ratio of *E. loftini* exit holes to bored internodes.
[b] Estimated as the product of the mean number of exit holes and the number of stalks per hectare.
[c] Degrees of freedom for F values were 4, 20.

SUGARCANE YELLOW LEAF VIRUS DISTRIBUTION IN LOUISIANA

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Sugarcane yellow leaf virus (SCYLV) was first discovered in Louisiana by Grisham and others in 1996. It is spread by the sugarcane aphid, *Melanaphis sacchari*. The sugarcane aphid was first detected in Louisiana in 1999 during surveys conducted by both USDA and LSU AgCenter Department of Entomology personnel.

A survey was conducted to assess the incidence of SCYLV throughout the Louisiana sugarcane production area in July and August 2002. Forty-two fields in 17 parishes were sampled. The sugarcane production area was divided into seven areas. The areas were Central (Rapides and Avoyelles parishes); Upper River (Pointe Coupee, West Baton Rouge, and Iberville parishes); Lower River (Ascension, St. Charles, St. John, and St. James parishes); Lafourche (Assumption, Lafourche, and Terrebonne parishes); Upper Teche and Western (St. Martin, Vermilion, and Lafayette parishes); Lower Teche (Iberia and St. Mary parishes); and Southwest (Jefferson Davis and Calcasieu parishes). All surveyed fields were first ratoon LCP 85-384. A single leaf was collected from 50 plants in an 0.86-acre portion of each field. The leaves were processed in the laboratory, and SCYLV was detected using a tissue blot immunoassay.

The virus was found to occur in varying degrees throughout the entire production area. Table 1 shows the results grouped by sampling region. The Lower Teche area had the lowest incidence of virus (0.3%), and the Lafourche area had the highest incidence (11.3%).

This study indicates that SCYLV is widely distributed throughout the Louisiana sugarcane production area. However, over half the fields surveyed had no virus infection detected, and 79% had less than 10% infection. This suggests that the disease is, as yet, not increasing rapidly in LCP 85-384. Other research being conducted in conjunction with areawide surveys includes studies to relate sugarcane aphid abundance to SCYLV infection and evaluation of disease spread and increase within different fields.

Table 1. Results for sugarcane yellow leaf virus statewide survey by region, July-August, 2002.

Survey Region	No. positive/no. stalks tested	SCYLV Infection (%)
Central	13/251	5.2
Upper River	38/349	10.9
Lower River	7/301	2.3
Lafourche	34/302	11.3
Upper Teche and Western	29/300	9.7
Lower Teche	1/300	0.3
Southwest	25/303	8.3

This research is a portion of the Ph.D. dissertation research of Chris D. McAllister in the Department of Entomology.