

POTENTIAL IMPACT OF MEXICAN RICE BORER NON-CROP HOSTS ON SUGARCANE IPM

By

J.M. BEUZELIN¹, T.E. REAGAN¹, M.O. WAY², A. MESZAROS¹,
W. AKBAR¹ and L.T. WILSON²

¹*Department of Entomology, Louisiana State University Agricultural Center,
Baton Rouge, LA 70803 USA*

²*Texas AgriLIFE Research and Extension Center at Beaumont,
Texas A&M University, Beaumont, TX 77713, USA*

JBeuzelin@agcenter.lsu.edu

KEYWORDS: *Eoreuma loftini* (Dyar), Integrated Pest Management, Alternate Hosts.

Abstract

THE Mexican rice borer, *Eoreuma loftini* (Dyar) (Lepidoptera: Crambidae), was detected in Louisiana in 2008, having first spread from Mexico into Texas. *E. loftini* is a severe pest of sugarcane, but it also feeds on rice and a wide range of other grasses. Research on *E. loftini* management has focused on studying the pest in its main crop host plants, with the role of non-crop grasses only recently studied. Two four-replication sentinel plant studies were conducted in 2006 and 2007 to assess naturally occurring *E. loftini* infestations in five selected weed species: *Leptochloa panicoides*, *Sorghum halepense*, *Paspalum urvillei*, *Urochloa platyphylla* and *Echinochloa crus-galli*. Results showed that *L. panicoides*, a common weed in Louisiana rice fields, was a highly suitable host, harbouring the highest *E. loftini* infestations with as many as 78% of the plants infested with at least one larva. In addition, *S. halepense* and *P. urvillei*, two ubiquitous perennial grasses, also supported complete larval development of *E. loftini*. On the other hand, both *U. platyphylla* and *E. crus-galli*, which are two common weeds in and near rice fields in Louisiana, proved to be poor *E. loftini* host plants. Continuous pheromone trapping in the southeast Texas rice area showed that adult moths are active throughout the year. Our studies showed that non-crop hosts could play a key role in *E. loftini* population build-up, thus warranting a better characterisation of *E. loftini* source-sink interactions in Louisiana sugarcane producing areas. The manipulation of *E. loftini* non-crop sources has the potential to decrease a significant proportion of area-wide populations, minimising damaging infestations in sugarcane fields.

Introduction

The Mexican rice borer, *Eoreuma loftini* (Dyar) (Lepidoptera: Crambidae), is indigenous to Mexico and was first reported in 1980 in south Texas (Johnson, 1984). This borer quickly became the most damaging insect pest of sugarcane (*Saccharum* spp. hybrids) in the Lower Rio Grande Valley of Texas, where it represents more than 95% of stem borer infestations (Legaspi *et al.*, 1997). After expanding its range in a northeast direction along the Gulf Coast (Reay-Jones *et al.*, 2007b), *E. loftini* has also become an increasing problem for rice (*Oryza sativa*) production in southeast Texas. *E. loftini* was detected in Louisiana for the first time in December 2008 (Hummel *et al.*, 2008), representing a serious threat to the state's sugarcane and rice industries. The imminent establishment of *E. loftini* in Louisiana sugarcane producing areas encouraged proactive studies that integrate cultivar resistance, biorational insecticides, and irrigation-based population suppression to develop an effective management program (Reay-Jones *et al.*, 2005). Insecticides and cultivar

resistance have also been studied in rice, which is also grown in sugarcane areas of Louisiana. In addition to crop hosts, Van Zwalunwenburg (1926) stated that *E. loftini* ‘attacks practically all the grasses large enough to afford it shelter within the stalk’. Non-crop grasses may therefore play a role in the overwintering and build-up of *E. loftini* populations, and should be integrated into the development of new cultural practices for an improved pest management program. This paper reports on initial studies with *E. loftini* non-crop hosts and discusses their possible importance in future sugarcane integrated pest management (IPM) for Louisiana.

Material and methods

Sentinel plant experiments

Two sentinel plant experiments were designed to compare *E. loftini* infestation development on selected non-crop grass species under natural infestations. Experiments were conducted in southeast Texas during 2006 and 2007 near Ganado (N 29.0267°, W 96.4394°) and Hankamer (N 29.8554°, W 94.5451°), respectively, where *E. loftini* populations naturally occur at high densities.

Five weed species that are abundant in or near sugarcane and rice fields and have the potential to host *E. loftini* populations were studied (Table 1). Rice (cultivar Cocodrie) served as a control. Seeds were obtained from Azlin Seed Service (Leland, MS), except for *Paspalum urvillei* seeds that were collected in Lafayette Parish, LA. Plants were grown in a greenhouse in 7.57 L pots, each containing eight (2006) or six (2007) evenly spaced plants. In mid-August, after growing for two months under greenhouse conditions, the potted plants were placed in a rice field near a levee. For each plant species, six pots constituted a plot, and plots were arranged in a randomised complete block design with four blocks (1 replication per block). Plots were separated by 75 cm (2006) or 2 m (2007) spaces. Plants remained in the pots, but pot bottoms were removed to facilitate better equalisation with field moisture conditions.

In 2006, ten plants from each plot were randomly selected and cut at the base both four and nine weeks after transplanting. In 2007, 12 plants were sampled both four and seven weeks after transplanting. Each tiller was measured and the number of leaves counted. Plants were observed for borer feeding signs and dissected for the presence of larvae and pupae.

Statistical analyses were performed using Proc GLIMMIX (SAS Institute, 2008). Generalised linear mixed models (GLMMs) with an over-dispersion parameter were used to analyse the proportion of plants infested with *E. loftini* (binomial distribution) and *E. loftini* abundance as affected by plant species (Poisson distribution). Because sugarcane borers, *Diatraea saccharalis* (F.), also infested sentinel plants in 2006, a GLMM with a binomial distribution was used to compare borer species composition as affected by the plant species. The Kenward-Roger adjustment for denominator degrees of freedom was used in all models to correct for inexact *F* distributions.

Adult pheromone trapping

Male *E. loftini* moths were continuously monitored to determine seasonal patterns of flight activity. From April 2007 to April 2009, monitoring was conducted at three sites in southeast Texas. Two standard universal pheromone traps were used at each site according to the method of Reay-Jones *et al.* (2007b). Traps were located near the Texas AgriLIFE Research Center at Beaumont (N 30.0672°, W 94.2932°), and near Hankamer and Ganado where the two sentinel plant experiments were conducted. Traps were checked for *E. loftini* moths every two-to-three weeks, and trap catches were estimated on a daily basis for each sampling period (Reay-Jones *et al.*, 2007b).

Results

Sentinel plant experiments

The five grass weed species used as sentinel plants presented a diverse range of height, number of tillers, and leaf availability (Table 1). In 2006, four weeks after transplanting to the field, rice, *S. halepense*, *E. crus-galli*, and *U. platyphylla* were either heading or showing maturing

flowerheads, whereas *L. panicoides* was senescent. *P. urvillei*, which had a slow germination rate, was still in a vegetative stage. Nine weeks after transplanting, *L. panicoides*, *E. crus-galli*, and *U. platyphylla*, all three annual grasses, had completed their life cycles and had died. Rice was senescent whereas *S. halepense* and *P. urvillei*, two perennial grasses, showed a mixture of senescent and maturing leaf and stem tissues.

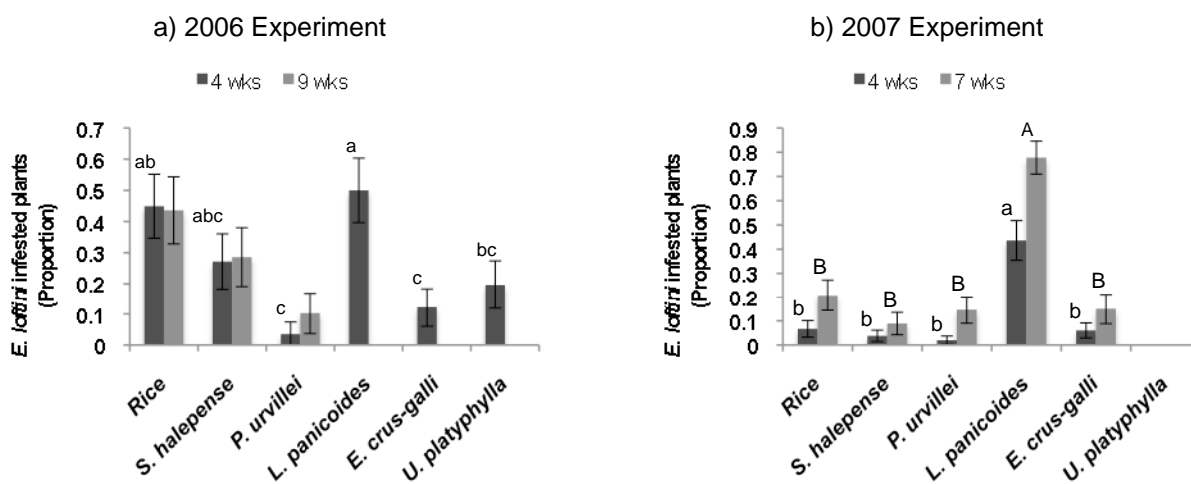
Table 1—Physical characteristics of grasses used in sentinel plant experiments, 4 and 9 weeks (2006 experiment) and 4 and 7 weeks (2007 experiment) after exposure to *E. loftini* natural infestations in Texas

	2006 experiment											
	<i>Oryza sativa</i> (Rice)		<i>Sorghum halepense</i> (Johnson-grass)		<i>Paspalum urvillei</i> (Vasey-grass)		<i>Leptochloa panicoides</i> (Amazon sprangletop)		<i>Echinochloa crus-galli</i> (Barnyard-grass)		<i>Urochloa platyphylla</i> (Broadleaf signalgrass)	
	4 wk	9 wk	4 wk	9 wk	4 wk	9 wk	4 wk	9 wk	4 wk	9 wk	4 wk	9 wk
Height (cm)	63.4	38.5	97.4	75.0	27.3	37.2	53.8	–	85.9	–	54.3	–
No. tillers / plant	1.8	3.2	1.7	1.3	2.6	5.5	1.5	–	1.9	–	3.3	–
No. total leaves / plant	9.9	10.2	10.3	3.4	10.2	18.3	9.5	–	12.7	–	22.2	–
No. green leaves / plant	5.1	6.4	5.4	2.6	9.0	12.9	1.9	–	4.9	–	7.4	–
	2007 experiment											
	4 wk		7 wk		4 wk		7 wk		4 wk		7 wk	
	4 wk	7 wk	4 wk	7 wk	4 wk	7 wk	4 wk	7 wk	4 wk	7 wk	4 wk	7 wk
Height (cm)	62.1	56.8	84.3	85.4	50.0	66.0	67.5	59.8	59.4	55.8	56.6	56.7
No. tillers / plant	3.2	4.7	1.7	2.1	5.4	5.1	1.8	1.9	3.5	3.9	3.8	4.3
No. total leaves / plant	13.1	18.6	11.4	15.5	24.1	23.8	22.5	21.3	37.3	49.8	31.6	40.4
No. green leaves / plant	8.0	11.3	6.4	9.9	17.7	16.8	7.1	0.9	9.6	14.3	9.1	16.3

Each grass species harboured at least some stage of *E. loftini* larvae. In addition, the grasses also harboured *D. saccharalis* larvae. Depending on the grass species, *E. loftini* represented 48% to 73% and 74% to 93% of the recovered borers after four and nine weeks, respectively. However, the proportion of *E. loftini* versus *D. saccharalis* was not affected by the grass species ($F=0.37$; $df=5, 12.25$; $P=0.857$ after 4 weeks and $F=0.66$; $df=2, 4.615$; $P=0.558$ after 9 weeks). After four weeks under natural infestations, there were differences in the proportion of plants infested with *E. loftini* ($F=3.94$; $df=5, 15$; $P=0.018$) and the number of *E. loftini* per plant ($F=3.45$; $df=5, 18$; $P=0.023$) as affected by the plant species. *L. panicoides* was numerically the most infested species (Figures 1 and 2). *E. loftini* fourth and larger instars represented 61.5% (LS mean) of the recovered immatures. *E. loftini* pupae and pupal casings, indicating completion of life cycle, represented 19.8% (LS mean) of the fourth instars and larger immatures, hereafter referred to as late instars. Infestations in rice and *S. halepense* were not different from *L. panicoides* although numerically trending lower. *E. loftini* late instars represented 19.4% and 5.6% (LS means) of the immatures recovered in rice and *S. halepense*, respectively, with no pupae observed. *U. platyphylla* harboured less infestation compared to *L. panicoides*, but was not different from the other grasses. *E. loftini* late instars represented 25% (LS mean) of the immatures recovered from *U. platyphylla*, with one pupa observed. However, this pupa was in a folded flag leaf, suggesting that the original larvae possibly came from another plant. *E. crus-galli* and *P. urvillei* harboured the lowest *E. loftini* infestations (Figures 1 and 2). Pupae were not found in *E. crus-galli*, however; 12.5% (LS mean) of the recovered immatures were late instars. No late instars were recovered from *P. urvillei*. Five weeks later, there were trends ($F=2.62$; $df=2, 9$; $P=0.127$) for a greater proportion of *E. loftini* infested rice plants, in comparison to *S. halepense* and *P. urvillei* plants (Figure 1). When considering the overall number of *E. loftini* per plant, rice also showed a strong trend ($F=5.00$; $df=2, 5.711$; $P=0.056$) for greater borer densities (Figure 2). In rice, *S. halepense*, and *P. urvillei* pupae

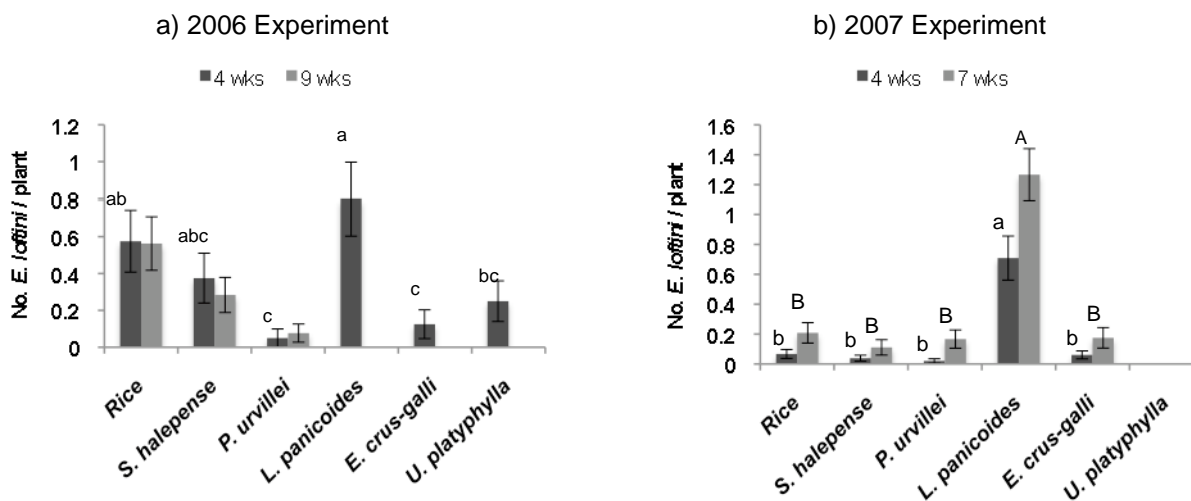
and pupal casings represented respectively 60.4%, 22.5%, and 12.5% (LS means) of the recovered *E. loftini*, indicating completion of the life cycle.

In 2007, four weeks after transplanting to the field, all plants were either heading or had maturing flowerheads. Seven weeks after transplanting, all plants exhibited maturing flowerheads, except *L. panicoides*, which was senescent. Almost exclusively, *E. loftini* infested the sentinel plants. However, three *D. saccharalis* larvae were recovered from *L. panicoides* plants collected from the same plot. All grasses except *U. platyphylla* were infested with *E. loftini* (Figures 1 and 2). The proportion of plants infested after four weeks ($F= 10.40$; $df= 5, 15.06$; $P< 0.001$) and seven weeks ($F= 8.83$; $df= 5, 18$; $P< 0.001$) changed with the plant species, as well as the number of *E. loftini* per plant ($F= 20.61$; $df= 5, 14.82$; $P< 0.001$ after 4 weeks and $F= 15.02$; $df= 5, 18$; $P< 0.001$ after 7 weeks). *L. panicoides* harboured the highest *E. loftini* infestations (Figure 1 and 2).



Bars with the same letter (lower case 4 wks, upper case 9 or 7 wks) are not significantly different (LSD, $\alpha = 0.05$).

Fig. 1—Proportion of plants (LS means \pm SEM) with *E. loftini* infestations in sentinel plant experiments conducted in 2006 (a) and 2007 (b) in Texas.



Bars with the same letter (lower case 4 wks, upper case 9 or 7 wks) are not significantly different (LSD, $\alpha = 0.05$).

Fig. 2—Number of *E. loftini* (LS means \pm SEM) per plant in sentinel plant experiments conducted in 2006 (a) and 2007 (b) in Texas.

Late instars were found only in *L. panicoides*, representing 25% (LS mean) of the larvae collected. No pupae were recovered after four weeks in the field. Three weeks later, the late instars observed in *L. panicoides*, rice, *E. crus-galli*, and *P. urvillei* represented 59.1%, 31.3%, 10% and

6.3% (LS means) of the recovered *E. loftini*. Only *L. panicoides* and rice had allowed completion of *E. loftini* life cycle, with five and one pupae or pupal casings recovered, respectively representing 13.8% and 8.3% of the *E. loftini* late instars found in each grass.

Adult pheromone trapping

Pheromone trapping showed that moth flight activity reached its peak between September and November while it was at a minimum between December and February (Figure 3). The highest *E. loftini* moth numbers were caught from the Hankamer site with 72.9 moths/trap/day for the November 2, 2008 sampling period.

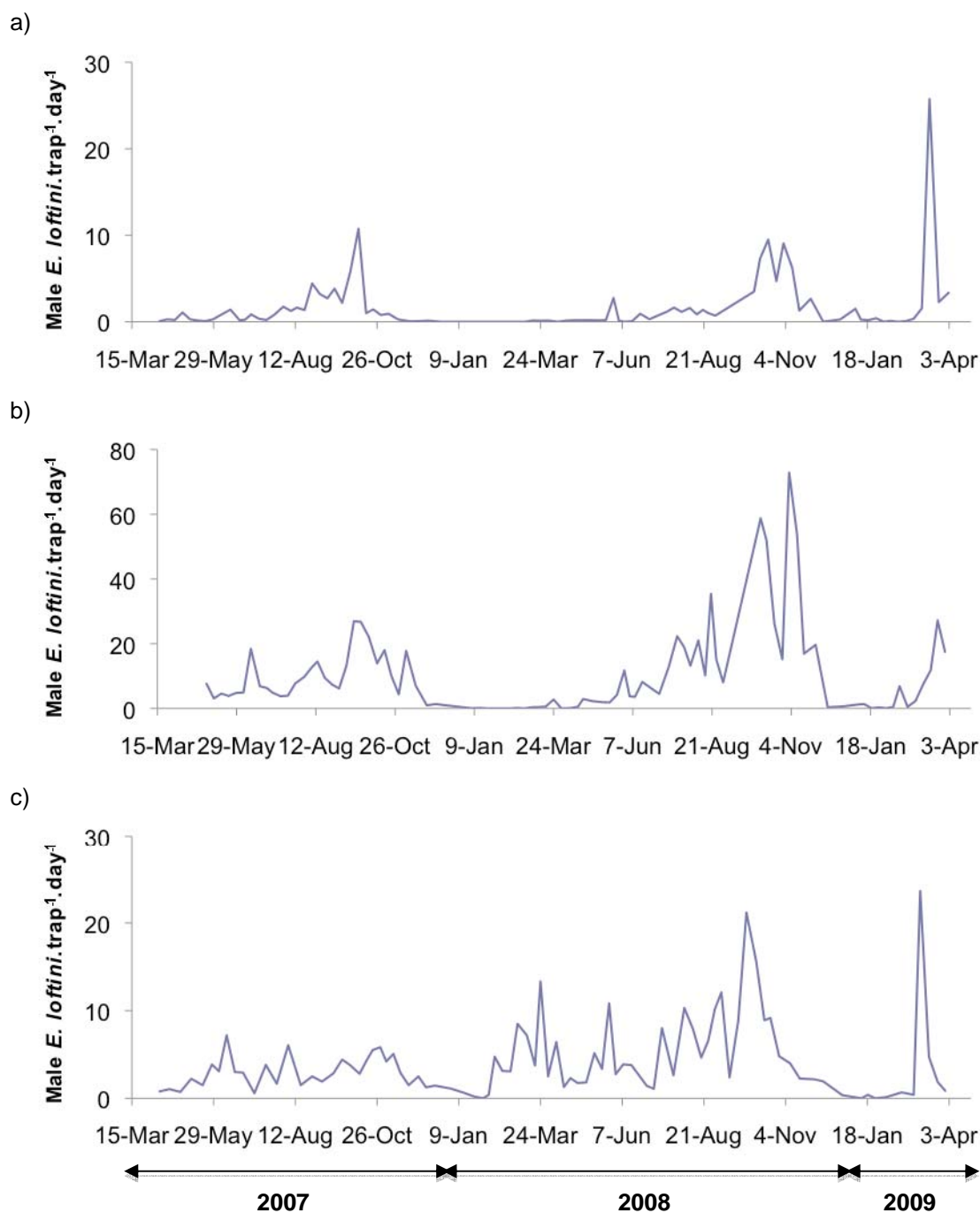


Fig. 3—Male *E. loftini* pheromone trap catches estimated on a daily basis near Beaumont (a), Hankamer (b), and Ganado (c), Texas, April 2007–April 2009

An early spring flight activity peak was recorded at the three trapping sites in March 2009. For the March 16 sampling period, 25.8 moths/trap/day were collected near Beaumont. For the Hankamer and Ganado sites, trap catches were 27.2 moths/trap/day for the March 22 period and 23.6 moths/trap/day for the March 7 period, respectively.

At the Beaumont site, *E. loftini* moths were not caught over more than two subsequent samplings from December 23, 2007 to March 10, 2008. At the Hankamer site, *E. loftini* moths were not caught over more than two subsequent samplings from January 21, 2008 to February 11, 2008. During the winter from 2008 to 2009, there were no two subsequent dates with zero catches at the Beaumont and Hankamer sites. Further south near Ganado, although trap catches were reduced somewhat in December and January, *E. loftini* moths were active all year long with no two subsequent dates of zero catches.

Discussion

The impacts on arthropod population dynamics of non-crop plants occurring in an agroecosystem are complex and far from following a general principle (Norris and Kogan, 2005). Non-crop plants may offer shelter for predators, and both shelter and food for their prey, increasing natural enemy density and subsequently decreasing pest populations (Letourneau, 1987; Russell, 1989). Conversely, non-crop plants may also serve as hosts and emit host-finding stimuli for crop pests, increasing pest populations (Karban, 1997, Tindall *et al.*, 2004). Our sentinel plant experiments showed that non-crop grasses could host *E. loftini*. Additional sampling of non-crop habitats near southeast Texas rice fields in February yielded *E. loftini* densities attaining as many as four immatures per m² (JMB, data not shown).

A plant is a host if both herbivore feeding and completion of the herbivore life cycle occur. *L. panicoides*, a weed in Louisiana rice fields, is a highly suitable host. Because *D. saccharalis* injury to rice is higher in plots surrounded by *L. panicoides* (Tindall, 2004), this grass may also enhance *E. loftini* infestations in surrounding areas. With no strong evidence of *E. loftini* completing its life cycle in *U. platyphylla* and *E. crus-galli*, two common weeds in and near rice fields, the contribution of these grasses to *E. loftini* population pressure seems small. Plant morphological (e.g., pubescence, stem hardness and diameter, abundance of dry leaves) and biochemical (e.g., primary metabolites, allelochemicals) factors affect stem borer oviposition preference and larval performance (Martin *et al.*, 1975, Sosa, 1990, Meagher *et al.*, 1996, Reay-Jones *et al.*, 2007a). Among other factors, the relatively smaller stem diameter of *U. platyphylla* and *E. crus-galli* likely contributes to the lack of suitability as a host for *E. loftini*.

Plant availability over time also plays a major role in the use of non-crop grasses as hosts by *E. loftini*. *S. halepense*, a ubiquitous grass in weedy areas and sugarcane fields, was infested with *E. loftini* in both sentinel plant experiments and winter samplings of non-crop habitats (JMB, data not shown). With all borer life stages recovered and infestations not differing from those in rice in the sentinel plant experiments, *S. halepense* is certainly a primary non-crop host. Bynum *et al.* (1938) concluded that if not mowed often, *S. halepense* could provide overwintering shelter for *D. saccharalis* and would be a source for spring infestations in Louisiana sugarcane. Another common perennial grass in weedy areas, *P. urvillei*, was heavily infested in samplings of non-crop habitats during the winter (JMB, data not shown), whereas not particularly infested in the sentinel plant experiments. From these observations, *P. urvillei* may not be a preferred host although suitable. *P. urvillei* plants grow large over the years and offer green material during the winter when other grasses are dry or too small (e.g., *S. halepense*). Despite reduced numbers during the winter, *E. loftini* adults fly during any season. The difference in plant availability may therefore explain *E. loftini* aggregation in *P. urvillei* plants during the winter; hence, *P. urvillei* is certainly a primary non-crop host.

Our studies were conducted in southeast Texas agroecosystems where rice is a dominant crop. Results suggest that non-crop hosts could play a role in *E. loftini* population dynamics. Weeds

differ in their life cycles (annual vs. perennial), timing of seasonal development, and habitat (crop fields vs. crop field margins, roadsides, ditches, or canal banks). Thus, the relative importance of each non-crop host species may change with time of the year, geographical area, and the dominant crop. The manipulation of *E. loftini* non-crop sources may decrease a significant proportion of area-wide populations, decreasing infestations in sugarcane fields. Thus, our studies warrant a better characterisation of the influence of non-crop hosts as *E. loftini* sources in Louisiana sugarcane. Ongoing research includes periodical non-crop habitat sampling and *E. loftini* oviposition preference and larval performance studies. Our ultimate goal is to incorporate findings from studies reported in this paper and ongoing research into a model that will simulate different weed management strategies (e.g., mowing, biorational insecticide applications) and predict their impact on *E. loftini* area-wide populations, thereby improving the overall sugarcane area IPM.

Acknowledgments

The authors thank Jiale Lv and Becky Pearson (Texas A&M University, Beaumont), Mike Hiller (Texas county extension agent), Jack Vawter (Texas A&M University, Eagle Lake), and Blake Wilson (LSU AgCenter) for technical assistance. We thank G. Henderson, J. W. Hoy, and K. A. Parys (LSU AgCenter) for participating in the review of the manuscript. This work was supported in part by grants from USDA CSREES Crops-At-Risk IPM program. This paper is approved for publication by the Director of the Louisiana Agricultural Experiment Station as manuscript number 2009-234-3724.

REFERENCES

- Bynum, E.K., Halley, W.E. and Charpentier, L.J.** (1938). Sources of infestation by the sugarcane borer and trash treatment for the destruction of overwintering borers. Proc. Int. Soc. Sugar Cane Technol., 6: 597–611.
- Hummel, N.A., Reagan, T.E., Pollet, D.K., Akbar, W., Beuzelin, J.M., Carlton, C.E., Saichuck, J., Hardy, T. and Way, M.O.** (2008). Mexican rice borer *Eoreuma loftini* (Dyar) (Identification card). Louisiana State University AgCenter Pub. 3098, Baton Rouge, LA.
- Johnson, K.J.R.** (1984). Identification of *Eoreuma loftini* (Dyar) (Lepidoptera: Pyralidae) in Texas, 1980: Forerunner for other sugarcane boring pest immigrants from Mexico? Bull. Entomol. Soc. Am., 30: 47–52.
- Karban, R.** (1997). Neighbourhood affects a plant's risk of herbivory and subsequent success. Ecol. Entomol., 22: 433–439.
- Legaspi, J.C., Legaspi, B.C., Jr., King, E.G. and Saldaña, R.R.** (1997). Mexican rice borer, *Eoreuma loftini* (Lepidoptera: Pyralidae) in the Lower Rio Grande Valley of Texas: Its history and control. Subtrop. Plant Sci., 49: 53–64.
- Letourneau, D.K.** (1987). The enemies hypothesis: tritrophic interaction and vegetational diversity in tropical agroecosystems. Ecology, 68: 1616–1622.
- Martin, F.A., Richard C.A. and Hensley, S.D.** (1975). Host resistance to *Diatraea saccharalis* (F.): relationship of sugarcane internode hardness to larval damage. Environ. Entomol., 4: 687–688.
- Meagher, R.L., Jr., Irvine, J.E., Breene, R.G., Pfannenstiel, R.S. and Gallo-Meagher, M.** (1996). Resistance mechanisms of sugarcane to Mexican rice borer (Lepidoptera: Pyralidae). J. Econ. Entomol., 89:536–543.
- Norris, R.F. and Kogan, M.** (2005). Ecology of interactions between weeds and arthropods. Annu. Rev. Entomol., 50: 479–503.
- Reay-Jones, F.P.F., Showler, A.T., Reagan, T.E., Legendre, B.L., Way, M.O. and Moser, E.B.** (2005). Integrated tactics for managing the Mexican rice borer (Lepidoptera: Crambidae) in sugarcane. Environ. Entomol., 34: 1558–1565.
- Reay-Jones, F.P.F., Wilson, L.T., Showler, A.T., Reagan, T.E. and Way, M.O.** (2007a). Role of

- oviposition preference in an invasive Crambid impacting two graminaceous host crops. *Environ. Entomol.*, 36: 938–951.
- Reay-Jones, F.P.F., Wilson, L.T., Way, M.O., Reagan, T.E. and Carlton, C.E.** (2007b). Movement of the Mexican rice borer (Lepidoptera: Crambidae) through the Texas rice belt. *J. Econ. Entomol.*, 100: 54–60.
- Russell, E.P.** (1989). Enemies hypothesis: A review of the effect of vegetational diversity on predatory insects and parasitoids. *Environ. Entomol.*, 18: 590–599.
- SAS Institute.** (2008). User's manual, version 9.2. SAS Institute, Cary, NC.
- Sosa, O., Jr.** (1990). Oviposition preference by the sugarcane borer (Lepidoptera: Pyralidae). *J. Econ. Entomol.*, 83: 866–868.
- Tindall, K.V.** (2004). Investigation of insect-weed interactions in the rice agroecosystem. Ph.D. dissertation. Louisiana State University, Baton Rouge, LA.
- Tindall, K.V., Stout, M.J. and Williams, B.J.** (2004). Effects of the presence of barnyardgrass on rice water weevil (Coleoptera: Curculionidae) and rice stink bug (Hemiptera: Pentatomidae) populations on rice. *Environ. Entomol.*, 33: 720–726.
- Van Zwaluwenburg, R.H.** (1926). Insect enemies of sugarcane in western Mexico. *J. Econ. Entomol.*, 19: 664–669.

IMPACT POTENTIEL DES PLANTES HÔTES NON CULTIVÉES SUR LA LUTTE INTÉGRÉE CONTRE LE FOREUR DES TIGES *EOREUMA LOFTINI* (DYAR) DANS LA CANNE À SUCRE

Par

J.M. BEUZELIN¹, T.E. REAGAN¹, M.O. WAY², A. MESZAROS¹,
W. AKBAR¹ et L.T. WILSON²

¹*Department of Entomology, Louisiana State University Agricultural Center,
Baton Rouge, LA 70803 USA*

²*Texas AgriLIFE Research and Extension Center at Beaumont,
Texas A&M University, Beaumont, TX 77713, USA*

MOTS CLES: *Eoreuma loftini* (Dyar), Lutte Intégrée, Hôtes non Cultivés.

Résumé

APRÈS avoir envahi le Texas à partir du Mexique, le foreur des tiges *Eoreuma loftini* (Dyar) a été détecté en Louisiane en 2008. *E. loftini* est un sérieux ravageur de la canne à sucre, mais il attaque aussi de nombreuses autres graminées. La recherche pour lutter contre ce ravageur s'est concentrée sur les insectes attaquant les plantes cultivées, le rôle des infestations dans les mauvaises herbes n'ayant été que récemment étudié. Une étude de deux ans a déterminé les infestations d'*E. loftini* sur cinq graminées non cultivées: *Leptochloa panicoides*, *Sorghum halepense*, *Paspalum urvillei*, *Urochloa platyphylla* et *Echinochloa crus-galli*. *L. panicoides*, une mauvaise herbe dans les rizières en Louisiane, est une plante hôte très adéquate, abritant les infestations les plus élevées avec jusqu'à 78% des plantes infestées avec au moins une larve. Avec *L. panicoides*, *S. halepense* et *P. urvillei*, deux herbes pérennes, étaient les seules à permettre la complétion du cycle biologique de l'insecte. *U. platyphylla* et *E. crus-galli*, deux mauvaises herbes communes dans les rizières et leurs alentours, étaient des hôtes peu adéquats. Le piégeage à l'aide de phéromones a montré que les adultes volent tout au long des saisons. Ces études menées au sud-est du Texas ont montré que les graminées non cultivées pourraient jouer un rôle dans la croissance des populations d'*E. loftini*, justifiant une meilleure caractérisation de ce rôle dans les zones cannières de Louisiane. La manipulation des hôtes non cultivés a le potentiel de diminuer les populations du foreur, minimisant les infestations qui endommagent les champs de canne à sucre.

IMPACTO POTENCIAL DEL BARRENADOR MEXICANO DEL ARROZ EN HOSPEDANTES ALTERNOS EN UN MIP DE CAÑA DE AZUCAR

Por

J.M. BEUZELIN¹, T.E. REAGAN¹, M.O. WAY²,
A. MESZAROS¹, W. AKBAR¹ y L.T. WILSON²

¹Department of Entomology, Louisiana State University Agricultural Center,
Baton Rouge, LA 70803 USA

²Texas AgriLIFE Research and Extension Center at Beaumont,
Texas A&M University, Beaumont, TX 77713, USA

JBeuzelin@agcenter.lsu.edu

PALABRAS CLAVE: *Eoreuma loftini* (Dyar),
Manejo Integrado de Plagas, Hospedantes Alternos.

Resumen

EL BARRENADOR mexicano del arroz, *Eoreuma loftini* (Dyar) (Lepidoptera: Crambidae), se detectó en Luisiana en 2008, siendo la primera vez que se dispersa de México a Texas. *E. loftini* es una plaga muy seria de la caña de azúcar, pero también se alimenta de arroz y otra serie de gramíneas. La investigación sobre el manejo de *E. loftini* se ha concentrado en el estudio de la plaga en su principal hospedante y solo recientemente se ha puesto interés en el papel que juegan los pastos no cultivados. Dos estudios con plantas centinelas con cuatro repeticiones se condujeron en 2006 y 2007 para evaluar la ocurrencia natural de infestaciones de *E. loftini* en cinco especies de malezas, *Leptochloa panicoides*, *Sorghum halepense*, *Paspalum urvillei*, *Urochloa platyphylla* y *Echinochloa crus-galli*. Los resultados mostraron que *L. panicoides*, una maleza común en campos de arroz de Luisiana, fue un hospedante muy apropiado, albergando las infestaciones más altas de *E. loftini*, llegando hasta un 78% de las plantas con al menos una larva. Además, *S. halepense* y *P. urvillei*, dos gramíneas perennes muy ubicuotas, también soportaron el desarrollo completo larval de *E. loftini*. Por otra parte, tanto *U. platyphylla* como *E. crus-galli*, que son malezas comunes en y cerca de campos de arroz en Luisiana, probaron ser muy pobres como plantas hospedantes de *E. loftini*. Un trapeo continuo con feromonas en el sureste del área arrocera de Texas mostró que las polillas adultas se mantienen activas a través del año. Nuestros estudios mostraron que plantas no cultivadas pueden jugar un papel muy importante en el incremento de las poblaciones de *E. loftini*, proporcionando así un mejor conocimiento sobre la fuente de *E. loftini* en las interacciones con las áreas productoras de caña de azúcar en Luisiana. La manipulación de las plantas no cultivadas que albergan poblaciones de *E. loftini* tiene un potencial para disminuir en proporción significativa las poblaciones, minimizando así las infestaciones que dañen los campos de caña de azúcar.