ture. Upon maturity, plots were harvested with a small-plot combine and grain yields were standardized to 12% grain moisture.

The data were subjected to three analysis procedures to evaluate different methods of determining N recommendations. First of all, data were subjected to standard analysis of variance procedures where mean separation was determined using the Least Significant Difference method. Secondly, the data were plotted and the derivative of a two-factor polynomial regression equation was used to determine the N rate that would provide 95% of the maximum yield. Finally, two ratios of N price ($/lb N) to rice price ($/lb rice) were determined and used to solve for the N rate that would give the greatest economic return. The first ratio simulated a high N price of $0.54/lb (equivalent to urea at $500/ton) plus $0.13/lb application cost and a low rice price of $0.10/lb (equivalent to $10/cwt). The second ratio assumed the same N price as the first, but included a higher price of rice ($0.13/lb).

Results and Discussion

CL171AR, regardless of the method used for recommending N fertilizer rates, required 17 to 23% less N when produced on clay soils compared to clay soils. Recommendations based on 95% of maximum yield were similar to recommendations based on LSD mean separation procedures; however, both of these methods were approximately 20% less than what would be recommended when considering economic returns. Experiment station and extension service scientists typically employ the more conservative approaches when recommendations are made because economic recommendations often lead to plant lodging and disease problems that ultimately cost producers in harvest efficiency, fungicide applications and grain quality. These data suggest that growers should not apply N at rates less than what is recommended by the land-grant institutions, even when rice prices are low and N prices are high. Before applying N rates based on economic return, growers should consult the source of the recommendations to gain more information about the cultivars of interest so that lodging and disease issues can be fully considered.

Table 1. Nitrogen rate recommendations for CL171AR on silt loam and clay soils based on Least Significant Difference, 95% maximum yield and economic N rate for high N price and low rice price, and high N price and high rice price.

	N Recommendation Method			
			Economic N Rate	
Soil Type	LSD	95% of Max Yield	High N/Low Rice	High N/High Rice
	lb N/a			
Sharkey clay	180-210	180	211	220
Forestdale silt loam	150-180	139	173	181

Conservation Tillage Impacts On Rice Pest Management

Presented by Dr. M. O. Way
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Introduction

Recent trends in southern U.S. rice production are more conservation tillage associated with earlier planting dates, lower seeding rates and more hybrid rice acreage. In addition, in SE Texas and SW Louisiana, more farmers are expanding ratoon rice acreage and adopting higher levels of management on this second crop. Obviously, conservation tillage allows for earlier planting which increases the likelihood of producing a high yielding ratoon crop. The trend towards lower seeding rates is a result of improved planting equipment, more precision leveling, increased cost of seed (particularly hybrid seed) and more drill versus aerial planting. Thus, the combination of lower seeding rate, earlier planting in cooler weather and increased cost of seed means farmers should consider investing in seed protectant technology.

For the past 3 years, my project has evaluated Dermacor X-100 (active ingredient rynaxypyr) rice seed treatment to control rice water weevil (RWW), Lissorhoptrus oryzophilus. In 2007, we also evaluated control of stem borers---Mexican rice borer, Eoreuma loftini and sugarcane borer, Diatraea saccharalis---and South American rice miner (SARM), Hydrellia wirthi. In addition, we quantified the impact of stem borers on main and ratoon crop rice. For brevity, this paper only reports results from 2007.

Materials and Methods

In 2007, RWW and SARM experiments were conducted at the Beaumont Center using Cocodrie and XL723. The stem borer experiments were conducted at Ganado, TX where stem borers are especially problematic. The stem borer ratoon experiment used Cocodrie and XL723 and the stem borer insecticide evaluation experiment used Cocodrie. All experiments were drill-seeded during the optimal planting season in Texas followed by a delayed flood and managed according to recommended practices. The experiments at the Beaumont Center had plots surrounded by metal barriers to minimize movement of fertilizer and pesticides into and out of the plots. The experiments at Ganado lacked metal barriers. All experiments were designed as a randomized complete block with four replications. Treatments are listed in the accompanying tables.

Results and Discussion

Dermacor X-100 seed treatment provided excellent control of RWW and good control of SARM at the rates investigated for both experiments involving XL723 and Cocodrie (Tables 1 and 2). Also, surprisingly, Dermacor X-100 seed treatment at 0.1 mg active ingredient per seed gave excellent control of stem borers as measured by number of whiteheads per plot (Table 3). These results show Dermacor X-100 has excellent potential as a seed treatment to protect rice from an array of early and late season insect pests. This new technology has the potential of immensely benefitting those farmers who practice conservation tillage, utilize low seeding rates and plant expensive seed. Presently, all southern rice-producing states are submitting Section 18s in a regional effort to have Dermacor X-100 available for use in 2008.

Data show stem borers were very damaging to main crop rice, regardless of variety---XL723 or Cocodrie (Tables 4 and 5). For instance, control of stem borers on the main crop of XL723 produced a yield advantage of 1881lb/acre compared to no control on the main crop. Due to relatively low populations of stem borers on the ratoon crop, no significant differences in yield among treatments were detected. However, for XL723, control of stem borers on the ratoon crop produced a yield advantage of 695lb/acre compared to no control on the ratoon crop. Thus, data show stem borer control for main and ratoon crop production is critical in certain areas of Texas.

Table 1. Rice water weevil (RWW), South American rice miner (SARM) and stem borer control. XL723. Beaumont, TX. 2007.

Description[a]	Rate mg (AI)/seed / lb (AI)/A[b]	No. SARM damaged leaves	No. immature RWW/5 cores Jun 14	No. immature RWW/5 cores Jun 26	No. WHs[c]	Yield[d] lb/A
Dermacor X-100	0.025 / 0.039	4 bc	2 b	1 b	0	11157 a
Dermacor X-100	0.05 / 0.078	3 bc	1 b	1 b	0	10575 a
Dermacor X-100	0.10 / 0.156	1 c	1 b	0 b	0	10465 ab
Karate Z	0.04 lb (AI)/A	8 b	5 b	9 a	0	10426 ab
Untreated	---	18 a	73 a	17 a	0	9602 b
					NS	

[a]Dermacor X-100 = seed treatment, Karate Z = foliar spray applied 3 days after flood.
[b]lb (AI)/A based on 18,800 Cocodrie seeds/lb and 90 lb/A seeding rate.
[c]Based on no. whiteheads (WHs) in middle 4 rows/plot.
[d]Based on reps I-III; rep IV data deleted due to drift of urea from adjacent Foundation Seed field.
Means in a column followed by the same or no letter are not significantly different (NS, $P > 0.05$, ANOVA, LSD).

Table 2. Rice water weevil (RWW), South American rice miner (SARM) and stem borer control. Cocodrie. Beaumont, TX. 2007.

Description[a]	Rate mg (AI)/seed / lb (AI)/A[b]	No. SARM damaged leaves	No. immature RWW/5 cores Jun 14	No. immature RWW/5 cores Jun 26	No. WHs[c]	Yield[d] lb/A
Dermacor X-100	0.0125 / 0.047	1 b	2 c	1 b	2	10349
Dermacor X-100	0.025 / 0.039	0 b	1 c	1 b	1	9956
Dermacor X-100	0.05 / 0.078	0 b	1 c	0 b	1	10168
Dermacor X-100	0.10 / 0.156	1 b	0 c	0 b	0	10331
Karate Z	0.04 lb (AI)/A	1 b	7 b	1 b	1	10215
Untreated	---	3 a	53 a	12 a	2	9841
					NS	NS

[a]Dermacor X-100 = seed treatment, Karate Z = foliar spray applied 3 days after flood.
[b]lb (AI)/A based on 18,800 Cocodrie seeds/lb and 90 lb/A seeding rate.
[c]Based on no. whiteheads (WHs) in middle 4 rows/plot.
[d]Based on reps I-III; rep IV data deleted due to drift of urea from adjacent Foundation Seed field.
Means in a column followed by the same or no letter are not significantly different (NS, $P > 0.05$, ANOVA, LSD).

Table 3. Evaluation of seed and foliar treatments for stem borer control in rice, Ganado, TX. 2007.

Description	Rate lb AI/A / mg AI/seed[a]	Timing[b]	No. panicles /ft of row	No. WHs/plot[c]	Yield lb/A
Untreated	---	---	27	69 ab	6660 bc
Cruiser 5FS	0.064	ST	26	90 b	6140 c
V-10170	0.20	ST	28	60 b	6432 c
Dermacor X-100	0.331 / 0.10	ST	28	2 d	7388 a
Rynaxypyr	0.026	LB	25	12 c	7439 a
Rynaxypyr	0.026	H	30	4 d	7053 ab
Rynaxypyr	0.046	LB	26	4 d	7407 a
Rynaxypyr	0.046	H	26	5 cd	7418 a
			NS		

[a]mg AI/seed given 18,800 Cocodrie seeds/lb and 80 lb/A seeding rate.
[b]ST = seed treatment; LB = late boot; H = heading.
[c]No. whiteheads (WHs) per 4 middle rows.
Means in a column followed by the same or no letter are not significantly different (NS, $P > 0.05$, ANOVA, LSD).

Notes:

Table 4. Stem borer research on main and ratoon crop rice. Cocodrie. Ganado, TX. 2007.

Main Crop[a]	Ratoon Crop[a]	No. WHs[b]/4 middle rows		Yield (lb/A)		
		Main	Ratoon	Main	Ratoon	Total
T	T	7 b	1 b	7502 a	2648	9970 a
T	U	7 b	10 a	7377 a	2106	9484 a
U	T	55 a	2 b	6477 b	2318	8795 b
U	U	61 a	16 a	6404 b	1975	8379 b
					NS	

[a]T = treated for stem borers; U = untreated.
[b]WHs = whiteheads.
Means in a column followed by the same or no letter are not significantly different (NS, $P > 0.05$, ANOVA, LSD).

Table 5. Stem borer research on main and ratoon crop rice. XL723. Ganado, TX. 2007.

Main Crop[a]	Ratoon Crop[a]	No. WHs[b]/4 middle rows		Yield (lb/A)		
		Main	Ratoon	Main	Ratoon	Total
T	T	1 b	0 c	8377 a	2423	10800 a
T	U	0 b	2 b	8675 a	1902	10577 a
U	T	67 a	1 bc	6715 b	2602	9317 b
U	U	66 a	4 a	6794 b	1907	8700 b
					NS	

[a]T = treated for stem borers; U = untreated.
[b]WHs = whiteheads.
Means in a column followed by the same or no letter are not significantly different (NS, $P > 0.05$, ANOVA, LSD).

11th Annual National Conservation Systems Cotton & Rice Conference

CORN PRESENTATIONS

Corn Rotations In The Mid-South

Presented by Dr. Chad E. Brewer
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Corn production has a long history in the Southern United States. In the mid-1860's corn was grown in rotation with cotton as an energy source for farm livestock and humans. This rotation was prevalent up until the mid-1900's when mechanization and the introduction of soybean and rice decreased corn acreage. Although there were practical reasons for this crop rotation sequence there were many unintended benefits.

A corn-cotton rotation reduces incidence of pests specific to cotton, can increase soil quality, and diversify farm production. Reniform nematodes (Rotylenchulus reniformis)infest 50% of cotton production fields in LA and MS, and approximately 10% of fields in AR (NCSU 2007). Currently there are no commercial cotton cultivars with genetic resistance to this pest (Weaver et al. 2007). Rotations to a non-host crop, such