opment.

Understanding the spread of the disease, its complexity, and the urgency for management options, the University of Arkansas Division of Agriculture has launched a research program with special emphasis on bacterial panicle blight. We are working primarily on chemical and non-chemical seed treatment options for short-term management options and on developing effective resistance screening techniques for discovery and development of durable resistance in high yielding rice cultivars.

Program 1R-2

Update On Rice Insect Pest Management

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Three rice insecticidal seed treatments were labeled in Texas in 2011. CruiserMaxx Rice and Dermacor X-100 had full federal labels (Section 3s) while NipsIt INSIDE had an Experimental Use Permit which allowed Texas rice farmers to plant up to 10,000 acres of NipsIt INSIDE-treated seed. Seed treatments work very well in a conservation tillage system because frequently the seedbed is less than ideal which can lead to reduced seedling vigor and emergence. Early seedling pests, if not controlled, can further reduce vigor and threaten stands. Also, many farmers are planting at lower seeding rates than in the past due to rising seed costs, better planting equipment and selection of hybrid varieties. Thus, insecticidal seed treatments are a form of "insurance" against rice insect pests, such as aphids, thrips, fall armyworm, grape colaspis, rice water weevil and stalk borers.

The above seed treatments possess different spectra of pest activity. CrusierMaxx Rice also contains 3 fungicidal active ingredients which target seedling diseases while the insecticidal active ingredient controls seedling pests like aphids, grape colaspis, thrips and leafhoppers. In addition, CruiserMaxx Rice controls rice water weevil. Dermacor X-100 targets fall army-

worm, South American rice miner, rice water weevil and stalk borers. NipsIt INSIDE controls the same insect pests as CruiserMaxx Rice. So, farmers who apply seed treatments must make management decisions in advance of the occurrence of insect pests in the field. Farmers can make informed decisions regarding selection of seed treatments by taking into account prior pest history, variety, projected planting date and seeding rate, surrounding cropping patterns, geographic location of fields, cost of seed, irrigation practices etc. Consult the 2011

Table 1. Mean data for hybrid seeding rate study. Beaumont, TX. 2011.

Seeding rate (lb/A)	Treatment	Rate (fl oz/cwt)	Stand (plants/ ft of row)	RWW/5 cores		WHs/4 rows	Yield (lb/A)
				Jun 15	Jun 27		
15	Dermacor X-100	1.75 fl oz/A	8	5	9	0	8877
15	CruiserMaxx Rice	7	8	14	14	1	8289
15	NipsIt INSIDE	1.92	8	12	13	1	8478
15	Untreated	---	5	51	16	1	7308
25	Dermacor X-100	1.75 fl oz/A	13	2	2	0	9507
25	CruiserMaxx Rice	7	12	9	7	0	9484
25	NipsIt INSIDE	1.92	12	11	7	1	9139
25	Untreated	---	11	75	13	0	8228
35	Dermacor X-100	1.75 fl oz/A	14	10	4	0	9223
35	CruiserMaxx Rice	7	16	8	3	2	9268
35	NipsIt INSIDE	1.92	15	5	7	1	9620
35	Untreated	---	14	53	18	0	8366

[c] RWW = rice water weevil; WH = whitehead

Table 2. Statistical analysis of data in Table 1. Beaumont, TX. 2011.

	Stand (plants/ ft of row)	RWW[c]/5 cores		WHs[c]/4 rows	Yield (lb/A)
		Jun 15	Jun 27		
Main plot					
15	7 c	21	13 a	1	8238 b
25	12 b	24	7 b	0	9090 a
35	15 a	19	8 b	1	9119 a
Subplot					
Dermacor X-100[d]	12	6 b	5 b	0	9202 a
CruiserMaxx Rice[d]	12	10 b	8 b	1	9014 a
NipsIt INSIDE[d]	11	9 b	9 b	1	9079 a
Untreated	10	60 a	16 a	0	7967 b
Interaction					
Seeding rate vs. treatment	*P* 0.9419	*P* 0.1997	*P* 0.4603	*P* 0.2043	*P* 0.5722

[c] RWW = rice water weevil; WH = whitehead

[d] Dermacor X-100 @ 1.75 fl oz/A; CruiserMaxx Rice @ 7 fl oz/cwt; NipsIt INSIDE @ 1.92 fl oz/cwt

Means in a column followed by the same or no letter are not significantly (NS) different (*P* 0.05. ANOVA and LSD)

Texas Rice Production Guidelines chapter on Insect Management via the following link for more specific information to help make a decision about the use of a seed treatment http://beaumont.tamu.edu/eLibrary/Bulletins/2011_Rice_Production_Guidelines.pdf.

In 2011, the Entomology Project at the Beaumont Center conducted a seeding rate experiment evaluating all the above seed treatments applied to the hybrid variety XP753. The experiment was designed as a split plot with main plots being seeding rate (15, 25 and 35 lb/A) and subplots being seed treatments (CruiserMaxx Rice, Dermacor-X-100 and NipsIt INSIDE). CruiserMaxx Rice and NipsIt INSIDE were applied to rice seed on a cwt basis, as recommended. This means the lower the seeding rate, the less insecticidal active ingredient is applied on a per acre basis. Dermacor X-100 was applied to seed on a per acre basis which means the amount of active ingredient per acre is the same regardless of seeding rate (as seeding rate decreases, the amount of active ingredient applied to each seed increases). Plot size was 18 ft by 7 rows (7 inches between rows). Treatments were replicated 4 times, so the total number of plots was 48, including untreated plots. Each plot was surrounded by a metal barrier to minimize movement of insecticide and fertilizer among plots. Water management was a delayed flood with the flood applied about 3 weeks after rice emergence. Urea was applied to plots just before flood (120 lb N/A) and at heading (60 lb N/A). Rice water weevils (RWWs) were sampled about 3 weeks after flood followed by a second sampling 12 days later. Samples consisted of 5 cores, each 4 inches in diameter by 4 inches deep containing at least 1 rice plant (usually 2-3) per plot on each sampling date. Whiteheads (WHs) were counted in the middle 4 rows of each plot at the milk stage of rice maturation. WHs are a measure of stalk borer (Mexican rice borer and sugarcane borer) damage. Plots were harvested with a small plot combine.

Data show rice plant stand varied with seeding rate, as expected (Tables 1 and 2). The seed treatments did not affect plant stand. Populations of RWW were well above treatment thresholds in the untreated, so experimental results are valid for this insect. All seed treatments effectively controlled RWW on both sample dates. WH counts were too low to draw conclusions; however, WH densities typically are low for hybrids. Across suplots, yields were significantly lower at the lowest seeding rate (15 lb/A)---an average of 867 lb/A lower than the 2 higher seeding rates. Across main plots, yields of all 3 seed treatments were similar---over 9000 lb/A. When yields of the 3 seed treatments are averaged (9098 lb/A), the difference compared to the untreated is 1131 lb/A which clearly shows the value of the 3 seed treatments.

Notes: