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Introduction

The Red Banded Stink Bug, *Piezodorus guildini*, present in Louisiana for the last several years, was initially identified as a problem in southern parts of the state, particularly the southwestern parishes. Currently, the pest is distributed throughout the state. The Red Banded Stink Bug is more difficult to control than other stink bug pests soybean producers have been accustomed to finding in their fields. While all soybeans are potential targets, late-planted soybeans are especially vulnerable because these fields have plants in early seed development stages that are highly attractive, compared to surrounding crops that are in later stages of plant maturity. See the LSU AgCenter website for additional details regarding management of the Red Banded Stink Bug in soybeans:

http://www.lsuagcenter.com/en/crops_livestock/crops/soybeans/red_banded_stink_bug/

Potential Damage

This pest could be a potentially more significant problem in 2007 because of the large winter wheat acreage and the attractive soybean prices currently available to producers. Because of the profit potential offered by soybeans, producers will consider planting soybeans following the harvest of the wheat crop. This could mean that there will be more than the traditional 80 percent of the wheat acreage planted to double crop soybeans. Since winter wheat is generally harvested in late May or early June, soybeans planted after wheat would not be seeded until after the optimum planting window. This is especially true for Group IV soybeans that are widely planted in Louisiana. Delayed planting creates two potential problems for soybean producers. First, delayed planting will generally decrease yield compared to planting during the optimum period. For a general discussion of this phenomenon see the LSU AgCenter web site: <http://www.lsuagcenter.com/MCMS/RelatedFiles/{9479C75C-687B-46CA-8002-4570C5131406}/SoybeanVarietyRecommendations2007.pdf>

The second problem is the increased potential for damage from the Red Banded Stink Bug. Increased probability of damage from this pest occurs because the surrounding fields provide a source area for the pest to emigrate from and move to the more attractive late-planted soybeans. In addition, fields of late-planted soybeans will concentrate the pest numbers because there are fewer acres, compared to early-planted soybeans that experience more widely distributed populations. Once in the soybeans, the pest is more difficult to control with the limited number of pesticides that have proven effective. While the pest can be controlled, re-infestations are frequent and severe. Because of these frequent re-infestations, it is necessary to make several applications of the most effective insecticides. Current estimates are that from three to five additional applications of insecticides may be required to adequately manage the pest, based on recent experience in the southwestern region of the state.

Impact on Profitability

Given the potential damage previously outlined, the impact on soybean profitability could be significant. To assess the potential impact of profitability, two budgets were prepared with one illustrating estimates of costs and returns for soybeans planted during the ideal planting window and the other reflecting the same information for late-planted soybeans infected with the Red Banded Stink Bug. For this comparison, a market price of \$7 per bushel is used. While producers have had opportunities to sell 2007 soybeans at much higher prices, this price was selected as a conservative estimate. Production

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costs are the same as those used in the 2007 budget projections published in the department of Agricultural Economics and Agribusiness and found at the LSU AgCenter site:

<http://www.lsuagcenter.com/NR/rdonlyres/990E50C9-8502-4320-84B5-D3A3F1CE0379/33825/2007NECottonBudgets.pdf>

Enterprise budgets for soybeans planted in the normal planting window were assumed to experience average insect pest problems and produce a 40 bushel yield (Table 1). This yield level exceeds the recent state average yield, but is below the levels reported by many producers in recent years. Under these assumptions, soybeans planted in the normal planting window could be expected to generate approximately \$280 per acre in revenue. Per acre variable (out-of-pocket) costs are estimated to be about \$127 which gives a return above variable costs of \$153 per acre. Only variable costs are included because fixed costs are the same for either normal or late-planted soybeans.

A similar budget for late-planted soybeans assumes an eight bushel yield reduction based on the plant response to the delay in planting (Table 2). This loss assumes that yields are reduced about one-half bushel per day for delays after June 1. The late-planted budget assumes the soybeans were seeded during the June 7-14 timeframe. With the lower yield, revenue is estimated to be \$224 per acre. An implicit assumption is that the additional insecticide costs were sufficient to minimize damage to the soybeans so there was no reduction in grade over the soybeans planted during the recommended planting window. However, producers should likely anticipate some level of seed quality reduction even with the added sprays for insect pest control.

Variable costs for the late-planted soybeans are estimated to be about \$162 per acre. This value represents a 28 percent increase in costs over soybeans planted in a normal planting window. The increased cost is due to the assumption that late-planted soybeans infested with the Red Banded Stink Bug will require several applications of insecticides. For this budget, four additional applications of effective insecticides (three applications of Orthene and one application of Baythroid) were included for Red Banded Stink Bug control. All applications were assumed to be applied by air in three gallons of water. The higher insect control cost coupled with decreased yield provides a return above variable costs of approximately \$62 per acre, or a reduction of 59 percent when compared to soybeans planted in the recommended planting window.

The budget shown in Table 2 assumes both late-planted soybeans and fields infested by the Red Banded Stink Bug. Based on the previous history of the pest, late-planted soybeans will suffer some yield reduction. Further, all fields of late-planted soybeans may not be infested with the Red Banded Stink Bug, but the probability of such an infestation of this pest, as well as others, is higher for late-planted soybeans. The total difference in returns above variable costs shown here is composed of a decrease in returns of \$56 per acre and increased cost of \$38.73. The increased costs are for the additional insecticides and aerial applications. These costs are slightly different than shown in the budgets because there are slightly different cultural practices for late-planted soybeans that decrease costs slightly. Therefore, if late-planted soybeans were not infested with the Red Banded Stink Bug, costs to control that pest would not be incurred, but yield reductions due to late planting would still be realized and net returns would be reduced.

Summary

The Red Banded Stink Bug has been identified as a potential significant insect pest for soybeans in Louisiana, especially late-planted soybeans. This paper illustrates the potential impact such a pest can have on the projected profitability of late-planted soybeans compared to those planted in the recommended planting window. Under the assumed scenario, infestation of the Red Banded Stink Bug could increase costs by about \$39 per acre. Further, late planting could reduce revenue by \$56 per acre. Late-planted soybeans coupled with an infestation of the Red Banded Stink Bug can dramatically reduce (up to 59 percent) the expected returns from soybeans.

Table 1. Estimated Costs and Returns per Acre, RR Soybeans,
 Stale Seedbed, 12-20" Row Equipment, Owner-Operator,
 Alluvial Soil, Standard Practices, Northeast Louisiana, 2007.

ITEM	UNIT	PRICE	QUANTITY	AMOUNT	YOUR FARM
		dollars		dollars	
INCOME					
Soybeans	bu	7.00	40.0000	280.00	_____

TOTAL INCOME				280.00	_____
DIRECT EXPENSES					
CUSTOM SPRAY					
App by Air (5 gal)	appl	4.50	2.0000	9.00	_____
App by Air (3 gal)	appl	3.50	2.0000	7.00	_____
HERBICIDES					
Roundup WeatherMax	oz	0.32	66.0000	21.12	_____
Harmony Extra	oz	13.70	0.3300	4.52	_____
Squadron CE	pt	4.55	3.0000	13.65	_____
INSECTICIDES					
Karate Z	oz	3.00	3.6000	10.80	_____
SEED/PLANTS					
Soybean Seed RR	lb	0.64	50.0000	32.00	_____
ADJUVANTS					
Surfactant	pt	1.39	0.2000	0.28	_____
CUSTOM HARVEST/HAUL					
Haul Soybeans	bu	0.16	40.0000	6.40	_____
OPERATOR LABOR					
Harvesters	hour	15.30	0.0851	1.30	_____
HAND LABOR					
Implements	hour	9.60	0.1154	1.11	_____
LA Hired Labor					
Tractors	hour	9.60	0.2179	2.10	_____
LA Other Labor					
Special Labor	hour	9.60	0.1200	1.15	_____
DIESEL FUEL					
Tractors	gal	2.10	2.1370	4.49	_____
Harvesters	gal	2.10	1.2047	2.53	_____
REPAIR & MAINTENANCE					
Implements	Acre	2.25	1.0000	2.25	_____
Tractors	Acre	0.81	1.0000	0.81	_____
Harvesters	Acre	1.66	1.0000	1.66	_____
INTEREST ON OP. CAP.	Acre	5.00	1.0000	5.00	_____

TOTAL DIRECT EXPENSES				127.17	_____
RETURNS ABOVE DIRECT EXPENSES				152.83	_____

Table 2. Estimated Costs and Returns per Acre, RR Soybeans,
 Stale Seedbed, 12-20" Row Equipment, Owner-Operator,
 Late-planted, Alluvial Soil, Northeast Louisiana, 2007.

ITEM	UNIT	PRICE	QUANTITY	AMOUNT	YOUR FARM
		dollars		dollars	
INCOME					
Soybeans	bu	7.00	32.0000	224.00	_____

TOTAL INCOME				224.00	_____
DIRECT EXPENSES					
CUSTOM SPRAY					
App by Air (5 gal)	appl	4.50	2.0000	9.00	_____
App by Air (3 gal)	appl	3.50	6.0000	21.00	_____
HERBICIDES					
Roundup WeatherMax	oz	0.32	66.0000	21.12	_____
Harmony Extra	oz	13.70	0.3300	4.52	_____
Squadron CE	pt	4.55	3.0000	13.65	_____
INSECTICIDES					
Karate Z	oz	3.00	3.6000	10.80	_____
Orthene 90S	lb	8.59	2.2500	19.33	_____
Baythroid 2	oz	2.70	2.0000	5.40	_____
SEED/PLANTS					
Soybean Seed RR	lb	0.64	50.0000	32.00	_____
ADJUVANTS					
Surfactant	pt	1.39	0.2000	0.28	_____
CUSTOM HARVEST/HAUL					
Haul Soybeans	bu	0.16	32.0000	5.12	_____
OPERATOR LABOR					
Harvesters	hour	15.30	0.0851	1.30	_____
HAND LABOR					
Implements	hour	9.60	0.1154	1.11	_____
LA Hired Labor					
Tractors	hour	9.60	0.1565	1.51	_____
LA Other Labor					
Special Labor	hour	9.60	0.1200	1.15	_____
DIESEL FUEL					
Tractors	gal	2.10	1.4261	3.00	_____
Harvesters	gal	2.10	1.2047	2.53	_____
REPAIR & MAINTENANCE					
Implements	Acre	1.70	1.0000	1.70	_____
Tractors	Acre	0.56	1.0000	0.56	_____
Harvesters	Acre	1.66	1.0000	1.66	_____
INTEREST ON OP. CAP.	Acre	5.61	1.0000	5.61	_____

TOTAL DIRECT EXPENSES				162.34	_____
RETURNS ABOVE DIRECT EXPENSES				61.66	_____