2000
Southwest Oklahoma Entomology Report

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Entomology Activities

Insect monitoring is a key component in a successful IPM program. Trapping activities in 2000 were expanded to also include West Central and Northern Oklahoma. Trapping activities in 2000 centered around the beet armyworm and the bollworm complex. Population trends, insect updates, and control tips are published in the Cotton Sentry and distributed to the State's cotton producers and consultants to help formulate management strategies to enhance profitability.

Like 1999, Bollgard™ technology was the focus of this year's research. Monetary support received throughout the year permitted this applied research to continue. Besides State IPM funds, I want to thank all the chemical companies for their contract research support. Special thanks go to the cotton producers for their support as cooperators and support through the Cotton Incorporated State Support Funds. And finally thanks to the County Extension Agents for their assistance in setting up field demonstrations and turn row meetings in 2000.

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Oklahoma. A total of 216,000 acres were planted. Excellent growing conditions prevailed across the state through June. A prolonged drought during boll set limited production and reduced harvested acres to 190,000 acres. Abundant heat units resulted with a total of 2,854 heat units accumulated between May 10 and October 1 exceeding the 40-year average. The state production average is projected at 440 lbs. of lint per acre.

Despite widespread use of at-planting insecticides thrips infestations built to damaging levels across the State. Lighter-than-normal infestations of cotton fleahoppers coupled with widespread OBWEO sprays limited the number of applications applied solely for cotton fleahopper control throughout Southwest Oklahoma. Heaviest cotton fleahopper infestation occurred in portions of Northern Oklahoma not in an active OBWEO spray program.

Light bollworm populations coupled with the large increase in acres planted to Bollgard cotton limited spraying in 2000. Conventional cotton received between 1 and 3 insecticide applications to prevent damage. June rains delayed beet armyworm infestations. Beet armyworm infestations surfaced in late July and early August with heaviest infestations occurring in Harmon County in Southwest Oklahoma.

Cotton aphid infestations flared during July. Heaviest infestations were associated with active OBWEO programs in Southwest Oklahoma. Only District 1, comprising 5 Counties (Harmon, Greer, Jackson, Kiowa and Tillman), were cleared for Furadan use to control resistant cotton aphids. Heaviest infestations occurred in cotton intensely managed. Severe yield loss would have occurred if Furadan had not been available for use. This aphid buildup was short lived and did not reoccur.

Ongoing Research Projects

Oklahoma. Several Bollgard trials were conducted in 2000 to further evaluate the value of this technology under Oklahoma conditions. Bollgard cotton provided sufficient bollworm control and produced increased yields to compensate for rental fees in all entries. Bollgard varieties increased profits for irrigated production compared to conventional cotton varieties regardless of management regimes.

This was the fifth year that Heliothine infestations failed to reach levels in economic threshold trials to activate insecticide applications. Heliothine pressure remained below 5 larvae (> 3/8 inch long) per 100 terminals. Insecticide protection was to be applied if infestations approached 10 larvae (> 3/8 inch long) per 100 terminals. Biweekly tagging of eggs and newly hatched larvae revealed no Heliothine survival at tagged sites. All newly hatched larvae died before any of the larvae reached ½ inch long.

Research continued in 2000 to determine the impact of planting date on boll weevil management grown under dryland conditions. Previous research during years with high boll weevil survival indicated planting date is critical regardless of management scheme to raise profitable cotton. Despite no boll weevil damage, 2000 results continue to emphasize May-planted cotton. May-planted cotton outperformed June-planted cotton treated the same by at least 67.8 lbs. lint per acre. Overwintering sprays of Vydate .125 lb A.I. / acre before bloom increased yields in 3 of the 4 treatments. Greatest lint gains (at least 23 lbs lint per acre) were seen in Paymaster HS 26 plots for both planting dates. Lint gains in Paymaster HS 26 plots offset insecticide inputs. Similar yield responses were not seen in Paymaster HS 183 plots.

Bollworm / Tobacco Budworm and Beet Armyworm Monitoring

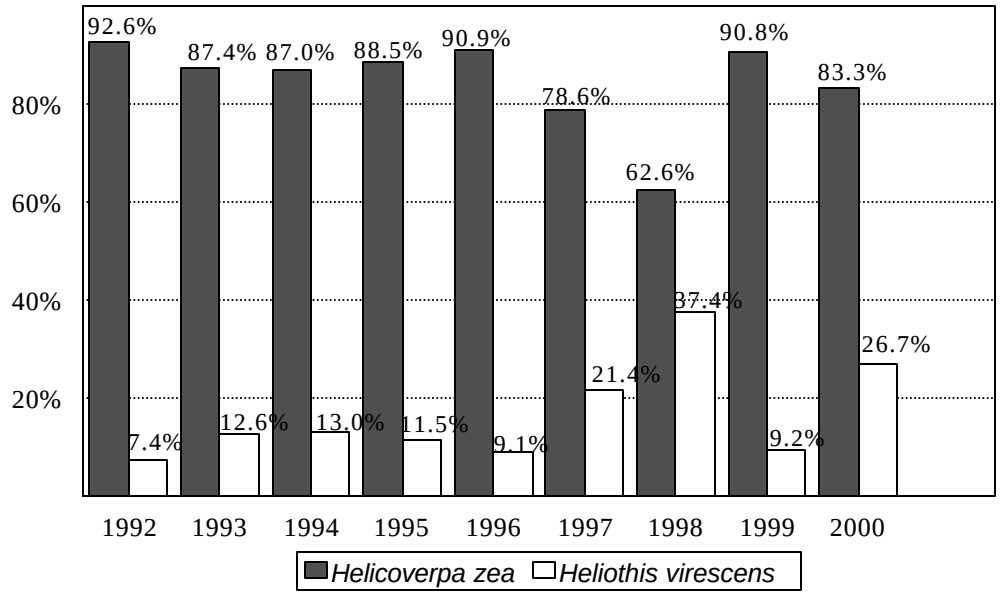
Bollworms/tobacco budworms are targets of many of the insecticide applications applied annually on cotton in Oklahoma. Monitoring moth activities helps determine species ratio and peak ovipositional activity for these insects. Pheromone trap surveillance was expanded in 2000. Besides Jackson, Harmon, and Tillman Counties, theWest Central region (Custer, Kiowa and Washita County) and the Northern Region (Grant and Kay County) were also trapped. Traps were located near these farming communities – Altus, Hollis, Tipton, Arapaho, Hobart, Dill City, Manchester, Deer Creek and Blackwell. In addition to Heliothine activity, beet armyworm movements were also monitored at each location. Traps were maintained between June 1 and September 1, 2000.

Moth Pheromone Trap Catch Totals for Selected Regions of Oklahoma, Summer 2000

	Bollworm							
	Southwest			West Central			Northern	
Altus	Hollis	Tipton	**Arapaho**	**Hobart**	**Dill City**	Manchester	Deer Creek	Blackwell
1,084	1,238	989	**295**	**228**	**13**	551	1,864	354
			Tobacco Budworm					
170	104	343	**53**	**129**	**0**	141	281	104
			Beet Armyworm					
1,001	1,409	1,338	**72**	**369**	**47**	1,504	3,186	386

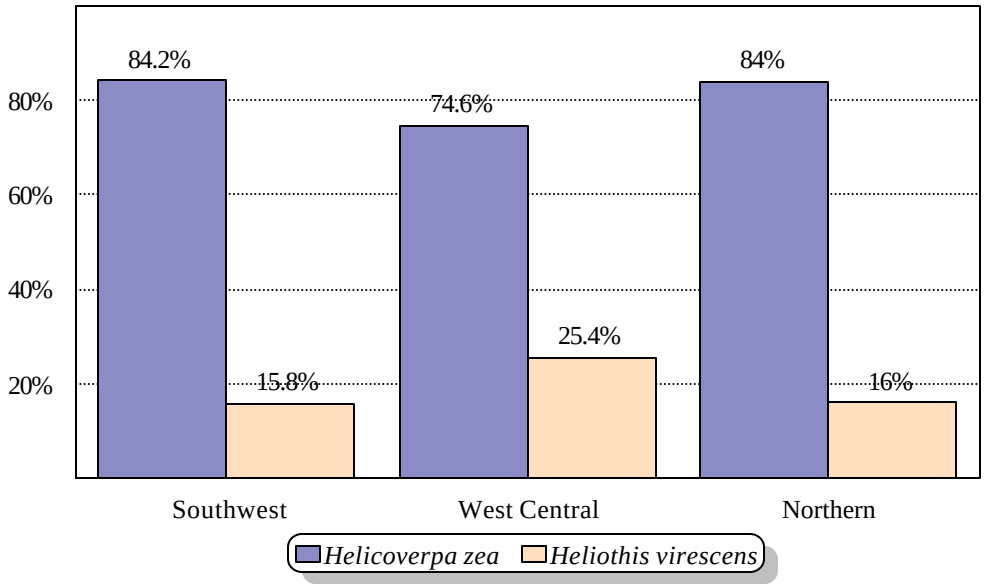
Although both species do coexist and are considered the same, this species ratio is important since tobacco budworms exhibit a higher level of resistance to insecticides than bollworms. It is extremely important to detect fluctuations in species ratio of each ovipositional period and adjust insecticide recommendations accordingly. A total of 7,941 moths were captured between the week of June 1 and September 1. Bollworms comprised 83.3% of the total catch in 2000 (Figure 1). Species composition was nearly identical at all locations making up between 74.6 % and 84.2 % of the catch. (Figure 2). No control difficulties were reported in 2000. Reduced Heliothine pressure and an increased acreage planted to Bollgard™ cotton were the main reasons limiting control problems across the State.

Figure 1. Species composition of moths trapped across Oklahoma, Summer 2000.



[1]Pheromone traps maintained from June 1 to September 1.

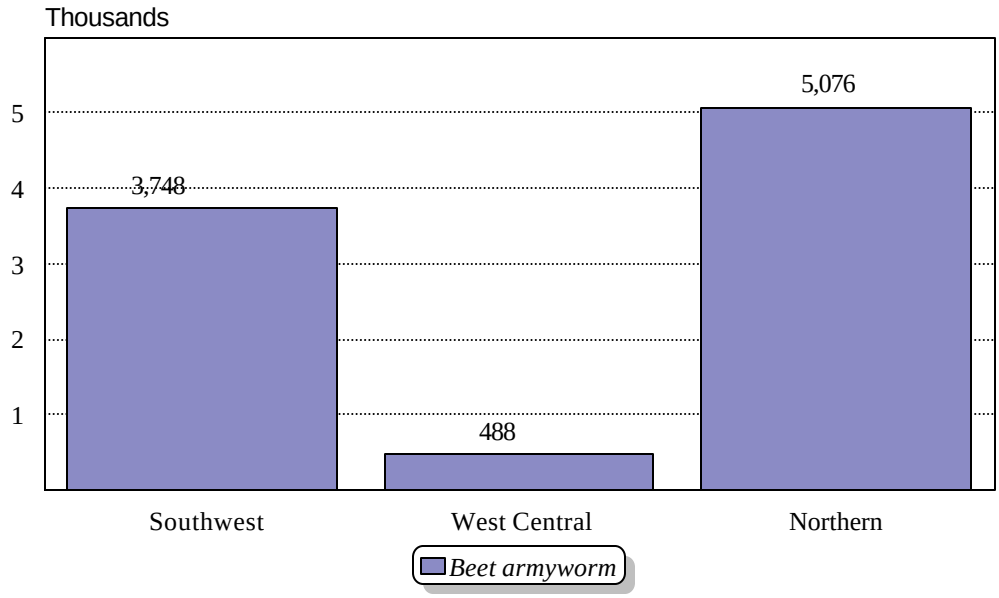
Figure 2. Species composition of trapped moths by production region, 2000.



Beet Armyworm Monitoring

A total of 9,312 beet armyworm moths were captured in Oklahoma in 2000 (Figure 3). Greatest numbers were recorded in Northern Oklahoma; however no field infestations were observed. In-field infestations only occurred in the Southwest Region of the State. Lateness of the overall infestation and popularity of Bollgard™ cotton were factors that lessened the impact of beet armyworms in 2000.

Figure 3. Beet armyworm moths trapped by region across Oklahoma, 2000.

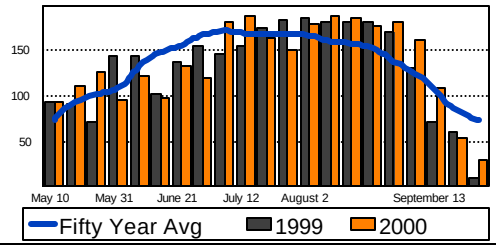


GROWING DEGREE DAYS ACCUMULATION FOR SELECT LOCATIONS ACROSS OKLAHOMA, SUMMER 2000.

Altus

Growing Degree Days (GDD)

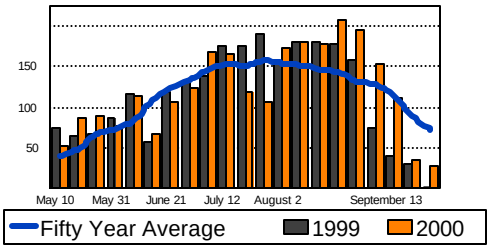
Month	50 year	1999	2000
May	377.2	400.4	427.9
June	604.6	539.5	473.5
July	680.3	661.8	687.6
August	776.9	905.0	914.1
September	387.6	270.8	350.9
Total	**2,826.6**	**2,777.5**	**2,854.0**



Blackwell

Growing Degree Days (GDD)

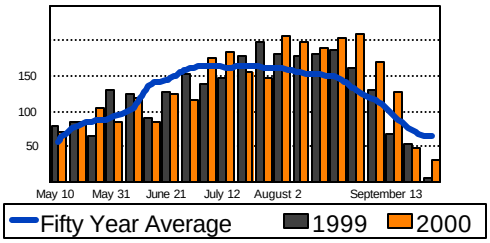
Month	50 year	1999	2000
May	228.0	291.8	303.9
June	364.0	309.0	297.8
July	607.0	678.4	558.1
August	728.0	851.0	930.8
September	403.0	142.7	328.3
Total	**2,414.0**	**2,388.1**	**2,533.6**



Hobart

Growing Degree Days (GDD)

Month	50 year	1999	2000
May	316.3	357.6	346.6
June	391.5	344.4	329.5
July	653.4	658.6	663.1
August	744.7	811.6	1,006.7
September	348.0	256.4	375.3
Total	**2,614.8**	**2,658.0**	**2,837.1**



Field Survey to Assess *Lygus spp* Populations in Oklahoma Agri-ecosystems and Potential Pest Status

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Abstract:
Sixteen plant bug species were collected across Oklahoma in field surveys conducted between June 12 and July 25, 2000. Species abundance and density varied by production region. Northern Oklahoma was the most diverse region recording 9 different species with the highest total catch followed by Southwest and West Central regions of Oklahoma respectively. *Lygus lineolaris* (Palisot) was the most abundant species caught followed by *Spanagonicus albofasciatus* (Reuter) and *Pseudatomoscelis seriatus* (Reuter). None of the species caught posed an economic threat to cotton during the sampling period. Alfalfa accounted for 38.8 % of the total number of plant bugs captured followed by cotton with 19.5 %. *Lygus lineolaris* (Palisot) was present in all three, production regions surveyed and poses the greatest threat where cotton is grown in close proximity to alfalfa.

Introduction:

The cotton fleahopper has been a consistent pest of cotton in Oklahoma. Economic loss in Oklahoma varies annually. In the last 5 years, monetary loss estimates ranged from a low of $193,535 in 1996 to a high of $668,173 in 1999 (Beltwide Cotton Insect Losses 1995 – 1999). Other Miridae (plant bug) species are noticed periodically in cotton but fail to reach damaging levels in traditional cotton production regions of Southwest Oklahoma.

Questions concerning the possibility of tarnished plant bug injury surfaced in 1999. These inquiries originated from new cotton production regions along the Kansas border. Climatic conditions coupled with unique cropping and production practices make this production region quite different from the traditional cotton regions in Southwest Oklahoma. Slight modifications in climate and agronomic practices could favor plant bug development in Northern Oklahoma compared to population dynamics observed in Southwest Oklahoma. A statewide *Lygus* spp. survey was designed to determine species composition and their potential to cause economic loss to cotton.

Material and Methods:

The survey was designed to sample the cropping systems found in each production region of Oklahoma – Northern, West Central, and Southwest. Two or three counties in each production region Northern (Grant and Garfield), West Central (Custer, Kiowa, and Washita), and Southwest (Greer, Jackson, and Tillman) were sampled weekly, weather permitting, between June 12 and July 25, 2000. In each county, 18 fields (6 cotton and 12 other commodities) as well as each field border were sampled. Crops surveyed included alfalfa, cotton, peanuts, sorghum, soybeans, and sunflowers. One hundred sweeps were taken in each field and border (ditch). Insects were killed and placed in paper bags. County samples were sorted and a composite sample for each crop and border was sent to Don Arnold, Survey Entomologist with OSU Department of Entomology and Plant Pathology, for identification.

Results and Discussion:

Sixteen species of plant bugs were caught and identified in 2000 (Table 1). Species abundance varied by region. The Northern region recorded the most plant bug species and highest numbers followed by Southwest and West Central regions. *Lygus lineolaris* (Palisot) was the most abundant species caught followed by *Spanagonicus albofasciatus* (Reuter) and *Pseudatomoscelis seriatus* (Reuter). These three species comprised over 60% of the species collected.

Three crops - alfalfa (38.8%), cotton (19.5%), and sorghum (3.2%) - accounted for 61.5% of the total number collected (Table 2). Adjacent crop borders were responsible for 30.6%; however, the order of abundance did not correspond with crop ranking. Sorghum borders accounted for 56.2% of the border collections followed by cotton borders - 28.6% and alfalfa borders - 15.2%.

During late June and early July most of the cotton grown in Oklahoma is squaring and is highly susceptible to plant bug attack. Peak catch for all regions occurred the week of June 26 and remained high through the week of July 3, 2000 (Figure 1). At this point plant bug numbers drop and remain low throughout the remainder of the sampling period.

Prior to sampling we speculated that the cotton fleahopper, *Pseudatomoscelis seriatus*, would be the most abundant species due to its history of infesting cotton and causing economic loss. However the low survey density mirrored the actual cotton fleahopper infestation experienced in Oklahoma in 2000. Although *Lygus lineolaris* was the most abundant species surveyed, populations failed to reach damaging levels. However, if favorable climatic conditions exist for development, *Lygus lineolaris* could possibly reach pest status. Cotton fields grown in close proximity to alfalfa have the greatest risk. A rapid build up of *Lygus lineolaris* could occur in cotton when alfalfa is cut forcing plant bugs to migrate in search of a new food source.

The key to detection of cotton fleahoppers and tarnished plant bugs is to employ proper scouting techniques. Besides terminal and plant exams, utilizing a sweep net can improve plant bug detection. Other helpful tools to assess square initiation and fruit retention are plant mapping and keeping track of heat units related to the overall growing conditions.

Acknowledgements:

Special thanks go to Mr. Ron Coggeshall for his assistance in data analysis and to the following County Extension Agents - Scott Price, Ron Robinson, Ron Wright, Kent Orrell, Wayne Chambers, and Marty Montague for their help in field operations. This project was funded by Cotton Incorporated State Support Funds and State IPM mini-grant.

References:

Williams, Michael R. 1997. Cotton Insect Losses 1996. Proceedings Beltwide Conferences. 834 – 809.

Williams, Michael R. 2000. Cotton Insect Losses 1999. Proceedings Beltwide Conferences. 884 – 913.

Table 1. Miridae species collected across Oklahoma, summer 2000.

Species	Region			Total
	Southwest	West Central	Northern	
Lygus lineolaris	3	5	105	**113**
Spanagonicus albofasciatus	16	0	37	**53**
Polymerus basalis	9	1	24	**34**
Pseudatomoscelis seriatus	4	0	29	**33**
Adelphocoris lineolatus	0	0	19	**19**
Trigonotylus sp.	0	0	19	**19**
Chlamydatus associates	1	0	17	**18**
Trigonotylus pulcher	2	0	15	**17**
Lygus hesperus	11	1	1	**13**
Rhinacloa forticornis	1	0	10	**11**
Trigonotylus tarsalis	0	0	8	**8**
Lygus elisus	2	0	0	**2**
Ceratocapsus fuscosignatus	0	0	1	**1**
Melanotrichus coagulatus	1	0	0	**1**
Plagiognathus politus	0	0	1	**1**
Total	**50**	**7**	**286**	**343**

Figure 1. Seasonal collection of plant bugs across Oklahoma, Summer 2000.

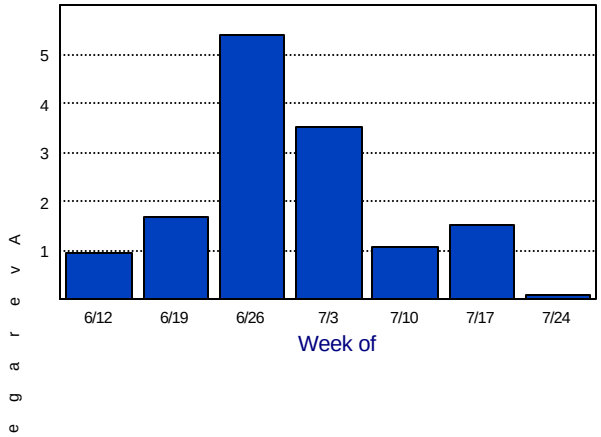

Table 2. Crop and border preference by Miridae species surveyed across Oklahoma, Summer 2000

Regions	Total Number Plant Bug Specimens Caught[1]
Southwest	
Alfalfa	**19**
Cotton	**13**
Milo	**0**
Border	
Alfalfa	**5**
Cotton	**5**
Milo	**1**
West Central	
Alfalfa	**7**
Northwest	
Alfalfa	**107**
Cotton	**54**
Milo	**11**
Border	
Alfalfa	**11**
Cotton	**24**
Milo	**57**

[1]Top 2 species collected (number): Southwest - *L.hesp.*(10) and *P. basa* (5), West Central - *L. line.* (5), *L. hesp.* (1), and *P. basa* (1), and Northern - *L. line* (80) and *A. line.* (17).

Fall Armyworm Insecticide Efficacy Trial – Vinyard's Farm

Cooperator: Vinyard Farms | Location: Jackson County
Finish spray: 10.0 gals/acre | Insecticides applied: July 19, 2000
Number of Alive and Dead Larvae per 6 ft. of row; includes both drop cloth and soil inspections.
Field irrigated on July 22, 2000; washed dead larvae away.

			Alive			Dead	
			FAW larvae/ 6 foot	FAW larvae/ 6 foot	FAW larvae/ 6 foot	FAW larvae/ 6 foot	FAW larvae/ 6 foot
			Jul-19-00	Jul-21-00	Jul-24-00	Jul-21-00	Jul-24-00
Treatment	Rate		Precount	2 DAT	5 DAT	2 DAT	5 DAT
Tracer	2.2	OZ/A	9.3	0.0 b	0.00	5.67	0.00
Dynamic	60	FL OZ/100 GAL					
Steward	10.66	OZ/A	9.3	0.0 b	0.00	5.33	0.00
Dynamic	60	FL OZ/100 GAL					
Lorsban	32	OZ/A	9.3	0.0 b	0.00	4.67	0.00
Dynamic	60	FL OZ/100 GAL					
Lannate	0.45	LB A/A	9.3	0.0 b	0.00	4.33	0.00
Dynamic	60	FL OZ/100 GAL					
Untreated			9.3	4.0 a	0.33	0.67	0.00
LSD (P=.05)			0.00	0.97	0.486	3.670	0.000
Standard Deviation			0.00	0.52	0.258	1.949	0.000
CV			0.0	77.46	387.3	47.16	0.0
Grand Mean			9.33	0.67	0.07	4.13	0.0

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

All insecticide treatments gave adequate control of fall armyworm throughout the sampling period.

Bollard™ Variety Demonstration - Terry White's Farm

Cooperator: Terry White
Planting Date: May 11
Harvest Aid applied: September 23
Insecticide History: 7 OBWEO Malathion applications

Location: Harmon County
Seeding Rate: 17.6 lbs/acre
Heat units accumulated: 2,836

Table 1. Comparison of plant characteristics: plant density, square retention, and lint yield, Terry Whites Farm, 2000.

Variety	Stand density plants/acre		% Retention		Lint Yield
	5/18	5/25	8/3	8/17	10/4
PM 1218 BG/RR + Roundup	54,000	58,000	100.0	94.6	899.5
PM 1218 BG/RR	45,000	55,000	89.3	92.4	901.7
PM 1560 BG/ RR + Roundup	53,000	59,000	96.0	93.3	844.5
PM 1560 BG/RR	58,000	56,000	94.2	95.3	946.5
NuCotn 33B	55,000	53,000	100.0	91.2	1,017.4
DP 458 BRR	49,000	54,000	100.0	92.6	908.7
DP 458 BRR + Roundup	54,000	57,000	100.0	93.0	958.2
DP 655 BRR	54,000	49,000	96.5	91.5	956.2
DP 655 BRR + Roundup	55,000	53,000	98.0	94.5	917.4
Stoneville 4691 B	48,000	59,000	100.0	92.3	918.8
Stoneville 4892 BR	50,000	56,000	93.3	91.3	1,062.2
Stoneville 4892 BR + Roundup	49,000	58,000	100.0	92.5	998.6
DP 90	59,000	59,000	84.6	85.6	855.5

[1]One quart Roundup applied on July 5, using a hooded sprayer in 5 gallons of finish spray.

Comparison of Bollgard™ and Parent Varieties

Cooperator: OSU Research and Extension Center
Planting Date: May 13, 2000
Harvest aid applied: September 29
1 pint/acre of Finish + 8 oz/acre of Ginstar + 9 oz/acre Induce
Insecticide History: 5 OBWEO Malathion applications

Location: Jackson County
Seeding Rate: 14.8 lbs/acre
Heat units accumulated: 2,871

Treatment	Stand Ct plants /acre Jun-05	Bworm egg /10plant Jul-25	Bworm larvae /10plant Jul-25	Bworm egg /10plant Aug-24	Bworm larvae /10plant Aug-24	1st FSITE 1st fsite /5plants Aug-02	% RETION % retention /5plants Aug-02
NuCOTN 33B	41000.0	0.0	0.0	0.0	0.0	7.53	98.43
PARENT DP 90	33666.7	0.0	0.3	0.0	0.0	7.27	98.93
DP 458 B/RR	42000.0	0.3	0.0	0.0	0.0	7.67	99.47
PARENT DP 5415 RR	42666.7	0.0	0.0	0.0	0.0	7.47	98.80
DP 237B	46333.3	0.0	0.0	0.0	0.0	6.27	97.60
PARENT DP 2379	43000.0	0.0	0.0	0.0	0.0	7.20	98.87
PM 2326 BG/RR	45333.3	0.0	0.0	0.0	0.0	5.60	98.30
PARENT PM HS-26	31333.3	0.0	0.0	0.0	0.0	7.20	98.33
DP 2280 BG/RR	40333.3	0.0	0.0	0.0	0.0	5.73	99.00
PARENT PM 280	34333.3	0.0	0.0	0.0	0.0	7.80	99.00
Stoneville 4691B	44666.7	0.7	0.0	0.0	0.0	7.87	98.20
PARENTStoneville 474	44000.0	0.0	0.0	0.0	0.0	7.47	100.00
LSD (P=.05)	11028.55	0.28	0.00	0.00	0.00	1.523	2.196
Standard Deviation	6512.61	0.17	0.00	0.00	0.00	0.899	1.297
CV	15.99	600.0	0.0	0.0	0.0	12.68	1.31
Grand Mean	40722.22	0.08	0.0	0.0	0.0	7.09	98.74

Treatment	NAWF nawf /5plants Aug-02	1st FSITE 1st fsite /5plants Aug-28	% RETION % retention /5plants Aug-28	NAWF nawf /5plants Aug-28	YIELD lint lbs/acre Oct-09		YIELD DIFFERENCE lint lbs/acre Oct-09
NuCOTN 33B	5.27	7.0	87.86	1.33	793.33	ab	168.63
PARENT DP 90	5.80	7.0	88.63	1.67	627.70	b	
DP 458 B/RR	5.40	6.7	89.86	1.67	852.18	a	260.11
PARENT DP 5415 RR	5.53	6.7	89.89	1.80	592.07	b	
DP 237B	6.13	6.7	90.19	1.67	697.85	ab	80.88
PARENT DP 2379	6.67	7.0	88.66	1.40	616.97	b	
PM 2326 BG/RR	7.27	7.0	92.76	1.67	755.45	ab	167.94
PARENT PM HS-26	5.40	6.7	89.66	1.67	587.51	b	
DP 2280 BG/RR	6.27	7.0	92.10	1.00	739.04	ab	105.22
PARENT PM 280	5.53	7.3	89.43	1.33	633.82	b	
Stoneville 4691B	6.13	7.0	89.73	1.67	712.58	ab	89.25
PARENTStoneville 474	5.40	7.0	85.16	2.07	623.33	b	
LSD (P=.05)	2.023	1.59	4.65	1.193	124.46		
Standard Deviation	1.195	0.94	2.74	0.705	73.49		
CV	20.25	13.55	3.07	44.66	10.71		
Grand Mean	5.9	6.92	89.5	1.58	686.24		

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Insect pressure was light throughout the growing season. OBWEO Malathion applications were the only insecticide applied in 2000. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and lint production. Despite the lower than expected yields all Bollgard varieties out-produced their respective conventional parent variety compensating for the technology fee. Yield increases ranged from 80.88 lbs. for DP237B to 260.11 lbs. DP 458B/RR. DP 458B/RR was the top yielder producing 852.18 lbs. lint per acre followed by Nucton 33B – 793.33 lbs. lint per acre.

Bollworm Economic Threshold – Bollgard™ Varieties

Cooperator: OSU Research and Extension Center
Planting Date: May 13, 2000
Harvest aid applied: September 29
1 pint/acre of Finish + 8 oz/acre of Ginstar + 9 oz/acre Induce
Insecticide History: 5 OBWEO Malathion applications

Location: Jackson County
Seeding Rate: 14.8 lbs/acre
Heat units accumulated: 2,871

Treatment	Stand Ct plants /acre Jun-05	Bworm egg /10plant Jul-17	Bworm larvae /10plant Jul-17	Bworm egg /10plant Aug-15	Bworm larvae /10plant Aug-15	1st FSITE 1st fsite /5 plants Aug-15
NuCOTN 33B	29666.7	0.0	0.0	6.47	0.0	6.47
DP 90	28666.7	0.0	0.0	6.00	0.0	6.00
Paymaster 2280 BG/RR	34333.3	0.3	0.0	6.13	0.0	6.13
Paymaster 2280	33666.7	0.0	0.0	5.87	0.0	5.87
Paymaster 2326BG	34333.3	0.0	0.3	6.00	0.0	6.00
Paymaster HS-26	36000.0	0.3	0.0	5.87	0.0	5.87
DP 237B	35000.0	0.7	0.0	6.67	0.0	6.67
DP 2379	37333.3	0.0	0.0	6.87	0.0	6.87
LSD (P=.05)	12709.40	0.87	0.36	1.672	0.00	1.672
Standard Deviation	7256.77	0.49	0.20	0.955	0.0	0.955
CV	21.58	296.41	489.9	15.31	0.0	15.31
Grand Mean	33625.0	0.17	0.04	6.23	0.0	6.23

Treatment	% RETION % retention /5plants Aug-15	NAWF nawf /5plants Aug-30	1st FSITE fsite /5plants Aug-30	% RETION % retention /5plants Aug-30	NAWF nawf /5plants Aug-30	YIELD lint lbs/acre Oct-09	YIELD DIFFERENCE lint lbs/acre Oct-09
NuCOTN 33B	99.13	4.13	6.3 b	89.647	0.7	725.50	116.96
DP 90	99.33	3.73	6.7 ab	91.100	0.0	608.54	
Paymaster 2280 BG/RR	99.17	3.93	7.0 ab	90.400	1.0	705.09	129.44
Paymaster 2280	98.07	4.13	7.0 ab	88.767	0.7	575.65	
Paymaster 2326BG	99.00	3.40	8.0 a	90.333	1.0	671.51	150.34
Paymaster HS-26	100.0	4.33	6.3 b	90.933	0.3	521.17	
DP 237B	98.90	3.60	7.3 ab	90.067	1.3	620.34	49.43
DP 2379	100.0	3.93	7.3 ab	88.600	0.0	570.91	
LSD (P=.05)	2.833	1.608	0.97	4.7752	1.23	179.717	
Standard Deviation	1.618	0.918	0.56	2.7265	0.70	102.614	
CV	1.63	23.54	7.95	3.03	112.46	16.42	
Grand Mean	3.9	3.9	7.0	89.98	0.63	624.84	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Insect pressure was light throughout the growing season. OBWEO Malathion applications were the only insecticide applied in 2000. Heliothine infestations failed to reach trigger thresholds for insecticide protection. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and lint production. Despite lack of Heliothine pressure and poor plant development all Bollgard varieties out-produced their respective conventional parent variety compensating for the technology fee. Yield increases ranged from 49.43 lbs. for DP237B to 150.34 lbs PM 2326BG. Nucotn 33B was the top yielder producing 725.50 lbs lint per acre followed by PM 2280BG/RR – 705.09 lbs. lint per acre.

Performance of Bollgard™ and Parent Varieties Under Different Overspray Regimes

Cooperator: OSU Research and Extension Center
Planting Date: May 13, 2000
Harvest aid applied: September 29
1 pint/acre of Finish + 8 oz/acre of Ginstar + 9 oz/acre Induce
Insecticide History: 5 OBWEO Malathion applications

Location: Jackson County
Seeding Rate: 14.8 lbs/acre
Heat units accumulated: 2,871

Treatment	Rate	Stand Ct plants /acre Jun-05	Bworm Larvae /10plant Jul-17	Bworm dam sqs /10plant Jul-17	Bworm egg /10plant Aug-15	Bworm larvae /10plant Aug-15	Bworm dam sqs /10plant Aug-15
NuCOTN 33B Untreated		43866.68	0.0	0.3	0.0	0.0	0.10
DP 90 Untreated		42066.66	0.0	0.2	0.0	0.0	0.10
LSD (P=.05)		12035.41	0.00	0.65	0.00	0.00	2.301
Standard Deviation		7015.85	0.00	0.38	0.00	0.00	1.341
CV		16.33	0.0	285.04	0.0	0.0	20.98
Grand Mean		42966.67	0.0	0.25	0.0	0.0	0.10

Treament	Rate	% RETION % retention /5 plants Aug-02	NAWF nawf /5 plants Aug-02	% RETION % retention /5 plants Aug-29	NAWF nawf /5 plants Aug-29	YIELD lint lbs/acre Oct-09	YIELD DIFFERENCES lint lbs/acre Oct-09
NuCOTN 33B Untreated		99.30	6.6	89.79	1.8	937.18 a	337.87
DP 90 Untreated		98.38	6.1	89.54	1.5	599.31 b	
LSD (P=.05)		2.592	2.301	3.786	1.29	122.367	
Standard Deviation		1.511	1.38	2.207	0.75	71.332	
CV		1.53	20.98	2.46	45.17	10.0	
Grand Mean		98.55	6.6	89.66	1.67	713.1	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Insect pressure was light throughout the growing season. OBWEO Malathion applications were the only insecticide applied in 2000. Heliothine infestations failed to reach trigger thresholds for insecticide protection preventing overspray of both varieties with Tracer and Karate. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and lint production. Despite lack of Heliothine pressure and poor plant development NuCOTN 33B out-produced DP90 by 337.87 lbs. lint per acre easily compensating for the technology fee.

Performance of Picker and Stripper Bollgard™ Varieties

Cooperator: OSU Research and Extension Center
Location: Jackson County
Planting Date: May 13, 2000
Seeding Rate: 14.8 lbs/acre
Harvest aid applied: September 29
Heat units accumulated: 2,871
1 pint/acre of Finish + 8 oz/acre of Ginstar + 9 oz/acre Induce
Insecticide History: 5 OBWEO Malathion applications

Treatment	Stand Ct plants /acre Jun-05	Bworm egg /10plant Jul-11	Bworm larvae /10plant Jul-11	Bworm egg /10plant Jul-17	Bworm larvae /10plant Jul-17	Bworm egg /10plant Aug-24	Bworm larvae /10plant Aug-24
NuCOTN 33B	39666.7	0.0	0.0	0.0	0.0	0.0	0.0
DP 458B/RR	39000.0	0.0	0.0	0.0	0.0	0.0	0.0
DP 237B	38333.3	0.0	0.0	0.0	0.0	0.0	0.0
Stoneville 4691 B	39000.0	0.0	0.0	0.0	0.0	0.0	0.0
Stoneville 4892 BR	41666.7	0.0	0.0	0.0	0.0	0.0	0.0
PM 2326 BG/RR	40000.0	0.0	0.0	0.0	0.0	0.0	0.0
PM 1218 BG/RR	40666.7	0.0	0.0	0.0	0.0	0.0	0.0
PM 1560 BG/RR	42000.0	0.0	0.0	0.0	0.0	0.0	0.0
PM 2280 BG/RR	42000.0	0.0	0.0	0.0	0.0	0.0	0.0
LSD (P=.05)	15606.33	0.00	0.00	0.00	0.00	0.00	0.00
Standard Deviation	9015.93	0.00	0.00	0.00	0.00	0.00	0.00
CV	22.39	0.0	0.0	0.0	0.0	0.0	0.0
Grand Mean	40259.26	0.0	0.0	0.0	0.0	0.0	0.0

Treatment	1st FSITE 1ST fsite /5 plants Aug-02	% RETION % retention /5 plants Aug-02	NAWF nawf /5 plants Aug-02	1stFSITE 1ST fsite /5 plants Aug-21	% RETION % retention /5 plants Aug-21	YIELD lint lbs/acre Oct-09
NuCOTN 33B	6.80	98.27	4.47	6.80	90.80	786.34
DP 458B/RR	6.67	99.93	3.87	6.80	89.03	747.84
DP 237B	5.47	99.17	3.47	7.47	90.20	710.21
Stoneville 4691 B	6.27	98.07	4.60	7.07	89.03	644.80
Stoneville 4892 BR	5.93	99.33	3.93	6.93	88.67	798.26
PM 2326 BG/RR	6.47	100.00	3.33	6.93	87.27	719.38
PM 1218 BG/RR	6.67	100.00	4.73	7.40	91.63	692.67
PM 1560 BG/RR	6.47	99.00	3.07	6.87	90.73	620.34
PM 2280 BG/RR	5.87	98.90	3.73	7.27	90.20	797.89
LSD (P=.05)	1.434	2.701	1.192	0.711	4.175	151.891
Standard Deviation	0.829	1.561	0.689	0.411	2.412	87.749
CV	13.18	1.57	17.61	5.82	2.69	12.12
Grand Mean	6.29	99.12	3.91	7.06	89.73	724.19

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Insect pressure was light throughout the growing season. OBWEO Malathion applications were the only insecticide applied in 2000. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and lint production. As a whole, picker varieties out performed stripper varieties except for PM 2280BG/RR. SV 4892 BR was top yielder producing 798.26 lbs. lint per acre followed by PM 2280 BG/RR - 797.89 lbs lint per acre and NuCOTN 33B – 786.34 lbs. lint per acre.

Impact of Planting Date and Different Insect Control Strategies On Dryland Cotton Production

Cooperator: OSU Research and Extension Center
Planting Date: May 9, 2000 and June 1, 2000
Insecticide History: 9 OBWEO Malathion applications

Location: Tillman County
Seeding Rate: 12.6 lbs/acre

Treatment	Stand Ct plants /acre Jun-08	Bworm egg /10plant Jul-17	Bworm larvae /10plant Jul-17	1st FSITE 1st fsite /5 plants Jul-27	% RETION % retention /5 plants Jul-27	YIELD lint lbs/ace Sep-18
Paymaster HS-26	45333.3 b	0.0	0.0	6.63	49.83	85.33 a
Planted May 9						
Untreated						
Paymaster HS-26	53000.0 a	0.0	0.0	7.07	50.43	18.36 c
Planted June 1						
Untreated						
Paymaster HS-26	44333.3 b	0.0	0.0	6.40	40.53	79.46 ab
Planted May 9						
Vydate Pinhead 7/14 - 0.125 LB A/A						
Vydate Pinhead 7/24 - 0.125 LB A/A						
Paymaster HS-26	53666.7 a	0.0	0.0	6.60	58.83	19.06 c
Planted June 1						
Vydate Pinhead 7/14 - 0.125 LB A/A						
Vydate Pinhead 7/24 - 0.125 LB A/A						
Paymaster 183	43000.0 b	0.0	0.0	6.53	38.27	55.19 abc
Planted May 9						
Untreated						
Paymaster 183	53666.7 a	0.0	0.0	6.97	46.80	36.52 bc
Planted June 1						
Untreated						
Paymaster 183	43333.3 b	0.0	0.0	6.97	59.50	66.40 ab
Planted May 9						
Vydate Pinhead 7/14 - 0.125 LB A/A						
Vydate Pinhead 7/24 - 0.125 LB A/A						
Paymaster 183	54666.7 a	0.0	0.0	6.87	47.23	35.47 bc
Planted June 1						
Vydate Pinhead 7/14 - 0.125 LB A/A						
Vydate Pinhead 7/24 - 0.125 LB A/A						
LSD (P=.05)	3909.22	0.00	0.00	0.991	18.104	92.077
Standard Deviation	2232.07	0.00	0.00	0.566	10.337	52.574
CV	4.57	0.0	0.0	8.37	21.13	35.11
Grand Mean	48875.0	0.0	0.0	6.75	48.93	149.74

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Due to OBWEO sprays and light insect pressure no in-season insect control was needed. Two of the three insect control strategies were not employed. Only the overwintering sprays were applied and compared to the untreated checks in both plantings. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and limit lint production. Extremely poor yields resulted. Overwintering sprays did not boost yields in either planting dates to justify costs for applications. May-planted cotton out-performed June-planted cotton.

Performance of Transgenic Cotton Varieties (Bollgard/ Roundup Ready vs Roundup Ready) Under Dryland Conditions.

Cooperator: OSU Research and Extension Center
Planting Date: May 9, 2000
Heat units accumulated:2,917

Location: Tillman County
Seeding Rate: 12.6 lbs/acre
Insecticide History: 9 OBWEO Malathion applications

Treatment	Stand Ct plants /acre May-30	Bworm larvae /10plant Jul-17	1st FSITE 1st fsite /5plants Jul-27	% RETION % retention /5plants Jul-27	NAWF nawf /5plants Jul-27	YIELD lint lbs/acre Sep-13	YIELD DIFFERENCE lint lbs/acre Sep-13
PM 2326 BG/RR	56500.00	0.0	7.14	51.95	0.82	111.81	28.78
PM 2326 RR	59333.30	0.0	7.09	52.78	1.10	83.03	
PM 2280 BG/RR	56333.35	0.0	6.92	55.95	0.70	99.93	22.31
PM 2280 RR	488333.30	0.0	7.12	49.80	0.55	77.62	
LSD (P=.05)	18721.14	0.00	1.080	16.517	2.089	40.312	
Standard Deviation	10689.34	0.00	0.617	9.431	1.193	23.017	
CV	19.35	0.0	8.73	17.92	150.67	24.72	
Grand Mean	55250.0	0.0	7.06	52.62	0.79	93.12	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Insect pressure was light throughout the growing season. OBWEO Malathion applications were the only insecticide applied in 2000. Poor planting conditions in May, excessive rains in June, and a hot, dry August combined to retard plant development and limit lint production. Extremely poor yields resulted. Bollgard varieties out-produced the Round Ready varieties but failed to compensate for technology fees increasing the monetary loss experienced.


OSU
Extension Entomology
Planting Date
Heat Units Accumulated
Growth Stage
MAY 14
2,441
DEFOLIATION
cotton
COTTON INCORPORATED