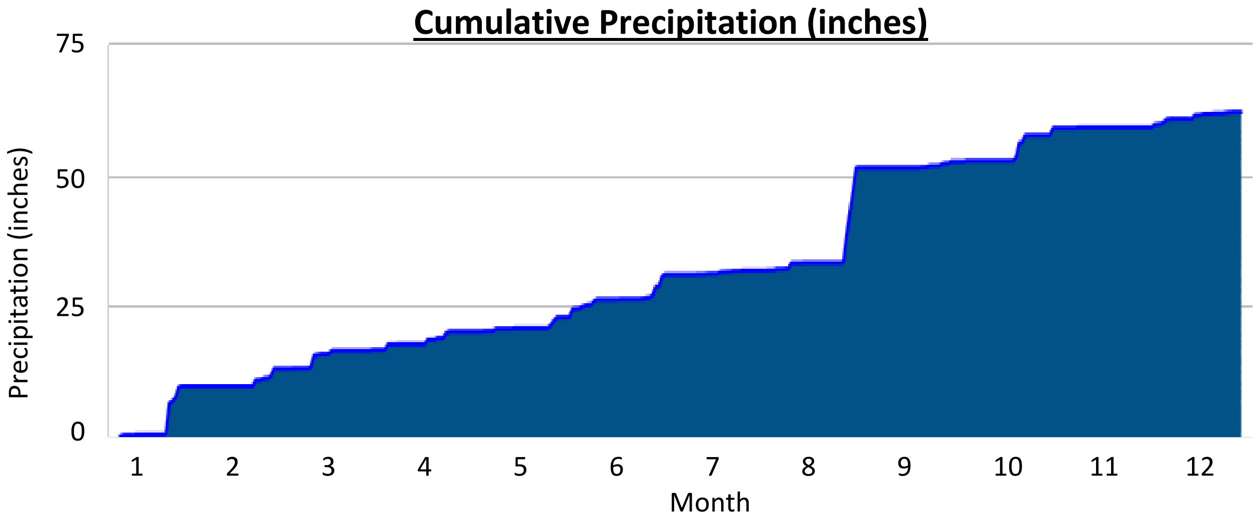
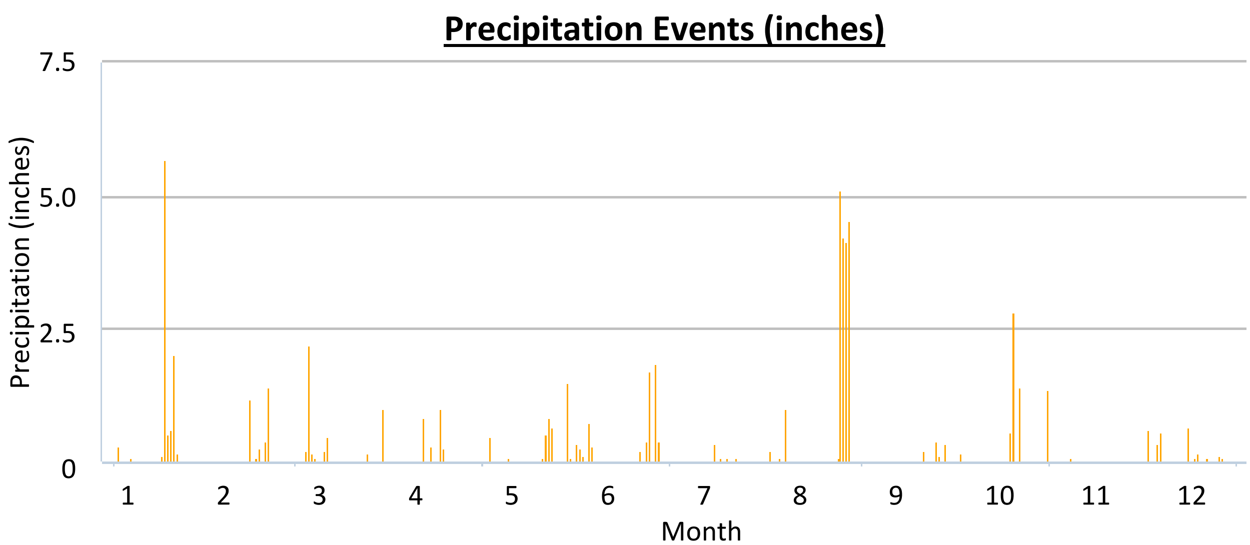
2017

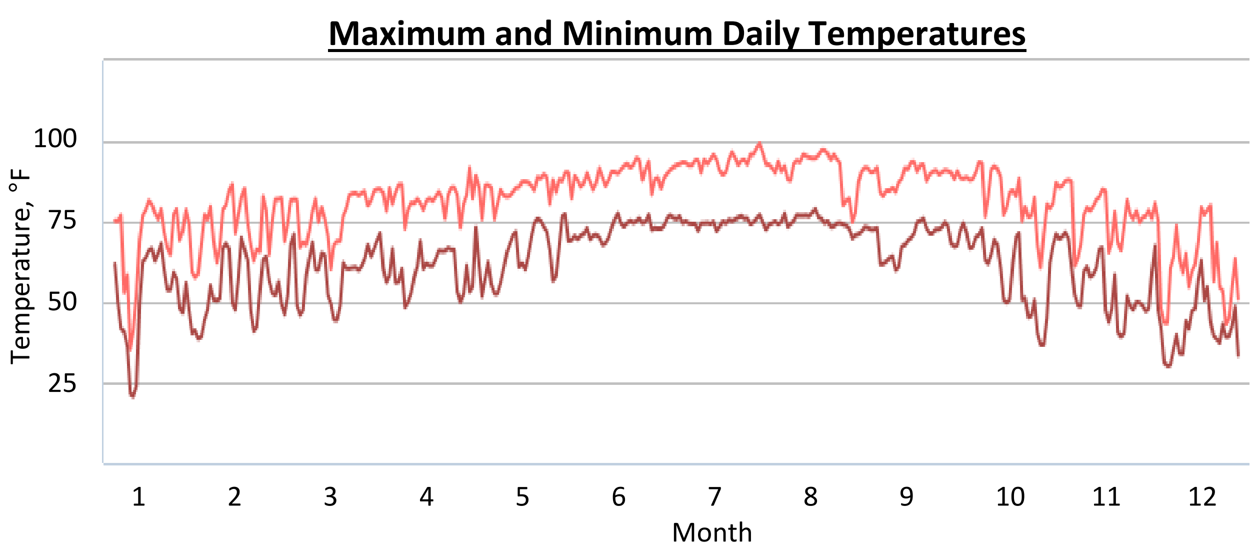
Fort Bend County Applied Research and Result Demonstration Handbook

Texas A&M AgriLife Extension

2017 Fort Bend County Annual Climate Summary







2017 Fort Bend County Result Demonstration and Applied Research Handbook

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Acknowledgements

Thanks to Fort Bend Row Crop Committee Members – Paul and Linda Freund, Alan and Lisa Stasney, Kenny Poehls, and Mark Wleczyk for their leadership in planning and implementing the row crop result demonstrations and meetings for 2017 and the generous sponsors of the Winter Row Crops Meeting and the Crops Tour, as well as supporters that helped to provide materials, funds, and other contributions in support of programs and result demonstrations in Fort Bend County. Special Thanks also to Brand Rader, for taking care of organization, registration, promotion, and coordination of agriculture programming at the Fort Bend County office of Texas A&M AgriLife Extension. Appreciation is also extended to John Grunseich and Sean Fennessy, Summer Interns, for their hard work assisting with result demonstration plots and programs.

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Result Demonstration Report

2017 Fort Bend County Cotton Variety Trial
Texas A&M AgriLife Extension Service
Cooperator: Alan and Lisa Stasney
John Gordy – County Extension Agent, Fort Bend County
Dr. Gaylon D. Morgan, Extension Cotton Agronomist
Dale A. Mott, Extension Program Specialist

Summary

In 2017, cotton was again the number one crop in acres under production in Fort Bend County at near 37,000 acres, up from 27,700 in 2016. With a reduced boll weevil eradication assessment on a per-bale basis and a decent cotton price, cotton acres are expected to remain high in 2018. As such, it is important to evaluate available varieties and other best management practices to provide producers with up-to-date information to make important production decisions.

Objective

The objective of this demonstration plot was to evaluate twelve cotton varieties for yield, quality, and value, and to provide unbiased data that local producers can reference when selecting cotton varieties for Fort Bend County and surrounding areas.

Materials and Methods

Twelve cotton varieties (Phytogen 330 W3RF, Stoneville 4848 GLT, Stoneville 4949 GLT, NexGen 5007 B2XF, DeltaPine 1646 B2XF, Phytogen 340 W3RF, DeltaPine 1725 B2XF, Croplan 3885 B2XF, Dyna-Gro 3526 B2XF, and Fibermax 1953 GLTP) were planted on April 5, 2016. The experiment was arranged in a randomized complete block design with 12 rows (36” spacing) per treatment and three replications. Because of rainfall throughout the growing season, the plot was only irrigated once in July. The plots were managed uniformly for insect and weed pressure and were harvested on September 16, 2017. Each plot was weighed in the field and samples were taken to evaluate percent turnout, micronaire, length, strength, and uniformity and loan value was calculated based on the these fiber quality characteristics. An analysis of variance (ANOVA) was performed for each and means were separated using Fisher’s protected LSD.

Results

There was no statistical difference in yield or uniformity among the ten varieties. There were differences in turnout, length, strength, micronaire, loan value, and lint value among the ten varieties tested. Certainly, the significant rains and wind associated with Hurricane Harvey affected both yield and quality. Yield, quality, and other attributes can be found in Table 1.

Table 1. Yield, quality, and economic data for Fort Bend County cotton[2] variety trial, 2017[3]

Variety	Yield (lbs/acre)		Turnout %		Length (inches)		Strength (g/tex)		Micronaire		Uniformity		Loan Value (¢/lbs)		Lint Value ($/Ac)[1]	
PHY 330W3FE	1295	a	48.4	bc	1.14	cd	30.87	a	4.8	e	84.3	a	54.43	ab	705	a
PHY 340W3FE	1312	a	49.1	ab	1.14	cd	30.13	abc	5.0	cd	84.1	a	53.53	ab	703	a
DP 1646B2XF	1253	a	48.4	bc	1.20	a	29.33	a-e	5.0	bc	84.2	a	52.97	b-	664	ab
ST 4848GLT	1247	a	47.7	cd	1.15	cd	29.10	b-e	5.2	a	83.5	a	51.93	de	647	ab
FM 1953GLTP	1161	a	45.4	e	1.18	ab	30.67	ab	4.5	f	84.1	a	54.70	a	635	bc
ST 4949GLT	1205	a	48.6	bc	1.10	e	27.70	e	5.0	cd	82.7	a	52.33	cd	631	bc
NG 5007B2XF	1175	a	47.1	d	1.15	cd	28.17	de	4.9	de	83.7	a	53.37	a-	627	bc
CL 3885B2XF	1148	a	48.0	cd	1.13	cde	29.67	a-d	5.0	cd	84.2	a	53.50	ab	614	bc
DG 3526B2XF	1191	a	48.4	bc	1.12	de	28.77	cde	5.2	ab	83.5	a	51.50	e	613	bc
DP 1725B2XF	1173	a	49.8	a	1.16	bc	30.17	abc	5.3	a	83.4	a	51.60	e	606	c
Mean	**1216**		**48.1**		**1.15**		**29.5**		**5.0**		**83.9**		**52.99**		**644**	
P>F	0.113		0.0001		0.0033		0.0654		0.0001		0.75		0.0147		0.067	
LSD (P=.10)	101.51		1.046		0.0343		1.697		0.147		1.091		1.517		58.14	
STD DEV	71.70		0.74		0.02		1.20		0.10		0.77		1.07		41.06	
CV%	5.90		1.54		2.11		4.07		2.09		0.91		2.02		6.37	

[1] Lint values were calculated using the 2017 Upland Cotton Loan Valuation Model from Cotton Incorporated.
[2] Indicates the location was irrigated.
[3] The plot was harvested following Hurricane Harvey which impacted yields and quality
CL= Croplan Genetics, DG= Dyna-Gro, DP=DeltaPine, FM=FiberMax, NG=NexGen, PHY=Phytogen, ST= Stoneville.

Summary and Conclusions

The objective of this result demonstration was met and it will provide an unbiased analysis of the ten varieties of cotton for production in Fort Bend County. While there was some variability in yield, there were no statistical differences among the ten varieties. Phytogen 330, Phytogen 340, and Deltapine 1646 demonstrated a lint value of greater than $650 per acre, with all varieties providing lint value greater than $600 per acre. Lint yields and total value would likely have been significantly higher, if not for excessive rain and winds experienced with Hurricane Harvey. This result demonstration will provide producers with valuable information to help them select cotton varieties for Fort Bend County. Due to the continued interest in growing cotton, this result demonstration will be continued next year.

For additional information and results from other locations, please visit:

http://varietytesting.tamu.edu/cotton

and

http://cotton.tamu.edu

Acknowledgements

Special thanks to Alan and Lisa Stasney for their cooperation and assistance in establishment, maintenance, and harvest of the plot.

TEXAS A&M AGRILIFE EXTENSION

Result Demonstration Report

2017 Fort Bend County Corn Variety Trial
Texas A&M AgriLife Extension Service
Fort Bend County

Cooperator: Alan and Lisa Stasney
John Gordy – County Extension Agent, Fort Bend County

Summary

Corn has historically been used (along with grain sorghum) for rotation with cotton in row crop production in Fort Bend County. Because of recent low corn prices, and a reduction in the boll weevil assessment, corn acres were reduced by almost 2,000 to 14,146 acres in 2017. However, because it continues to be an important crop, the need to evaluate available hybrids and other best management practices to provide producers with up-to-date information to make important production decisions continues.

Objective

The objective of this demonstration plot was to evaluate seven corn hybrids for production in Fort Bend County and to provide unbiased data that local producers could reference when selecting corn hybrids for future production years.

Materials and Methods

Seven corn hybrids (Dyna-Gro D57VP51, Dekalb 67-14, Terral REV 25BHR55, Syngenta NK G16K01, Mycogen MY13M87, Warner W4706, and Pioneer P131) were planted on March 21, 2017 at a rate seeding rate of 24,000 seeds per acre. A total of 191.5 lb. nitrogen, 90 lb. of phosphorus (P_2O_5), and 41 lb. of potassium (K_2O) were applied to the crop. It should be noted that 130 lb. of N was applied in the form of 30-0-0 and the remainder of N, along with the phosphorus and potassium (estimated, based on nutrient analysis) were applied as chicken litter, therefore, not all of those nutrients would have been plant available in 2017. The experiment was arranged in a randomized complete block design with six rows (36" spacing) per treatment and three replications. On August 11, 2017 the plot was harvested, weighed, and tested for moisture and bushel weight. An analysis of variance (ANOVA) was performed for bushel weight, moisture and yield (adjusted to 14 percent moisture) and means were separated using Fisher's protected LSD.

Results

There were differences in bushel weight and yield per acre ($p = 0.005$ and $p < 0.001$, respectively) across the seven varieties tested (Table 1).

Table 1: Grain Moisture, Bushel Weight, and Yield for Corn Hybrids Evaluated in the Fort Bend County Trial.

Company	Brand	Hybrid	Trait(s)	Moisture %	Test Weight (lb/bu)	Yield (bu/acre)
Terral Seed	REV	25BHR55	OPT INT	14.4	56.8	179.7
Monsanto	Dekalb	DKC 67-14	GEN VT2P	14.2	58.0	176.5
CPS Dyna-Gro	Dyna-Gro	D57VP51	GEN VT3PRIB	13.8	58.0	176.3
Dupont	Pioneer	P1311	AM-R	14.1	57.5	169.1
Syngenta	NK	G16K01	RR	14.2	57.0	163.9
Warner Seeds Inc.	Warner Seed	W4706		14.4	58.5	154.2
Mycogen Seeds	Mycogen	MY13M87		14.1	57.0	154.2
			Mean	14.16	57.54	167.7
			C.V. (%)	3.000	1.000	2.2
			L.S.D.		0.90	6.1
			Pr>F (hybrid)	0.623	0.005	0.000

Conclusions

Among the seven hybrids, there was no difference between yields of the top three (LSD = 6.1 bushels, p = 0.05), which ranged from 179.7 to 176.3 bushels per acre. The average yield across all hybrid was 167.7 bu./acre, up from 151.0 bu./acre for 2016. This year, we observed higher than average yields than is typical for Fort Bend County. The objective of this result demonstration was met and it will provide an unbiased analysis of the nine corn hybrids and will provide producers with valuable information to select hybrids for production in Fort Bend County. Because of the continued interest and possible increase in corn acreage in Fort Bend County, this result demonstration will be continued next year.

Acknowledgements

Special thanks to Ronnie Schnell for coordinating and providing guidance for the demonstration, and Alan and Lisa Stasney for space, equipment, and manpower.

Result Demonstration Report

2017 Fort Bend County Grain Sorghum Hybrid Trial
Texas A&M AgriLife Extension Service
Fort Bend County
Cooperator: Alan and Lisa Stasney

John Gordy – County Extension Agent, Fort Bend County
Ronnie Schnell, Ph.D. – Assistant Professor and Extension Specialist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on almost 17,000 acres, accounting for approximately 25% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions.

Objective

The objective of this demonstration plot was to evaluate ten varieties of grain sorghum for production in Fort Bend County and to provide unbiased data that local producers could reference when selecting sorghum varieties.

Materials and Methods

Ten varieties of sorghum (Advanta/Alta AG3203, BH Genetics 4100, Dyna-Gro M74GB1, Dekalb 51-01, Golden Acres 3960B, Sorghum Partners 7715 and 78M30, Terral/REV 9782, and Warner Seeds W-7051 and W-844E) were planted on March 21, 2017 at a rate seeding rate of 75,000 seeds per acre. A total of 189.5 lb. nitrogen, 85 lb. of phosphorus ($P2O5$), and 40.5 lb. of potassium ($K2O$) were applied prior to crop establishment. It should be noted that 130 lb. of N was applied in the form of 30-0-0 and the remainder of N, along with the phosphorus and potassium (estimated, based on nutrient analysis) were applied as chicken litter, therefore, not all of those nutrients would have been plant available in 2017. The plot was arranged in a randomized complete block design with six rows (36" spacing) per treatment and three replications. The plot was irrigated once mid-June. Additional climate information can be found page 1. On July 20, 2017 the plot was harvested, weighed, and tested for moisture and bushel weight. An analysis of variance (ANOVA) was performed for bushel weight, moisture and yield (adjusted to 14 percent moisture) and means were separated using Fisher's protected LSD.

Results

There was a significant yield effect ($p < 0.001$) across the ten hybrids evaluated (Table 1). There were no differences in moisture or bushel weight

Table 1: Grain Moisture, Bushel Weight, and Yield for Grain Sorghum Hybrids Evaluated in the Fort Bend County Trial.

Company/Brand	Hybrid	Moisture (%)	Bushel Weight (lbs.)	Pounds/Acre
Monsanto/Dekalb	DKS 51-01	12.8	59.7	7,242 A
Sorghum Partners	SP 7715	12.8	59	7,059 AB
BH Genetics	BH 4100	13.6	57	6,773 ABC
Advanta/Alta	AG3203	12.3	58.7	6,767 ABC
Terral/REV	9782	12.7	58	6,686 BC
Golden Acres	GA 3960B	12.2	58.3	6,683 BC
CPS Dyna-Gro	M74GB1	12.8	58.3	6,485 C
Warner Seeds, Inc.	W-7051	12.9	58.3	6,478 C
Warner Seeds, Inc.	W-844E	12.4	58.3	6,441 C
Sorghum Partners	SP 78M30	11.3	58.3	6,401 C
Mean		12.6	58.4	6,701
CV (%)		9.33	1.36	4.39
LSD (P=.05)				501
Treatment Probability (P>f)		0.364	0.068	<0.001

Means followed by same letter do not significantly differ (P=.05, LSD)

Conclusions

Among the ten hybrids, there was no yield difference among the top four hybrids, with averages of between 7,242 and 6,767 lb./acre. The overall average for the plot was 6,701 lb./acre, which was well above average for Fort Bend County. The objective of this result demonstration was met and it will provide an unbiased analysis of the seven varieties of sorghum and will give producers with valuable information to select hybrids for production in Fort Bend County. Because of the continued interest in growing sorghum in Fort Bend County, this result demonstration will be continued next year.

Acknowledgements

Special thanks to Ronnie Schnell for coordinating and providing guidance for the demonstration, and Alan and Lisa Stasney for space, equipment, and manpower.

Result Demonstration Report

2017 Fort Bend County Large Plot Evaluation of Sugarcane Aphid Resistant Grain Sorghum Hybrids

Texas A&M AgriLife Extension Service
Cooperator: Mark Wleczyk
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Specialist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on almost 17,000 acres, accounting for approximately 25% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions. Pest resistant or tolerant germplasm of any given crop can be an important component of an effective integrated approach to management of a pest, and the sugarcane aphid – grain sorghum dynamic is no different. Some sorghum hybrids with greenbug resistant traits as well as additional sources of resistance show reduced damage when infested with sugarcane aphid.

Objective

The objective of this demonstration plot was to evaluate eight grain sorghum hybrids for resistance to sugarcane aphid and agronomic suitability for production in Fort Bend County and to provide unbiased data that local producers could reference when selecting sorghum hybrids.

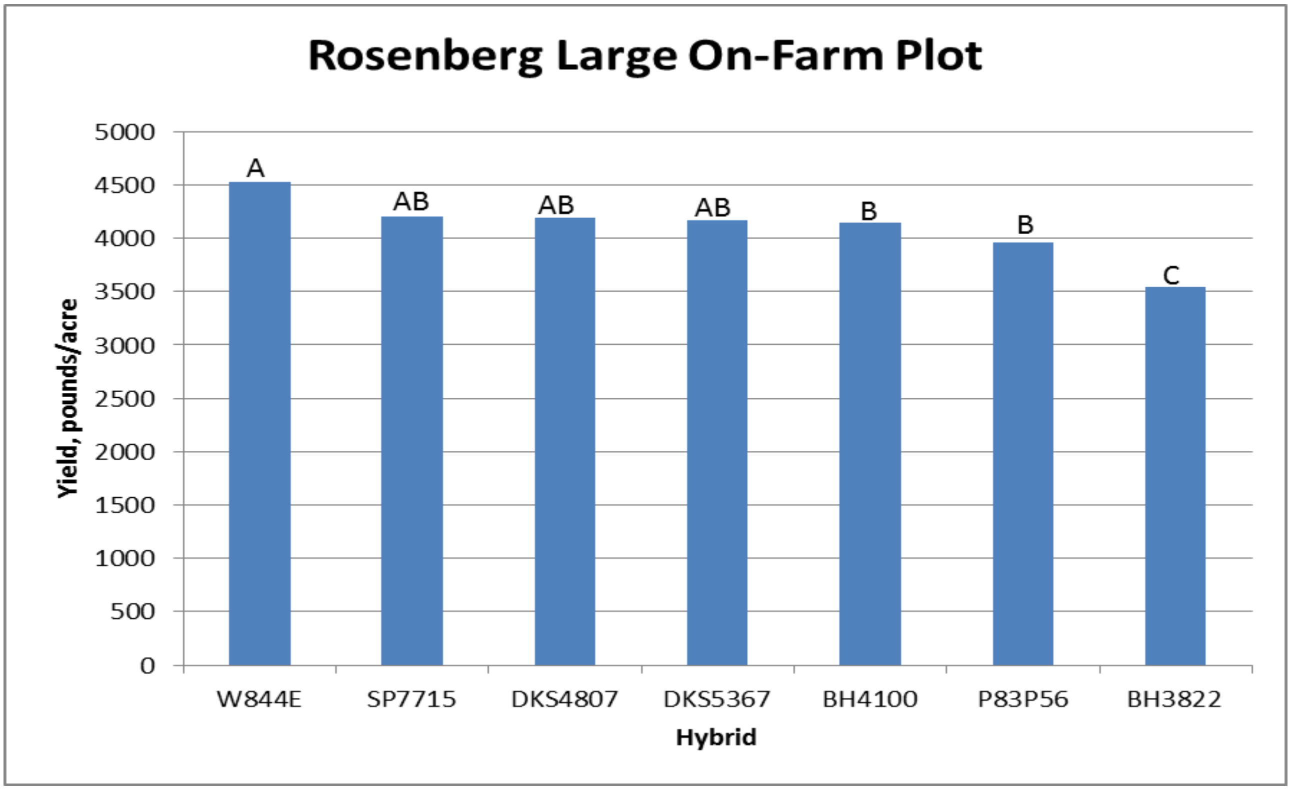
Materials and Methods

Eight sorghum hybrids (BH 4100, BH 3822, Dekalb, 53-67, Dekalb 48-07, Pioneer 83P56, Sorghum Partners 7715, Warner 844E, and Warner W-7051) were planted on March 27. Because of a mid-season wind storm where Warner 7051 suffered >50% lodging, it was not harvested. Main plots were 6 rows, 1,050 feet long on 40” row spacing. Aphid populations showed up in late May at the V7-V8 stage, but never reached threshold levels of above 50 aphids per leaf. The highest mean population recorded on any plot was 68 aphids/leaf, with populations rarely exceeding 10 aphids/leaf. Main plots were harvested on August 4th with grower equipment and weighed using a weigh wagon. An analysis of variance (ANOVA) was performed for yield (adjusted to 14 percent moisture) and means were separated using Fisher’s protected LSD.

Results

There was a significant yield effect (p = 0.0011) across the seven hybrids harvested (Figure 1). The overall average yield was just over 4,100 lb/acre (73 bushels), with yields ranging from 3,500 to 4,500 pound per acre.

Figure 1: Yield results from large on-farm plot.



Bars with different letters indicate different yields (mean separation using Fisher's protected LSD, $p<0.05$).

Conclusions

Aphid-yield regressions did not indicate any damage, likely because of very low aphid populations throughout the season. Yields indicate favorable adaptability of most evaluated hybrids, with performance comparable to DKS53-67 under minimal aphid pressure. Whole plot yields were lower than expected due to some rains occurring after the grain matured and before harvest on August 4th, resulting in some seed sprouting in the head. Because of the continued interest in growing sorghum in Fort Bend County, this result demonstration will be continued next year.

Acknowledgements

Special thanks to Mark Wleczyk for space, equipment, and manpower, the Texas Grain Sorghum Board and United Sorghum for financial assistance, and seed companies for providing seed.

Result Demonstration Report

2017 Fort Bend County Evaluation of Grain Sorghum Hybrids for Resistance to Sugarcane Aphid

Texas A&M AgriLife Extension Service
Fort Bend County
Cooperator: Mark Wleczyk
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Specialist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on almost 17,000 acres, accounting for approximately 25% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions.

Pest resistant or tolerant germplasm of any given crop can be an important component of an effective integrated approach to management of a pest, and the sugarcane aphid – grain sorghum dynamic is no different. Some sorghum hybrids with greenbug resistant traits as well as additional sources of resistance show reduced damage when infested with sugarcane aphid.

Objective

The objective of this demonstration plot was to evaluate the presence/absence of sugarcane aphid on yield of seven commercially available grain sorghum hybrids – six marketed by seed companies as sugarcane aphid resistant and one known to be susceptible to sugarcane aphid.

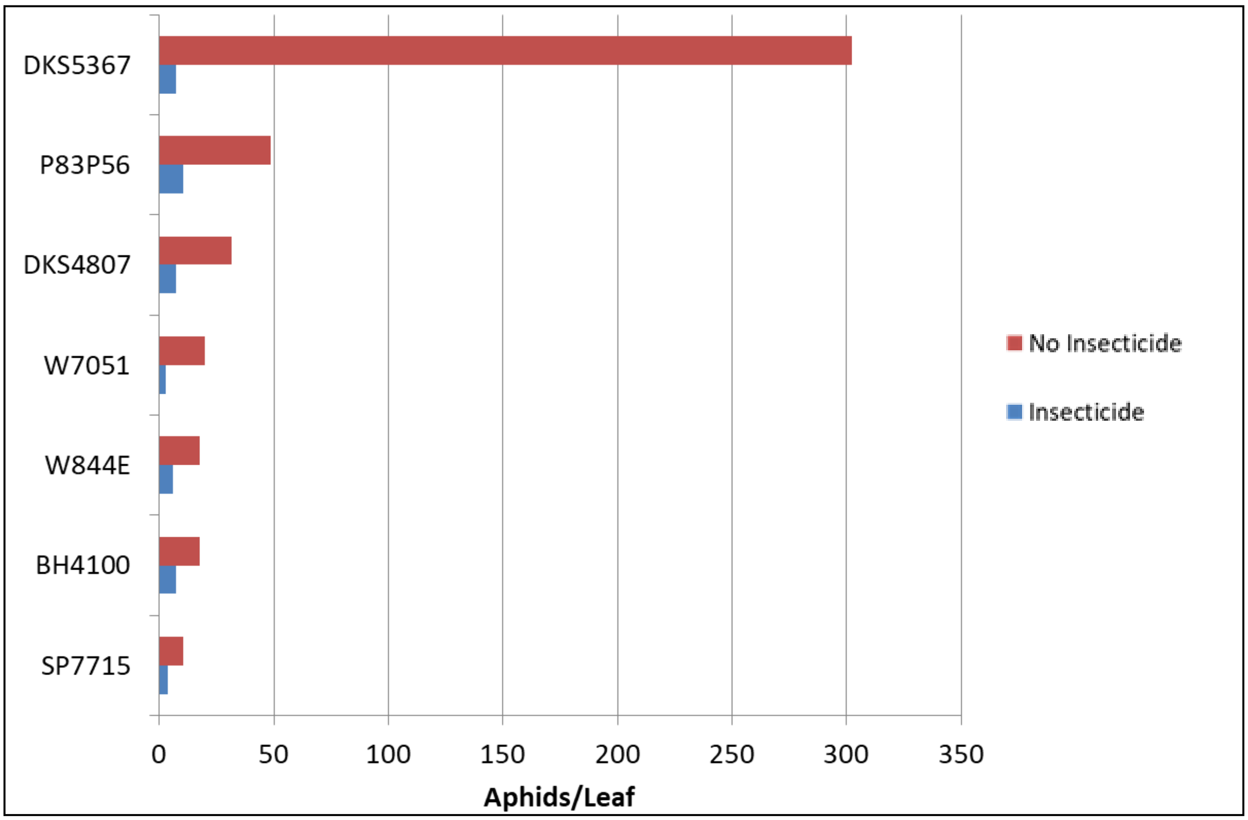
Materials and Methods

Seven grain sorghum hybrids (BH 4100, Dekalb 53-67, Dekalb 48-07, Pioneer 83P56, Sorghum Partners 7715, Warner 7051, and Warner 844E) were planted on March 29, 2017 at a rate seeding rate of 65,000 seeds per acre. The experiment was arranged in a split plot design with hybrid as main plot, insecticide treatment as subplot. Main plots were eight rows with four row subplot, with 40' row length on 40" spacing. Aphids were counted weekly on 20 leaves (10 plants, one upper and lower leaf) per plot. As soon as aphids were detected in insecticide treated plots, Transform WG (sulfoxaflor, 1.0 oz/ac) or Sivanto (flupyridone, 4.0 fl. oz/ac) were applied to keep populations near zero. Insecticides were not applied to non-treated plots for management of aphids. All plots were protected from late season pests including sorghum midge and headworm.

Results

Sugarcane aphid populations grew to more than 300 aphids/leaf on DKS 53-67 (known susceptible), where no insecticide was applied (Figure 1). Aphid populations grew to near 50 aphids/leaf on Pioneer 83P56, with one plot reaching 150 aphids per leaf (other plots showed populations less than 50 aphids/leaf). Average aphid populations for the other five hybrids did not exceed 30 aphids/leaf. Additionally, there were apparent differences in overall plant health of the susceptible hybrid, while resistant hybrids showed no difference in overall plant health between insecticide treated and non-treated plots (See Figures 3 and 4).

Figure 1: Mean maximum aphids per leaf by hybrid and treatment.

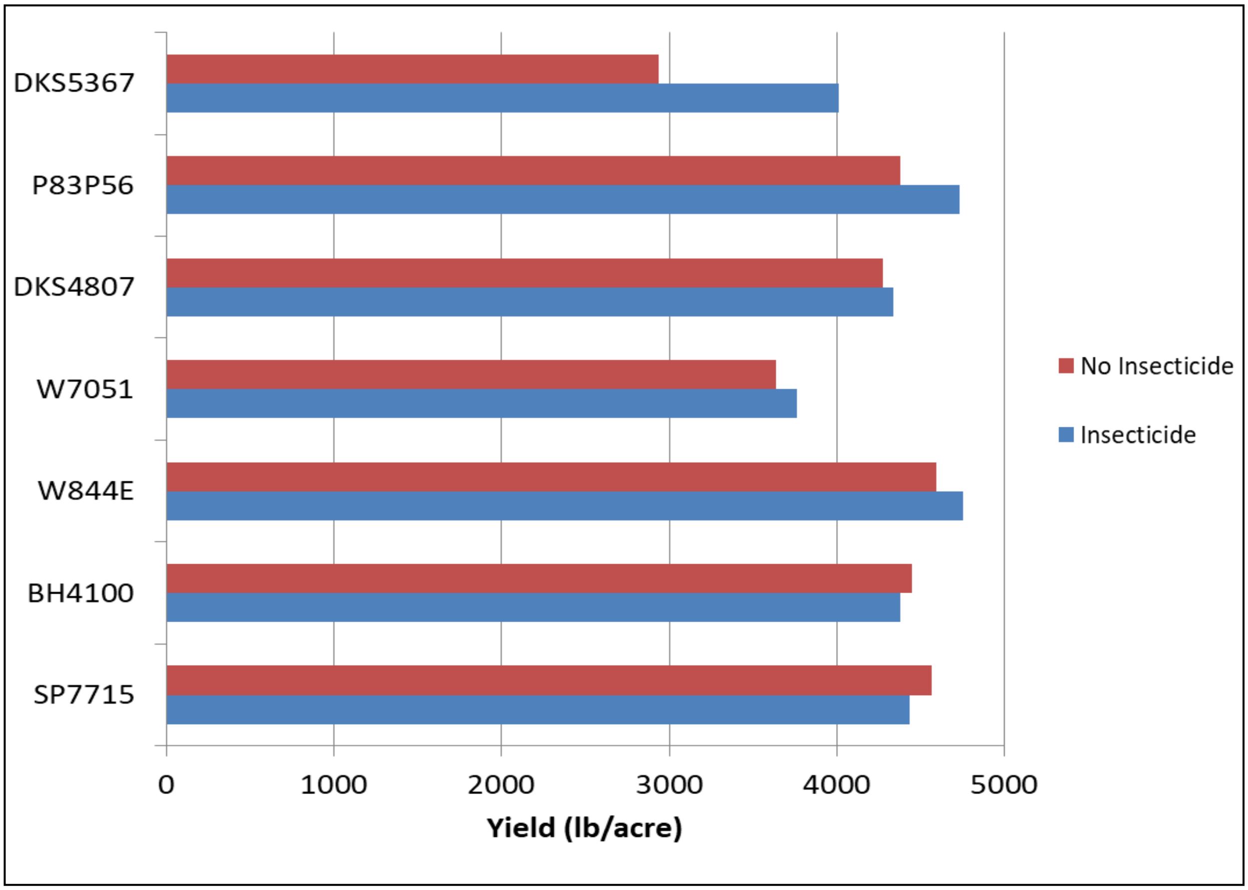


When comparing insecticide treated and non-treated plots within the same hybrid, DKS 53-67 exhibited s 25% reduction in yield when not treated with insecticide (Figure 2). Pioneer 83P56 also showed a slight decrease in yield, although the difference was not statistically significant. The other five hybrids had similar yields for insecticide treated and non-treated plots.

Conclusions

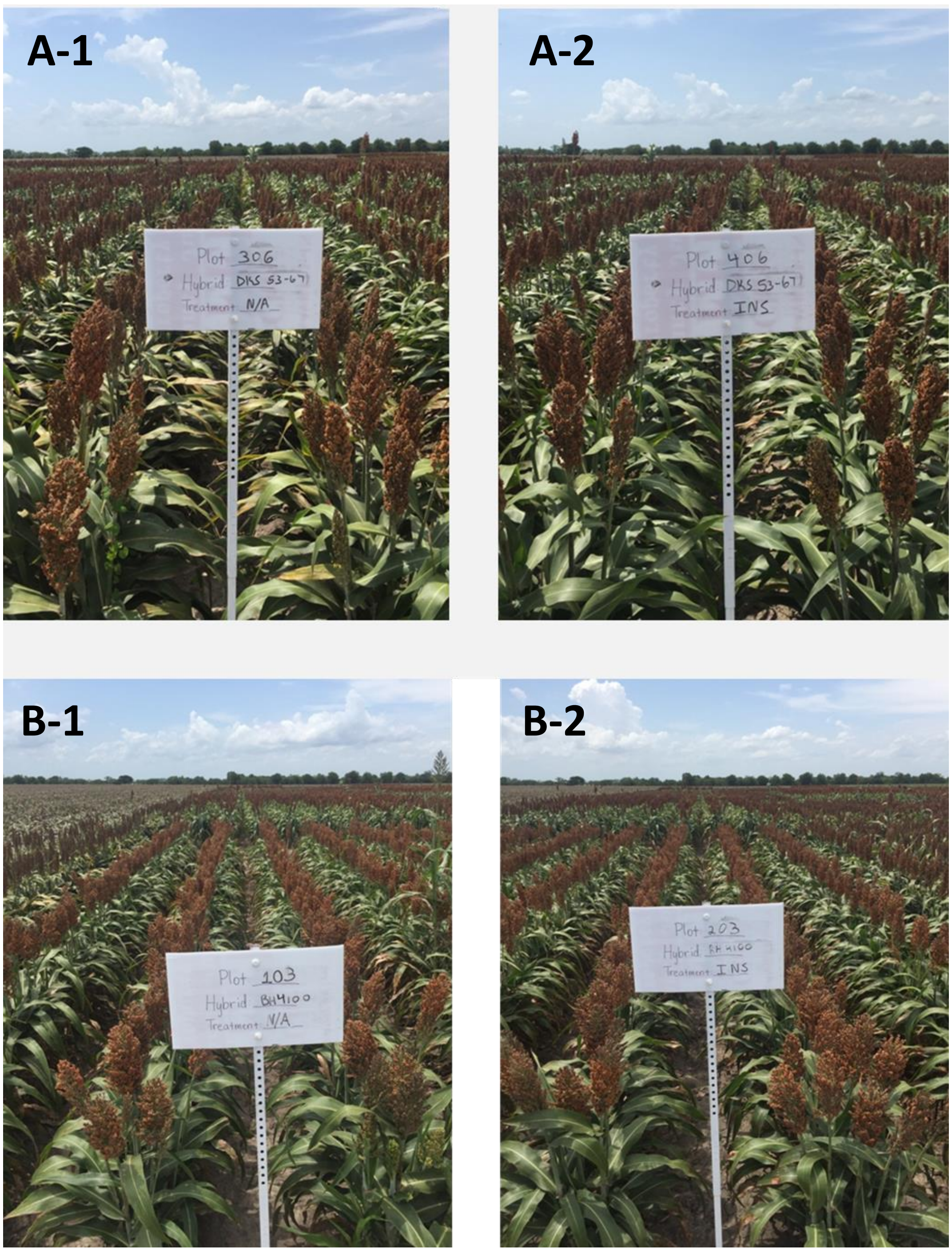
Among the seven hybrids, BH 4100, Dekalb 48-07, Sorghum Partners 7715, Warner 7051, and Warner 844E showed the lowest number of aphids on plots not treated with insecticide and showed comparable yields between insecticide treated and non-treated

Figure 2: Mean yield by hybrid and treatment.

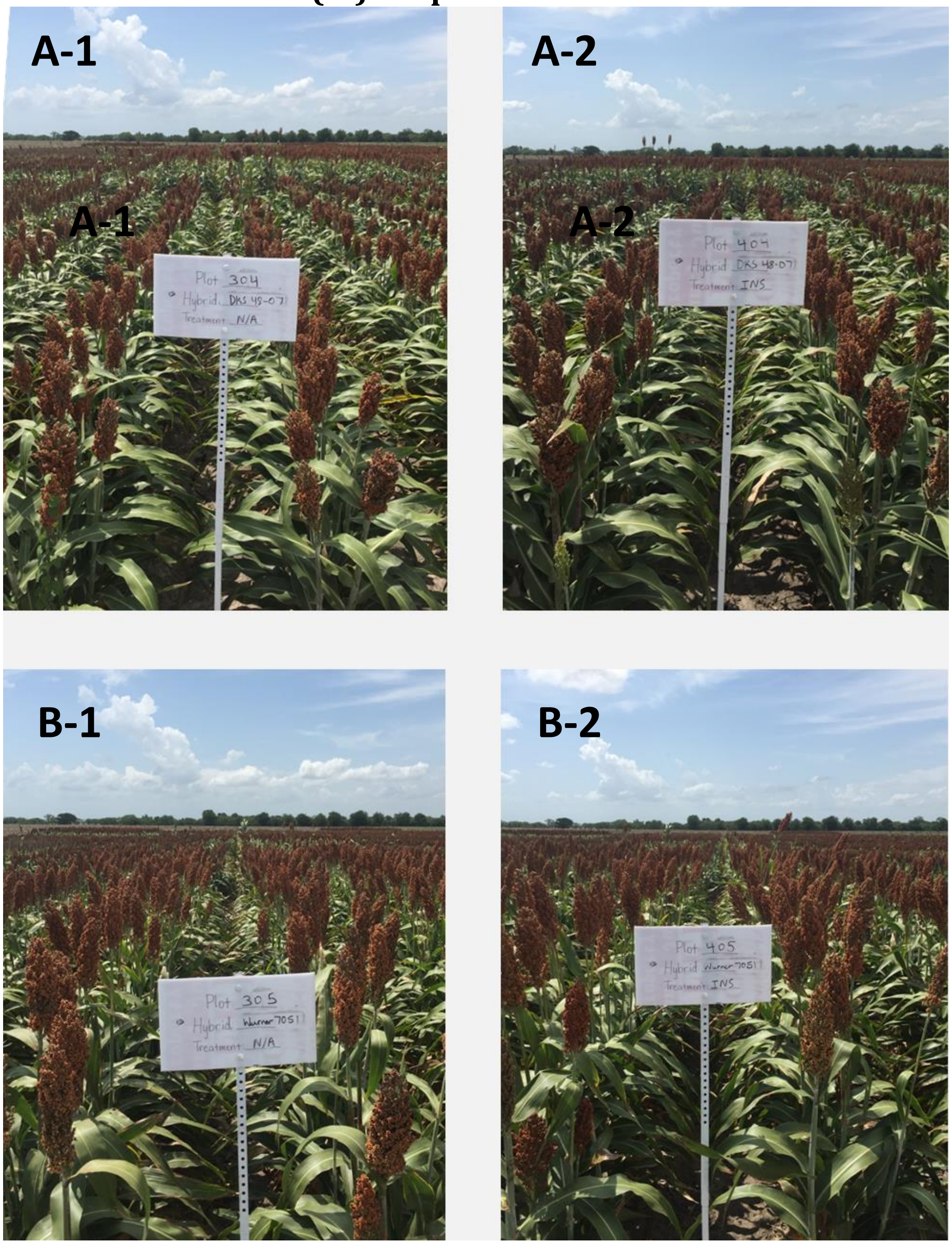


plots. Dekalb 53-67, a known susceptible hybrid, showed the highest number of aphids and a 25% reduction of yield in plots not treated with insecticide. Based on data here and at other locations, Pioneer 83P56 likely exhibits moderate resistance to the sugarcane aphid and has an intermediate likelihood of requiring treatment when there is significant aphid pressure. When considering hybrids, growers should consider how any given hybrid fits into their production system. A mix of hybrids, rather all susceptible or a mix of resistant and susceptible, with good yield potential is recommended and good-yielding susceptible hybrids should not necessarily be avoided just because of the potential for needing to treat for sugarcane aphid. Because of the importance and reliability of grain sorghum in rotation with cotton, we will continue to evaluate hybrids for their resistance to sugarcane aphid and suitability in our area. Additional information on resistant hybrids can be found at http://ccag.tamu.edu/sorghum-insect-pests or http://www.sorghumcheckoff.com

<u>Figure 3 A,B.</u> Selected hybrids from small plots in Rosenberg. Hybrid A, known susceptible Dekalb 53-67, exhibits visible yellowing and sooty mold in non-treated (A-1) versus healthy plants in insecticide-treated (A-2) subplots. Hybrid B, Resistant hybrid exhibiting little or no difference between non-treated (-1) and insecticide-treated (-2) subplots.



<u>Figure 4 A,B.</u> Selected hybrids from small plots in Rosenberg. Hybrids A and B, Resistant hybrids exhibiting little or no difference between non-treated (-1) and insecticide-treated (-2) subplots.



<u>Acknowledgements</u>

Special thanks to Mark Wleczyk for space and equipment, the Texas Grain Sorghum Board and United Sorghum for financial support, seed companies for providing seed, and to Pete Eure and Brian Bacak with Syngenta for assistance at harvest.

Texas A&M AgriLife Extension

Result Demonstration Report

Spray Tip Evaluation – Sorghum Coverage for Management Of Sugarcane Aphid

Texas A&M AgriLife Extension Service – Fort Bend County
Cooperator: Paul and Linda Freund
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Entomologist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on over 17,000 acres, accounting for approximately 25% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions. One recent management issue for grain sorghum is the sugarcane aphid. Because the aphids typically colonize the bottom of the plant canopy and the insecticides used in its management have limited or no downward mobility in the plant, maximizing canopy penetration and coverage could be important in controlling sugarcane aphid and reducing the potential need for follow-up applications.

Objective

The objective of this result demonstration plot was to evaluate seven spray tips (nine configurations) for canopy penetration as a means to maximize control when applying appropriate insecticides for management of sugarcane aphid in grain sorghum.

Materials and Methods

The performance of nine spray tips/arrangements (See Table 1) were evaluated spray coverage at different sorghum canopy levels under two different spray volumes (7 and 12 gpa). Water sensitive spray cards were placed on individual plants in four locations

Table 1: Spray tip treatments used in spray coverage evaluation

Brand	Spray Tip	Droplet Size @30-40 psi	Arrangement
TeeJet-TurboTeeJet	TTJ60-11004	Coarse	Standard
Agrotop	TC 110-04	Coarse	Standard
TeeJet	AIXR 110-04	Extra Coarse	Standard
Greenleaf	DF 04	Coarse	Standard
Greenleaf	DF 04	Coarse	Alternating
TeeJet	AI 3070-04	Extra Course – Very Coarse	Standard
Greenleaf	TADF 04	Very Coarse - Coarse	Standard
Greenleaf	TADF 04	Very Coarse - Coarse	Alternating
TeeJet-ConeJet	TXR 8004VK	Fine	Standard

(Figure 1) throughout the canopy (9 tip configurations X 4 canopy locations X 5 replications X 2 volumes = 360 cards), to determine spray coverage by each nozzle type for each portion of the canopy. A John Deere sprayer was used to apply 7 gpa (30 psi, 15.6 mph) and 12 gpa (40 psi, 10.3 mph) to boot sorghum.

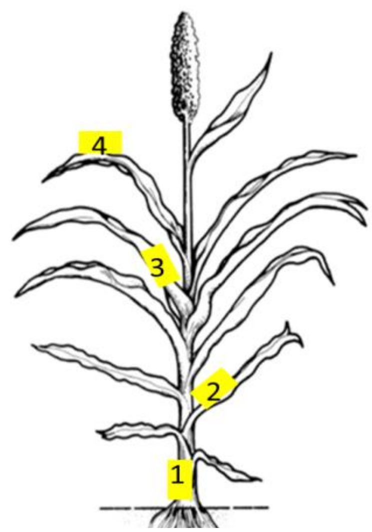


Figure 1: Spray card placement on sorghum plant; 4. upper canopy, 3. middle canopy, 2. lower canopy, 1. base of plant

Results

There was variation of spray coverage among tip combinations at different levels of the canopy, although there were no statistical differences (Figure 2). For the lower/middle canopy, across all tips, spray coverage significantly increased from 0.86% for 7 GPA to 1.79% for 12 GPA ($p=0.0135$), more than doubling (Figure 3). Additionally, coverage at lower levels was generally better with AI tips. This could be important, especially to increase canopy penetration during applications with increased winds.

Summary and Conclusions

Due to wet conditions when aphid populations were highest, we were unable to perform any spray tip - insecticide efficacy studies to see if coverage and canopy penetration translate into improved efficacy. Therefore, we cannot say definitively that it will increase efficacy of insecticide. However, when increasing from 7 to 12 GPA, spray volume more than doubling, which would translate to more active ingredient reaching the lower and middle canopy of the sorghum plant. Additionally, coverage at lower levels was generally better with AI tips. This could be important, especially to increase canopy penetration during applications with increased winds. In the future, we will make an effort to compare efficacy among tips and between spray volumes to see if better coverage translates into better control.

Figure 2: **Percent coverage by spray canopy level at 7 and 12 GPA**

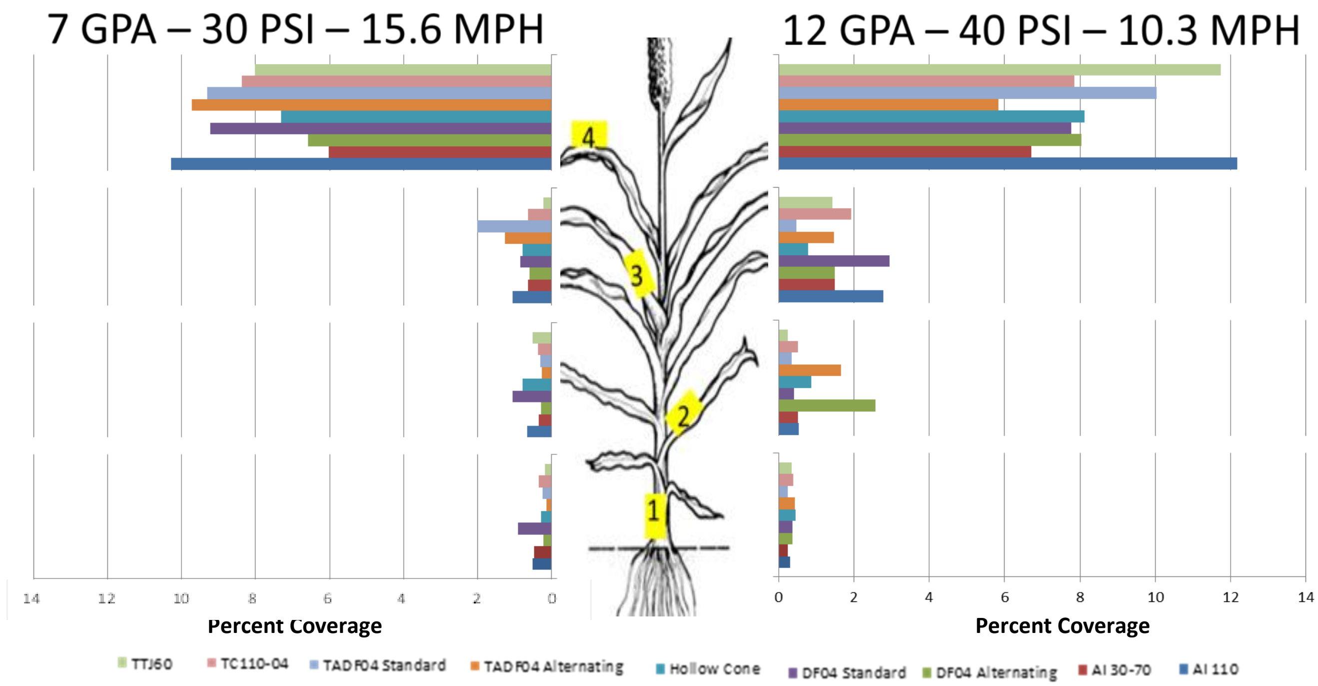
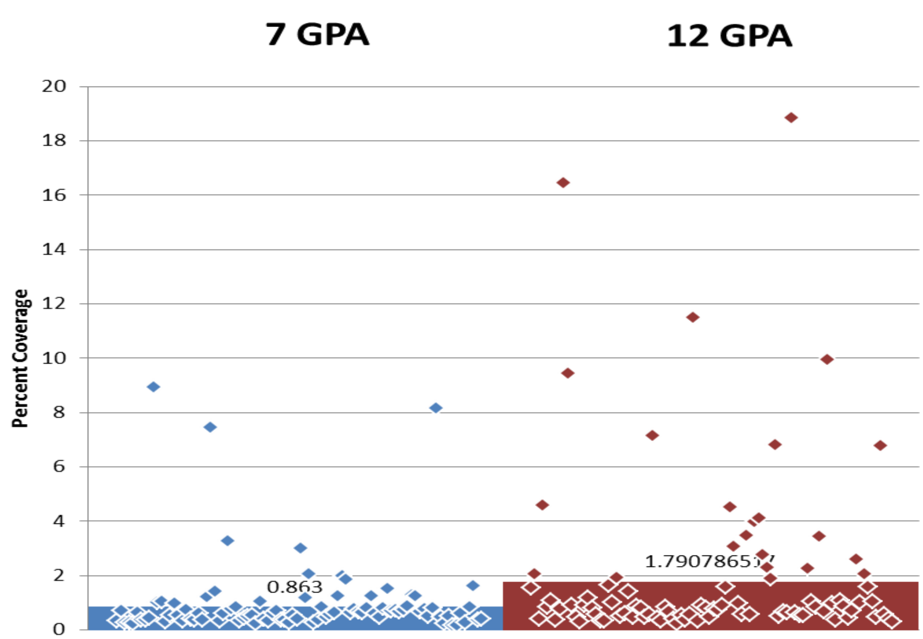


Figure 3: **Percent spray coverage of all spray tips at the middle canopy positions (2 and 3) compared at 7 and 12 gpa. Average percent across all tips for 7 GPA (blue bar: 0.863%) and 12 GPA (red bar: 1.791%) were significantly different (p=0.0135).**



Acknowledgements

Special thanks to Paul and Linda Freund, producer cooperator in Needville for field use, equipment, and manpower, and the Texas Grain Sorghum Board and United Sorghum for financial support.

TEXAS A&M AGRILIFE EXTENSION

Result Demonstration Report

Sugarcane Aphid Insecticide Efficacy Trial

Texas A&M AgriLife Extension Service – Fort Bend County
Cooperator: Mark Wleczyk
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Entomologist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on almost 17,000 acres, accounting for approximately 25% of field crop acreage. The importance of sorghum as a crop in Fort Bend County warrants evaluation of best management practices to provide producers with up-to-date information to make important production decisions. One recent management issue for grain sorghum is the sugarcane aphid. Since first being detected in 2013, this pest has contributed to yield loss and harvest issues in Fort Bend County and throughout sorghum producing areas in Texas and the southern United States. Because of the sugarcane aphid's potential to damage a crop, evaluation of insecticide seed treatments necessary.

Objective

The objective of this result demonstration plot was to evaluate insecticides for efficacy and residual control of sugarcane aphid on susceptible grain sorghum in Fort Bend County.

Materials and Methods

The performance of four insecticides and one plant health promoter were evaluated for efficacy against sugarcane aphid in a grain sorghum field near Rosenberg. Plots measured 40 feet by 4 rows with 40" spacing arranged in a randomized block design with 4 replications. The trial was performed on Dekalb DKS 53-67 grain sorghum with plots being planted on March 29.

Insecticide applications were made at the heading stage on June 2, following sampling on June 1 where populations averaged near or at threshold levels of 50-75 aphids per leaf. Applications of insecticides (Table 1) were delivered with a hand-held CO_2 assisted boom sprayer with total spray volume of 13.5 gallons per acre. Aphid counts (20 leaves, upper and lower leaves on 10 random plants per plot) continued every three to seven days, until 25 days after treatment, when aphid populations fell to near zero for all treatments. The middle two rows of each Plot were harvested on August 4th, using a plot combine. Yield data were analyzed using analysis of variance and mean separation was performed using LSD.

<u>Table 1:</u> Active Ingredients and Rates of Insecticides Evaluated Against Sugarcane Aphid

Treatment	Active Ingredient	Rate
No Insecticide	n/a	n/a
Baythroid XL (Bayer)	Beta-Cyfluthrin	2.4 fl oz/a
Endigo ZCX⁺ (Syngenta)	Lamda-Cyhalothrin + Thiamethoxam	5.0 fl oz/a
Sivanto Prime (Bayer)	Flupyradifurone	4.0 fl oz/a
Transform WG (Dow)	Sulfoxaflor	1.0 oz/a
Actigard* (Syngenta)	Benzothiadiazole	2.0 oz/a

***Actigard is not an insecticide, it is a plant hormone/signaling molecule mimic purported to promote overall plant health**

⁺Endigo ZCX is not labeled for use on sugarcane aphid in grain sorghum

Results

At 4 days after treatment (DAT), Sivanto, Transform, and Endigo had reduced aphid populations to near zero, while aphids in the Baythroid, Actigard, and the control remained stable (Figure 1). Populations in the control, Baythroid, and Actigard treatments then expanded through 10 DAT, where the average population was ≥250 aphids per leaf. There were differences in yield among treatments, with Sivanto, Transform, and Endigo yielding approximately 25% higher than Baythroid, Actigard, and the control.

Summary and Conclusions

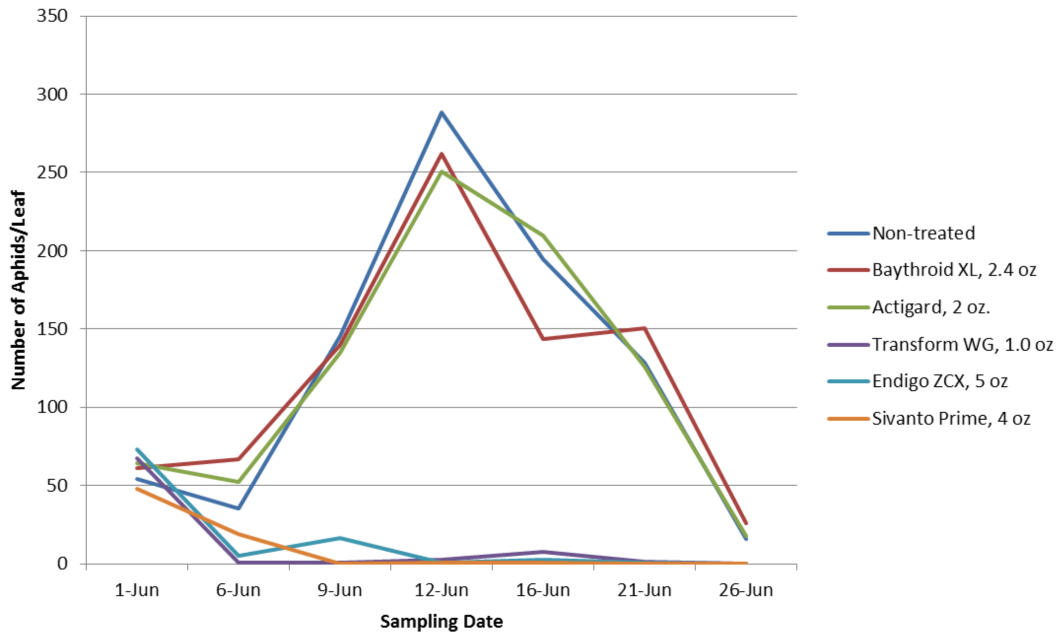
In this study, Sivanto Prime and Transform WG, both labeled for sugarcane aphid in grain sorghum, offered comparable control of the aphid, reducing populations to near zero within four days after treatment. Additionally, aphid populations did not rebound above 10 aphids/leaf for either Sivanto or Transform. Use of pyrethroid insecticides for management of sugarcane aphid is not advised as it is not efficacious and may increase aphid population growth through reduction of non-target beneficials, including lady beetles, syrphid flies, and lacewings. If you are considering using a pyrethroid for managing midge, headwork, or stinkbugs and sugarcane aphids are present, you may consider a tank mix with Sivanto or Transform to prevent flaring the aphids and needing an additional application.

It is important to consult product labels when considering use, and prior to application. In 2017, Transform could not be applied to flowering grain sorghum, per Section 18 label restrictions. Always read and follow all label requirements.

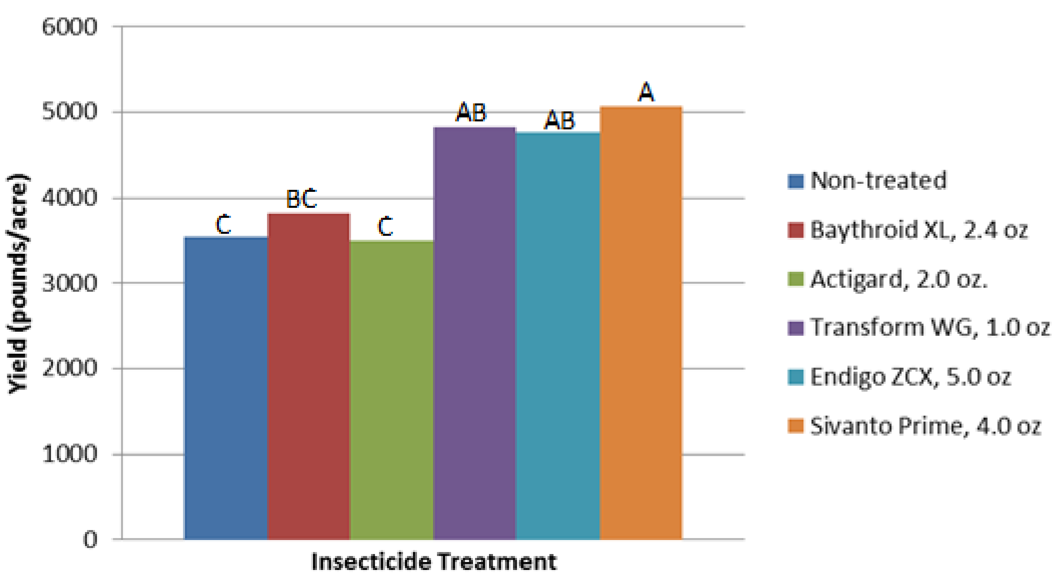
For Additional Information and Data, Please See:

http://ccag.tamu.edu/sorghum-insect-pests

<u>Figure 1:</u> Aphid populations by sampling date. Insecticide applications were made on June 2. Aphid populations did not rebound for any treatment where adequate control was observed.



<u>Figure 2:</u> Grain Sorghum Yield. Bars with different letters indicate a difference in yield (p<0.05)



Acknowledgements

Special thanks to Mark Wleczyk, producer cooperator in Rosenberg, Texas Grain Sorghum Board and United Sorghum for financial support, Gary Schwarlose of Bayer for material support, and to Pete Eure and Brian Bacak of Syngenta for material support and harvest.

Result Demonstration Report

Sorghum Headworm and Midge Insecticide Efficacy Trial

Texas A&M AgriLife Extension Service – Fort Bend
County Cooperator: Mark Wleczyk
John Gordy – County Extension Agent, Fort Bend County
Robert Bowling, Ph.D. – Assistant Professor and Extension Entomologist

Summary

Grain sorghum, because of its drought tolerance and low potential for insect pressure, has historically been used (along with corn) to rotate with cotton. According to USDA Farm Service Agency data, in 2017, grain sorghum was planted on almost 17,000 acres, accounting for approximately 25% of field crop acreage. However, on late planted sorghum and in replant situations, sorghum midge can become problematic. Additionally, headworms – bollworm, armyworm, and sorghum webworm, can occasionally reach damaging levels. For these reasons, it is important to evaluate available insecticides for their efficacy on these occasional pests.

Objective

The objective of this result demonstration plot was to evaluate insecticides for efficacy the headworm complex and midge on grain sorghum in Fort Bend County.

Materials and Methods

The performance of six insecticide-rate combinations were evaluated for efficacy against the headworm complex and sorghum midge in a grain sorghum field near Rosenberg. Plots measured 35 feet by 4 rows with 40" spacing arranged in a randomized complete block design with 4 replications.

The trial was performed on late planted grain sorghum and applications were made on July 19 when sorghum was in bloom/milk stage; applications of insecticides (Table 1) were delivered with a hand-held CO_2 assisted boom sprayer with total spray volume of 13.5 gallons per acre. Worm counts were taken via beat-bucket method prior to insecticide application and again 4 and 7 days after treatement (DAT). Midge were determined to be present and percent damage was estimated. Worm populations, midge damage, and yield data were analyzed using analysis of variance and mean separation was performed using LSD.

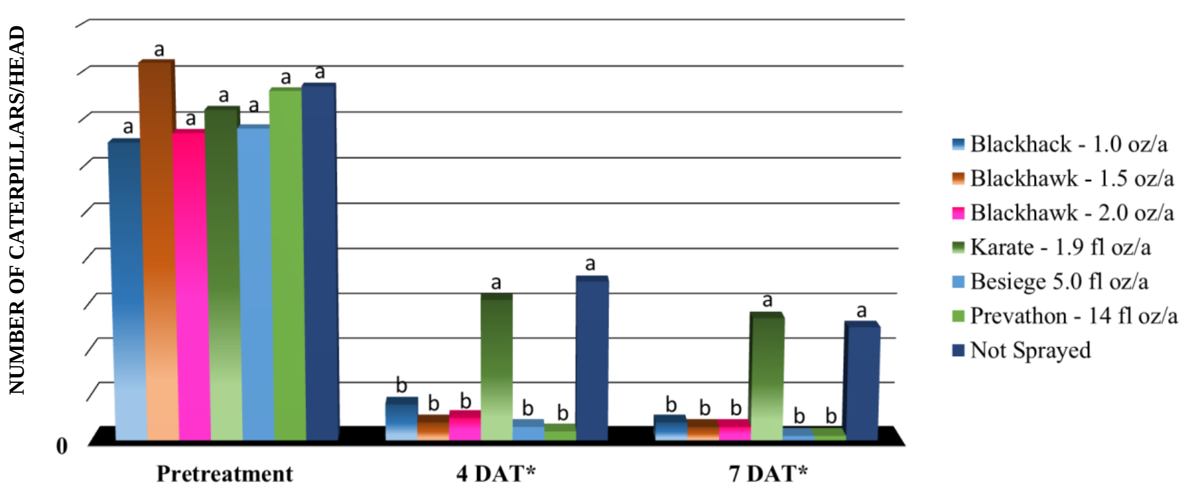
<u>Table 1:</u> Active Ingredients and Rates of Insecticides Evaluated Against Sugarcane Aphid

Treatment	Active Ingredient	Rate
No Insecticide	n/a	n/a
Blackhawk (Dow)	Spinosad	1.0 fl oz/a
Blackhawk (Dow)	Spinosad	1.5 fl oz/a
Blackhawk (Dow)	Spinosad	2.0 fl oz/a
Karate (Syngenta)	Lamda-Cyhalothrin	1.9 oz/a
Beseige (Syngenta)	Lamda-Cyhalothrin + Chlorantraniliprole	5.0 fl oz/a
Prevathon (Dupont)	Chlorantraniliprole	14 fl oz/a

Results

At 4 and 7 days after treatment (DAT), only Karate did not provide adequate control of the headworm complex, resulting in numbers comparable to the non-treated control (Figure 1). For sorghum midge, there was a numerical difference (not statistically significant) between the control and all other treatments, with all treatments performing equally. The damage is likely due to damage that occurred prior to pesticide application. There were differences in yield among treatments, with Sivanto, Transform, and Endigo yielding approximately 25% higher than Baythroid, Actigard, and the control.

<u>Figure 1:</u> Number of caterpillars per head before treatment and 4 and 7 days after treatment.



*DAT is an acronym for days after treatment

Figure 2: **Percent damage caused by sorghum midge.**

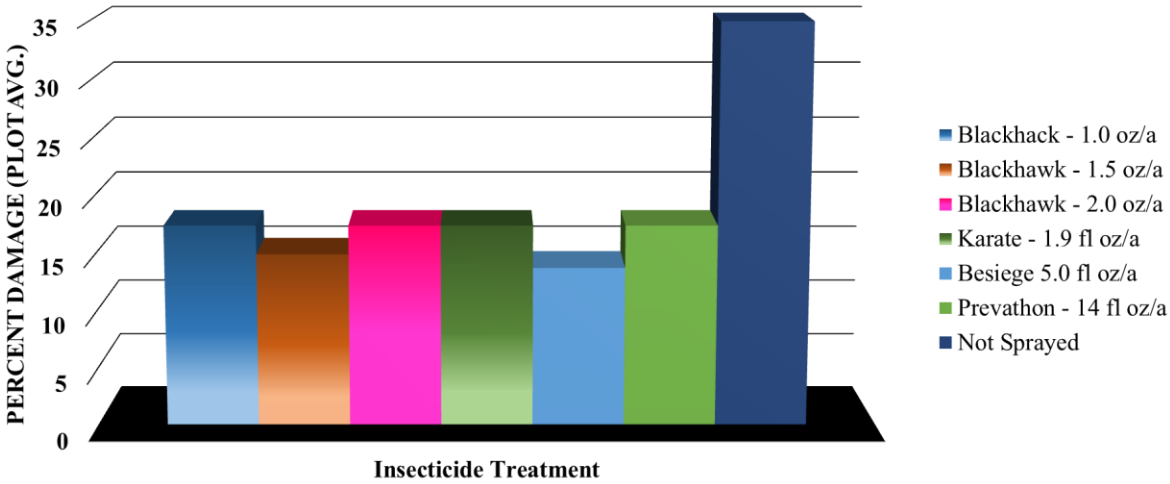
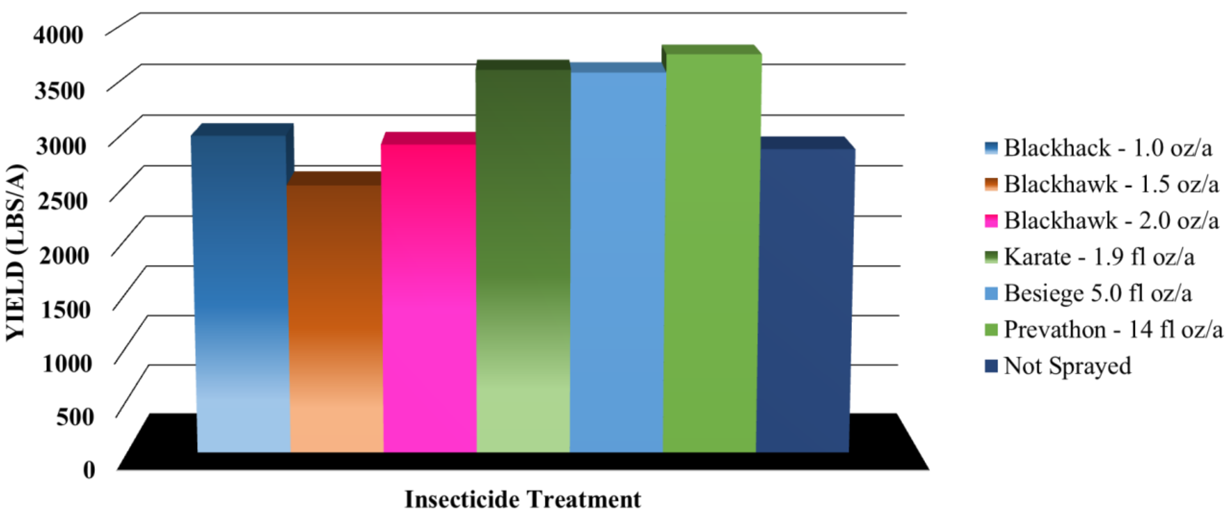


Figure 3: **Average yield by insecticide treatment.**



Summary and Conclusions

In this study, Prevathon, Besiege, and Blackhawk provided good control of headworms in bloom/milk sorghum. All products resulted in similar midge damage, which was lower than the non-treated control. While this test did not evaluate for efficacy against rice stink bug, some of the products will likely offer some level of control. The above insecticides do not control sugarcane aphid, and so for those insecticides above that are harsher on beneficial insects, you should scout for and monitor sugarcane aphids as they may flare aphid populations.

For Additional Information and guidance on headworm, midge, stink bug, and sugarcane aphid, Please See: https://agrilife.org/extensionento/sorghum-midge-calculator/ or http://ccag.tamu.edu/sorghum-insect-pests

Acknowledgements

Special thanks to Mark Wleczyk, producer cooperator in Rosenberg.

TDA Q527

Texas Department of Agriculture
Pesticide Applicator Record

COMMISSIONER SID MILLER

Business/Applicator Name ___________________________________ **Address** ____

Application Date	Time Started	Name of the person for whom the application was made	Location of Land Treated	Site Treated	Wind Direction	Wind Velocity	Air Temp

Product Trade Name	EPA Registration Number	Target Pest	Rate of Product Per Unit	Method or Type of Equipment Used To Make Application	FAA "N" Number for Aerial Application Equipment:

Is Application Applied in Regulated County: □ Yes □ No	Regulated Herbicide Permit Number:

Licensed Applicator's Name and License Number	Non-licensed Applicator's Name Working Under Licensee	Total Acres or Volume of Area Treated	Total Volume of Spray Mix, Dust, Granules or Other Materials Applied Per Unit

Documentation used to verify training of non-licensed applicator (Mark Applicable Box)

□ Direct Supervisor Affidavit □WPS Handler Card □Signed & Dated Label

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Rev. 9/15
TDA Q570A

TEXAS DEPARTMENT OF AGRICULTURE

Commissioner Sid Miller
P O Box 12847, Austin, Texas 78711 800-835-5832
For the hearing impaired: (800) 735-2988(voice) or (800) 735-2989(TDD/TT)
Internet address: http://www.texasagriculture.gov

DIRECT SUPERVISION AFFIDAVIT

1. This is an affidavit made by________________________ and ________________________ on _________________
unlicensed applicator licensed applicator date

to satisfy the requirements under Section 76.105(c) of the Texas Agriculture Code to assure that any person working under a licensed applicator's direct supervision is knowledgeable of the requirements governing the use of the particular pesticides being used by that individual.

2. I,________________________, hereby state that I have received training on and/or have read and understood the
unlicensed applicator (print name)

Texas Pesticide Law and Texas Pesticide Regulations. I understand the complete labeling information for the following pesticides and the uses listed:

Product Name	**EPA Reg. #**	**Activity**	**Use (site/method)**

______________________________ ______________________________
Printed name of Unlicensed Applicator Signature of Unlicensed Applicator

3. I hereby state that the unlicensed applicator named above and acting under my direct supervision is knowledgeable of the label requirements and the laws and regulations governing the use of the pesticides listed above for the uses identified.

______________________________ ______________________________
Printed name of Licensed Applicator Signature of Licensed Applicator

______________________________ (   )__________________________
Address Telephone

☐ Commercial #______________ ☐ Noncommercial #______________ ☐ Private #______________

A copy of this form shall be provided to the nonlicensed person and the original shall be kept by the licensed applicator with application records for at least two years after the last date of direct supervision.

Rev. 9/15
TDA Q570A

TEXAS DEPARTMENT OF AGRICULTURE

Commissioner Sid Miller
P O Box 12847, Austin, Texas 78711 800-835-5832
For the hearing impaired: (800) 735-2988(voice) or (800) 735-2989(TDD/TT)
Internet address: http://www.texasagriculture.gov

DIRECT SUPERVISION AFFIDAVIT

1. This is an affidavit made by________________________ and ________________________ on __________________
unlicensed applicator / licensed applicator / date

to satisfy the requirements under Section 76.105(c) of the Texas Agriculture Code to assure that any person working under a licensed applicator's direct supervision is knowledgeable of the requirements governing the use of the particular pesticides being used by that individual.

2. I,__________________________, hereby state that I have received training on and/or have read and understood the
unlicensed applicator (print name)

Texas Pesticide Law and Texas Pesticide Regulations. I understand the complete labeling information for the following pesticides and the uses listed:

Product Name	**EPA Reg. #**	**Activity**	**Use (site/method)**

____ ____
Printed name of Unlicensed Applicator / Signature of Unlicensed Applicator

3. I hereby state that the unlicensed applicator named above and acting under my direct supervision is knowledgeable of the label requirements and the laws and regulations governing the use of the pesticides listed above for the uses identified.

____ ____
Printed name of Licensed Applicator / Signature of Licensed Applicator

____ (   )____________________________________
Address / Telephone

☐ Commercial #_______________ ☐ Noncommercial #_____________ ☐ Private #________________

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Notes

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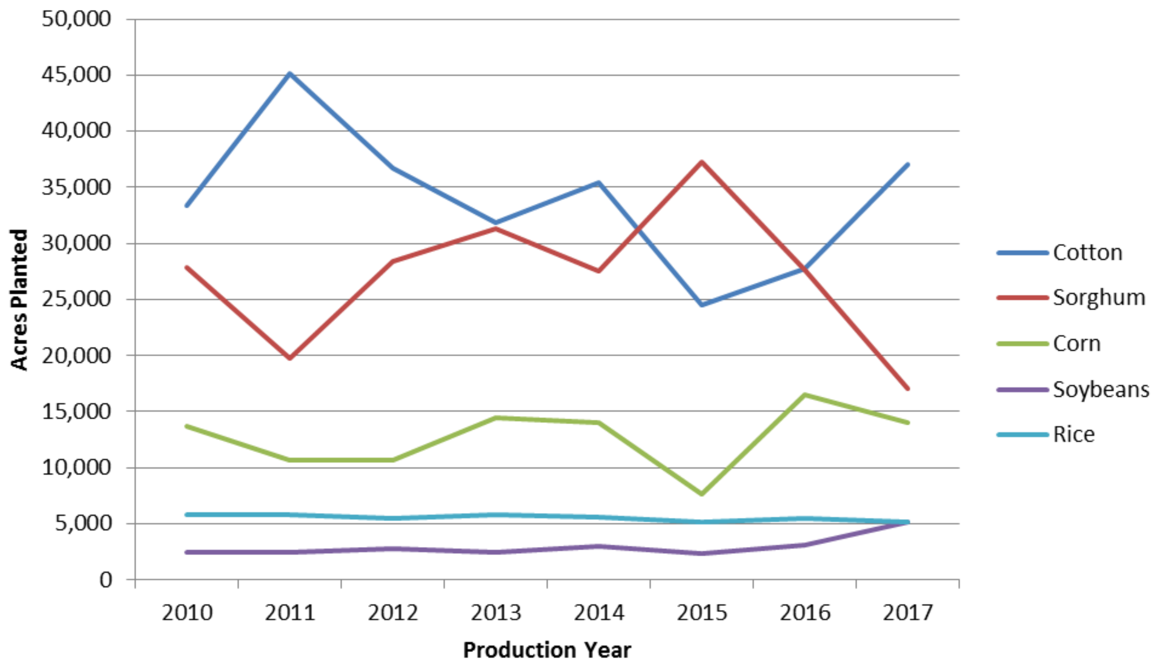
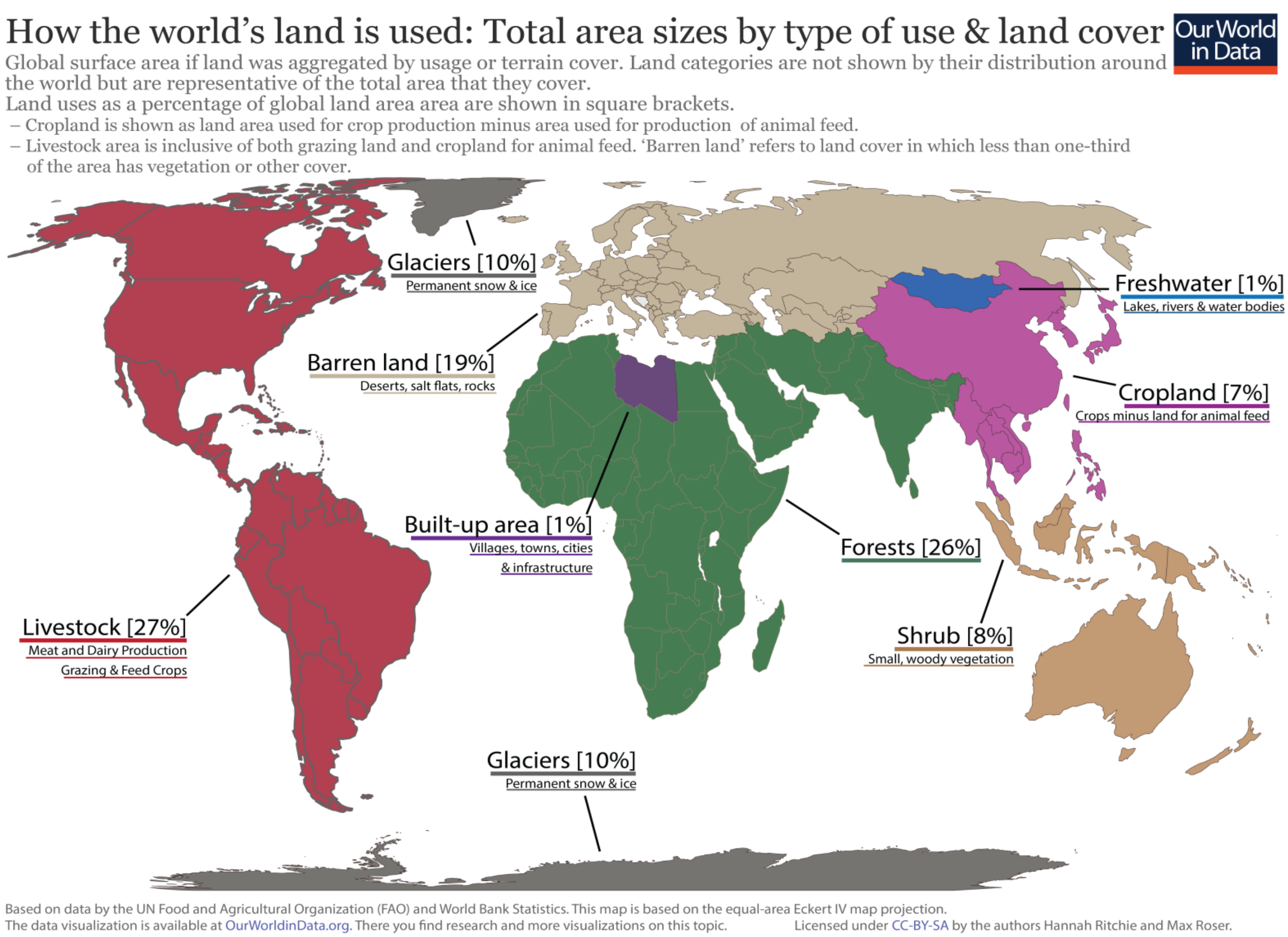
Random Information

Agriculture Production by Commodity for Fort Bend County, 2010-2017





Map Image From: Max Roser and Hannah Ritchie (2017) - "Land Cover". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/land-cover'

TEXAS A&M AGRILIFE EXTENSION

Fort Bend County Row Crops Committee

THE STATE OF TEXAS
FORT BEND COUNTY