

2010 Arizona Upland Cotton Advanced Strain Testing Program

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Abstract

A series of experiments were conducted at three locations in Arizona to evaluate approximately 35-40 commercial cotton strains and varieties during the 2010 cotton growing season. These trials were conducted in Yuma, AZ (130 ft. above MSL); Maricopa, AZ (1170 ft. above MSL); and Safford, AZ (2900 ft. above MSL). Strains were planted in four row plots extending 38 feet in a randomized complete block design with a minimum of four replications. Data collected included plant growth and development, yield, fiber quality, and average boll size data. All data was subjected to statistical analysis to test for differences among strains for yield and fiber quality. Overall yield levels for these trials were very good despite the fact that abnormally cool conditions were experienced at each location at or near planting. Relatively low levels of heat stress were experienced in the lower desert regions providing opportunity for the varieties to compensate for the cooler than average spring temperatures and resulting in a good environment for high yield potential to be realized. Yield results ranged from 1200 lbs lint/acre to just over 2100 lbs lint/acre in Yuma; from 1100 lbs lint/acre to just over 2000 lbs lint/acre in Maricopa; and from 950 lbs lint/acre to just over 1700 lbs lint/acre in Safford. All entries at every location had premiums associated with the fiber quality data, with some entries producing as much as a 5 cent per pound premium. Several new varieties released for the 2010 and 2011 season performed very well in these trials, both in terms of lint yield and fiber quality, providing additional choices for growers when it comes to variety selection for the coming year.

Introduction

One of the most critical decisions cotton producers make each year is which variety is best suited to their region and even more specifically, on their own farm. With the advent of transgenic technologies and the quick development and release of additional varieties each year, that decision can be very difficult. Variety trial information produced by both private industry and by the public sector, such as universities, can help provide the information needed to make an informed decision with respect to variety selection.

The decision of a seed company to bring a variety to market and release it for general consumption is made after several years of testing through a breeding program. One of the last steps of a breeding program prior to commercial release is testing of advanced strains across environments. This is one of the last opportunities for a seed company to evaluate a particular strain prior to public release and is critical for the development of varieties that are well-suited for specific cotton producing regions of the United States.

The Arizona Upland Cotton Advanced Strains Testing Program conducted through the University of Arizona, with support from participating seed companies and Cotton Incorporated, provides critical and unbiased information to the seed companies on the performance of varieties that will likely be grown in Arizona in the subsequent years. It also provides the Arizona cotton industry with an unbiased view of plant materials that are being considered for commercialization prior to their release into the public market place. This situation provides an opportunity to influence the decisions as to which varieties will be advanced for release, helping to ensure high yielding and high fiber quality varieties for the Arizona cotton growing industry. One of the unique aspects of this program is the range of conditions under which these strains are being evaluated. Three locations are selected for testing of these strains that range from slightly above sea level (100 ft, Yuma) to over 2800 ft elevation (Safford), providing for a very diverse set of climatic conditions for variety performance evaluation.

This program provides an opportunity to evaluate the same variety across these varied environments and to observe the effects of these conditions on plant growth and development, yield, and fiber quality.

Materials and Methods

Three separate field trials were conducted in 2010 across the cotton producing regions of Arizona. These locations included Yuma (130 ft above MSL), Maricopa (1170 ft. above MSL), and Safford (2900 ft above MSL). Plot dimensions were four rows wide and extended 38 feet in length. Row spacing varied among locations with 38, 40, and 42 inch row spacing at Safford, Maricopa, and Yuma respectively. All plots were arranged in a randomized complete block design with four replications. Plots were planted 200 seeds per 40 feet of row length to achieve a plant population of 3-4 plants per linear foot. If populations were found to be higher than this target, thinning crews were employed to achieve the desired population. In 2010 there was no need for plot thinning. Further details of each experiment, including planting dates, irrigation termination dates, defoliation, harvest dates, and soil classification are contained in Table 1.

Early season data, including stand counts and vigor rating, were collected within 2 weeks of planting or initial water-up irrigation. This data was used to calculate an estimate of percent emergence, population estimates, and vigor ratings. Plant growth and development data was collected at three times during the season at each location to document crop vigor, potential fruit load, and progression towards cut-out. Data collected included; plant height, total number of mainstem nodes, position of first fruiting branch, total aborted and missing sites, and nodes above white flower. This data was utilized to calculate height-to-node ratios and percent fruit retention. The final plant measurement data collected at the Yuma location was nodes above cracked boll instead of nodes above white flower. The final date of plant measurements collected in Safford included only plant height. Final plant height data was also collected from each entry at harvest time.

Yield was estimated by harvesting the center two rows of each experimental unit and weighed with a hanging basket equipped with load cells. A large grab sample (approximately 8-10 lbs) was also collected from each experimental unit from which percent lint was determined by ginning the sample on a small research gin at the Maricopa Agricultural Center. Fiber quality was determined by the USDA-AMS cotton classing office in Visalia, CA. A premium or discount for each entry was then determined based upon fiber quality data and the USDA CCC (Commodity Credit Corporation) loan schedule. This premium/discount was then applied to a base price of 52 cents per pound and a final crop value was calculated by multiplying the base price plus the premium/discount by the total lint yield of the entry. At harvest, a 50 boll hand-picked sample was also collected from each experimental unit to determine seedcotton weight per boll providing an indication of boll size. All data collected was summarized and analyzed according to statistical procedures as outlined by the SAS Institute.

Results and Conclusions

Yuma

The Yuma location was planted slightly later than normal for that region of Arizona with a 17 March planting. Cooler than average temperatures experienced across Arizona during the normal planting window delayed planting and made early season growth and development slower than normal. Early season stand evaluations are summarized in Table 2. Plant growth and development data collected on three separate dates are presented in Table 3. Cooler than average early season temperatures resulted in lower vigor overall as indicated by height-to-node ratio data collected on the first sample date, 2 June (Table 3). Lower than average heat stress levels also resulted in higher than average fruit retention levels generally across all varieties (Table 3). Final average fruit retention across all varieties was just under 65%. Final fruit retention values above 50% generally result in higher than average lint yields, which were experienced at this location

(Table 4). Final plant height data collected at harvest is presented in Figure 1. Yield and fiber quality data is presented in Table 4, along with statistical analysis for each of the yield and fiber quality parameters. Yield ranged from a low of 1274 to 2104 lbs lint/acre. All entries received a premium associated with the fiber quality, with highest premiums observed generally with entries from the Arizona Cotton Growers breeding initiative. Seedcotton weight per boll for each entry is presented in a tabular form (Table 11) and in a graphical representation in Figure 7. The relationship between lint yield and fiber quality is presented in Figure 2. Lint yield is plotted as a function of the premium associated with the fiber quality characteristics of each entry. The horizontal line represents the average lint yield and the vertical line represents the average for the fiber quality premium. Those entries that fall within the upper right hand quadrant of this graph performed better than average with respect to both lint yield and fiber quality.

Maricopa

The Maricopa location also suffered from less than optimal air and soil temperatures shortly after planting. Plots at this location were planted and irrigated on 13 April. Temperatures were normal for the first week following planting, and then a significant cold front entered the area, dramatically reducing temperatures and significantly slowing crop development. Early season stand evaluations are summarized in Table 5. Plant growth and development data collected on three separate dates are presented in Table 6. This slowing of crop growth is also illustrated with the height-to-node ratio across all entries on the first plant measurement sample date of 10 June (Table 6). Height-to-node ratios were, on average, around 0.8 where a normal level would be over 1.0 on that date. Lower percent fruit retention was also experienced early on in the season, however, the crop responded to the lower than normal heat stress levels and recovered in fruit load and ended the season on average just under 60% (Table 6) which resulted in good yields for this location in 2010. Final plant height taken at harvest is presented in Figure 3. Yield and fiber quality data is presented in Table 7 along with statistical analysis for each of the yield and fiber quality parameters. Yield ranged from a low of 1116 to 2007 lbs lint/acre. All entries received a premium associated with the fiber quality ranging from approximately 1.5 to just under 5.0 cents/lb. Seedcotton weight per boll for each entry is presented in a tabular form (Table 11) and in a graphical representation in Figure 7. The relationship between lint yield and fiber quality is presented in Figure 4. Lint yield is plotted as a function of the premium associated with the fiber quality characteristics of each entry. The horizontal line represents the average lint yield and the vertical line represents the average for the fiber quality premium. Those entries that fall within the upper right hand quadrant of this graph performed better than average with respect to both lint yield and fiber quality.

Safford

The Safford location experienced the most severe weather pattern affecting planting. Plots were planted on 29 April, after which a cold front passed through the region on 2-4 May and resulted in freezing temperatures. This produced a significant decrease in seedling development, along with an increased incidence of seedling disease. However, despite these conditions, plot integrity was not compromised to a point that would require re-planting. Early season stand evaluations are summarized in Table 8. Plant growth and development data collected on three separate dates are presented in Table 9. Early season crop vigor was affected in a similar way to the other two locations with decreased height-to-node ratios on the first plant measurement sample date, 20 Jun (Table 9). Lower vigor was experienced throughout the majority of the season as illustrated by the height-to-node ratio data in Table 9. Only plant height was collected on the final sample date. Final plant height data was collected at harvest and is presented in Figure 5. Yield and fiber quality data is presented in Table 10 along with statistical analysis for all entries. Lint yield ranged from 957 to 1730 lbs lint/acre with an average yield of just under 1400 lbs lint/acre. Average lint turnout was also higher in Safford than in the other two locations, at 37.6% (Table 10). Fiber quality was high for the trial conducted in Safford with an average premium of 4.1 cents/lb. This was the highest average premium of all three locations (Table 10). Seedcotton weight per boll for each entry is presented in a tabular form (Table 11) and in a graphical representation in Figure 7. The relationship between lint yield and fiber quality is presented in Figure 6. Lint yield is plotted as a function of the premium associated with the fiber quality characteristics of each entry.

The horizontal line represents the average lint yield and the vertical line represents the average for the fiber quality premium. Those entries that fall within the upper right hand quadrant of this graph performed better than average with respect to both lint yield and fiber quality.

Table 1. Significant crop management dates and soil classification for each advanced strain evaluation location conducted during the 2010 growing season.

Location:	Yuma	Maricopa	Safford
Planting Date:	3/17/2010	4/13/2010	4/29/2010
Final Irrigation	7/27/2010	9/5/2010	9/10/2010
Defoliation	8/15/2010	10/1/2010	10/7/2010
Harvest Date:	9/3/2010	11/4/2010	10/27/2010
Soil Type	Lagunita loamy sand	Casa Grande sandy clay loam	Grabe clay loam

Table 2. Early season emergence and vigor evaluations of each entry planted in the Advanced Strain evaluation in Yuma, AZ, 2010.

Seed Company	Variety	Estimate of Percent		
		Emergence Percent	Population Plants/Row Foot	Vigor Rating 1-9 (low-high)
AZ Cotton Growers	ACGA039	37.0	1.9	4.8
AZ Cotton Growers	ACGA082	38.5	1.9	5.0
AZ Cotton Growers	ACGA189	38.5	1.9	4.3
AZ Cotton Growers	ACGA225	43.5	2.2	4.8
AZ Cotton Growers	ACGA229	39.5	2.0	4.5
AZ Cotton Growers	ACGA246	55.5	2.8	5.0
AZ Cotton Growers	ACGA250	36.0	1.8	3.7
AZ Cotton Growers	ACGA264	54.5	2.7	5.0
AZ Cotton Growers	ACGA265	63.5	3.2	5.8
AZ Cotton Growers	ACGA276	43.5	2.2	4.8
Bayer CropScience	BCSX1030B2F	64.5	3.2	5.8
Bayer CropScience	BCSX1040B2F	55.0	2.8	6.0
Bayer CropScience	FM1740B2F	58.0	2.9	5.0
Bayer CropScience	FM9160B2F	50.0	2.5	5.0
Bayer CropScience	FM9170B2F	60.0	3.0	5.8
Bayer CropScience	ST4288B2F	45.0	2.3	4.8
Bayer CropScience	ST5288B2F	49.5	2.5	4.5
Bayer CropScience	ST5458B2F	48.5	2.4	5.0
Monsanto	10R013B2R2	53.0	2.7	4.5
Monsanto	10R015B2R2	37.0	1.9	4.0
Monsanto	10R020B2R2	56.5	2.8	5.5
Monsanto	10R026B2R2	37.0	1.9	3.0
Monsanto	10R050B2R2	56.0	2.8	4.8
Monsanto	DP0949B2RF	54.5	2.7	5.5
Monsanto	DP1032B2RF	60.5	3.0	5.3
Monsanto	DP1133B2RF	28.0	1.4	3.0
Monsanto	DP1137B2RF	48.5	2.4	5.3
Phytogen	PHY367WRF	53.5	2.7	5.3
Phytogen	PHY375WRF	57.0	2.9	5.3
Phytogen	PHY499WRF	42.5	2.1	5.3
Phytogen	PHY519WRF	51.5	2.6	6.0
Phytogen	PHY565WRF	36.0	1.8	4.5
Phytogen	PHY569WRF	52.5	2.6	4.5
	Average	48.6	2.4	4.9

Table 3. Plant growth and development data for three sample dates and each entry collected at the Yuma, AZ location, 2010.

Variety	2-Jun-10						29-Jun-10						3-Aug-10					
	Plant	First	Mainstem	Nodes	Mean	Mean	Plant	First	Mainstem	Nodes	Mean	Mean	Plant	First	Mainstem	Nodes	Mean	Mean
	Height	Fruiting	Nodes	Above	Height to	Fruit	Height	Fruiting	Nodes	Above	Height to	Fruit	Height	Fruiting	Nodes	Cracked	Height to	Fruit
inches	Branch	Flower	White	Node	Retention	inches	Branch	Flower	White	Node	Retention	inches	Branch	Nodes	Boll	Node	Retention	
					Percent						Percent							Percent
ACGA039	17.8	6.3	15.5	.	1.1	78.0	32.9	6.3	20.3	5.8	1.6	89.2	29.8	7.0	20.8	10.0	1.4	69.5
ACGA082	17.8	7.3	14.3	.	1.3	87.5	35.1	6.0	21.5	7.5	1.6	91.7	35.5	6.5	21.3	11.3	1.7	55.6
ACGA189	17.0	7.0	14.3	.	1.2	84.8	31.8	5.3	17.5	6.5	1.8	91.5	35.6	6.5	23.3	10.5	1.5	59.2
ACGA225	13.3	6.0	13.8	.	1.0	97.1	30.6	6.3	21.5	6.8	1.4	90.0	31.7	7.0	21.3	11.0	1.5	59.0
ACGA229	16.7	6.0	39.5	.	0.4	92.8	33.1	6.8	20.8	6.0	1.6	92.5	33.2	7.0	20.0	11.8	1.7	72.3
ACGA246	19.5	7.5	15.3	.	1.3	51.4	30.1	7.3	20.3	5.0	1.5	93.8	30.7	7.0	21.0	11.0	1.5	67.5
ACGA250	13.8	6.8	14.0	.	1.0	69.7	30.5	6.3	17.3	3.8	1.8	91.7	30.3	7.0	21.5	10.0	1.4	75.0
ACGA264	16.2	7.3	14.5	.	1.1	72.7	35.1	5.5	19.8	6.0	1.8	85.2	34.4	7.5	21.3	14.5	1.6	66.1
ACGA265	15.4	6.8	13.8	.	1.1	87.5	31.0	6.8	19.8	6.0	1.6	95.5	33.4	7.5	22.5	12.5	1.5	64.1
ACGA276	15.6	6.8	15.3	.	1.0	65.8	33.8	6.5	20.3	8.0	1.7	93.2	34.6	6.5	23.3	12.3	1.5	61.3
BCSX1030B2F	19.7	5.5	14.0	.	1.4	84.2	28.4	6.3	18.8	4.0	1.5	91.7	31.1	6.3	20.5	7.5	1.5	59.8
BCSX1040B2F	14.5	5.8	14.0	.	1.0	91.9	32.1	5.3	18.0	5.5	1.8	94.5	31.1	6.8	23.0	10.5	1.4	58.0
FM1740B2F	17.5	6.0	15.0	.	1.2	95.0	32.3	6.5	21.0	5.5	1.5	94.4	29.3	7.8	20.8	10.5	1.4	61.6
FM9160B2F	15.2	8.5	14.5	.	1.0	85.7	30.0	7.0	20.3	4.3	1.5	91.2	29.6	8.0	22.8	10.8	1.3	53.2
FM9170B2F	14.6	8.5	15.5	.	0.9	93.8	22.8	7.0	19.5	4.3	1.2	89.8	34.4	7.0	23.3	11.3	1.5	71.0
09R555B2R2	14.8	6.3	13.3	.	1.1	68.8	33.2	5.8	17.8	4.8	1.9	86.5	32.3	6.8	20.3	8.8	1.6	62.9
09R619B2R2	18.5	7.5	13.0	.	1.4	76.9	39.4	7.8	19.3	5.5	2.0	84.0	36.3	6.8	19.8	10.0	1.8	50.9
10R013B2R2	15.5	6.3	13.3	.	1.2	93.8	33.6	5.8	17.8	4.8	1.9	91.3	34.2	7.0	22.5	11.0	1.5	63.6
10R015B2R2	11.5	5.5	12.0	.	1.0	100.0	29.5	5.5	17.0	6.8	1.7	92.0	31.7	6.5	19.3	9.0	1.6	62.7
10R020B2R2	16.0	6.5	13.0	.	1.2	76.7	39.5	6.3	21.0	5.0	1.9	83.3	39.7	7.3	23.0	13.0	1.7	65.7
10R026B2R2	16.6	6.3	13.3	.	1.3	68.8	36.6	5.8	18.0	6.3	2.0	85.8	37.4	6.8	20.8	9.7	1.8	58.3
10R050B2R2	16.0	7.3	14.0	.	1.1	83.9	29.8	6.3	17.5	5.0	1.7	92.9	33.3	7.3	21.3	9.8	1.6	74.2
DP0949B2RF	17.6	7.3	14.3	.	1.2	96.9	34.6	5.8	17.8	4.5	2.0	93.3	38.2	7.5	22.3	8.8	1.7	71.4
DP1032B2RF	17.8	6.8	13.5	.	1.3	87.1	34.4	7.0	18.8	5.0	1.8	87.3	35.1	7.3	21.0	9.3	1.7	63.6
PHY367WRF	14.1	6.8	13.5	.	1.0	93.5	30.7	7.0	18.8	4.5	1.6	96.1	29.2	7.0	18.5	9.0	1.6	64.0
PHY375WRF	14.8	7.0	14.5	.	1.0	100.0	32.5	6.3	17.3	4.0	1.9	86.5	30.3	7.0	22.0	9.5	1.4	75.0
PHY499WRF	16.2	7.8	13.0	.	1.2	96.0	34.5	8.3	19.8	5.0	1.7	95.0	35.8	8.3	21.0	10.3	1.7	58.2
PHY519WRF	17.5	7.8	14.0	.	1.3	86.2	38.5	8.8	21.3	5.8	1.8	92.6	42.9	7.8	23.3	13.0	1.8	66.7
PHY565WRF	17.0	7.5	14.5	.	1.2	96.9	32.7	6.8	18.8	6.0	1.7	95.2	33.9	6.8	22.8	10.5	1.5	66.9
PHY569WRF	14.0	7.8	14.0	.	1.0	62.1	33.8	7.5	19.5	4.8	1.7	82.7	32.4	7.0	21.8	12.5	1.5	69.0
ST4288B2F	13.2	7.5	14.0	.	0.9	93.3	31.3	6.8	18.8	4.5	1.7	90.4	29.5	7.5	20.3	8.5	1.5	67.3
ST5288B2F	15.2	6.0	14.0	.	1.1	83.3	33.7	6.3	19.5	5.0	1.7	85.1	32.7	6.0	21.5	10.3	1.5	78.0
ST5458B2F	17.3	7.8	14.0	.	1.2	100.0	29.8	6.3	19.3	6.0	1.5	95.5	32.5	8.3	21.0	11.3	1.5	55.5
Average	16.0	6.9	14.8	.	1.1	84.9	32.7	6.5	19.2	5.4	1.7	90.6	33.4	7.1	21.5	10.6	1.6	64.5

Table 4. Yield and fiber quality data along with statistical analysis for each of the varieties and advanced strains evaluated in Yuma, AZ, 2010.

Seed Company	Variety	Lint Yield lbs/acre	Means Separation *	Lint Turnout Percent	HVI Color	Staple 32nds	Strength g/tex	Length Inches	Uniformity Percent	Micronaire	Leaf Grade	Premium cent/lb	Value \$/acre
Monsanto	10R013B2R2	2103.8	a	36.9	21	36	29.9	1.13	81.4	4.6	2	4.9	\$1,196.54
Phytogen	PHY499WRF	2005.1	a b	38.1	21	35	31.1	1.11	82.3	4.5	2	4.6	\$1,134.39
Monsanto	10R050B2R2	1999.4	a b c	37.7	21	35	29.9	1.10	80.3	4.4	2	3.0	\$1,100.43
ACGA	ACGA039	1997.9	a b c	37.5	21	37	30.9	1.15	81.3	4.4	2	5.2	\$1,142.80
Phytogen	PHY367WRF	1920.2	a b c d	36.4	21	35	27.2	1.08	80.1	4.5	2	2.7	\$1,050.98
Monsanto	DP1032B2RF	1917.9	a b c d	39.2	21	35	27.6	1.10	80.2	4.4	2	3.6	\$1,066.35
Bayer CropScience	ST5458B2F	1908.8	a b c d	35.9	21	36	29.3	1.11	81.1	4.7	2	4.4	\$1,075.61
Monsanto	10R015B2R2	1850.8	a b c d e	39.4	21	35	27.8	1.10	82.5	4.8	2	3.7	\$1,031.60
Phytogen	PHY375WRF	1842.1	a b c d e	37.3	21	36	28.1	1.10	80.7	4.2	2	3.6	\$1,023.29
ACGA	ACGA082	1829.9	a b c d e f	34.4	21	39	32.7	1.20	82.8	4.5	2	5.3	\$1,048.99
ACGA	ACGA225	1821.4	b c d e f	34.8	21	36	29.4	1.12	81.7	4.8	2	4.8	\$1,033.64
ACGA	ACGA246	1813.6	b c d e f	33.2	21	36	31.0	1.11	81.5	4.4	2	4.6	\$1,025.59
Monsanto	10R020B2R2	1798.6	b c d e f g	37.0	21	35	25.6	1.07	81.5	4.5	2	2.0	\$971.93
ACGA	ACGA250	1774.6	b c d e f g	35.0	21	36	32.6	1.13	81.0	4.4	2	5.1	\$1,013.30
Bayer CropScience	FM1740B2F	1766.0	b c d e f g	37.8	21	34	27.1	1.06	80.3	4.8	2	1.1	\$936.86
Phytogen	PHY565WRF	1740.1	b c d e f g	35.3	21	36	31.2	1.13	81.2	4.2	2	5.3	\$996.50
Monsanto	DP1133B2RF	1736.9	b c d e f g	41.2	21	35	29.1	1.10	82.3	4.9	2	3.4	\$962.03
Bayer CropScience	ST5288B2F	1736.5	b c d e f g	36.0	21	35	27.0	1.09	80.9	4.6	2	2.9	\$953.77
Monsanto	DP0949B2RF	1726.6	b c d e f g	37.6	21	35	28.9	1.09	81.6	4.6	2	4.3	\$972.73
Monsanto	DP1137B2RF	1723.6	c d e f g	40.5	21	34	27.8	1.07	82.3	4.7	2	2.7	\$942.38
ACGA	ACGA189	1715.2	d e f g	34.2	21	37	31.5	1.17	82.2	4.3	2	5.4	\$985.18
Bayer CropScience	FM9170B2F	1708.0	d e f g	36.4	21	37	29.4	1.14	80.6	3.8	2	4.2	\$960.32
ACGA	ACGA229	1698.1	d e f g	36.0	21	37	31.2	1.15	81.8	4.5	2	5.2	\$971.53
Monsanto	10R026B2R2	1698.1	d e f g	39.2	21	36	28.1	1.10	81.4	4.4	2	4.4	\$957.30
ACGA	ACGA264	1673.6	d e f g	32.6	21	39	32.8	1.21	82.1	4.8	2	4.5	\$945.17
Bayer CropScience	ST4288B2F	1653.6	d e f g	33.0	21	36	28.2	1.11	81.1	4.4	2	4.4	\$932.85
Phytogen	PHY519WRF	1628.3	e f g	35.6	21	34	27.6	1.08	80.3	4.3	2	3.6	\$905.33
Bayer CropScience	BCSX1030B2F	1615.4	e f g	36.9	21	34	26.0	1.05	80.2	3.9	2	0.8	\$852.74
ACGA	ACGA265	1581.5	e f g	33.2	21	37	31.4	1.15	82.2	4.6	2	5.3	\$906.59
Bayer CropScience	BCSX1040B2F	1554.9	f g	31.4	21	38	29.5	1.20	82.3	4.5	2	5.1	\$888.24
Bayer CropScience	FM9160B2F	1522.5	g h	34.3	21	36	26.8	1.12	81.3	3.7	2	4.0	\$853.18
ACGA	ACGA276	1520.6	g h	34.2	21	38	32.8	1.17	83.1	4.7	2	5.5	\$873.96
Phytogen	PHY569WRF	1274.1	h	34.6	21	35	29.9	1.07	81.0	4.3	2	2.4	\$693.11
Average		1753.3		36.1	---	36	29.4	1.12	81.4	4.4	2	4.0	\$981.98
LSD§		279.6		0.0	---	1	1.6	0.04	1.2	0.3	2.0	2.3	\$165.60
OSL†		0.0001		0.0001	---	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0012	0.0001
CV‡		11.2		4.8	---	2.5	3.8	2.4	1.0	5.3	5.1	40.2	11.8

*Means followed by the same letter are not statistically different according to a Fisher's least significant difference means separation test.

§ Least Significant Difference

† Observed Significance Level

‡ Coefficient of Variation

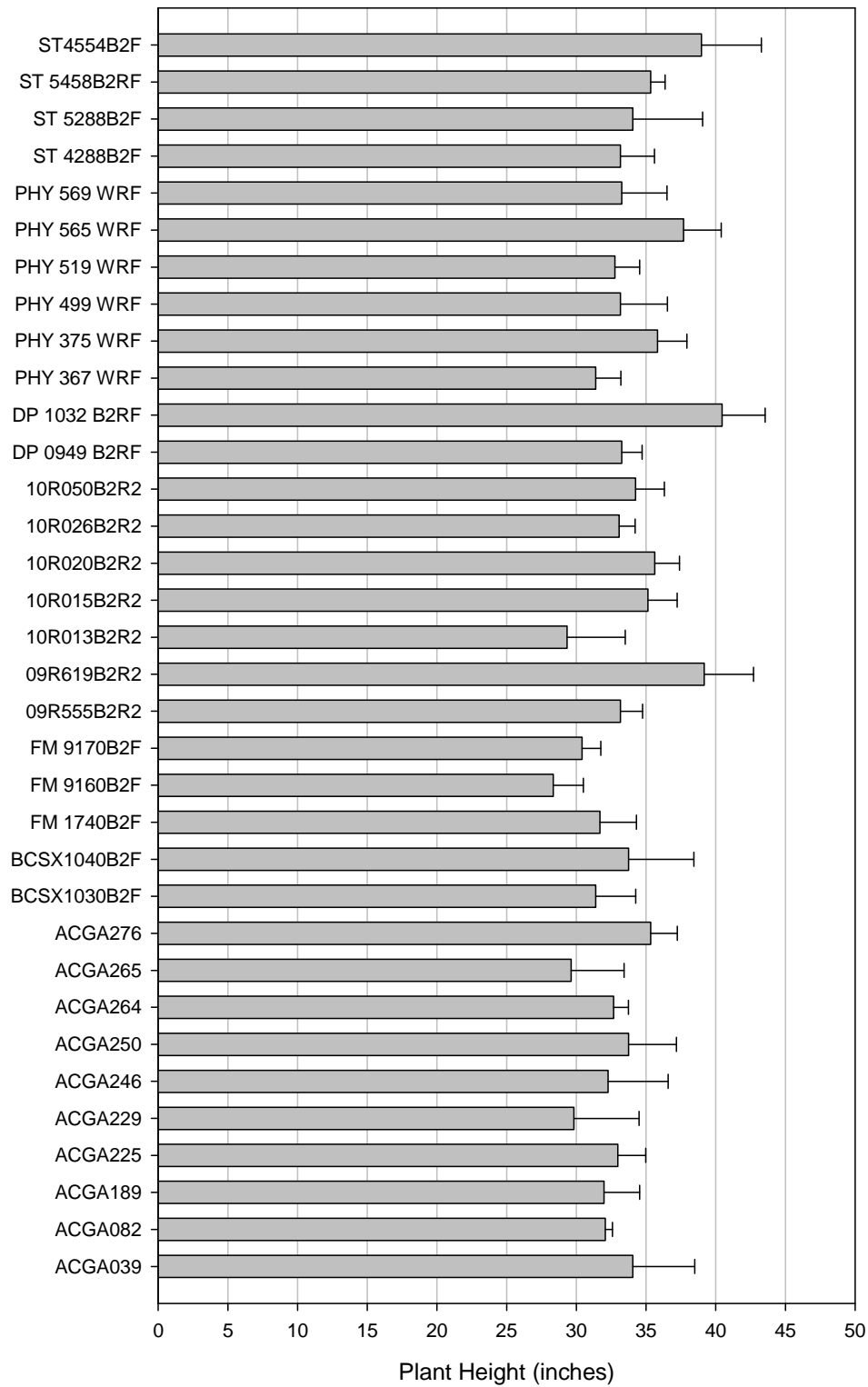
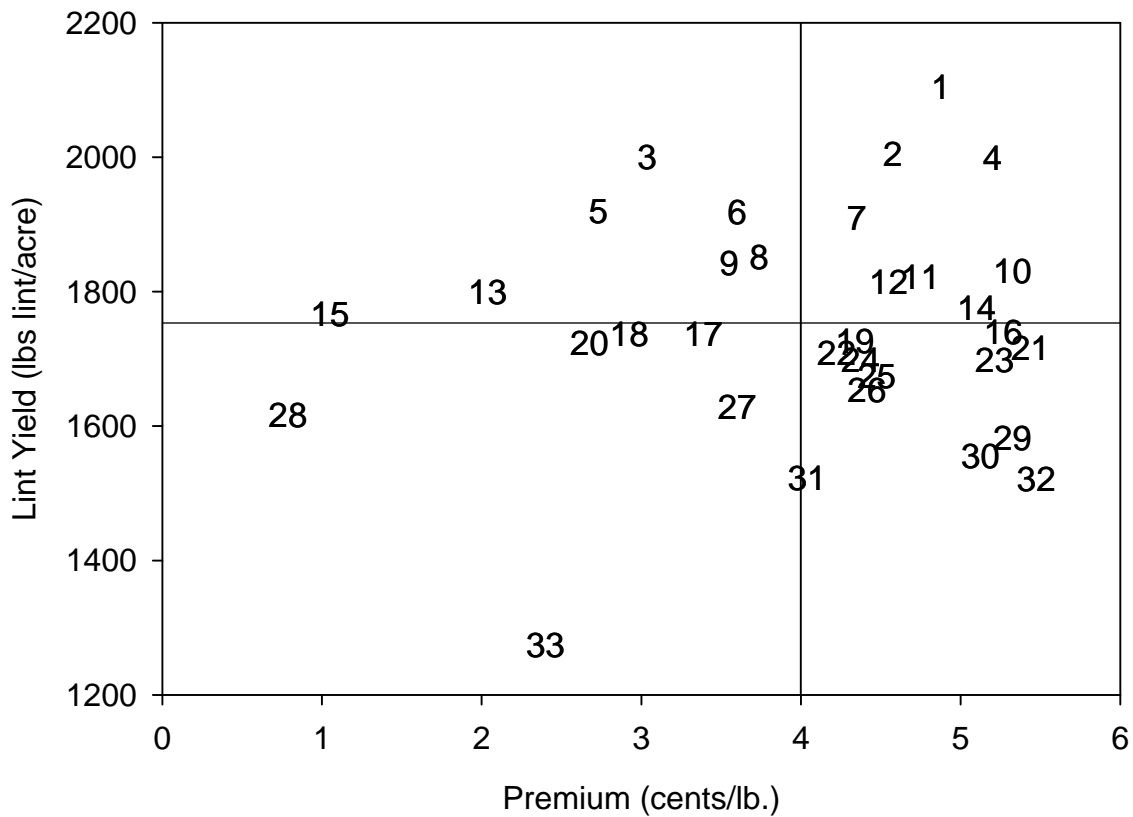


Figure 1. Mean final plant height (inches) along with the standard deviation for each of the varieties and advanced strains evaluated in Yuma, AZ, 2010.



Key

1	10R013B2R2	14	ACGA250	24	10R026B2R2
2	PHY499WRF	15	FM1740B2F	25	ACGA264
3	10R050B2R2	16	PHY565WRF	26	ST4288B2F
4	ACGA039	17	DP1133B2RF	27	PHY519WRF
5	PHY367WRF	18	ST5288B2F	28	BCSX1030B2F
6	DP1032B2RF	19	DP0949B2RF	29	ACGA265
7	ST5458B2F	20	DP1137B2RF	30	BCSX1040B2F
8	10R015B2R2	21	ACGA189	31	FM9160B2F
9	PHY375WRF	22	FM9170B2F	32	ACGA276
10	ACGA082	23	ACGA229	33	PHY569WRF
11	ACGA225				
12	ACGA246				
13	10R020B2R2				

Figure 2. Lint yield (lbs/acre) plotted as a function of fiber quality premium/discount (cents/lb). Vertical and horizontal lines represent the mean value for the two parameters. Varieties that fall in the upper right quadrant formed by the mean lines produced higher than average lint yield and fiber quality. Each of the varieties and advanced strain entries are plotted for the Yuma, AZ location in 2010.

Table 5. Early season emergence and vigor evaluations of each entry planted in the Advanced Strain evaluation in Maricopa, AZ, 2010.

Seed Company	Variety	Estimate of Percent		
		Emergence Percent	Population Plants/Row Foot	Vigor Rating 1-9 (low-high)
AZ Cotton Growers	ACGA039	74.5	3.7	5.3
AZ Cotton Growers	ACGA082	57.5	2.9	4.0
AZ Cotton Growers	ACGA189	69.0	3.5	4.0
AZ Cotton Growers	ACGA225	63.0	3.2	4.0
AZ Cotton Growers	ACGA229	46.0	2.3	3.8
AZ Cotton Growers	ACGA246	79.0	4.0	5.0
AZ Cotton Growers	ACGA250	69.5	3.5	4.5
AZ Cotton Growers	ACGA264	59.0	3.0	4.3
AZ Cotton Growers	ACGA265	55.5	2.8	4.3
AZ Cotton Growers	ACGA276	74.7	3.7	5.3
Bayer CropScience	BCSX1030B2F	66.5	3.3	4.8
Bayer CropScience	BCSX1040B2F	63.5	3.2	4.3
Bayer CropScience	FM1740B2F	63.5	3.2	3.8
Bayer CropScience	FM1773LLB2	64.5	3.2	4.0
Bayer CropScience	FM1845LLB2	62.5	3.1	4.3
Bayer CropScience	FM9160B2F	69.0	3.5	4.3
Bayer CropScience	FM9170B2F	61.5	3.1	3.8
Bayer CropScience	ST4288B2F	46.5	2.3	4.0
Bayer CropScience	ST5288B2F	67.0	3.4	4.0
Bayer CropScience	ST5458B2F	66.0	3.3	4.5
Monsanto	10R020B2R2	64.5	3.2	4.5
Monsanto	10R026B2R2	55.5	2.8	4.5
Monsanto	10R040B2R2	64.5	3.2	4.0
Monsanto	10R047B2R2	60.0	3.0	4.0
Monsanto	10R050B2R2	65.5	3.3	4.8
Monsanto	10R051B2R2	52.5	2.6	4.3
Monsanto	10R052B2R3	48.0	2.4	3.5
Monsanto	DP1044B2RF	49.0	2.5	3.5
Monsanto	DP1133B2RF	51.5	2.6	3.3
Monsanto	DP1137B2RF	68.0	3.4	4.3
Phytogen	PHY367WRF	70.0	3.5	5.0
Phytogen	PHY375WRF	82.0	4.1	5.3
Phytogen	PHY499WRF	78.0	3.9	5.0
Phytogen	PHY519WRF	77.5	3.9	5.3
Phytogen	PHY565WRF	69.5	3.5	4.3
Phytogen	PHY569WRF	76.0	3.8	4.5
	Average	64.2	3.2	4.3

Table 6. Plant growth and development data for three sample dates and each entry collected at the Maricopa, AZ location, 2010.

Variety	10-Jun-10						12-Jul-10						10-Aug-10						
	Plant	First	Mainstem	Nodes	Mean	Mean	Plant	First	Mainstem	Nodes	Mean	Mean	Plant	First	Mainstem	Nodes	Mean	Mean	
	Height	Fruiting	Nodes	White	Height to	Fruit	Height	Fruiting	Nodes	White	Height to	Fruit	Height	Fruiting	Nodes	Cracked	Height to	Fruit	
	inches	Branch	Flower	Ratio	Retention	inches	Branch	Flower	Ratio	Retention	inches	Branch	Boll	Ratio	Retention				
					Percent					Percent									Percent
ACGA039	8.9	6.8	12.3	.	0.7	65.4	30.5	7.5	22.5	7.8	1.4	72.7	37.0	8.3	26.5	4.8	1.4	69.5	
ACGA082	9.3	7.0	12.0	.	0.8	62.5	29.4	8.0	21.5	8.0	1.4	73.3	39.0	9.0	25.8	4.0	1.5	68.3	
ACGA189	8.3	6.8	11.0	.	0.8	66.7	30.5	6.5	19.5	8.3	1.6	72.3	36.3	7.3	23.3	4.8	1.6	69.1	
ACGA225	8.1	6.8	12.0	.	0.7	68.0	29.8	7.8	22.3	7.0	1.3	71.0	39.4	8.0	28.8	5.8	1.4	59.2	
ACGA229	6.6	6.5	10.8	.	0.6	66.7	26.7	6.8	18.8	7.3	1.4	68.3	37.6	6.5	25.3	3.8	1.5	67.1	
ACGA246	7.6	7.8	11.8	.	0.6	75.0	27.4	7.0	20.3	7.5	1.4	61.4	35.1	7.8	24.8	3.5	1.4	60.4	
ACGA250	8.3	6.8	11.0	.	0.8	66.7	29.3	7.3	17.8	6.8	1.7	69.6	35.9	7.5	24.3	4.0	1.5	57.0	
ACGA264	8.1	7.5	12.3	.	0.7	78.3	26.3	6.8	18.5	7.8	1.4	70.6	34.3	7.5	22.0	4.5	1.6	61.3	
ACGA265	8.0	7.5	11.5	.	0.7	65.0	31.6	7.5	20.5	8.5	1.5	65.2	35.8	7.5	24.8	4.8	1.4	62.3	
ACGA276	8.9	6.5	11.0	.	0.8	45.5	27.3	7.8	19.5	7.5	1.4	64.7	37.2	8.5	27.3	4.8	1.4	43.7	
BCSX1030B2F	7.4	6.5	10.3	.	0.7	78.9	30.8	6.5	20.5	6.8	1.5	62.5	36.8	7.3	22.3	4.0	1.7	62.5	
BCSX1040B2F	7.9	6.0	9.5	.	0.8	77.8	26.3	6.8	19.0	6.3	1.4	71.7	34.4	7.0	24.8	4.5	1.4	40.0	
FM 1740B2F	8.5	6.0	11.3	.	0.8	68.0	27.2	7.3	19.5	6.3	1.4	67.9	32.6	6.8	22.0	4.8	1.5	69.2	
FM 1773LLB2	9.0	7.8	11.5	.	0.8	84.2	28.9	8.8	19.5	7.0	1.5	77.7	38.3	8.3	25.5	4.5	1.5	67.8	
FM 1845LLB2	8.4	8.3	12.0	.	0.7	89.5	28.1	9.3	18.3	6.3	1.5	81.3	34.6	6.8	26.0	4.3	1.3	50.0	
FM 9160B2F	9.1	8.5	12.3	.	0.7	68.4	26.3	8.5	20.8	8.0	1.3	69.8	39.1	8.8	28.3	5.0	1.4	48.8	
FM 9170B2F	8.8	7.3	11.0	.	0.8	73.7	26.6	8.3	19.5	7.3	1.4	83.7	39.1	8.5	26.0	5.0	1.5	49.3	
09R555B2R2	8.8	6.5	11.0	.	0.8	68.2	32.1	6.3	20.0	7.5	1.6	72.9	37.1	6.3	23.5	4.5	1.6	71.2	
09R619B2R2	8.6	6.8	9.5	.	0.9	80.0	31.2	6.3	19.3	7.5	1.6	69.6	43.2	5.8	20.0	4.5	2.2	70.5	
10R020B2R2	8.4	6.3	11.5	.	0.7	68.0	31.1	8.3	21.8	7.8	1.4	78.4	37.3	8.0	24.0	4.3	1.6	62.5	
10R026B2R2	8.3	6.3	9.8	.	0.8	66.7	32.2	6.3	19.3	7.5	1.7	65.2	45.3	7.3	25.0	4.8	1.8	74.7	
10R040B2R2	9.1	7.3	9.5	.	1.0	69.2	27.4	5.8	17.0	7.3	1.6	70.4	46.9	7.5	26.5	5.3	1.8	43.1	
10R047B2R2	9.6	6.8	9.8	.	1.0	68.8	32.8	7.0	18.5	7.5	1.8	73.0	37.4	7.0	23.5	5.0	1.6	42.9	
10R050B2R2	7.6	6.3	10.5	.	0.7	81.0	32.3	7.0	20.8	8.0	1.6	65.3	40.7	7.3	26.5	4.3	1.5	54.9	
10R051B2R2	9.5	6.0	10.3	.	0.9	85.7	30.9	6.0	19.3	7.3	1.6	69.3	45.8	7.0	24.0	4.3	1.9	53.5	
10R052B2R2	9.7	6.3	9.3	.	1.1	93.8	31.3	7.8	18.0	6.5	1.7	67.8	46.2	7.0	26.3	4.0	1.8	43.8	
DP 1044 B2RF	7.0	6.8	10.3	.	0.7	66.7	27.7	7.8	18.5	7.3	1.5	64.9	34.0	5.5	22.3	3.8	1.5	68.3	
PHY 367 WRF	8.4	6.5	9.8	.	0.9	82.4	30.7	7.3	19.8	8.3	1.6	81.5	35.1	7.8	23.0	4.0	1.5	57.7	
PHY 375 WRF	8.7	7.0	10.3	.	0.8	82.4	31.6	7.0	20.5	8.3	1.5	80.2	37.2	7.0	22.3	4.3	1.7	76.9	
PHY 499 WRF	8.3	7.8	11.0	.	0.8	88.2	32.7	8.0	18.8	7.0	1.7	76.6	37.9	7.8	24.8	4.3	1.5	57.6	
PHY 519 WRF	7.4	7.8	10.5	.	0.7	80.0	28.6	7.8	18.8	7.3	1.5	80.2	38.7	8.8	25.0	4.8	1.5	59.4	
PHY 565 WRF	7.3	7.8	11.0	.	0.7	70.6	29.2	7.8	20.0	8.8	1.5	68.9	39.6	7.5	24.3	4.8	1.6	58.5	
PHY 569 WRF	7.0	7.0	10.0	.	0.7	81.3	28.1	8.0	20.5	7.8	1.4	64.8	39.7	6.8	22.3	4.5	1.8	72.0	
ST 4288B2F	8.6	7.3	10.5	.	0.8	91.2	27.0	7.0	20.3	7.3	1.3	80.7	33.1	7.3	25.8	4.0	1.3	61.5	
ST 5288B2F	7.9	6.8	9.8	.	0.8	93.8	30.8	6.8	19.0	7.5	1.6	81.1	30.4	7.5	24.0	4.3	1.3	55.7	
ST 5458B2F	9.1	6.8	10.5	.	0.9	92.1	26.4	5.3	17.8	6.5	1.5	78.7	34.2	6.5	22.5	4.0	1.5	55.9	
Average	8.3	6.9	10.8	.	0.8	75.3	29.4	7.3	19.6	7.4	1.5	72.0	37.8	7.4	24.5	4.4	1.6	59.6	

Table 7. Yield, fiber quality, and boll weight mean data along with statistical analysis for each of the varieties and advanced strains evaluated in Maricopa, AZ, 2010.

Seed Company	Variety	Lint Yield lbs/acre	Means Separation *	Lint Turnout Percent	HVI Color	Staple 32nds	Strength g/tex	Length Inches	Uniformity Percent	Micronaire	Leaf Grade	Premium cent/lb	Value \$/acre
Monsanto	10R050B2R2	2006.7	a	34.8	31	38	34.1	1.18	82.4	4.5	2	4.0	\$1,122.72
Phytogen	PHY499WRF	1867.9	a b	35.6	31	36	31.5	1.13	82.7	4.4	3	4.4	\$1,053.09
Monsanto	DP1044B2RF	1813.5	b c	33.4	31	36	30.7	1.14	81.9	4.8	2	3.6	\$1,007.14
Phytogen	PHY375WRF	1742.5	b c d	34.3	41	37	31.3	1.16	82.8	4.5	2	1.9	\$938.47
Monsanto	DP1133B2RF	1644.6	c d e	35.8	31	38	33.0	1.20	83.5	4.4	3	4.0	\$920.86
Phytogen	PHY367WRF	1643.6	c d e	32.8	31	37	31.7	1.15	82.4	4.5	3	4.7	\$932.17
Bayer CropScience	BCSX1030B2F	1600.0	d e f	33.7	31	36	29.6	1.13	81.6	4.3	2	2.7	\$875.24
Monsanto	10R047B2R2	1583.2	d e f g	35.1	31	38	29.6	1.17	82.5	4.7	2	4.6	\$895.51
Monsanto	10R020B2R2	1554.6	e f g h	33.2	41	36	29.4	1.12	82.3	4.3	2	3.3	\$859.20
Phytogen	PHY519WRF	1522.4	e f g h i	33.6	31	37	31.5	1.14	82.5	4.6	3	4.4	\$857.87
Arizona Cotton Growers	ACGA229	1517.7	e f g h i j	32.9	31	38	32.3	1.18	82.8	4.6	2	3.0	\$835.19
Monsanto	10R026B2R2	1508.1	e f g h i j k	33.9	41	37	30.1	1.16	82.0	4.5	2	4.9	\$858.81
Bayer CropScience	ST5458B2RF	1491.8	e f g h i j k	32.9	41	37	30.9	1.14	81.6	4.7	3	2.8	\$818.82
Phytogen	PHY565WRF	1476.8	e f g h i j k l	31.8	31	37	32.9	1.17	82.7	4.1	3	3.6	\$820.65
Monsanto	10R051B2R2	1470.0	f g h i j k l	35.5	31	36	29.4	1.14	82.4	4.7	2	4.2	\$825.10
Monsanto	10R040B2R2	1465.0	f g h i j k l	34.8	31	38	30.8	1.18	82.6	4.3	2	4.0	\$820.13
Bayer CropScience	ST5288B2F	1436.0	f g h i j k l m	33.6	41	36	29.2	1.12	81.6	4.8	4	1.4	\$767.22
Arizona Cotton Growers	ACGA039	1432.1	f g h i j k l m	34.3	41	37	32.2	1.18	82.9	4.5	2	3.9	\$800.61
Arizona Cotton Growers	ACGA265	1425.3	g h i j k l m	30.2	31	38	32.3	1.18	82.1	4.6	2	3.0	\$784.13
Arizona Cotton Growers	ACGA225	1418.7	g h i j k l m	31.0	41	37	31.0	1.16	82.7	4.5	2	4.7	\$803.71
Arizona Cotton Growers	ACGA246	1410.7	h i j k l m n	34.3	31	37	32.5	1.15	82.9	4.5	2	4.9	\$801.99
Arizona Cotton Growers	ACGA250	1403.9	h i j k l m n	32.1	41	37	31.9	1.17	82.4	4.4	2	2.2	\$760.50
Bayer CropScience	BCSX1040B2F	1380.4	i j k l m n	28.7	21	38	31.5	1.20	82.3	4.5	3	2.1	\$746.12
Bayer CropScience	ST4288B2F	1370.5	i j k l m n	28.7	41	37	30.6	1.16	81.6	4.3	3	2.8	\$750.34
Bayer CropScience	FM1845LLB2	1368.4	i j k l m n	30.8	31	38	32.4	1.19	82.5	4.5	3	3.7	\$761.95
Bayer CropScience	FM9170B2F	1359.8	i j k l m n	32.1	31	38	32.3	1.19	82.5	4.2	3	2.7	\$743.77
Monsanto	DP1137B2RF	1354.5	i j k l m n	35.2	41	38	30.8	1.19	83.3	4.4	2	3.2	\$747.30
Arizona Cotton Growers	ACGA276	1353.2	i j k l m n	31.6	31	38	32.6	1.19	82.0	4.7	2	4.6	\$765.65
Arizona Cotton Growers	ACGA082	1349.9	j k l m n	30.6	41	39	34.5	1.24	83.4	4.8	3	3.9	\$755.25
Phytogen	PHY569WRF	1348.2	j k l m n	32.2	31	38	32.9	1.18	83.5	4.0	2	4.9	\$767.57
Arizona Cotton Growers	ACGA189	1343.7	k l m n	31.0	31	38	32.2	1.20	82.8	4.4	3	3.9	\$750.40
Arizona Cotton Growers	ACGA264	1338.9	k l m n	29.0	31	39	34.0	1.23	82.9	4.8	2	3.9	\$749.03
Bayer CropScience	FM1740B2F	1316.6	l m n	33.4	31	37	31.7	1.14	82.7	4.5	2	3.1	\$726.01
Monsanto	10R052B2R2	1280.0	m n o	35.6	31	38	30.8	1.18	82.8	4.3	2	3.9	\$713.44
Bayer CropScience	FM1773LLB2	1241.8	n o	30.5	31	39	33.7	1.22	82.7	4.6	2	4.0	\$696.55
Bayer CropScience	FM9160B2F	1115.7	o	31.6	31	36	29.6	1.13	81.3	4.2	2	3.8	\$622.57
Average		1471.0		32.8		37	31.6	1.17	82.5	4.5	2	3.6	\$818.20
LSD§		170.8		0.7	-	1	2.0	0.04	NS	0.3	0.8	NS	\$101.92
OSL†		0.0001		0.0001	-	0.0001	0.0001	0.0001	0.4337	0.0001	0.0050	0.0589	0.0001
CV‡		7.1		1.4	-	2.1	3.9	2.1	1.1	3.9	20.6	34.5	7.7

*Means followed by the same letter are not statistically different according to a Fisher's least significant difference means separation test.

§ Least Significant Difference

† Observed Significance Level

‡ Coefficient of Variation

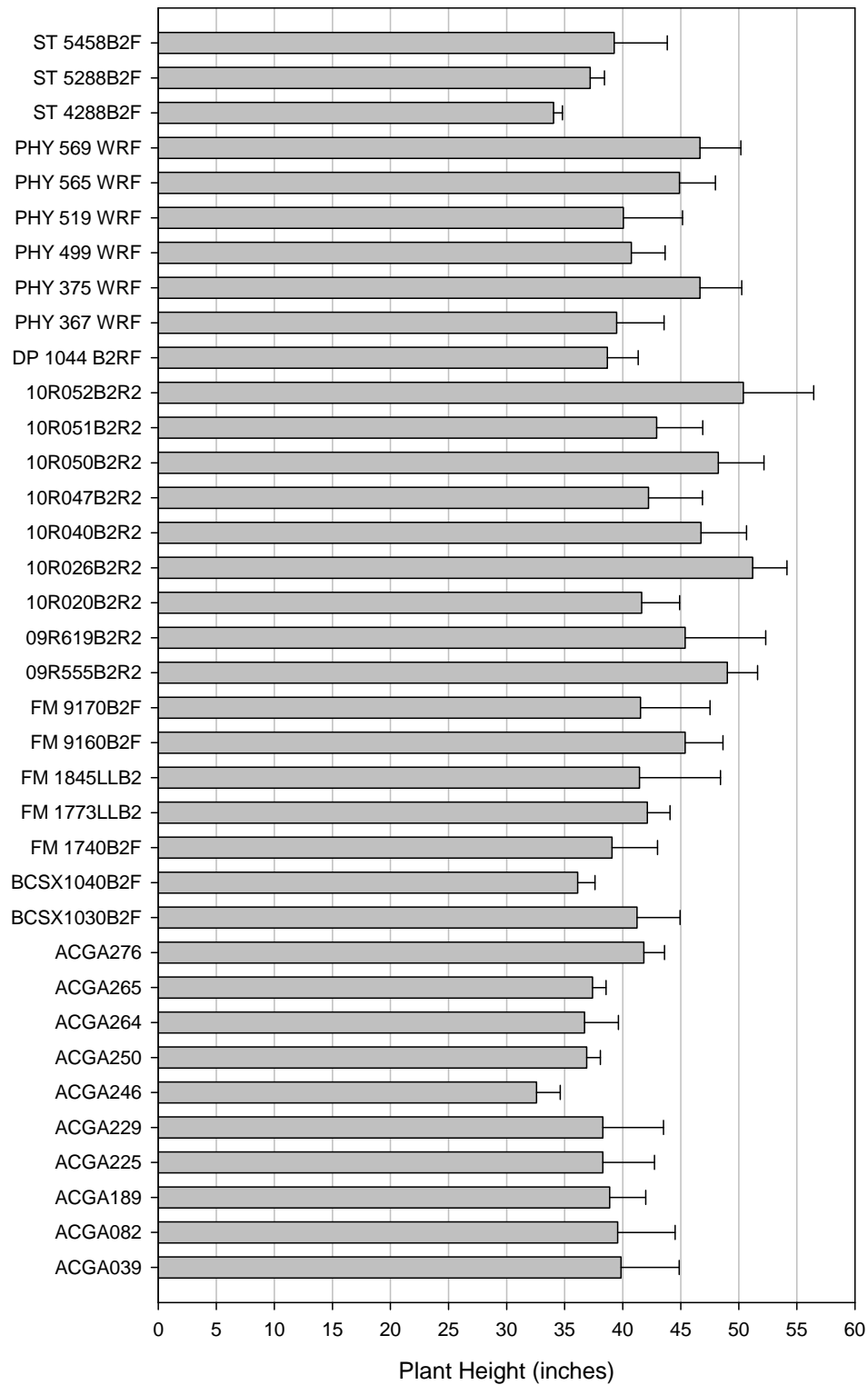
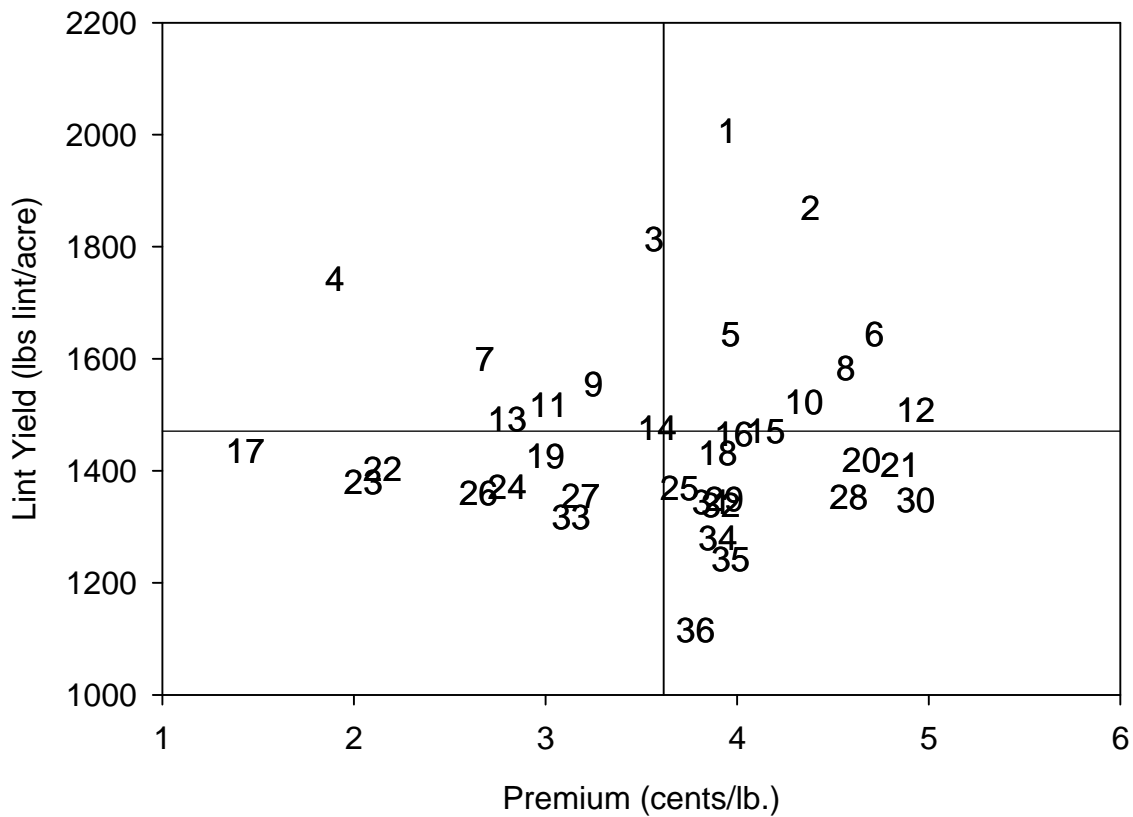


Figure 3. Mean final plant height (inches) along with the standard deviation for each of the varieties and advanced strains evaluated in Maricopa, AZ, 2010.



Key

1	10R050B2R2	13	ST5458B2RF	25	FM1845LLB2
2	PHY499WRF	14	PHY565WRF	26	FM9170B2F
3	DP1044B2RF	15	10R051B2R2	27	DP1137B2RF
4	PHY375WRF	16	10R040B2R2	28	ACGA276
5	DP1133B2RF	17	ST5288B2F	29	ACGA082
6	PHY367WRF	18	ACGA039	30	PHY569WRF
7	BCSX1030B2F	19	ACGA265	31	ACGA189
8	10R047B2R2	20	ACGA225	32	ACGA264
9	10R020B2R2	21	ACGA246	33	FM1740B2F
10	PHY519WRF	22	ACGA250	34	10R052B2R2
11	ACGA229	23	BCSX1040B2F	35	FM1773LLB2
12	10R026B2R2	24	ST4288B2F	36	FM9160B2F

Figure 4. Lint yield (lbs/acre) plotted as a function of fiber quality premium/discount (cents/lb). Vertical and horizontal lines represent the mean value for the two parameters. Varieties that fall in the upper right quadrant formed by the mean lines produced higher than average lint yield and fiber quality. Each of the varieties and advanced strain entries are plotted for the Maricopa, AZ location in 2010.

Table 8. Early season emergence and vigor evaluations of each entry planted in the Advanced Strain evaluation in Safford, AZ, 2010.

Seed Company	Variety	Estimate of Percent		
		Emergence Percent	Population Plants/Row Foot	Vigor Rating 1-9 (low-high)
AZ Cotton Growers	ACGA039	49.5	2.8	5.0
AZ Cotton Growers	ACGA070	46.5	2.6	4.8
AZ Cotton Growers	ACGA189	52.5	2.9	4.8
AZ Cotton Growers	ACGA213	43.0	2.4	4.5
AZ Cotton Growers	ACGA229	60.5	3.4	5.3
AZ Cotton Growers	ACGA243	52.5	2.9	4.8
AZ Cotton Growers	ACGA246	46.5	2.6	4.8
AZ Cotton Growers	ACGA248	43.5	2.4	4.8
AZ Cotton Growers	ACGA271	68.0	3.8	5.0
AZ Cotton Growers	ACGA275	47.0	2.6	4.8
Bayer CropScience	BCSX1010B2F	51.0	2.8	4.3
Bayer CropScience	BCSX1030B2F	49.0	2.7	4.8
Bayer CropScience	BCSX1040B2F	44.5	2.5	4.5
Bayer CropScience	FM1740B2F	51.0	2.8	4.3
Bayer CropScience	FM1773LLB2	32.0	1.8	4.0
Bayer CropScience	FM1845LLB2	31.3	1.7	3.7
Bayer CropScience	FM9160B2F	35.5	2.0	3.8
Bayer CropScience	FM9170B2F	40.5	2.3	4.0
Bayer CropScience	ST4288B2F	51.5	2.9	4.8
Bayer CropScience	ST5288B2F	51.5	2.9	4.5
Bayer CropScience	ST5458B2F	55.5	3.1	5.3
Monsanto	10R020B2R2	52.0	2.9	4.5
Monsanto	10R026B2R2	44.5	2.5	4.5
Monsanto	10R040B2R2	50.5	2.8	4.8
Monsanto	10R050B2R2	51.5	2.9	5.0
Monsanto	10R051B2R2	41.5	2.3	4.0
Monsanto	10R052B2R2	58.0	3.2	4.5
Monsanto	DP0935B2RF	62.5	3.5	5.0
Monsanto	DP1032B2RF	51.0	2.8	4.5
Monsanto	DP1044B2RF	50.0	2.8	5.3
Monsanto	DP1133B2RF	30.0	1.7	4.0
Monsanto	DP1137B2RF	46.5	2.6	4.8
Phytogen	PHY367WRF	63.0	3.5	5.0
Phytogen	PHY499WRF	66.5	3.7	5.3
Phytogen	PHY519WRF	45.5	2.5	4.5
Phytogen	PHY565WRF	45.0	2.5	4.5
Phytogen	PHY569WRF	44.0	2.4	4.5
Phytogen	PHY755WRF	46.0	2.6	4.8
	Average	48.7	2.7	4.6

Table 9. Plant growth and development data for three sample dates and each entry collected at the Safford, AZ location, 2010.

Variety	20-Jun-10						21-Jul-10						25-Oct-10					
	Plant Height	First Fruiting Branch	Mainstem Nodes	Nodes Above White Flower	Mean Height to Node Ratio	Mean Fruit Retention	Plant Height	First Fruiting Branch	Mainstem Nodes	Nodes Above White Flower	Mean Height to Node Ratio	Mean Fruit Retention	Plant Height	First Fruiting Branch	Mainstem Nodes	Nodes Above Cracked Boll	Mean Height to Node Ratio	Mean Fruit Retention
09R555B2R2	8.6	6.3	9.5	.	0.9	82.4	26.3	6.0	18.5	6.3	1.4	76.9	40.5	.	.	.	.	.
09R619B2R2	10.3	6.0	10.3	.	1.0	76.2	26.6	6.5	18.3	7.0	1.5	88.2	36.8	.	.	.	.	.
10R020B2R2	9.6	8.0	11.5	.	0.8	88.9	29.5	8.3	21.3	7.0	1.4	88.4	38.0	.	.	.	.	.
10R026B2R2	10.3	6.0	10.3	.	1.0	71.4	26.9	7.5	18.0	6.3	1.5	80.4	34.6	.	.	.	.	.
10R040B2R2	9.1	6.3	10.3	.	0.9	95.0	21.8	6.8	17.0	7.3	1.3	83.3	37.5	.	.	.	.	.
10R050B2R2	9.4	7.5	11.3	.	0.8	73.7	28.9	7.0	21.0	7.8	1.4	89.2	43.1	.	.	.	.	.
10R051B2R2	9.1	6.5	9.0	.	1.0	85.7	25.8	5.8	18.5	6.5	1.4	77.3	39.7	.	.	.	.	.
10R052B2R2	9.3	6.5	9.8	.	0.9	76.5	30.4	6.5	18.5	6.8	1.6	85.6	43.8	.	.	.	.	.
ACGA039	11.0	7.0	11.8	.	0.9	87.0	26.2	7.0	20.0	7.0	1.3	89.3	31.0	.	.	.	.	.
ACGA070	9.3	7.5	11.5	.	0.8	100.0	26.0	7.8	21.8	7.0	1.2	91.7	46.4	.	.	.	.	.
ACGA189	9.4	7.3	11.5	.	0.8	81.0	26.6	6.3	18.5	6.8	1.4	90.6	36.9	.	.	.	.	.
ACGA213	8.9	7.5	10.8	.	0.8	82.4	28.4	7.8	20.0	7.5	1.4	83.0	44.8	.	.	.	.	.
ACGA229	7.3	7.3	11.8	.	0.6	81.8	24.4	6.5	19.0	6.5	1.3	84.3	36.2	.	.	.	.	.
ACGA243	10.3	7.3	10.8	.	1.0	77.8	27.5	7.0	19.3	6.0	1.4	87.7	38.9	.	.	.	.	.
ACGA246	9.0	7.5	11.5	.	0.8	80.0	25.6	7.8	20.5	6.3	1.2	86.4	34.8	.	.	.	.	.
ACGA248	10.2	6.5	12.0	.	0.9	80.8	27.3	6.5	21.3	7.3	1.3	89.7	33.4	.	.	.	.	.
ACGA271	10.3	6.8	10.5	.	1.0	68.4	25.9	7.3	20.3	7.5	1.3	86.6	42.9	.	.	.	.	.
ACGA275	10.3	6.8	12.0	.	0.9	88.0	29.4	6.8	20.5	6.5	1.4	83.1	41.7	.	.	.	.	.
BCSX1010B2F	9.5	7.0	11.0	.	0.9	85.0	27.4	6.5	19.0	6.5	1.4	89.8	34.4	.	.	.	.	.
BCSX1030B2F	9.6	7.3	10.0	.	1.0	86.7	26.0	6.5	18.5	6.8	1.4	91.3	35.4	.	.	.	.	.
BCSX1040B2F	10.6	5.5	10.3	.	1.0	91.3	23.3	6.3	18.0	6.0	1.3	94.1	32.5	.	.	.	.	.
DP0935B2RF	9.3	7.3	10.3	.	0.9	93.8	26.6	7.3	19.0	6.3	1.4	91.2	39.4	.	.	.	.	.
DP1032B2RF	9.0	6.8	10.3	.	0.9	77.8	27.6	6.5	18.8	6.3	1.5	83.0	37.2	.	.	.	.	.
DP1044B2RF	9.5	6.8	11.8	.	0.8	83.3	26.9	7.0	19.8	6.8	1.4	90.9	38.1	.	.	.	.	.
FM1740B2F	8.5	7.3	11.8	.	0.7	95.5	27.3	6.3	19.5	6.3	1.4	90.4	36.6	.	.	.	.	.
FM1773LLB2	8.8	8.3	11.3	.	0.8	75.0	24.1	8.0	19.3	6.8	1.3	88.8	38.5	.	.	.	.	.
FM1845LLB2	8.8	7.3	11.8	.	0.7	90.9	23.6	7.8	20.3	7.0	1.2	88.0	39.3	.	.	.	.	.
FM9160B2F	7.3	8.0	10.5	.	0.7	78.6	24.5	8.0	21.0	7.5	1.2	87.5	33.9	.	.	.	.	.
FM9170B2F	7.9	7.5	11.5	.	0.7	90.0	26.7	7.8	20.3	6.8	1.3	87.0	41.8	.	.	.	.	.
PHY367WRF	8.9	7.0	10.5	.	0.8	100.0	28.8	6.8	18.5	6.5	1.6	92.2	33.9	.	.	.	.	.
PHY499WRF	9.3	7.3	11.0	.	0.8	100.0	30.3	8.3	19.8	6.3	1.5	95.0	39.1	.	.	.	.	.
PHY519WRF	9.4	7.3	10.5	.	0.9	88.2	33.0	7.5	20.8	7.5	1.6	89.5	37.6	.	.	.	.	.
PHY565WRF	9.0	6.8	9.8	.	0.9	81.3	26.8	7.8	20.8	7.5	1.3	94.6	34.0	.	.	.	.	.
PHY569WRF	7.5	7.0	10.8	.	0.7	73.7	27.0	6.8	20.0	8.3	1.3	84.2	40.9	.	.	.	.	.
PHY755WRF	8.0	7.3	10.3	.	0.8	100.0	29.4	7.3	20.0	5.8	1.5	87.3	36.9	.	.	.	.	.
ST4288B2F	10.2	7.8	11.0	.	0.9	82.4	25.7	6.5	18.5	6.8	1.4	93.3	29.8	.	.	.	.	.
ST5288B2F	8.1	6.5	9.3	.	0.9	86.7	25.6	5.8	20.0	7.8	1.3	95.9	38.2	.	.	.	.	.
ST5458B2F	9.4	6.5	10.8	.	0.9	95.2	27.6	6.0	19.8	6.8	1.4	94.1	34.3	.	.	.	.	.
Average	9.2	7.0	10.8	.	0.9	85.1	26.9	7.0	19.6	6.8	1.4	88.1	37.7	.	.	.	.	.

Table 10. Yield, fiber quality, and boll weight mean data along with statistical analysis for each of the varieties and advanced strains evaluated in Safford, AZ, 2010.

Seed Company	Variety	Lint Yield lbs/acre	Means Separation *	Lint Turnout	HVI Color	Staple 32nds	Strength g/tex	Length Inches	Uniformity Percent	Micronaire	Leaf Grade	Premium cent/lb	Value \$/acre
Phytogen	PHY519WRF	1730.4	a	38.3	31	37	29.1	1.14	80.9	4.1	2	4.4	\$975.24
Monsanto	DP1133B2RF	1631.7	a b	41.4	31	37	29.4	1.14	82.3	4.6	2	4.4	\$920.71
Bayer CropScience	FM9170B2F	1610.7	a b c	38.4	31	37	28.7	1.16	81.3	4.1	2	4.2	\$904.23
Bayer CropScience	FM9160B2F	1576.1	b c d	36.9	31	37	29.0	1.17	81.6	4.1	2	4.4	\$889.00
ACGA	ACGA213	1540.5	b c d e	37.5	21	37	30.3	1.16	82.0	4.5	2	4.8	\$875.09
Monsanto	10R050B2R2	1533.7	b c d e	38.9	31	38	30.5	1.17	80.5	4.2	2	4.6	\$868.30
Monsanto	DP1032B2RF	1526.2	b c d e f	40.6	31	37	28.3	1.14	80.6	4.4	2	4.2	\$857.32
Monsanto	DP1044B2RF	1520.1	b c d e f	36.6	31	37	28.9	1.14	81.7	4.2	2	4.2	\$854.15
ACGA	ACGA243	1518.3	b c d e f	37.8	31	37	30.7	1.17	81.4	4.4	2	4.7	\$860.13
Phytogen	PHY755WRF	1509.4	b c d e f	36.5	31	38	31.1	1.20	81.1	4.2	2	4.7	\$854.86
Bayer CropScience	FM1740B2F	1504.5	b c d e f	37.8	31	36	28.4	1.12	80.4	4.4	2	3.4	\$832.05
Bayer CropScience	BCSX1030B2F	1493.6	b c d e f g	38.5	31	36	27.7	1.10	80.4	4.3	2	3.8	\$833.25
ACGA	ACGA246	1492.4	b c d e f g	38.0	31	36	29.8	1.11	81.5	4.4	2	4.0	\$835.59
ACGA	ACGA070	1489.7	b c d e f g	35.1	31	39	32.7	1.21	82.9	4.6	2	4.7	\$844.20
Monsanto	DP0935B2RF	1486.7	b c d e f g	38.7	31	36	28.9	1.13	80.7	4.3	2	3.9	\$830.26
Monsanto	10R020B2R2	1483.5	c d e f g	38.5	31	35	27.8	1.10	81.7	4.4	2	2.9	\$814.50
ACGA	ACGA271	1478.7	c d e f g	35.4	31	39	32.3	1.20	82.5	4.6	2	4.9	\$841.66
Bayer CropScience	ST5458B2F	1453.9	d e f g h	36.1	31	36	28.7	1.12	80.2	4.2	2	3.9	\$812.93
Phytogen	PHY565WRF	1443.4	d e f g h i	36.4	31	37	29.6	1.15	81.8	4.0	2	4.5	\$815.40
Monsanto	10R026B2R2	1442.2	d e f g h i j	39.6	31	37	28.5	1.13	81.2	4.4	2	4.3	\$812.00
Phytogen	PHY499WRF	1439.2	d e f g h i j k	37.5	31	36	29.2	1.12	81.3	4.4	2	4.2	\$809.37
Monsanto	10R051B2R2	1426.5	e f g h i j k	41.5	31	37	27.0	1.14	82.1	4.4	2	4.2	\$802.21
Monsanto	DP1137B2RF	1383.3	f g h i j k l	40.8	31	35	27.2	1.11	81.0	4.6	2	3.3	\$764.85
Phytogen	PHY569WRF	1355.5	g h i j k l m	38.2	31	36	29.3	1.12	82.3	4.2	2	4.2	\$762.17
Bayer CropScience	BCSX1010B2F	1350.6	g h i j k l m n	36.0	31	36	27.5	1.13	80.3	4.3	2	4.0	\$756.74
Phytogen	PHY367WRF	1315.4	h i j k l m n o	36.9	31	36	29.1	1.12	80.4	3.9	2	3.6	\$730.96
Bayer CropScience	ST5288B2F	1297.9	i j k l m n o	37.1	31	36	28.1	1.13	80.6	4.2	2	3.4	\$717.52
Monsanto	10R052B2R2	1294.9	j k l m n o	42.2	31	36	28.0	1.14	81.7	4.3	2	4.2	\$727.28
Bayer CropScience	FM1845LLB2	1292.7	k l m n o	35.9	31	38	30.0	1.19	81.9	4.4	2	4.6	\$731.51
ACGA	ACGA275	1255.0	l m n o	36.8	31	36	28.1	1.11	81.1	4.7	2	3.4	\$695.28
ACGA	ACGA189	1252.1	l m n o	36.0	31	37	30.3	1.16	81.6	4.3	3	4.5	\$707.18
Monsanto	10R040B2R2	1216.9	m n o p	40.3	31	36	27.4	1.13	80.8	4.2	2	3.8	\$679.46
Bayer CropScience	ST4288B2F	1207.8	m n o p q	35.5	31	35	27.3	1.10	80.4	4.6	2	3.1	\$666.61
ACGA	ACGA039	1204.2	n o p q	37.3	31	37	29.6	1.14	81.1	4.3	3	4.0	\$673.78
ACGA	ACGA229	1202.4	o p q	37.4	31	37	30.8	1.15	80.7	4.3	3	4.3	\$676.55
Bayer CropScience	FM1773LLB2	1100.0	p q r	35.4	31	37	29.2	1.15	79.5	4.3	2	3.9	\$615.09
Bayer CropScience	BCSX1040B2F	1066.3	q r	32.7	31	39	29.9	1.21	82.1	4.3	2	4.6	\$603.90
ACGA	ACGA248	957.8	r	35.4	21	37	30.6	1.14	80.9	4.0	2	4.8	\$544.06
Average		1396.9		37.6	---	37	29.2	1.14	81.2	4.3	2	4.1	\$784.09
LSD§		147.7		0.0	---	1	1.6	0.04	1.2	0.3	0.3	1.1	\$84.12
OSL†		0.0001		0.0001	---	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0454	0.0001
CV‡		7.5		2.7	---	2.4	4.0	2.4	1.0	4.8	10.2	19.7	7.7

*Means followed by the same letter are not statistically different according to a Fisher's least significant difference means separation test.

§ Least Significant Difference

† Observed Significance Level

‡ Coefficient of Variation

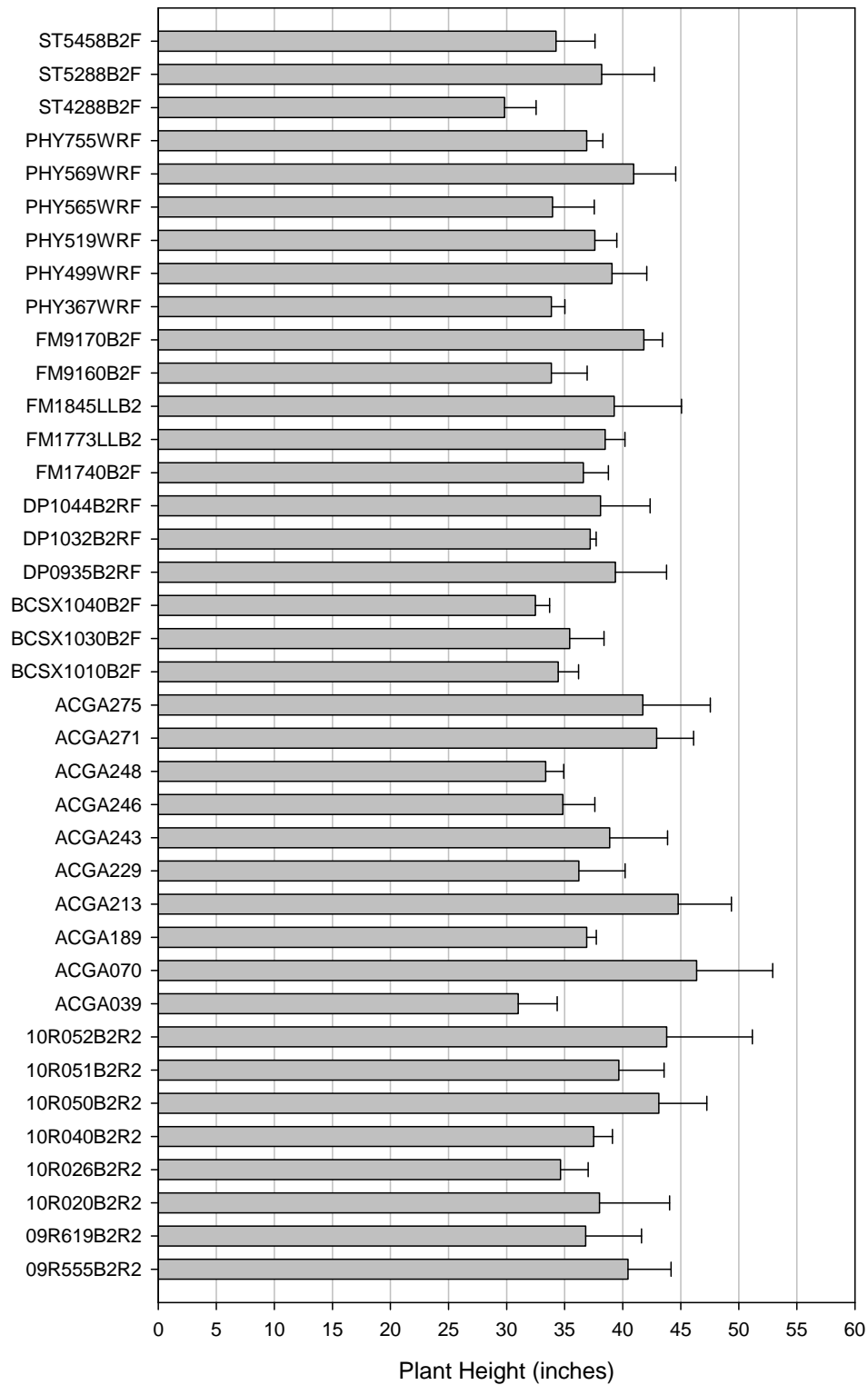
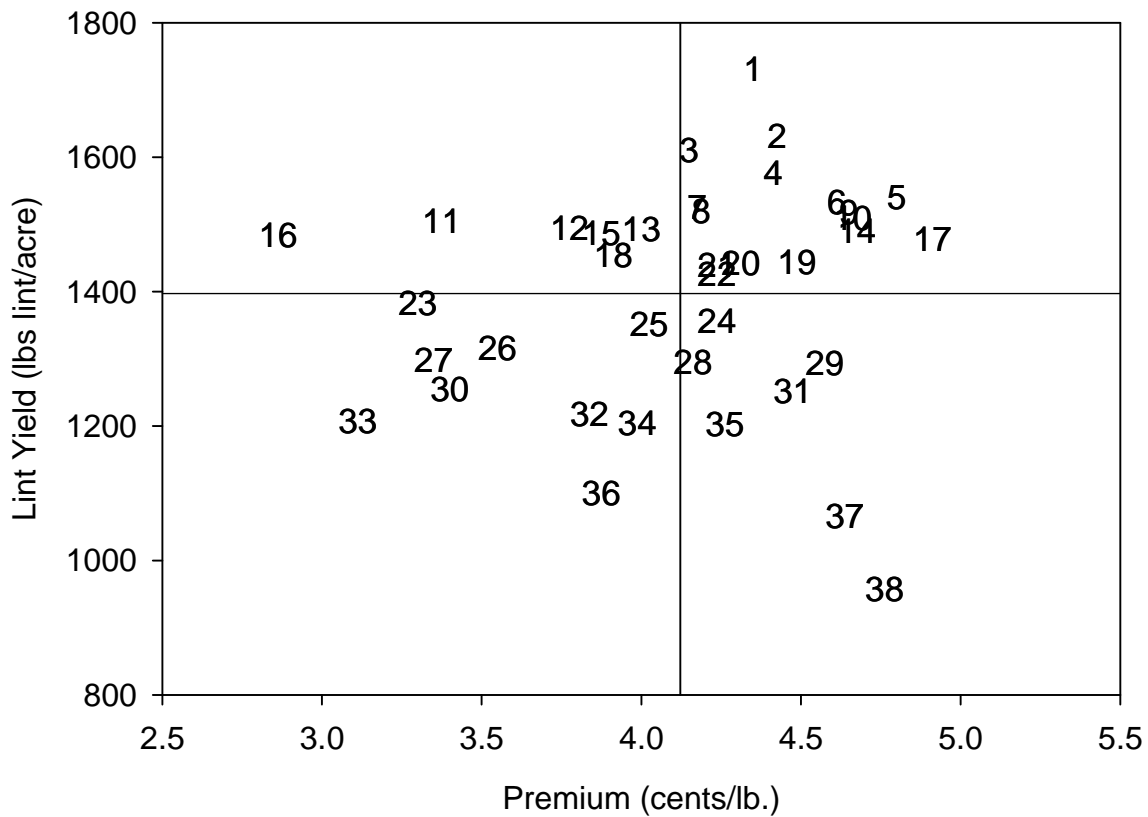


Figure 5. Mean final plant height (inches) along with the standard deviation for each of the varieties and advanced strains evaluated in Safford, AZ, 2010.



Key

1	PHY519WRF	14	ACGA070	27	ST5288B2F
2	DP1133B2RF	15	DP0935B2RF	28	10R052B2R2
3	FM9170B2F	16	10R020B2R2	29	FM1845LLB2
4	FM9160B2F	17	ACGA271	30	ACGA275
5	ACGA213	18	ST5458B2F	31	ACGA189
6	10R050B2R2	19	PHY565WRF	32	10R040B2R2
7	DP1032B2RF	20	10R026B2R2	33	ST4288B2F
8	DP1044B2RF	21	PHY499WRF	34	ACGA039
9	ACGA243	22	10R051B2R2	35	ACGA229
10	PHY755WRF	23	DP1137B2RF	36	FM1773LLB2
11	FM1740B2F	24	PHY569WRF	37	BCSX1040B2F
12	BCSX1030B2F	25	BCSX1010B2F	38	ACGA248
13	ACGA246	26	PHY367WRF		

Figure 6. Lint yield (lbs/acre) plotted as a function of fiber quality premium/discount (cents/lb). Vertical and horizontal lines represent the mean value for the two parameters. Varieties that fall in the upper right quadrant formed by the mean lines produced higher than average lint yield and fiber quality. Each of the varieties and advanced strain entries are plotted for the Safford, AZ location in 2010.

Table 11. Mean seedcotton weight per boll for each entry at all three locations of the Advanced Strain evaluations, 2010.

Seed Company	Entry	Seedcotton/Boll		
		Yuma	Maricopa	Safford
		-----grams-----		
AZ Cotton Growers	ACGA039	5.2	4.9	5.5
AZ Cotton Growers	ACGA070	N/A	N/A	5.3
AZ Cotton Growers	ACGA082	5.4	4.8	N/A
AZ Cotton Growers	ACGA189	5.4	4.4	4.7
AZ Cotton Growers	ACGA213	N/A	N/A	5.0
AZ Cotton Growers	ACGA225	5.8	4.8	N/A
AZ Cotton Growers	ACGA229	5.3	4.2	5.3
AZ Cotton Growers	ACGA243	N/A	N/A	5.6
AZ Cotton Growers	ACGA246	N/A	N/A	5.1
AZ Cotton Growers	ACGA246	5.9	4.8	N/A
AZ Cotton Growers	ACGA248	N/A	N/A	5.5
AZ Cotton Growers	ACGA250	5.4	4.5	N/A
AZ Cotton Growers	ACGA264	5.0	4.7	N/A
AZ Cotton Growers	ACGA265	5.3	4.7	N/A
AZ Cotton Growers	ACGA271	N/A	N/A	4.8
AZ Cotton Growers	ACGA275	N/A	N/A	6.0
AZ Cotton Growers	ACGA276	5.7	4.2	N/A
Bayer CropScience	BCSX1010B2F	N/A	N/A	4.8
Bayer CropScience	BCSX1030B2F	4.8	4.3	5.7
Bayer CropScience	BCSX1040B2F	5.7	4.5	4.9
Bayer CropScience	FM1740B2RF	6.0	4.5	4.8
Bayer CropScience	FM1773B2RF	N/A	5.0	5.4
Bayer CropScience	FM1845B2RF	N/A	5.3	5.7
Bayer CropScience	FM9160B2RF	5.9	4.3	5.0
Bayer CropScience	FM9170B2RF	5.5	4.6	5.1
Bayer CropScience	ST4288B2F	5.3	4.5	4.9
Bayer CropScience	ST5288B2F	4.9	4.4	4.6
Bayer CropScience	ST5458B2F	6.3	5.0	5.1
Monsanto	10R013B2R2	5.4	N/A	N/A
Monsanto	10R015B2R2	5.7	N/A	N/A
Monsanto	10R020B2R2	5.3	4.8	5.2
Monsanto	10R026B2R2	5.9	4.1	4.5
Monsanto	10R040B2R2	N/A	4.3	4.8
Monsanto	10R047B2R2	N/A	4.7	N/A
Monsanto	10R050B2R2	5.6	4.5	4.9
Monsanto	10R051B2R2	N/A	4.3	4.9
Monsanto	10R052B2R2	N/A	4.2	4.3
Monsanto	DP0935B2RF	N/A	N/A	6.0
Monsanto	DP0949B2RF	4.9	N/A	N/A
Monsanto	DP1032B2RF	5.2	N/A	4.6
Monsanto	DP1044B2RF	N/A	4.4	4.6
Monsanto	DP1133B2RF	4.8	4.1	4.7
Monsanto	DP1137B2RF	5.0	4.3	4.8
Phytogen	PHY367WRF	4.7	3.7	4.2
Phytogen	PHY375WRF	5.4	4.4	N/A
Phytogen	PHY499WRF	5.3	4.6	5.1
Phytogen	PHY519WRF	4.8	4.5	6.2
Phytogen	PHY565WRF	4.5	3.7	4.5
Phytogen	PHY569WRF	4.3	3.4	4.3
Phytogen	PHY755WRF	N/A	N/A	5.9
	Average	5.3	4.5	5.1

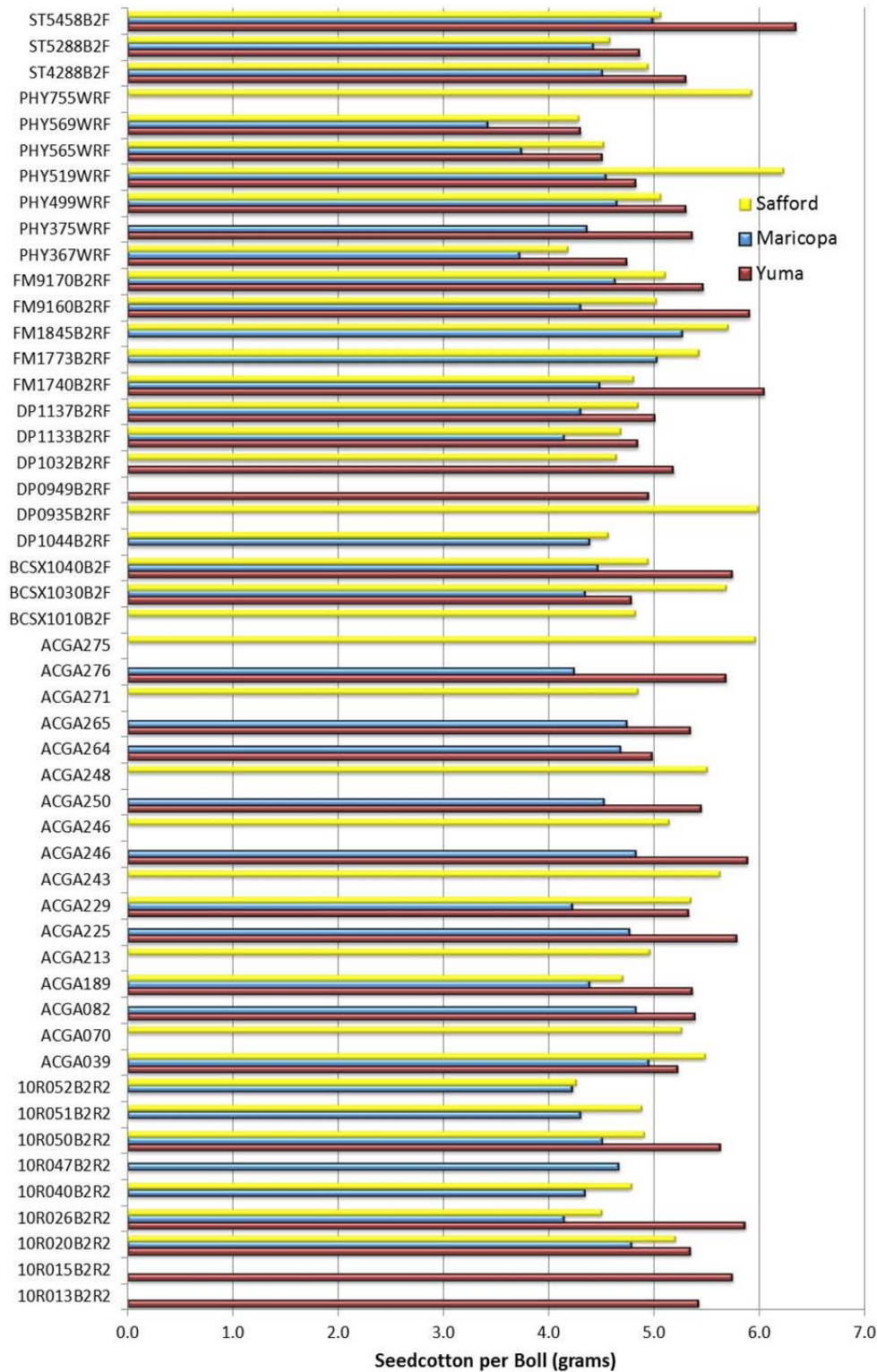


Figure 7. Mean seedcotton weight (g) per boll for each entry at all three locations of the Advanced Strain evaluations, 2010.