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2013 Wheat Variety Trials Conducted in the Texas and New Mexico High Plains

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2012-2013 Wheat Crop in Review

A year ago we wrote about the impact of the severe drought in the Texas High Plains which continued to affect the High Plains wheat crop. Little was expected of the dryland crop in most cases, but the repeated spring freezes of 2013 were unprecedented. These freezes were no less extraordinary in their uniqueness than the drought of 2011. Dates like March 25, April 10, April 19, April 24, and May3 became seared in our minds. Initially Texas A&M AgriLife staff felt that many producers of irrigated wheat rushed too quickly to abandon irrigated wheat after the first or second freeze as wheat has strong potential to compensate for freeze damage by developing additional tillers, filling remaining heads better, etc. But who would have imagined that more freezes would occur?

Few to no dryland fields were harvested in the Texas High Plains in 2013 and as many as half and more of the irrigated fields were ultimately hayed or simply abandoned to become a cover crop or replanted to summer row-crop. Many irrigated growers, especially those with seed blocks or who hoped to save some seed in the face of declining seed prospects, fought through the deteriorating conditions to salvage some yield. The cost of production was high, however, due to the extra irrigation that was needed to prolong the wheat long enough to benefit from compensatory tiller growth and reach yield. This was costly.

In order to assist grower decisions Texas A&M AgriLife developed resources to assess and manage freeze-damaged wheat. We hope that these resources are not needed again anytime soon, but these will remain available to growers at http://wheatfreezeinjury.tamu.edu

Variety Trial Results—Limitations in 2013

Due to poor yields and the impact of repeated freezes on our Texas High Plains variety trials, only limited data may be released to the public. Though the data remain of interest to Texas A&M AgriLife wheat breeders and agronomists, the data does not provide a sound foundation upon which to base grower wheat variety decisions. The variability in the three irrigated trials (out of seven) and one dryland trial (out of six) that were harvested was greatly impacted by the freezes and the response of each variety to the freezes may have been due in great part to the stage of growth (earlier maturing wheats were hurt more, but this was not always the case). The goal of these trials is measure response to genetics and minimize or avoid other potential factors.

Irrigated trials were harvested at Sunray (58 bu/A), Plainview (35 bu/A), and Seagraves (26 bu/A). All trials were irrigated several inches beyond what would have otherwise been applied in order to keep the trials going. The dryland trial harvested at Groom yielded 12 bu/A. Trial test weights were reduced some with site averages ranging from 54.9 to 58.0 lbs./bu.

All test sites include three to five replications with each test, and the test sites are a mix of farmer's fields and Texas A&M AgriLife research station settings. Producer cooperators were instructed

to treat their test site no differently than the rest of the field. Thirty of forty entries were planted across all Texas wheat growing regions, and ten more with regional adaptation were added to the High Plains trials. These forty entries included eight advanced experimentals lines (Texas A&M AgriLife and Syngenta).

Texas A&M AgriLife Variety "Picks"—Texas High Plains

How "Picks" are Chosen

The process of determining "Pick" varieties from Texas A&M AgriLife was initiated many years ago by Dr. Brent Bean, former Extension agronomist, Amarillo. Since then we have continued the methods of identifying top performing varieties as well as added multi-year, multi-site yield and test weight reports (Tables 4 to 7). Our criteria is a minimum of three years of data in Texas A&M High Plains wheat variety trials across the numerous annual locations. A "Pick" variety means this: given the data available these are the varieties I would choose to include and emphasize on my farm for wheat grain production. Picks are not necessarily the numerical top yielders as importance disease resistance traits (leaf or stripe rust, wheat streak mosaic virus), insect tolerance (greenbugs, Russian wheat aphid), or standability can also be important varietal traits that enable a producer to better manage potential risk. We look for **consistency** of yields, e.g. the regularity with which an individual variety is in the top 25% of yield at each location.

Picks Will Remain Unchanged for 2013-2014

Due to the lack of quality data in the 2013 harvest, we will not alter the Picks set forth for the past wheat cropping season. Instead we review previous results from 2009 to 2012 that served as the foundation for Pick selection.

Irrigated data from 2009 to 2012 represent 22 trial sites in the Texas High Plains. We have noted strong performance from irrigated Winterhawk (Westbred), yielding 8 bu/A above average for the 3-year period (Table 4). TAM 111 and TAM 112 trail only Winterhawk by 1-2 bu/A for 3-year top average yields per acre among 17 sites. Their yield was essentially matched by TAM 113, which was released in 2011 by Texas A&M AgriLife Research.

As noted above, varieties become top Picks after reviewing their performance at multiple locations over a minimum of three years. For example, TAM 111 and TAM 112 have each been in the top 25% 13 and 15 times among 22 dryland variety trials in the High Plains over the last four years (Table 5). Their consistent high yield across a range of conditions readily qualifies them as varietal Picks for dryland production. Duster, Hatcher, and Endurance remain solid dryland performers (9 to 12 sites among 22 in top 25%). Hatcher offers Russian what aphid tolerance, and though its yields have tailed off some in the past two years, it has a solid record of long-term performance.

The dryland Picks included two new members beginning in 2012. TAM 113 (formerly TX02A0252) has broader disease resistance to leaf and stripe rust and excellent bread making quality. Winterhawk now has 3 years of yield trial data, and it is the top yielding dryland wheat variety by 2 bu/A over the 3-year period (Table 5). One potential concern for this variety, however, is susceptibility to stem rust which is otherwise rare in other wheat varieties in the Texas High Plains. Stem rust can have devastating impact if conditions are favorable. Producers interested in Winterhawk are encouraged to limit plantings, perhaps no more than 25% of total acreage, to ensure that conditions favorable for stem rust do not damage your entire crop.

Table 1. Texas A&M AgriLife wheat grain variety Picks for the Texas High Plains based on yield performance and consistency based on data from at least 21 multi-year, multi-site trials, 2009-2012.

Wheat Variety "Picks", Texas High Plains		
Full Irrigation	Limited Irrigation	Dryland
TAM 111	TAM 111	TAM 111
	TAM 112	TAM 112
TAM 113	TAM 113	TAM 113
TAM 304		
Duster	Duster	Duster
Hatcher	Hatcher	Hatcher
Winterhawk	Winterhawk	Winterhawk
		Endurance

The Pick varieties for full and limited irrigation are nearly the same as those listed for dryland, including the addition of TAM 113 and Winterhawk (top average irrigated yield over 3 years) in 2012, with just a couple of exceptions. TAM 112 is not recommended for full irrigation because straw strength is an issue under high water and nitrogen conditions. TAM 304 will work well under full irrigation because of its excellent straw strength and good disease resistance though we believe its potential for outperformance is best in high input production.

How did Pick varieties perform in the freeze damaged trials of 2013? As noted before we will base few if any decisions about varietal performance upon our four irrigated trials that were harvested in 2013. For what it's worth, in general Winterhawk performed well in these three irrigated 2013 trials (as did dryland Pick Endurance); TAM 111, TAM 112, TAM 304, Duster, and Hatcher had average performance; TAM 113 performed below average (TAM 304 was likely at a disadvantage as we Pick it for full irrigation which these harvested trials were not).

Watch List from 2012: After the 2012 harvest we had just two years of data on Oklahoma's Iba but at that point it certainly demonstrated strong yield potential. We will be watching to see how its disease package compares to current Pick varieties. Sister line Gallagher from Oklahoma may also be a possible consideration in the future with more data. Iba performed well in the limited, freeze-affected trials in 2013, but Gallagher did not.

Is TAM 113 a "Replacement" for TAM 111 or TAM 112?

This was a common early question from producers in the past year. Texas A&M AgriLife believes that TAM 113 will fit well into any production system where producers have used either 111 or 112 (Table 2), but no, it is not a replacement—rather a *compliment*—to existing TAM 111 and TAM 112 production.

Based on absolute yield numbers TAM 111 appears to be a better choice than TAM 113 for irrigated production. The past four years, however, have largely been absent any major leaf or stripe rust concerns, which TAM 113 would handle better. We do not see any issue with TAM 113 that might preclude it from use in full irrigation like we do for TAM 112 (potential stalk strength/standability issue under high inputs). Though producers can get lulled into disregarding key traits like resistance to leaf or stripe rust if they haven't had a problem with this for a few years, TAM 113 offers a better package of resistance to these two diseases. For this reason, you may consider having TAM 113 share some of your acreage, especially if you have planted either TAM 111 or TAM 112 exclusively in either irrigated or dryland production. TAM 112 has provided strong performance in tough dryland conditions, and brings

greenbug tolerance but no rust tolerance to that situation, whereas if TAM 113 proves of similar hardiness, it can introduce significant disease tolerance to rusts in dryland production.

Table 2. Comparison of TAM 111, TAM 112, and TAM 113 for 4-year Texas High Plains irrigated and dryland production performance (2009-2012) and varietal traits important for Texas High Plains wheat.

Varietal Production	Irrigated, 2009-2012			Dryland, 2009-2012		
	Yield	# of sites in top 25% of yield	Test Weight	Yield	# of sites in top 25% of yield	Test Weight
	Bu/A		*Lbs./bu*	*Bu/A*		*Lbs./bu*
TAM 111	67.6	14	59.7	35.2	13	59.6
TAM 112	65.4	13	59.6	36.1	15	59.5
TAM 113	63.7	12	59.4	35.6	12	59.8
Trial Averages	*60.3*	*22 sites*	*58.6*	*32.6*	*22 sites*	*58.3*

Varietal Traits			Disease Reaction†			
	Relative Maturity	Standability	Leaf Rust	Stripe Rust	Wheat Streak Mosaic Virus	Greenbug Tolerance
TAM 111	Medium	Good	S	MS	MS	S
TAM 112	Medium-Early	Lower w/ high inputs	S	S	MR	MR
TAM 113	Medium	Good	R	R	MS	S

†S−Susceptible, MS−Moderately Susceptible, MR−Moderately Resistant, R−Resistant.

The Advantage of Variety Picks in Multi-Year Wheat Grain Production

Texas A&M AgriLife notes the relative outperformance of Pick varieties, averaged as a group, versus the non- pick varieties in the same trial for irrigated (Table 4) and dryland (Table 5) production. This is another means to demonstrate the potential for improvements in your wheat yield and ultimately your profit potential when you consider Pick wheat varieties for the Texas High Plains. These results are tabulated at the bottom of these tables for yield and also for test weight (Tables 6 & 7).

For example, in 2012, the average yield of Pick wheat varieties under irrigation was 68.4 bu/A, which was 10% higher than non-Pick varieties (62.2 bu/A, Table 4). Furthermore, the four-year average yield advantage for Pick varieties has an 11% yield advantage over non-Pick varieties. The same varieties had a 2% higher test weight over four years (Table 6). A similar advantage also exists among dryland varieties where Picks out-yielded non-Picks by 3.9 bu/A (12% increase, Table 3) over four years.

We also note that beardless wheats have a significant yield drag over any grain variety (Table 3). It is not often that any beardless wheat variety to date yields competitively with Pick wheat varieties, and beardless wheats taken to grain should only be for seedblock purposes (and command a premium per-bushel price to be comparable to commodity grain production with bearded wheats).

Table 3. Yield and test weight performance advantage during 2009-2012 of Texas A&M AgriLife's Pick wheat varieties vs. all other tested varieties or beardless varieties (2013 data not included due to widespread freeze damage).

	Irrigated			Dryland		
	Yield	Test weight	Yield drag vs. Picks	Yield	Test weight	Yield drag vs. Picks
	Bu/A	*Lbs./bu*		*Bu/A*	*Lbs./bu*	
Pick Wheat Varieties	65.9	59.2	---	35.8	59.4	---
All Other Varieties	59.1	58.1	-11.4%	31.9	58.1	-12.1%
Beardless Varieties	53.4		-23.4%	29.0		-23.2%
# of Test Sites	22 sites			22 sites		

Wheat Variety "Pick" Deletions Since 2010

In addition to the reasoning behind adding new varieties to our Picks, it is also informative to note what varieties have been removed from the Picks list and why.

- TAM 304, limited irrigation: Removed (2011) as modest yields fells below several other Pick varieties. Low test weight is a concern. TAM 304 remains a Pick for high input production, in part due to data from other states demonstrating excellent performance under heavy irrigation.
- Bill Brown, dryland and all irrigated: Added in 2011 but deleted in 2012. Early performance (2009 & 2010) was exceptional; but yields, though still solid, have tailed off since 2010. It is susceptible to stem rust, which is rare on all other wheat varieties except Winterhawk. Sister line Hatcher (also tolerant to Russian wheat aphid) is still a Pick and a better choice.
- Armour, dryland: Added in 2011 after one exceptional year but now removed. Performance has been solid, but other recent dryland Picks have achieved better long-term performance.
- Endurance, full and limited irrigation: Endurance is not performing well under irrigation relative to other Picks (top 25% only 4 of 22 trials since 2009), but it continues to enjoy good performance on dryland (top 25% 10 of 22 sites, 2009-2012) and it has good dual purpose grazing/grain potential.

Seed Considerations for 2013-2014 Wheat Production

Wheat supplies will be very short and costs will be elevated. Western Kansas (which also experienced significant wheat yield reductions due to freeze damage) and some other areas may be able to compensate some wheat seed supply to the Texas High Plains though transportation costs will push seed prices even higher. Producers are encouraged to contact seed dealers as soon as possible. Beardless wheat seed for forage production is acutely short due to lower inherent grain yields of beardless wheat and reduced beardless seed production outside of the Texas High Plains where beardless wheat is less common or simply not grown.

Considerations for 2013 planting seed: AgriLife recommends a minimum of 58 lbs./bu for planting seed (60 lbs./bu. is standard), but some planting seed in 2013 may have reduced test weight. As long as the germination is good this should not be a major concern for wheat with test weight of at least 55 lbs./bu. Texas High Plains wheat harvest also had reduced seed size, which as long as germination is good, again should not be a major concern. This could limit planting depth though you may also be able to reduce seeding rates for small seed above 16,000 seeds/lb. (typical seed size ranges from about

14,000 to 15,500 seeds/lb.). Also, if you are able to get a supply of a desired wheat variety (one of the Picks, for example), you may be better off to reduce your target seeding rate by ~25% per acre in order to cover more acres with a top variety vs. a full seeding rate with a lesser performing wheat. Texas A&M AgriLife data suggests that seeding rates at lower rate for grain most often still yield competitively with the common 1 bushel/A (60 lbs./A) seeding rate.

For Further Information

For updated wheat variety trial results, variety descriptions, past annual summaries and other Texas High Plains wheat production information, view reports online at http://amarillo.tamu.edu/amarillo-center-programs/agronomy/wheat-publications (the Agronomy link) or http://varietytesting.tamu.edu/wheat

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Table 4. Multi-year Irrigated Wheat Variety Trial Yields, 2009-2012, Texas & NM High Plains.
Variety names in bold indicate Pick varieties for irrigated production.

Variety	Source	4-Year	3-Year	2-Year	2012
		Multi-year Bushels per Acre Average			
TAM 111	Texas A&M	67.6	70.4	62.2	66.1
Hatcher	Colorado St.	67.5	66.7	63.0	65.2
Bill Brown	Colorado St.	65.9	67.0	65.7	65.6
Duster	Oklahoma St.	65.5	69.2	65.7	68.5
TAM 112‡	Texas A&M	65.4	69.8	66.3	66.5
Billings	Oklahoma St.	64.0	66.9	60.4	64.2
TAM 113	Texas A&M	63.7	67.2	65.5	67.1
TAM 304§	Texas A&M	63.6	67.9	63.3	69.3
TAM 203	Texas A&M	63.0	66.0	61.1	60.7
Armour	Westbred	62.2	66.6	61.8	63.9
Endurance	Oklahoma St.	61.0	63.5	60.0	63.4
Greer	Syngenta	60.7	64.7	59.2	62.5
Fuller	Kansas St.	59.1	63.6	59.3	64.8
Jackpot	Syngenta	58.4	62.7	58.6	65.1
Santa Fe	Westbred	58.4	61.4	57.4	59.6
Jagger	Kansas St.	56.3	58.3	54.2	58.1
TAM W-101	Texas A&M	55.5	59.2	54.8	59.3
TAM 401 (BL)	Texas A&M	54.1	57.1	52.4	58.2
Fannin	Syngenta	49.7	51.8	46.4	47.8
Winterhawk	Westbred		71.4	70.0	75.6
Garrison	Oklahoma St.		65.6	61.5	62.7
Mace	Nebraska		59.2	52.7	54.2
Pete (BL)	Oklahoma St.		57.3	55.3	58.9
Iba (OK07209)	Oklahoma St.			68.8	74.6
Gallagher (OK07214)	Oklahoma St.			64.3	68.8
Cedar	Westbred			62.2	66.8
TAM 305 (TX06A001263)	Texas A&M			60.1	63.6
Razor (BL)	Syngenta			53.2	57.2
TX03A0563-07	Texas A&M				73.7
TX06V7266	Texas A&M				72.9
Everest	Kansas St.				67.2
T158	Trio Res.				66.9
TX07A001505	Texas A&M				66.6
Hitch	Westbred				65.4
Ripper	Colorado St.				63.8
Ruby Lee	Oklahoma St.				59.7
APH09T9614	Syngenta				57.5
CJ	Syngenta				54.7
Doans	Syngenta				54.5
APH09T2620	Syngenta				50.5
Annual Average, All Varieties¶		**60.3**	**63.7**	**59.9**	**63.3**
Average of Pick Varieties		65.9	68.9	65.5	68.4
Average of Non-pick Varieties		59.1	62.5	58.7	62.2
%Yield, Picks over Non-Picks		**12%**	**11%**	**12%**	**10%**
Number of total test sites		22	17	12	6

‡TAM 112 is a Pick for limited irrigation only; §TAM 304 is a Pick for full irrigation only. BL = Beardless

¶Reports all varieties included in each individual year; only 2012 test varieties are listed from previous year's trials.

Table 5. Multi-year Dryland Wheat Variety Trial Yields, 2009-2012, Texas & NM High Plains.

Varieties in bold indicate Pick varieties for dryland production.

Variety	Source	4-Year	3-Year	2-Year	2012
		Multi-year Bushels per Acre Average			
Hatcher	Colorado St.	36.5	35.6	28.7	33.9
TAM 112	Texas A&M	36.1	36.7	31.2	36.5
TAM 113	Texas A&M	35.6	36.2	31.0	36.1
TAM 111	Texas A&M	35.2	35.7	29.5	37.0
Endurance	Oklahoma St.	35.0	36.0	30.1	37.5
Duster	Oklahoma St.	34.8	36.0	29.0	35.9
TAM 304	Texas A&M	33.9	35.7	30.0	39.2
Bill Brown	Colorado St.	33.9	34.0	27.6	33.3
Armour	Westbred	33.8	35.1	29.9	35.2
Billings	Oklahoma St.	33.8	35.3	29.2	38.8
Greer	Syngenta	32.7	34.2	29.0	36.4
Santa Fe	Westbred	32.6	33.6	29.4	37.0
Jackpot	Syngenta	32.5	34.1	29.7	37.8
Fuller	Kansas St.	31.7	33.2	27.9	35.6
TAM 203	Texas A&M	31.2	32.9	27.0	31.8
Jagger	Kansas St.	31.0	31.6	27.1	35.3
TAM W-101	Texas A&M	30.3	31.3	25.8	30.2
Fannin	Syngenta	29.3	29.7	25.0	31.6
TAM 401 (BL)	Texas A&M	28.3	28.9	24.8	31.0
Winterhawk	Westbred		38.6	31.8	40.1
Garrison	Oklahoma St.		35.3	28.9	36.5
TAM 305 (TX06A001263)	Texas A&M		33.2	26.8	32.5
Mace	Nebraska		31.1	25.4	28.8
Pete	Oklahoma St.		31.0	26.7	34.8
Iba (OK07209)	Oklahoma St.			31.5	37.9
Cedar	Westbred			30.7	40.7
Gallagher (OK07214)	Oklahoma St.			29.9	37.3
Razor (AP08TA6927) (BL)	Syngenta			25.9	32.4
Ruby Lee	Oklahoma St.				39.4
TX06V7266	Texas A&M				39.2
T158	Trio Res.				37.3
TX03A0563-07	Texas A&M				36.5
TX07A001505	Texas A&M				36.4
Everest	Kansas St.				36.1
Hitch	Westbred				34.8
Doans	Syngenta				34.1
Ripper	Colorado St.				32.8
CJ	Syngenta				32.6
APH09T9614	Syngenta				32.4
APH09T2620	Syngenta				30.3
Annual Average, All Varieties¶		**32.6**	**33.6**	**28.3**	**35.1**
Average of Pick Varieties		35.8	36.4	30.2	36.7
Average of Non-Pick Varieties		31.9	33.0	28.1	35.0
%Yield, Picks over Non-Picks		**12%**	**10%**	**9%**	**5%**
Number of sites per year		22	17	10	**3**

¶Reports all varieties included in each individual year; only 2012 test varieties are listed from previous year's trials. BL = Beardless

Table 6. Multi-year Irrigated Wheat Variety Trial Test Weights, 2009-2012, Texas & NM High Plains.
Variety names in bold indicate Pick varieties for irrigated production.

Variety	Source	4-Year	3-Year	2-Year	2012
		Multi-year Pounds per Bushel Average			
TAM 111	Texas A&M	59.7	60.1	59.9	59.8
TAM 112‡	Texas A&M	59.6	60.0	60.0	59.2
Bill Brown	Colorado St.	59.5	59.8	60.0	59.2
Hatcher	Colorado St.	59.5	59.6	59.8	58.9
TAM 113	Texas A&M	59.4	60.0	60.1	59.0
Fannin	Syngenta	59.4	59.8	59.8	58.5
Billings	Oklahoma St.	59.4	59.8	59.5	58.2
Duster	Oklahoma St.	59.3	59.7	59.7	58.8
TAM W-101	Texas A&M	58.8	59.1	58.7	58.4
Fuller	Kansas St.	58.6	59.3	59.1	58.3
Endurance	Oklahoma St.	58.6	59.1	59.3	58.4
Santa Fe	Westbred	58.3	59.0	58.8	57.7
Armour	Westbred	58.3	58.9	59.1	57.5
Jackpot	Syngenta	58.2	59.0	58.8	57.8
Jagger	Kansas St.	57.8	58.6	58.5	57.5
TAM 304§	Texas A&M	57.2	57.9	58.1	56.7
Greer	Syngenta	56.9	57.4	57.3	56.2
TAM 203	Texas A&M	56.5	56.9	56.9	55.9
TAM 401 (BL)	Texas A&M	56.4	57.4	57.9	58.0
Winterhawk	Westbred		60.2	60.2	60.1
TAM 305 (TX06A001263)	Texas A&M		59.4	59.4	59.1
Pete (BL)	Oklahoma St.		59.1	59.1	57.7
Garrison	Oklahoma St.		58.9	58.7	57.5
Mace	Nebraska		58.4	58.7	57.5
Iba (OK07209)	Oklahoma St.			60.5	60.0
Gallagher (OK07214)	Oklahoma St.			59.4	58.7
Cedar	Westbred			59.1	57.9
Razor (BL)	Syngenta			58.9	58.7
TX07A001505	Texas A&M				60.4
TX03A0563-07	Texas A&M				59.4
Doans	Syngenta				59.1
T158	Trio Res.				59.1
APH09T2620	Syngenta				58.8
APH09T9614	Syngenta				58.8
CJ	Syngenta				58.7
Ruby Lee	Oklahoma St.				58.7
Hitch	Westbred				57.6
TX06V7266	Texas A&M				57.6
Everest	Kansas St.				57.4
Ripper	Colorado St.				56.8
Annual Average, All Varieties¶		**58.6**	**59.2**	**59.2**	**58.3**
Average of Pick Varieties		59.2	59.7	59.7	59.0
Average of Non-Pick Varieties		58.1	58.5	58.2	56.5
%TW, Picks over Non-Picks		**2%**	**2%**	**3%**	**4%**
Number of sites per year		22	17	12	**6**

‡TAM 112 is a Pick for limited irrigation only; §TAM 304 is a Pick for full irrigation only. BL = Beardless

¶Reports all varieties included in each individual year; only 2012 test varieties are listed from previous year's trials.

Table 7. Multi-year Dryland Wheat Variety Trial Test Weights, 2009-2012, Texas & NM High Plains.

Varieties in bold indicate Pick varieties for dryland production.

Variety†	Source	4-Year	3-Year	2-Year	2012
		Multi-year Pounds per Bushel Average			
TAM 113	Texas A&M	59.8	59.8	60.2	58.3
Bill Brown	Colo. St.	59.6	59.3	59.5	57.8
TAM 111	Texas A&M	59.6	59.7	60.5	58.7
TAM 112	Texas A&M	59.5	59.6	60.1	58.7
Fannin	Syngenta	59.3	59.3	59.6	57.6
Hatcher	Colo. St.	59.1	58.7	59.0	56.4
Endurance	Okla. St.	58.5	58.5	58.7	56.4
Duster	Okla. St.	58.4	58.0	57.9	57.9
TAM W-101	Texas A&M	58.3	58.1	58.4	57.2
Billings	Okla. St.	58.3	58.1	58.0	56.4
Fuller	Kansas St.	58.1	58.0	58.2	56.3
Jackpot	Syngenta	57.7	57.5	57.0	55.2
Armour	Westbred	57.7	57.9	58.3	56.2
Santa Fe	Westbred	57.6	57.5	57.8	55.7
Jagger	Kansas St.	57.2	57.1	57.4	54.8
TAM 304	Texas A&M	56.4	56.6	56.6	53.3
TAM 203	Texas A&M	56.2	56.0	56.0	54.6
TAM 401 (BL)	Texas A&M	55.8	55.8	56.3	54.5
Greer	Syngenta	55.7	55.7	55.9	53.4
Winterhawk	Westbred		60.1	60.4	59.9
Pete	Okla. St.		58.7	58.8	57.1
Garrison	Okla. St.		58.3	58.9	57.2
TAM 305	Texas A&M		58.2	58.4	57.2
Mace	Nebraska		57.8	58.1	56.1
Iba (OK07209)	Okla. St.			60.9	59.7
Razor (AP08TA6927) (BL)	Syngenta			59.2	58.3
Gallagher (OK07214)	Okla. St.			59.0	58.0
Cedar	Westbred			57.3	55.7
TX07A001505	Texas A&M				57.9
Ruby Lee	Okla. St.				57.7
Doans	Syngenta				57.3
TX03A0563-07	Texas A&M				57.2
Everest	Kansas St.				56.9
APH09T9614	Syngenta				56.7
CJ	Syngenta				56.7
T158	Trio Res.				56.6
Ripper	Colo. St.				56.5
APH09T2620	Syngenta				56.4
Hitch	Westbred				56.4
TX06V7266	Texas A&M				55.7
Annual Average, All Varieties¶		**58.3**	**58.3**	**58.5**	**56.8**
Average of Pick Varieties		59.4	59.4	59.8	58.0
Average of Non-Pick Varieties		58.1	58.1	58.2	56.5
%TW, Picks over Non-Picks		**2%**	**2%**	**3%**	**3%**
Number of sites per year		22	17	10	**3**

¶Reports all varieties included in each individual year; only 2012 test varieties are listed from previous year's trials. BL = Beardless