

Initial report—Tables will be added by mid-August and reposted online.



SCS-2017-XX

Pick Wheat Grain Varieties for the Texas High Plains & Eastern New Mexico 2017-2018

Final Report with multi-year averages posted to <http://lubbock.tamu.edu> & <http://amarillo.tamu.edu/amarillo-center-programs/agronomy/wheat-publications/>

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This summary is derived from High Plains wheat grain testing coordinated by the Texas A&M AgriLife wheat breeding program based at Amarillo. Irrigated and dryland test sites range from Lamesa to Perryton and west, including a test site at NMSU-Clovis.

2016-2017 Wheat Crop in Review

Southern High Plains conditions reflected a wide range of wheat production as some dryland yields exceeded 70 bu/A with typical yields in the 40 bu/A range. Irrigated yields depended on inputs, but good rainfall in many areas contributed to the potential for yields of 80 bu/A and more in many cases. Like conditions in previous years, moist conditions over much of the region again fostered favorable conditions for rust diseases, but the incidence of stripe rust in 2017 was lower. Where stronger striped rust infections occurred (TAM 111, TAM 112) yields dropped. Much of the High plains wheat production for 2016-2017 was heavily afflicted with Wheat Streak Mosaic Virus (or its cousins High Plains Virus or Triticum Mosaic Virus). WSMV can be common where volunteer wheat (and to a lesser extent range grasses) host wheat curl mite, the vector for WSMV. Control of volunteer wheat near commercial wheat is essential, especially for early planted wheat. Texas A&M AgriLife is increasingly stressing the role of varietal resistance to the wheat curl mite as an essential component to successful tolerance of WSMV. Varieties may not have much tolerance of WSMV *per se*, but may be resistant to the wheat curl mite thus lowering infection potential. Almost all Texas High Plains wheat enjoyed excellent fall and winter growing conditions due to above average moisture, and this was one of the best grazing years in recent memory. The exception was the northeastern Texas Panhandle where much of the dryland wheat was "dusted in," and there was insufficient fall precipitation to provide good fall forage. Poor fall and winter conditions, however, were relieved by good spring precipitation. See Table 9 at the end of this report (when finalized) for a summary of wheat variety disease and insect resistance ratings for the Southern High Plains.

Texas A&M AgriLife High Plains Wheat Grain Picks for 2017-2018

Our ongoing Picks criteria include a minimum of three years of data in Texas A&M AgriLife High Plains wheat variety trials across numerous annual locations. A "Pick" variety means this: given the data these are the varieties we would choose to include and emphasize on our farm for wheat grain production. Picks are not necessarily the numerical top yielders as important disease resistance traits (leaf or stripe rust, wheat streak mosaic virus), insect tolerance (greenbugs, Russian wheat aphid, wheat curl mite), 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.

Over the years we often make only one of two changes to the annual Picks. This is evidence of multi-year data contributing to our decisions, and wheat varieties tend to be available over many years.

Deletion in 2017: After debate over the past two years we have now elected to remove TAM 111 as a limited irrigation and dryland Pick. This variety was removed as a full irrigation Pick for the 2015-2016 cropping season. It is important that producers understand the basis for our decision. Yes, TAM 111 remains by far the most widely planted variety in the Texas High Plains, but we are observing increased inconsistent performance. It is still outstanding in some cases, especially high-input systems with optimum fertility and fungicide management, but poor in others. We find TAM 111 underperformance in some irrigated trials as much as 20% below trial averages. The reduction in TAM 111 consistency and performance we believe is in great part due to lack of any meaningful resistance or tolerance to leaf and especially stripe rust, the latter prevalent in the past three springs throughout much if not all the Texas High Plains. Our numbers no longer support TAM 111 as a Pick, especially when we have other Pick varieties less susceptible to the rusts (e.g., TAM 113, TAM 114, Iba, Grainfield).

Is it OK to still plant TAM 111? Yes. There is a lot of saved seed and many producers will still purchase TAM 111 for the 2017-2018 cropping season. But be aware that TAM 111 success relative to other Pick varieties and wheat varieties in general may likely depend on drier conditions (less potential for rusts) and use of a fungicide even if infection levels are light or even simply as preventative (which we wouldn't recommend for a moderately resistant or resistant variety)—we recommend you budget a fungicide application for TAM 111 on both irrigated and dryland. Given these concerns AgriLife urges producers to at least consider reducing any high percentage of your overall acres of this one variety.

Deletions in 2016 (Review): No deletions of Picks were made for the 2016-2017 cropping season though we had debated whether to remove TAM 111 and TAM 304. (Hatcher and Duster were removed for all production conditions the year before.)

Table 1. Texas A&M AgriLife wheat grain variety Picks for the Texas High Plains based on yield performance and consistency based on over 30 multi-year, multi-site irrigated and dryland trials harvested in 2014-2017. Leaf rust and stripe rust reactions are included (see footnote).

Wheat Variety "Picks", Texas High Plains. 2017-2018		
<u>Full Irrigation#</u>	<u>Limited Irrigation</u>	<u>Dryland</u>
	TAM 112 (S/S)&	TAM 112
TAM 113 (R/R)	TAM 113	TAM 113
TAM 114 (MR/R)	TAM 114	TAM 114
TAM 304 (R/MR)		
WB Grainfield (MR/R)	WB Grainfield	WB Grainfield
Iba (R/MR)	Iba	Iba
	T158 (MS/MR)	T158
Winterhawk (MS/MR)	Winterhawk	Winterhawk

#Full irrigation in the Texas & eastern NM High Plains reflects a production system that also is oriented to ample nitrogen fertilizer applications and likely fungicide application, in particular for leaf rust and stripe rust even when infection is minimal or perhaps even not evident (preventive applications).

&Leaf rust/stripe rust resistance ratings: R, Resistant; MR, moderately resistant; MS, moderately susceptible; and S, susceptible

Two & three-year 'watch list.' Denali (S/MS) remains of a variety of interest (but no longer Byrd), a good irrigated performer for the Texas Panhandle (but not the South Plains); in general, the further south in the Texas High Plains we see Colorado lines (also Byrd, Avery) drop in performance potentially due to hotter

conditions. Though Byrd appears to have some favorable characteristics over Denali the latter's yields outpace Byrd (S/S). We removed Gallagher from the previous 2016-2017 watch list as it appears better adapted to the Rolling Plains region and has needed Hessian fly resistance there. Iba continues to be a better choice than Gallagher in the High Plains.

Additions in 2017: None.

Additions in 2016 (Review): TAM 114 (initially tested as TX07A001505) was added for all production conditions. We would have added it in 2015 but there was little seed available. TAM 114 has good across-the-board resistance to rusts, good straw strength, desirable milling and baking qualities, and also has intermediate resistance to some biotypes of Hessian fly. WB Grainfield grain yields are good and key rust resistances are in place.

A Special Note on Individual Varieties

TAM 304: TAM 304 remains a viable choice for high-input production systems with high irrigation, high nitrogen fertility applications, etc. where producers are shooting for yields at 100 bushels per acre or more. We again discussed removing TAM 304 as a full irrigation Pick in lieu of other Pick varieties, but still agree it has a place in some high input Texas High Plains production. If you look at our multi-site, multi-year irrigated yields you may not find TAM 304 that impressive, but sorting out the highest yield trials shows that 304 does perform well relative to other varieties at the upper end of the yield spectrum, and has better straw strength to hold the grain up for harvest (slightly shorter stem). Performance across southwest Kansas is often exceptional under good irrigation.

TAM 204 (MS/MR): This beardless variety is not a Pick but has yielded well over five years in the Texas High Plains though relative yields tailed off some in the 2017 harvest. It offers as well-rounded a package of disease (especially rusts, though 204 did have stripe rust in the Concho Valley/lower Rolling Plains in 2017) and insect resistance as any wheat variety, including greenbug resistance and moderate resistance to wheat curl mite, the vector for wheat streak mosaic virus (both found otherwise only in TAM 112). Grain quality and test weight are both marginal for this beardless variety and the milling and baking industry would prefer your other varieties. Grazing potential is good. We suggest TAM 204 as a possible dual-purpose wheat but not for grain only production.

TAM 112 (S/S). This variety had mediocre to poor performance at many High Plains trials in 2016-2017, irrigated or dryland, and much of this might be attributed to susceptibility to rusts. But with greenbug and wheat curl mite tolerance (thus elevated tolerance to WSMV), coupled with excellent performance in tough dryland conditions, TAM 112 overall remains an excellent choice for dryland wheat production in the Texas High Plains when tough conditions are normally expected.

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

"Pick" varieties with a minimum of three years in High Plains Texas A&M AgriLife testing continue to yield an average of 6 to 10% better as a group than all other varieties in both irrigated and dryland tests. Though you may have a variety for your production conditions that you really like, we encourage you to include one of our Picks in your cropping. We will have full results reported by the week of August 14, 2017 so please contact us for a comprehensive report or visit the wheat pages at <http://amarillo.tamu.edu> and <http://lubbock.tamu.edu>. Perhaps a Pick variety that has a specific disease package—which may have been valuable in the stripe rust outbreaks of 2015 & 2016—or relative maturity that contrasts with your current variety would be a good complement to your overall program.

Wheat Variety Grain Picks for Other Texas Regions

Dr. Emi Kimura, Vernon, (940.552.9941, emi.kimura@ag.tamu.edu) compiles the Picks for the Rolling Plains, and Dr. Clark Neely, state small grains extension agronomist, College Station (979.862.1412,

cbn108@tamu.edu) compiles our Picks for the Texas Blacklands (including northeast Texas), and South Texas. See their forthcoming 2017-2018 Picks lists at <http://varietytesting.tamu.edu/wheat/>

August 2017

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