

Wheat Grain Variety Picks for the Texas High Plains in 2023-2024 & 2022-2023 Texas High Plains Wheat Production Summary

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2022-2023 Wheat Cropping Season in Review

The 2022-2023 wheat season was marked by extreme weather events. Continued drought conditions in fall 2022 resulted in poor planting conditions across most of the Texas High Plains. Timely planted fields benefited from late September and early October 2022 rainfall, but fields quickly dried out. In most areas, there was negligible sub-soil moisture to carry wheat through the season. Fields dusted in later (late October & November) had poor to no stands. There was minimal winter precipitation through the central and northern Texas High Plains resulting in another dry winter. The few dry snowfall events provided little moisture. As a result, much of the region received less than one inch of moisture from October through mid-April. Sub-zero temperatures in December resulted in winterkill in many dryland wheat areas.

Although planted wheat acres increased in 2022, much of the dryland wheat that was not failed because of winterkill failed in early spring 2023 because of drought and/or wind injury. Most irrigated producers were not able to meet crop water demands with limited well capacities. Prolonged winter drought conditions (like 2021 and 2022) resulted in many producers pulling cattle off dryland wheat pasture early due to a lack of forage. Of significance, strong winds throughout the spring of 2023 resulted in many wheat fields being blown out. The drought and above-average spring temperatures resulted in a large forage deficit across the region and strong forage prices. As a result, much of the wheat—even irrigated—not lost to drought and wind injury was grazed out or harvested for hay or silage. Wheat streak mosaic virus (WSMV) and barley yellow dwarf virus were heavy in many areas. As in 2022, Russian wheat aphid pressure was heavy across much of the Texas High Plains with reports from north of Lubbock to the Oklahoma line.

From mid-May through mid-June the region saw record rainfall and below average temperatures. This reversed some poor wheat conditions and resulted in greater than expected grain and forage yields. Damaging hail accompanied many early June storm events, and as a result, many wheat fields were severely damaged. Where wheat was not impacted by hail. Rainfall was beneficial for late-maturing wheat varieties reaching flowering. Because of wet conditions through June, there was a long grainfill period. Wheat harvest was delayed. Although overall grain production was reduced, regional yields were near the long-term average in most areas depending on variety, irrigation capacity, and precipitation timing and amount.

AgriLife Wheat Grain Variety “Picks” for 2023-2024

Continuing a long-time tradition, ongoing Picks criteria include a minimum of three years of irrigated or dryland data in Texas A&M AgriLife regional variety trials across numerous annual locations.

Furthermore, a “Pick” variety can be described as: “Varieties we would choose to include and emphasize on our farm for wheat grain production given 3-year performance and variety characteristics.” It is important to note that this list only includes varieties designated for grain. Varieties used primarily for grazing and forage are not included. Some varieties probably could have been included among our Picks but the seed company did not enter the trials sufficiently or not at all.

Picks are not necessarily the numerical top yielders. The following criteria are also considered:

- Milling and baking quality
- Important disease resistance traits (leaf or stripe rust, wheat streak mosaic virus)
- Insect resistance (greenbugs, wheat curl mite, and Hessian fly)
- Standability.

These important varietal traits enable a producer to better manage potential risk.

Table 1. Texas A&M AgriLife wheat grain variety Picks for the 2023-2024 Texas High Plains wheat season. Picks are based on yield performance and consistency from 18 irrigated and dryland trials primarily in the Texas Panhandle (northern Texas High Plains) harvested from 2020-2023.

Wheat Variety "Picks", Texas High Plains. 2023-2024		
Full Irrigation†	Limited Irrigation	Dryland
----	----	TAM 113
TAM 114	TAM 114	----
----	TAM115	----
TAM 116*	TAM 116*	TAM 116*
TAM 205	TAM 205	TAM 205
WB4792¶	WB4792	WB4792
CP7017AX¶	CP7017AX	----
----	----	Canvas
SY Wolverine	----	----
Watch ListΔ: Monarch¶	Watch List: Kivari AX¶, Monarch	Watch List: Kivari AX

†Full irrigation in the Texas High Plains reflects a production system oriented to ample nitrogen fertilizer and likely fungicide application(s) for leaf rust and stripe rust even when either infection is minimal or even preventative applications before infestation.

*Seed availability is very limited for the 2023-2024 wheat season.

ΔPromising varieties but only two years of data.

¶Certified Seed Only (CSO) varieties which contractually do not permit farmer-saved seed.

Notes about the High Plains Picks—Additions, Deletions, Exceptions

TAM 112 was removed from the Picks list for the 2021-2022 wheat crop, but it remains a good option for tough dryland conditions. If you reach your typical dryland wheat planting season and you are

already experiencing drought then a late switch to TAM 112 could be a sound decision. This is especially true if planting into November when little precipitation is expected for the next several months.

TAM 113 was not tested in 2022-2023. Because of past performance history, it remains on the current dryland because producers continue to report good performance under dryland conditions. TAM 115 (see below) does not have the tillering potential of TAM 113 under tough, water-stressed dryland conditions.

TAM 114 (a general replacement for TAM 111) remains the number one variety in Texas and is a good Pick for irrigated systems. It is not a dryland Pick because of lower performance on very tough dryland conditions. It has solid grain performance, excellent milling and baking quality, and good forage potential under irrigated conditions. It tolerates heavy grazing and is resistant to stripe, leaf, and stem rust.

TAM 115 is a dual-purpose variety similar in pedigree and traits to TAM 112, but it should not be positioned on tough dryland acres. TAM 115 was removed from the fully irrigated Picks list, but it remains a good option for limited irrigation because it is less susceptible to injury from late spring freezes. TAM 115 has very good milling and baking quality. It maintains the disease and insect resistance package of TAM 112 (all rusts, greenbug, and wheat curl mite resistance to wheat curl mite which conveys WSMV tolerance). It has slightly improved grain yields under limited irrigated and favorable dryland conditions. TAM 115 is a large-seeded variety for the Limited Irrigated and Dryland Pick lists based on 3-year history in the Texas High Plains. Recent observations indicate it maintains performance under irrigated conditions, but performance is variable under dryland and limited irrigated conditions.

TAM 116 is a newly released variety previously tested as TX14A001035. TAM 116 is an excellent dual-purpose wheat well adapted to irrigated systems with good yields and test weights. It has leaf, stripe, and stem rust resistance. Seed availability is tightly limited for the 2023-2024 season but should be available for most farmers for fall 2024.

TAM 205 continues to perform well under irrigated and good dryland conditions. It is not as stable under very tough dryland conditions (switch to Tam112?). It is a dual-purpose variety with a high top-end yield potential, good test weights, very good end-use quality, and good fall forage production. It is resistant to leaf rust, stripe rust, and stem rust. It is also resistant to WSMV and soil-borne wheat mosaic virus. It performed very well across all water regimes.

Croplan CP7017AX is a new addition to the 2023-2024 irrigated Picks list. It has a strong 4-year production history in the High Plains Uniform Variety trials. It contains CoAxiom® as denoted by AX. CoAxiom® varieties contain the AXigen trait which conveys resistance to Aggressor herbicide (active ingredient quizalofop-P ethyl) for control of annual grassy weeds. It is moderately resistant to stripe rust. It requires a Stewardship Agreement as a Certified Seed Only (CSO) variety and in contrast to Plant Variety Protection Act (PVPA) but seed cannot be saved for planting your own next crop.

Canvas from Colorado State/PlainsGold has an record of dryland grain yield in the Texas High Plains, resistance to WSMV, good tolerance to stripe rust, and good milling and baking quality. It is a top yielding dryland variety in current trials.

Syngenta SY Wolverine is a 2019 AgriPro release previously evaluated in Texas A&M AgriLife trials as 08BC379-40-1. It is a top yielder in the High Plains Uniform Variety irrigated trials for the last 3 years with good test weights. It is a high tillering variety noted for good drought tolerance. It has only

moderate tolerance to WSMV, so it should not be placed in a WSMV susceptible field. It shows high-end potential under well managed conditions.

Westbred WB4792 (CSO) remains on the Picks list because of continued stable performance under irrigated and dryland conditions with good test weights.

Croplan CP7869 was removed from the new Picks list. Though it was not tested in 2022-2023 it remained within the two-year retention window as a recent Pick. However, Croplan is not actively marketing CP7869 in Texas for 2023 but is guiding customers to the new AX herbicide-tolerant varieties.

Table 2. Characteristics of 2023-2043 Pick varieties based on marketed traits and observations in Texas A&M AgriLife High Plains trials.

Variety	Leaf Rust	Stripe Rust	WSMV	Straw Strength	Maturity
TAM 113	Resistant	Resistant	Moderately Susceptible	Decent	Medium Early
TAM 114	Resistant	Resistant	Moderately Susceptible	Very Good	Medium
TAM 115	Resistant	Resistant	Good [‡]	Good	Med-Late
TAM 116	Resistant	Resistant	Good [§]	Very Good	Medium
TAM 205	Resistant	Resistant	Good [§]	Very Good	Medium
CP7017AX	Susceptible	Mod. Resistance	Susceptible	Good	Medium
Canvas	Moderately Susceptible	Resistant	Moderately Resistant	Excellent	Medium
Kivari AX	Poor	Poor	Tolerance	Unknown	Late
Monarch	Resistance	Resistance	Very Good	Very Good	Med. Late
WB4792	Moderate tolerance	Moderate tolerance	Susceptible	Very Good	Med-Late
SY Wolverine	Good tolerance	Good tolerance	Moderate tolerance	Very Good	Med. Early

[‡] Resistant to the wheat curl mite which provides resistance to wheat streak mosaic virus (WSMV).

[§] Resistant to WSMV.

Watch List Varieties

Watch list varieties show promise based on two years of data to date. These are evaluated after Year 3 for possible graduation to our Pick list.

Kivari AX is a Colorado State/PlainsGold variety and a new addition to the 2023-2024 Limited Irrigated and Dryland Watch List. It has a strong 3-year yield performance with good test weights in High Plains uniform variety trials. Unfortunately, it was not tested in 2022 so it was not moved to the Picks list. It is a Colorado State University 2020 release marketed by PlainsGold. Kivari AX is a CoAXium® variety with slightly later maturity, and it is well positioned for drought conditions. Kivari AX has good test weight and wheat curl mite resistance, but weaker straw in high moisture environments. It also has poor stripe and leaf rust resistance, so it should not be placed under irrigated conditions without plans to scout and spray for leaf diseases. It requires a Stewardship Agreement (CSO) and seed cannot be saved.

Monarch is a new addition to the Watch list. It is also a Colorado/PlainsGold product, but it is a hard **white** winter wheat variety with a very good yield potential in irrigated trials. Monarch also shows good resistance to WSMV as well as leaf, stripe, and stem rusts. It is CSO hence no saved seed is allowed.

Certified Seed Only and PVPA: Wheat Varieties

In the past few years many if not most companies have moved to implement additional protections on their wheat varieties. This includes limiting planting to Certified Seed Only (CSO). This is an effort to better recapture the cost of developing and releasing a new wheat variety. This cost can be several million dollars in great part because wheat breeding programs test potentially hundreds of crosses through many generations over multiple locations to find one that is commercially viable. As part of the farmer purchase of a CSO variety farmers are required to sign a Stewardship Agreement with the variety developer. The key regulation is the farmer may NOT save any seed for planting a future crop. This is a contractual matter, not a legal one. If the developer of a CSO variety finds a farmer in violation of a CSO agreement they have the right to seek civil recourse through the court system. If a farmer is unwilling to agree to these terms then simply do not purchase a CSO variety. There are other good variety choices.

Some state breeding programs including Colorado State (via their PlainsGold brand) also have adopted CSO on some varieties. Currently no AgriLife TAM varieties are CSO but there is no assurance this provision may remain in the future.

The Plant Variety Protection Act (1994) allows a farmer to save his or her own harvested grain to the extent of their own acres they intend to plant the next cropping season. The primary reason is to reduce wheat seed purchase costs, which can be substantial over large acreages. PVPA expires at 20 years. Most wheat variety developers also use patents as a means to govern the use and reuse of their varieties. This provision is generally regarded as stronger than PVPA. Texas A&M AgriLife will be updating a previous guide on wheat and PVPA in August 2023. For a 2005 AgriLife review of PVPA see <https://varietytesting.tamu.edu/wp-content/uploads/sites/17/legacy-files/wheat/docs/plantvarietyprotectionact.pdf>

Additional Texas A&M AgriLife Wheat Production Information

The AgriLife wheat group for the Texas A&M High Plains region is preparing multi-year tables for grain yield and test weight, irrigated and dryland. These tables offer an excellent summary of Pick & Watch list

performance. Historically the yield advantages of Pick varieties yield 5 to 8% more than vs. all other wheat varieties across the same trials.

For further AgriLife wheat information for the Texas High Plains and statewide visit the online wheat pages at:

- <https://amarillo.tamu.edu/amarillo-center-programs/agronomy/wheat-publications/>
- <http://varietytesting.tamu.edu/wheat>

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