

## 2022 New Commercial Wheat Varieties

### Variety releases with PVP (3)

1. **‘ND Heron’** (PVP 202200266, submitted 2/15/22) is an early maturing wheat variety best adapted to central and western North Dakota. It has high grain protein, very high-water absorption, and is moderately resistant to FHB, leaf rust and stem rust. It was genotyped at the USDA-ARS genotyping lab in Fargo during its development.
2. **‘Ascend SD’** (PVP 202200513, submitted 8/01/22) is a South Dakota HRS wheat variety released in the Fall of 2021. Ascend SD has excellent yield potential and has above-average to good end-use quality. It has good resistance to BLS and FHB.
3. **‘MT Sidney’** (PVP 202200291 submitted 03/04/2022) is a hollow-stem, high yielding semi-dwarf hard red spring wheat variety released by Montana State University in 2021. MT Sidney is moderately resistant to FHB (Scab), has 0.5% higher grain protein content than Vida, above average TWT and average end-use quality.

### Variety releases with pending PVP (29)

1. **‘Windom SF’** (PVP pending) CO18SF009W = Warhorse/Breck//CO12D1028 is a Hard-White Winter wheat, released by Colorado State University in summer 2022. It has the semi-solid-stemmed trait for partial resistance to wheat stem sawfly.
2. **‘UI GOLD’** (PVP pending) is a Hard-White Spring wheat cultivar released in October 2022 by the University of Idaho. It has very high grain yield and excellent bread-baking quality and good resistance to stripe rust.
3. **‘IDO2002S’** is a Hard-White Spring wheat line developed by the University of Idaho using combination of DH technology and characterized via molecular marker for bread-baking quality. It will be submitted to NSGC in spring 2023.
4. **‘IDO2202 CL2’** is a Hard-White Spring wheat line developed by the University of Idaho via MAS for herbicide resistance to Beyond.
5. **‘IL19-14856’** is a breeding line licensed by the University of Illinois to a private seed company, and is ultra-early, high-yielding, and Fusarium Head Blight (FHB) resistant.
6. **‘IL17-8930’** is a breeding line licensed by the University of Illinois to a private seed company, and is ultra-early, high-yielding, and Fusarium Head Blight (FHB) resistant.
7. **‘US16-IL-063-063’** is a breeding line licensed by the University of Illinois to a private seed company, and is ultra-early, high-yielding, and Fusarium Head Blight (FHB) resistant.
8. **‘IL19-5466’** is a breeding line licensed by the University of Illinois to a private seed company, and is ultra-early, high-yielding, and Fusarium Head Blight (FHB) resistant.
9. **‘IL18MSFRS-18’** is a breeding line licensed by the University of Illinois to a private seed company, and is a high-yielding, and Fusarium Head Blight (FHB) resistant line with medium maturity.

10. **'IL18-17905'** is a breeding line licensed by the University of Illinois to a private seed company, and is a high-yielding, and Fusarium Head Blight (FHB) resistant line with medium maturity.
11. **'IL18-14534'** is a breeding line licensed by the University of Illinois to a private seed company, and is a high-yielding, and Fusarium Head Blight (FHB) resistant line with medium maturity.
12. **'US17-IL-108-039'** is a breeding line licensed by the University of Illinois to a private seed company, and is a high-yielding, and Fusarium Head Blight (FHB) resistant line with medium maturity.
13. **'KS Providence'** (PVP pending) is a Kansas Hard-Red Winter with excellent yield potential and yield stability. It has demonstrated good drought tolerance and is expected to be well adapted to the Central Corridor of Kansas. It carries *Lr34*, *Lr46* and *Lr68*, giving it very good resistance to leaf rust but is intermediate to stripe rust. Benefitted from genotyping lab analysis of regional nursery germplasm.
14. **'KS Big Bow'** (PVP pending) is a Kansas Hard-White wheat with excellent yield potential. Viewed as a Joe replacement having better yield, sprout tolerance and coleoptile length than Joe. Carries the *Wsm2* gene for WSMV. Benefitted from genotyping lab analysis of elite/regional nursery germplasm.
15. **'KS Territory'** (PVP pending) is a Kansas Hard-Red Winter wheat with good resistance to WSMV based on *Wsm2*. Benefitted from genotyping lab support of elite/regional nursery germplasm.
16. **'MN-Rothsay'** (PVP pending) is a Hard-Red Spring wheat that was released in January 2022 by the University of Minnesota. It has high grain yield and strong straw. The Fargo USDA-ARS Genotyping Center contributed DNA marker data used in the selection and development of MN-Rothsay.
17. **'TAM 116'** (TX14A001035) (PVP pending) Pedigree: Billings/TX03A0563). It is resistant to leaf rust, stripe rust, and stem rust. Good bread-making quality and adapted to intense management systems in the Texas High Plains and Texas Rolling Plains.
18. **'Dyna-Gro 7322'** (TX14V70214) (PVP pending) Pedigree: Art/TAM 401. It is awnless with high biomass yield and resistance to leaf, stripe and stem rust. It has statewide adaptation and is suitable for dual purpose, silage, and graze-out management systems.
19. **'Amigos'** (TX14M8024) (PVP pending) Pedigree: TAM 203/Duster. It is resistant to Hessian fly, leaf rust, stripe rust, and stem rust. Good bread-making quality and is adapted to the Texas Rolling Plains, Texas Blacklands, and South Texas.
20. **'TX16M9216'** (PVP pending) Pedigree: TX07A001482/TAM 401//Duster). It is resistant to Hessian fly, leaf rust, stripe rust, and stem rust. It has very good bread-making quality and is adapted to all wheat growing areas in Texas.
21. **'MI16R0720'** was released as a soft red winter wheat from Michigan State University. This line was genotyped as part of the 5-State nursery.
22. **'VA17W-75' marketed as 'EPIX 1375'** (PVP pending) is a high yielding, high test weight, semi-dwarf, awnless soft red winter wheat with excellent resistance to foliar

diseases, including leaf rust and powdery mildew, as well as expressing moderate resistance to fusarium head blight (FHB) in the mid-Atlantic and southern U.S. Molecular markers were used in the development.

23. **'15VDH-FHB-MAS38-01'** (PVP pending) is an exceptionally early, high yielding, short, semi-dwarf, awned soft red winter wheat with good leaf rust and powdery mildew resistance, and exceptional FHB resistance (contains the Fhb1 locus). Molecular markers were used in the development.
24. **'15VDH-FHB-MAS33-13'** (PVP pending) is a high yielding, high test weight, semi dwarf, awnless soft red winter wheat with excellent FHB (contains the Fhb1 locus), leaf rust and septoria leaf blotch resistance. Molecular markers were used in the development.
25. **'14VDH-HRW-02-029' marketed as 'Phoenix 29'** (PVP pending) is a Hard-Red Winter wheat specifically adapted to Mid-Atlantic, and the first hard wheat developed with yield potential comparable to commercial soft red winter wheat varieties grown in the region with acceptable milling and baking qualities for use in flour blends to manufacture bread products. Molecular markers were used in the development.
26. **'Inspire'** (PVP pending) is a soft white winter wheat and was developed for the intermediate rainfall areas of Washington with excellent disease resistance, end-use quality, and high falling numbers. Developed with the assistance of molecular markers.
27. **'Jameson'** (PVP pending) is a soft white winter wheat developed for the low rainfall areas of Washington with excellent emergence from deep planting, snow mold tolerance, and good end-use quality. Developed with the assistance of molecular markers.
28. **'Roger'** (PVP pending) is a spring club wheat developed for production in Washington with high grain yield, excellent end-use quality, and the first spring club wheat developed with Hessian fly tolerance. Developed with the assistance of molecular markers.
29. **'AR09137UC-17-2'** is a common soft red winter wheat variety released by the Board of Trustees of the University of Arkansas in 2021 before Esten Mason moved to CO.
30. **'ARS16W1067'** =ARS05-1044/Baldwin. ARS16W1067 is a HRW intended to replace NuEast in local milling and baking as a wheat with comparable quality but substantially higher yields. The release is supported by 4 y of testing in the USDA Uniform Bread Wheat Trial and genotyping for major disease resistance, bread-making quality, and phenology genes.

## **2022 PVP that were Pending in previous reports**

1. **'Kivari AX'** (PVP 202200001, submitted 10/04/2021) CO14A055-258 (= AF28/Byrd/3/AF10 /2\*Byrd, is a new high-yielding CoAXium wheat that was released by Colorado State University in summer 2020.
2. **'Amplify SF'** (PVP 202300009 submitted 09/16/2022) Amplify SF (Bearpaw/Antero// Antero) is a Hard-Red Winter wheat, released by Colorado State University in 2021. It has the semi-solid-stemmed trait for partial resistance to wheat stem sawfly.

3. **'KS Hatchett'** (PVP 202100488, application submitted 09/02/2021) is a Hard-Red Winter wheat cultivar developed by Kansas State University for central Kansas. It has excellent yield potential and good test weight. It has durable resistance to leaf rust.
4. **'AM Cartwright'** (PVP 202100489, application submitted 09/03/2021) is a Hard-Red Winter wheat variety developed by Kansas State University. It has competitive yields, excellent disease resistance package, and good baking quality
5. **'SD Midland'** (HRW, PVP 202200516, filled on 8/26/22) was released in the Fall of 2021. SD Midland is a semi-dwarf variety with medium-tall in height and late in maturity. It is high yielding with average protein and test weight and good to excellent milling and baking quality. SD Midland is moderately resistant to stripe rust and yields well in lower rainfall areas. SD Midland got Miller's choice 'Best-of-Show' award at the 2022 Wheat Quality Council meeting for good end-use quality.
6. **'TAM 115'** (TX11A001295 = TAM 112/TX02U2508, PVP 202000429, filed on 9/18/2020) is resistant to greenbug (Gb3), wheat curl mite (Cmc4), leaf rust, stripe rust, and stem rust. It has good bread-making quality and is adapted to the Texas High Plains and Texas Rolling Plains.
7. **'TAM 205'** (TX12V7415 = ND 801/TX02D5813]/RonL, PVP 202000430, filed on 9/18/2020) is resistant to leaf rust, stripe rust, stem rust, Fusarium head blight (Fhb1) and wheat streak mosaic virus (Wsm2). It has excellent bread-making quality and is adapted to the Texas High Plains, Texas Rolling Plains, and Central Texas.

## 2022 Germplasm (6)

1. **'CddH-266'** is a Hard-White Spring wheat line developed by the University of Idaho using combination of DH technology and characterized via molecular marker for bread-baking quality. It will be submitted to NSGC in spring 2023.
2. **PI 698810:** *Wapo-A1b* allele (haplotype H2) for increased number of spikelets per spike introgressed into tetraploid Kronos. Developed by UC Davis.
3. **PI 699107:** *FT-A2 A10* allele for increased number of spikelets per spike introgression into tetraploid Kronos. Developed by UC Davis.
4. **PI 700734:** stem rust resistance gene *SrKN (Sr9e)* introgressed into Fielder. Developed by UC Davis.
5. **PI 700735:** stem rust resistance gene *Sr22b* introgressed into Fielder. Developed by UC Davis.
6. **Eight *SstI* isogenic pairs** (CSU): Near isogenic lines with and without the solid-stem locus *SstI* locus in eight different genetic backgrounds. These were distributed to Katherine Frels (UNL) and Jeffrey Boehm (USDA-Lincoln) for screening in 2023.

## 2022 Populations

1. PI173438xWA8137 winter wheat doubled haploid mapping population developed for snow mold tolerance and accepted for publication to the Journal of Plant Registrations and has the designation Reg. no. MP-16, NSL 543858 MAP.

## 2023 New Commercial Wheat Varieties

## 2023 Variety releases with PVP

1. UC-Central White (PVP 202300187, submitted 4/17/2023) is a hard white spring wheat variety released by the University of California, Davis adapted to the Sacramento and San Joaquin valleys. It has excellent breadmaking quality and it was included in the “Recommended” category based on quality. It is the highest yielding variety in CA among the ones in the “Recommended” list. It was selected with molecular markers for resistance gene *Yr15* effective against stripe rust and the strong gluten allele *Glu-D1d*.
2. ‘ND Thresher’ (PVP 202400025, submitted 10/24/2023) is a hard red spring wheat variety was released. ND Thresher is adapted to eastern and central ND. Marker-assisted selection was performed throughout line development.
3. ‘Fortress’ (PVP 202400022, submitted 10/15/2023) (Antero/Judee//Antero), a semi-solid stemmed, hard red winter wheat, released by Colorado State University in 2021 will be marketed by MonTech.

## 2023 PVP that were pending in previous reports

1. KS Providence (PVP 202300377, submitted 08/09/2023). KS Providence is a Kansas Hard-Red Winter with excellent yield potential and yield stability. It has demonstrated good drought tolerance and is expected to be well adapted to the Central Corridor of Kansas. It carries *Lr34*, *Lr46* and *Lr68*, giving it very good resistance to leaf rust but is intermediate to stripe rust. Benefitted from genotyping lab analysis of regional nursery germplasm.
2. KS Big Bow (PVP 202300090, submitted 12/13/2022). KS Big Bow is a Kansas Hard-White wheat with excellent yield potential. Viewed as a Joe replacement having better yield, sprout tolerance and coleoptile length than Joe. Carries the *Wsm2* gene for WSMV. Benefitted from genotyping lab analysis of elite/regional nursery germplasm.
3. KS Territory (PVP 202300091, submitted 12/13/2022). is a Kansas Hard-Red Winter wheat with good resistance to WSMV based on *Wsm2*. Benefitted from genotyping lab support of elite/regional nursery germplasm.
4. KS Ahearn (PVP 202300010, submitted 10/10/2022). KS Ahearn was released as a late-maturing hard red winter wheat with excellent straw strength, good resistant to leaf, stripe and stem rusts and acceptable test weight. It has excellent yield potential and has performed well across widely disparate growing seasons. It does carry the 1B.1R wheat-rye translocation.
5. ‘Windom SF’ (PVP 202400023, submitted 10/15/2023) (CO18SF009W = Warhorse/Breck//CO12D1028), a hard white semi-solid stemmed winter wheat, released by Colorado State University in summer 2022. PVP Submitted. Application No. 202400023
6. ‘UI GOLD’ (PVP 202300355, submitted 08/10/2023) is a Hard-White Spring wheat cultivar released by the University of Idaho. It has very high grain yield and excellent bread-baking quality and good resistance to stripe rust.
7. ‘MN-Rothsay’ (PVP 202300138, submitted 02/03/2023) is a HRS released in 2022 by the University of Minnesota. It has high grain yield and strong straw. DNA markers generated by the USDA Genotyping lab at Fargo were used in the selection and development of MN-Rothsay

## 2023 Variety releases with pending PVP

1. 'AP18-AX' (CO14A136-135 = [(AF10/2\*Byrd)/(AF26/Byrd)]) is a new CoAXium wheat variety released by Colorado State University in 2023. It will be marketed by Syngenta. PVP will be submitted in August 2024.
2. 'CO18D007W' (CO12D906/CO07W722-F5) is a high yielding hard white winter wheat, developed utilizing the wheat by maize doubled haploid system. Released by Colorado State University in 2023. PVP will be submitted in August 2024.
3. 'CO18D297R' (CO12D906/CO11D1353//Monarch) is a high yielding hard red winter wheat, developed utilizing the wheat by maize doubled haploid system. Released by Colorado State University in 2023. PVP will be submitted in August 2024.
4. IL19-5632 is a very early maturing soft red winter wheat variety that yields well in the northern half of the eastern US and is moderately resistant to scab, caused by *Fusarium graminearum*. Genomic Selection was used to advance IL19-5632 from stage 2 to stage 3 of testing. IL19-5632 was released in 2023 for brand labeling.
5. KS Mako is a medium maturity HRW with excellent yield, protein deviation and quality. It is moderately susceptible to leaf and stripe rusts, moderately resistant to stem rust and resistant to SBMV and WSMV (Wsm2). Benefitted from marker lab.
6. KS Bill Snyder was released in 2023. With its high yield potential, good drought tolerance, good disease resistance package, good quality, and good straw strength, KS Bill Snyder can be used for both dryland and irrigated production in western Kansas and surrounding regions. Its wheat streak mosaic virus resistance was confirmed with the Wsm2 marker testing during its development.
7. MT Carlson (MT 1939) is a spring wheat variety that was released from Montana State University breeding program in 2023.
8. MT Dutton (MT 1809) is a spring wheat variety that was released from Montana State University breeding program in 2023.
9. NHH17612 is released August 2023 by the University of Nebraska, Name TBD, PVP application will be made early 2024. NHH17612 is a hard red winter wheat with two-gene Clearfield herbicide resistance targeted towards the Nebraska Panhandle and western South Dakota region. NHH17612 was advanced in part based on genome estimated breeding values, and molecular markers for specific biotic and abiotic stress resistance genes.
10. 'SD PHEASANT' is a hard red winter wheat developed by the South Dakota Agricultural Experiment Station and is recommended for release in 2023. The line was tested as SD18B025-8 and was developed from the cross OK07719W/SD07W083-4//SD07W053/3/SD09161. SD Pheasant is a high-yielding line with good test weight and good grain protein content. SD Pheasant is resistant to leaf rust and moderately resistant to stem rust, hessian fly and moderately tolerant to stripe rust, *Fusarium Head Blight*, and Bacterial Leaf Streak. Along with excellent grain yield potential, SD Pheasant has good milling characteristics and excellent baking characteristics. SD Pheasant was awarded the Best-of-Show award by the US Millers at the 2023 Wheat Quality Council Meetings for overall excellent milling and baking quality.
11. 15VDH-FHB-MAS25-15 is a soft red winter wheat that is publicly released as 'VT Pitman'.
12. VA18HRW-96 is a hard red winter wheat privately and is licensed to Mennel Milling Co. as 'Phoenix 96'.

13. ‘Rollie’ is a soft white winter wheat and was developed using marker-assisted selection to incorporate stripe rust resistance and eyespot resistance genes into a low-rainfall adapted cultivar; PVP pending.
14. ‘Windust’ is a soft white winter wheat and was selected using marker-assisted selection as a standard height cultivar with excellent emergence, stripe rust resistance, eyespot resistance, and high end-use quality; PVP pending.
15. ‘Gemini’ is a hard red winter wheat, was selected using marker-assisted selection for end-use quality traits, targeted for production in intermediate rainfall zones, and has very good stripe rust resistance and tolerance to low pH soils; PVP pending.
16. ‘Nova AX’ is a soft white winter wheat with tolerance to the Aggressor herbicide, confirmed to be homozygous for tolerance genes using markers, and approved for use in the CoAXium production system; PVP pending.
17. ‘Butch CL+’ is a soft white spring wheat with tolerance to the Beyond herbicide, confirmed to be homozygous for tolerance genes using markers, and approved for use in the Clearfield production system. This line has very good stripe rust and Hessian fly tolerance (confirmed with markers) and very high grain yield across environments; PVP pending.
18. Paradox is a hard red winter wheat variety released in early 2023 by Oklahoma State University for contracted seed wheat and grain production in a controlled supply chain (farmer to baker). Its development benefited from the molecular markers for the Bx7oe high-molecular-weight glutenin subunit.
19. Breadbox is a hard red winter wheat variety released in early 2023 by Oklahoma State University for contracted seed wheat and grain production in a controlled supply chain (farmer to baker). Its development benefited from the molecular markers for the Bx7oe high-molecular-weight glutenin subunit.
20. Firebox is a hard red winter wheat variety released in early 2023 by Oklahoma State University. It was released for contracted seed wheat and grain production in a controlled supply chain (farmer to baker). Its development benefited from the molecular markers for the Bx7oe high-molecular-weight glutenin subunit.
21. High Cotton (OK18510) (PVP application in preparation) is a hard red winter wheat variety released in early 2023 by Oklahoma State University for adoption throughout Oklahoma and the southern Great Plains. Molecular markers were used to select desirable leaf rust resistance genes that corroborated phenotypic results and to confirm the presence of *Sbm1* in the absence of more reliable phenotypic data.
22. ‘MI20R0012’ is a SRWW released by Michigan State University with high grain yield and test weight and resistance to leaf rust, stripe rust and FHB. The variety was advanced based on genomic prediction of grain yield and disease resistance. GBS marker sets developed at MSU were used for prediction of quantitative traits. KASP markers for quality, disease resistance and phenology were evaluated by the USDA-ARS genotyping lab in Raleigh, NC as part of the Big6 nursery. PVP is not being sought for this variety. The variety has been licensed by the Michigan Wheat Program, the wheat grower checkoff organization in Michigan.

## 2023 Germplasm

1. PI 701905. Germplasm released by UC Davis. Isogenic line of tetraploid wheat *T. turgidum* ssp. *durum* cultivar Kronos carrying the photoperiod sensitive allele *Ppd-A1b*

2. PI 701906. Germplasm released by UC Davis. Isogenic line of tetraploid wheat *T. turgidum* ssp. *durum* cultivar Kronos carrying the combined knock-out mutant alleles *elf3 phyB*.
3. PI 701907. Germplasm released by UC Davis. Isogenic line of tetraploid wheat *T. turgidum* ssp. *durum* cultivar Kronos carrying the combined knock-out mutant alleles *elf3 ppd1*.
4. PI 702421. Germplasm released by UC Davis. BC<sub>4</sub>F<sub>3</sub> isogenic line of tetraploid wheat *T. turgidum* ssp. *durum* cultivar Kronos carrying combined knock-out mutations *platz-A1 platz-B1*.
5. PI 702944. Germplasm released by UC Davis. Isogenic line of tetraploid wheat *T. turgidum* ssp. *durum* cultivar Kronos carrying the adult plant stripe rust resistance gene *Yr78*.