

## Varieties and germplasm released by the WheatCAP

PVP source <https://www.ars-grin.gov/cgi-bin/npgs/pvp/pvplist.pl>

### 2018 Variety releases

1. UC-Lassik-RS is a hard red spring variety with five *sbeII* mutations that result in a 42-53% increase in amylose and 880-905% increase in resistant starch. UC-Lassik-RS performs well agronomically in Sacramento, San Joaquin and Imperial valleys of California and has good breadmaking quality characteristics. PVP application 201800070 (11/22/2017).
2. UC-Patwin-RS is a hard white spring variety with five *sbeII* mutations that result in a 69-77% increase in amylose and 1034-1102% increase in resistant starch. UC-Patwin-RS has excellent breadmaking quality characteristics and high yield potential in the San Joaquin and Imperial valleys of California. PVP application 201800058 (11/22/2017).
3. UC-Desert King-RS is a Desert Durum® variety with four *sbeII* mutations and a 41-58% increase in amylose and 900% increase in resistant starch. UC-Desert King-RS showed a 55% reduction in cadmium content in the grain and excellent pasta quality. PVP application 201800069 (11/22/2017).

### Pending PVP

1. Desert Gold is a Desert Durum® variety with reduced cadmium (*Cdu1* gene), increase yellow pigment (two QTL for semolina yellow pigment) and color stability (*lpxB1.1* mutation) and increased gluten strengths. It showed very high grain yield in the San Joaquin and Imperial Valleys and excellent pasta quality. PVP submission pending.
2. Central Red is a hard red spring wheat variety with one of the highest yields in the Sacramento and San Joaquin valleys and excellent breadmaking quality. It was selected with molecular markers for s resistance gene *Yr15* effective against stripe rust, strong gluten allele *Glu-D1d*, and the 2NS/2AS translocation from *Aegilops ventricosa*. PVP submission pending.
3. 'Showdown' (OK12716) hard red winter wheat (PVP application pending), developed by the Oklahoma Agricultural Experimental Station, will be targeted for statewide adoption with improved yield potential, stripe rust resistance, Hessian fly resistance, and test weight over the recently released HRW cultivar, Bentley.

4. ‘Green Hammer’ (OK13209) hard red winter wheat (PVP application pending), developed by the Oklahoma Agricultural Experimental Station, has a more limited target region, specifically southwest, central, and north central Oklahoma, with elevated grain protein content, superior test weight, and exceptional protection against leaf rust and stripe rust. Yield responses to fungicide treatments in OSU variety trials have routinely been neutral.
5. ‘Baker’s Ann’ (OK13621) hard red winter wheat (PVP application pending), developed by the Oklahoma Agricultural Experimental Station, will be intended solely for contracted production and direct shipment to end-users with a need for elevated dough strength in the HRW class.
6. ‘Skydance (OK13625) hard red winter wheat (PVP application pending), developed by the Oklahoma Agricultural Experimental Station, will be targeted to those environments which may transiently lack for soil-available nitrogen, combined with broad and effective foliar disease resistance and exceptional milling and baking quality. An apparently higher nitrogen-use efficiency level was discovered from research at Tipton, OK originating from a previous CAP project emphasizing this trait in collaboration with UN-L.
7. ‘KS Venada’ (PVP application pending) is a hard white winter wheat cultivar developed by the Kansas State University. It has competitive yield in central Kansas and good disease package with improved straw strength and pre-harvest sprouting tolerance. PVP pending.
8. ‘Purl’ is a soft white winter wheat variety targeted to the high rainfall production zones of Washington and Northern Idaho. This line has very high test-weight and has the second highest yield average over three years. Purl combines excellent abiotic and biotic stress resistance, being resistant to stripe rust, eyespot foot rot, cereal cyst nematodes, low pH soils, and cold temperatures. The line has good end-use quality for domestic and export markets. PVP pending
9. ‘Breck’ (CO12D2011), a hard white winter wheat, released fall 2017. Markers for *Glu-B1a1* (HMWG Bx7oe+8), *Glu-D1d* (HMWG 5+10), PHS3AS, *Lr24/Sr24*, and *Lr37/Yr17* confirmed by USDA genotyping lab in Manhattan KS.
10. ‘Incline AX’ (CO14A065), hard red CoAXium winter wheat, released fall 2017. The first wheat variety released compatible with the CoAXium wheat production system. Markers for *Lr46* and *Glu-D1a* (HMWG 2+12) confirmed by USDA genotyping lab in Manhattan KS.
11. ‘Whitetail’ is a new soft white winter wheat variety release through Michigan Crop Improvement Association.

### *Pending PVP in 2017 report that received PVP in 2018*

1. ‘Smith’s Gold’ (PVP201800136) is a hard red winter wheat cultivar developed by the Oklahoma Agricultural Experimental Station and designated as a potential replacement for ‘Gallagher’ with improved stripe rust resistance and baking quality.

2. ‘Spirit Rider’ (PVP201800137) is a hard red winter wheat cultivar developed by the Oklahoma Agricultural Experimental Station with elevated total dietary fiber in the grain and was selected with the aid of DNA marker assays for *Lr34* and *Rht8*. It was also found to carry the *Wx-B1b* allele, and it apparently has gene(s) conferring strong acid-soil tolerance different from *ALMT1*.
3. ‘Lonerider’ (PVP201800135) is a hard red winter wheat cultivar developed by the Oklahoma Agricultural Experimental Station with unusually broad adaptation to the southern and central Plains. Critical to its release was using marker assays to select for the absence of 1RS and presence of *Glu-D1d* in a genetic background prone to weaker gluten.
4. ‘Lang-MN’ (PVP201800165) is a hard red spring variety released by the MN wheat-breeding program in 2017. Lang-MN has competitive grain yields, high grain protein. Lang-MN has good resistance to Fusarium head blight, leaf rust, stripe rust, and bacterial leaf streak.
5. ‘Thompson’ (PVP 201800429) is a HRS wheat released by SDSU that has an excellent combination of high yield and disease resistance. Thompson has medium height and medium maturity with average protein content, test weight and grain quality. It is moderately resistant to leaf rust, stem rust and FHB.

### 2018 Germplasm releases

1. Induced mutant ***RHT-B1<sub>E529K</sub>*** (PI 687144) confers reduced height by partially suppressing the semi-dwarf phenotype of *Rht-B1b*. This mutation is also associated with length increases in coleoptiles, seedling shoots, and stem internodes relative to the *Rht-B1b* allele
2. “KS05HW14” is a hard white winter experimental line developed by the Kansas State University. It has good crossability with *Aegilops tauschii*, a very important genetic resource that could contribute various traits of agronomic importance for wheat.
3. Six winter wheat germplasm from CSU: Snowmass 2.0, Canvas, Whistler, Monarch, Byrd CL Plus and Crescent AX.

### 2018 Population releases

1. The spring wheat TCAP NAM population consisting of 2400 RIL was deposited in the NSGC.
2. South Dakota State University. RIL population 1- SD52/SD1001, 92 F<sub>5</sub> RILs, Genotyped -1,200 GBS SNPs, Trait- Bacterial Leaf Streak resistance.
3. South Dakota State University. RIL population 2 - Lyman/Emerson, 92 F<sub>5</sub> RILs for FHB resistance, will be genotyped soon.
4. A doubled haploid population (140 DH lines) from the cross between UC-Lassik-RS c UC-Patwin-RS, two lines that share loss-of-function mutations in five of the *sbeII* genes. Developed by the University of California, Davis was genotyped with the 90K Illumina.

Assay in the ND genotyping laboratory. The objective is to identify loci that help ameliorate yield penalties in line with increased levels of amylose and resistant starch.

5. CO960293-2/TAM 111 mapping population with 217 RILs developed by Drs. Shuyu Liu and Jackie Rudd from Texas A&M. A QTL for yield on chromosome 2B and a QTL for TKW have been already identified.