WHEAT VARIETY GUIDE

2017

Plains Gold
Genetics you can trust
Colorado Wheat Research Foundation (CWRF) acknowledges you, the farmers, who have helped launch the PlainsGold® brand to prominence in Colorado, Kansas, Nebraska, and other High Plains states.

PlainsGold varieties are recognized for their unique combination of proven yields with sought-after production traits and quality characteristics. PlainsGold offers innovative new winter wheat varieties developed by one of the nation’s leading public wheat breeding and research programs.

Each PlainsGold winter wheat variety is developed with the High Plains region in mind. Farmers can expect the highest standards, including:

- Consistently high yields year to year
- Resistance to drought and prevalent disease problems
- High quality varieties with optional premium programs
- Winter annual grass control through the CoAxium® and Clearfield® production systems.

USE THIS VARIETY GUIDE AND YOUR LOCAL PLAINSGOLD DEALER TO SELECT THE PERFECT LINE-UP TO MEET YOUR PRODUCTION GOALS.
COLORADO STATE UNIVERSITY | Wheat Breeding & Genetics Program

The unique partnership between Colorado State University’s (CSU) Wheat Breeding and Genetics Program and our outstanding seed growers is the backbone of the success of PlainsGold varieties. PlainsGold royalties are reinvested in the research program to ensure continued excellence in future varieties.

The Wheat Breeding and Genetics Program is based on a firm foundation of field testing, taking advantage of a network of 15 trial locations in eastern Colorado. In addition, the program features industry-leading adoption of advanced breeding technologies such as doubled haploid breeding, marker assisted selection and genomic selection. Excellent facilities on the CSU campus including state-of-the-art greenhouses, end-use quality testing, and molecular genetics/genomics laboratories, provide the necessary tools to develop improved varieties using the latest of new technologies.

COLORADO WHEAT RESEARCH FOUNDATION (CWRF) is the only farmer governed organization in the U.S. that gets ownership of varieties and novel traits from a public wheat breeding program.
PlainsGold’s elite hard red winter wheat varieties combine stable and consistent yields with drought tolerance and disease resistance. As a PlainsGold seed grower, you have the unique opportunity to provide exclusive access to these sought-after varieties. PlainsGold varieties have dominated the market in Colorado for years and now these innovative varieties are quickly reaching new markets across the High Plains states.
Avery is a doubled haploid-derived line from a cross between TAM 112 and Byrd. Similar to Byrd in drought tolerance and other agronomic characteristics and with better water absorption, Avery also resists the wheat curl mite which gives good resistance to Wheat Streak Mosaic Virus. Slightly later heading may also aid in freeze avoidance at some locations.

**CHARACTERISTICS**

- **HEIGHT**: Medium-tall
- **MATURITY**: Medium
- **YIELD**: Very high
- **STRAW STRENGTH**: Average
- **S HATTERING**: Good
- **TEST WEIGHT**: Average
- **COLEOPTILE LENGTH**: Average
- **DROUGHT TOLERANCE**: Excellent
- **RWA RESISTANCE**: Susceptible
- **MILLING/BAKING QUALITY**: Very good
- **PEDIGREE**: TAM 112/Byrd

### PEST AND/OR DISEASE PROFILE

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**RATING SCALE**

- Very poor
- Poor
- Fair
- Good
- Very good
- Excellent

### NOTES:

- High yielding variety
- Larger kernels than Byrd
- Excellent drought tolerance
- Very good wheat curl mite and Wheat Streak Mosaic Virus resistance
- Very good quality
Brawl CL Plus is the first publicly-developed two-gene Clearfield® hard red winter wheat variety. This means Brawl CL Plus provides a greater degree of tolerance to Beyond™ herbicide by allowing the use of methylated seed oil in the tank mix with Beyond™ herbicide to increase the effectiveness of the herbicide, particularly on feral rye, which is tougher to control once it starts to tiller and develop.

**CHARACTERISTICS**

- **HEIGHT** ......................... Medium
- **MATURITY** ......................... Early
- **YIELD** ............................. Good
- **STRAW STRENGTH** .............. Excellent
- **SHATTERING** ..................... Good
- **TEST WEIGHT** ................... Excellent
- **COLEOPTILE LENGTH** .......... Medium-long
- **DROUGHT TOLERANCE** .......... Good
- **RWA RESISTANCE** .......... Susceptible
- **MILLING/BAKING QUALITY** .... Excellent
- **PEDIGREE** ....................... Teal 11A / Above // CO99314

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<th>PEST AND/OR DISEASE PROFILE</th>
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**NOTES:**

- Control winter annual grassy weeds
- Excellent test weight
- Higher protein
- High temperature tolerant
After its 2011 blockbuster debut, Byrd continues to be the top-ranked PlainsGold variety planted in Colorado. Byrd is among the yield leaders, showing consistent performance under dryland and irrigated conditions. Byrd also has good test weight and superior end-use quality. Byrd has excellent drought tolerance and resists the wheat curl mite which gives excellent resistance to Wheat Streak Mosaic Virus.

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
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<tbody>
<tr>
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<td>TEST WEIGHT</td>
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<td>COLEOPTILE LENGTH</td>
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<td>DROUGHT TOLERANCE</td>
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<td>RWA RESISTANCE</td>
<td>Susceptible</td>
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<td>MILLING/BAKING QUALITY</td>
<td>Excellent</td>
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<tr>
<td>PEDIGREE</td>
<td>TAM 112/CO970547-7</td>
</tr>
</tbody>
</table>

**NOTES:**
- High dryland and irrigated yields
- Excellent drought tolerance
- Carries excellent resistance to wheat curl mite and Wheat Streak Mosaic Virus
- Excellent milling and baking characteristics
DENALI

Denali is a hard red winter wheat variety that has performed well across the High Plains region. Denali has excellent test weight, resistance to Hessian fly, good straw strength and good milling properties. Denali exhibits excellent yields in irrigated conditions as well. Denali can also be accessed through Kansas Wheat Alliance.

**CHARACTERISTICS**

- **HEIGHT**: Medium-tall
- **MATURITY**: Medium-late
- **YIELD**: High
- **STRAW STRENGTH**: Good
- **SHATTERING**: Good
- **TEST WEIGHT**: Excellent
- **COLEOPTILE LENGTH**: Medium-long
- **DROUGHT TOLERANCE**: Good
- **RWA RESISTANCE**: Susceptible
- **MILLING/BAKING QUALITY**: Average
- **PEDIGREE**: CO980829/TAM 111

**PEST AND/OR DISEASE PROFILE**

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<thead>
<tr>
<th>STRIPE RUST</th>
<th>LEAF RUST</th>
<th>WHEAT STREAK MOSAIC</th>
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<td>3</td>
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**RATING SCALE**

- Poor
- Fair
- Good
- Very Good
- Excellent

**NOTES:**

- High dryland and irrigated yields
- Excellent test weight
- Taller plant stature
- Superior to TAM 111 in variety trials in CO, KS, and NE
HATCHER

With consistently high dryland yields and superior drought tolerance, Hatcher’s long-term stability has made it one of the top-ranking varieties in CSU variety trials since 2001. Hatcher has an established reputation for recovering well from poor stands, and remains the second-most planted variety in Colorado.

### CHARACTERISTICS

- **HEIGHT**  Medium-short
- **MATURITY**  Medium
- **YIELD**  High
- **STRAW STRENGTH**  Fair
- **SHATTERING**  Good
- **TEST WEIGHT**  Good
- **COLEOPTILE LENGTH**  Medium-long
- **DROUGHT TOLERANCE**  Good
- **RWA RESISTANCE**  Biotype 1
- **MILLING/BAKING QUALITY**  Very good
- **PEDIGREE**  Yuma/Pl 372129/1 TAM-200/3/4 *Yuma/4/KS91H184/Vista

### PEST AND/OR DISEASE PROFILE

<table>
<thead>
<tr>
<th>DISEASE PROFILE</th>
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### NOTES:

- Stable dryland yields
- Good drought tolerance
- Good test weight
- Good stripe rust resistance
- Very good quality
Released in 2016, Langin is an early maturing semi-dwarf with very high yields, topping the Colorado dryland trials in 2017. Langin also showed very strong performance in Western Kansas and Western Nebraska state trials. Stripe rust resistance is very good, and resistance to wheat curl mite is carried from the Byrd parent. Use of a growth regulator is recommended to achieve the highest yields.

**NOTES:**
- Very high yielding
- Very good stripe rust resistance
- Very good test weight
- Excellent drought tolerance
- Excellent baking quality

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**CHARACTERISTICS**

- **HEIGHT**................................. Short
- **MATURITY**......................... Early
- **YIELD**................................. Very high
- **STRAW STRENGTH**............... Fair
- **SHATTERING**...................... Good
- **TEST WEIGHT**...................... Good
- **COLEOPTILE LENGTH**........... Medium
- **DROUGHT TOLERANCE**.......... Good
- **RWA RESISTANCE**.............. Biotype 1 and 2
- **MILLING/BAKING QUALITY**...... Good
- **PEDIGREE**........................... CO050270/Byrd

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**PEST AND/OR DISEASE PROFILE**

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**RATING SCALE**

- POOR
- FAIR
- GOOD
- VERY GOOD
- EXCELLENT
PlainsGold is a leader in marketing high-yielding hard white winter wheat varieties that are preferred for milling and baking. These hard white winter wheat varieties are sought-after in the U.S. and abroad to make whole grain food products with a look and texture similar to refined flour. Often these varieties are in such high demand that they come with guaranteed premium pricing options. Snowmass™, Sunshine, and Thunder CL, for example, are all eligible for the CWRF / Ardent Mills Ultragain® Premium Program.
Snowmass™ is PlainsGold’s leading hard white winter wheat variety and offers wheat farmers premium pricing through the CWRF / Ardent Mills Ultragrain® Premium Program. Snowmass™ combines good dryland yields and good test weights with excellent milling and baking characteristics that are so sought-after that Snowmass™ earns premium pricing. Snowmass™ showed industry leading Wheat Streak Mosaic Virus resistance in 2017.

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<td>RWA RESISTANCE</td>
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<td>MILLING/BAKING QUALITY</td>
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RATING SCALE

- POOR
- FAIR
- GOOD
- VERY GOOD
- EXCELLENT

NOTES:

- Excellent Wheat Streak Mosaic Virus resistance
- Premium pricing
- Excellent baking characteristics
- Good dryland yields
- Good sprouting tolerance
As PlainsGold’s newest hard white winter wheat and part of the CWRF / Ardent Mills Ultragrain® Premium Program, Sunshine is a very good-yielding variety with very good milling and baking quality. Sunshine also has good drought tolerance and is well adapted for both dryland and irrigated production in the High Plains region.

**NOTES:**
- Premium pricing
- Considerably better straw strength than Snowmass
- Medium-early maturity
- Good sprouting tolerance
- Longer coleoptile than Snowmass
Thunder CL is a single-gene Clearfield® hard white winter wheat variety that is tolerant to Beyond™ herbicide for broad-spectrum weed control, including problematic winter annual grassy weeds. In addition, Thunder CL combines high yields, good stress tolerance, excellent straw strength, good test weights and superior milling and baking qualities. Thunder CL is also an excellent irrigated wheat variety that is eligible for the CWRF / Ardent Mills Ultragrain® Premium Program.

**PEST AND/OR DISEASE PROFILE**

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**RATING SCALE**

- POOR
- FAIR
- GOOD
- VERY GOOD
- EXCELLENT

**NOTES:**
- Control winter annual grassy weeds
- Excellent straw strength for irrigation
- Premium pricing
- Good leaf disease resistance package
- Excellent milling and baking characteristics

**CHARACTERISTICS**

- **HEIGHT** Medium-short
- **MATURITY** Medium-early
- **YIELD** High
- **STRAW STRENGTH** Excellent
- **SHATTERING** Good
- **TEST WEIGHT** Good
- **COLEOPTILE LENGTH** Medium
- **DROUGHT TOLERANCE** Good
- **RWA RESISTANCE** Biotype 1
- **MILLING/BAKING QUALITY** Good milling, excellent baking
- **PEDIGREE** KS01-5539/CO99W165
Antero is a yield-leading hard white winter wheat across the High Plains, including Colorado, Western Kansas and Western Nebraska. Antero exhibits good drought tolerance, excellent test weight, and excellent stripe rust resistance.

**NOTES:**
- Very high dryland and irrigated yields
- Good sprouting tolerance
- Excellent test weight
- Excellent stripe rust resistance
## WHEAT VARIETY | PERFORMANCE RESULTS

### Summary of 2017 Collaborative On-Farm Test (COFT) | 25 LOCATIONS

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<thead>
<tr>
<th>VARIETY</th>
<th>YIELDiationsub[^]a\</th>
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<tbody>
<tr>
<td></td>
<td>BU/AC</td>
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<tr>
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<td>56.9</td>
<td>59.2</td>
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<td>52.4</td>
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<td>10.6</td>
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<tr>
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<td>49.9</td>
<td>58.9</td>
<td>11.4</td>
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<tr>
<td>Denali</td>
<td>48.2</td>
<td>57.8</td>
<td>11.0</td>
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[^]a Yield corrected to 12% moisture
**DRYLAND VARIETY | PERFORMANCE RESULTS**

**Summary of 3-Year (2015 - 2017) | 25 LOCATIONS**

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<tr>
<th>VARIETY</th>
<th>MARKET</th>
<th>YIELD</th>
<th>YIELD % TRIAL AVERAGE</th>
<th>TEST WEIGHT</th>
<th>PLANT HEIGHT</th>
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<td>Antero</td>
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<td>111%</td>
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<td>HRW</td>
<td>75.6</td>
<td>107%</td>
<td>59.3</td>
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<td>Avery</td>
<td>HRW</td>
<td>72.2</td>
<td>102%</td>
<td>58.8</td>
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<td>Byrd</td>
<td>HRW</td>
<td>71.4</td>
<td>101%</td>
<td>59.2</td>
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<td>Denali</td>
<td>HRW</td>
<td>70.5</td>
<td>100%</td>
<td>59.1</td>
<td>35</td>
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<td>HWW</td>
<td>700</td>
<td>99%</td>
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<td>Brawl CL Plus</td>
<td>HRW</td>
<td>63.3</td>
<td>90%</td>
<td>58.7</td>
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</table>
Innovation at work for growers...

- Will provide growers with a new Non-GMO herbicide tolerant weed control tool.
- A new tool in the growers tool box for controlling tough winter annual grassy weeds like feral rye (Secale cereale), downy brome (Bromus tectorum), and jointed goat grass (Aegilops cylindrica).
- Will provide a new mode of action, crop rotation flexibility and consistent broad-spectrum grassy weed control.
- CoAxium™ Wheat Production System will be available as Certified seed for growers to plant in the Fall of 2018.
- Varieties are being developed through public and private breeding programs.
OTHER RESOURCES

PLAINSGOLD.COM
Information on PlainsGold varieties and where to buy.

WHEAT.COLOSTATE.EDU
Homepage for CSU’s Wheat Breeding and Genetics Program.

RAMWHEATDB.COM
Compare varieties, view trial data, and analyze agronomic and other characteristics of wheat varieties. Maintained by CSU’s Wheat Breeding and Genetics Program.

CSUCROPS.COM
Crop variety performance trial results as conducted by CSU’s Crops Testing program.

WHEATQUALITYCOUNCIL.ORG
Review the reports generated by the work of the Wheat Quality Council.

PLAINSGRAINS.ORG
Serving hard red winter (HRW) wheat producers through quality testing, timely reporting, enhanced marketing, and the development of buyer relationships.