

A REPORT OF THE  
**SMALL GRAIN VARIETY REVIEW BOARD**



**ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES**

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ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

August 2021

The Association of Official Seed Certifying Agencies (AOSCA), Small Grain Variety Review Board (SGVRB), reviewed the following varieties on August 17, 2021. The Board recommended the inclusion of these varieties for certification. Seed of these varieties may be certified, providing production meets all standards of the Seed Certifying Agency of the jurisdiction in which the seed is grown.

All variety information, including descriptions, claims, and research data to support any claim, was supplied to the Small Grain Variety Review Board by the applicants. The Small Grain Variety Review Board makes judgments regarding recommendation of varieties for inclusion into certification based on the data supplied. Beyond that, the Small Grain Variety Review Board takes no position on the accuracy or truthfulness of any description or claim made by the applicants.

Further information on current procedures, application forms, and detail regarding the Small Grain Variety Review Board can be obtained from:

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Respectfully submitted,

Lauren Port, Chairman  
Small Grains Variety Review Board

## 2021 AOSCA SMALL GRAIN VARIETY REVIEW BOARD

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** indicates amendment application for description change				

**Wheat**  
**WB4394**  
**XB4325 (Exp)**  
**(Amended – Description Change)**

Variety Name WB4394

Experimental Designation(s) XB4325

Date SGVRB first recommended this variety Mar 28, 2019

Date(s) any previous amendments were recommended \_\_\_\_\_

Date this amendment was submitted 7/21/2021

1. WB4394 (XB4325) is a hard red winter wheat developed by Bayer Crop Science.
2. In early generations of WB4394, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance
3. WB4394 is adapted to the hard red winter wheat growing regions of the Pacific Northwest.
4. No claims about disease resistance are made at this time.
5. Identifying characteristics –

1. Kind:	<u>Common, Hard Red Winter Wheat</u>		
2. Seasonal Growth Habit:	<u>Winter</u>	16. Awn Type:	<u>Awned</u>
3. Coleoptile Color:	<u>White</u>	17. Awn Color:	<u>Brown</u>
4. Juvenile Growth Habit:	<u>Semi-erect</u>	18. Glume Color:	<u>Tan/Bronze</u>
5. Leaf Color at Boot:	<u>Blue-Green</u>	19. Glume Length:	<u>Short</u>
6. Flag Leaf at Boot:	<u>Erect, Twisted, Wax Present</u>	20. Shoulder Shape:	<u>Apiculate</u>
7. Auricle Color:	<u>Purple</u>	21. Shoulder Width:	<u>Medium</u>
8. Day(s) to 50% Heading:	<u>188</u>	22. Beak Shape:	<u>Acuminate</u>
9. Anther Color:	<u>Purple</u>	23. Beak Length (S,M,L,VL):	<u>Long</u>
10. Anthocyanin:	<u>Absent</u>	24. Glume Pubescence:	<u>Absent (Glabrous)</u>
11. Plant Height (cm):	<u>97</u>	25. Seed Color:	<u>Red</u>
12. Internodes:	<u>Hollow</u>	26. Seed Shape:	<u>Ovate</u>
13. Spike Shape:	<u>Tapering</u>	27. Cheeks:	<u>Rounded</u>
14. Spike Density:	<u>Lax</u>	28. Brush Size (S,M,L.):	<u>Short</u>
15. Spike Curvature:	<u>Nodding</u>	29. Avg 1,000 Kernel Wt (grams):	<u>48.5</u>

30. Physiological/biochemical Traits:

Variants and Frequency: A variant that is similar to WB4394 but has white seed occurs at a frequency of up to 0.50% (50 out of 10,000 seeds). A variant that is similar to WB4394 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A white head variant may occur at a frequency of 0.1% (10/10,000). An awnless variant may occur at a frequency of 0.1% (10/10,000).

6. Recognized classes of WB4394 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification or bulk method to produce breeder seed as needed and all foundation seed. Royalty fees and/or licensing agreements are anticipated.
7. Commercial seed will likely be ready for sale by the fall of 2020.
8. Application for PVP is anticipated with the option that WB4394 can be sold by variety name only as a class of certified seed.
9. Certified seed production acreage is not to be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jul 21, 2021

Date recommended by the VRB: Aug 17, 2021



# Wheat

## WB4511

### XD4401 (Exp)

#### (Amended – Description Change)

Variety Name WB4511

Experimental Designation(s) XD4401

Date SGVRB first recommended this variety May 18, 2021

Date(s) any previous amendments were recommended \_\_\_\_\_

Date this amendment was submitted June 9, 2021

1. WB4511 is a hard red winter wheat developed by Bayer Crop Science.
2. In early generations of WB4511, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.
3. WB4511 is adapted to the hard red winter wheat growing regions of Oklahoma & Texas.
4. No claims about disease resistance are made at this time.
5. Identifying characteristics –

1. Kind:	<u>Common, Hard Red Winter Wheat</u>		
2. Seasonal Growth Habit:	<u>Winter</u>	16. Awn Type:	<u>Awnletted</u>
3. Coleoptile Color:	<u>White</u>	17. Awn Color:	<u>Tan/Bronze</u>
4. Juvenile Growth Habit:	<u>Semi-erect</u>	18. Glume Color:	<u>Tan/Bronze</u>
5. Leaf Color at Boot:	<u>Green</u>	19. Glume Length:	<u>Medium</u>
6. Flag Leaf at Boot:	<u>Erect, Twisted, Not Waxed</u>	20. Shoulder Shape:	<u>Oblique</u>
7. Auricle Color:	<u>White</u>	21. Shoulder Width:	<u>Medium</u>
8. Day(s) to 50% Heading:	<u>158</u>	22. Beak Shape:	<u>Acute</u>
9. Anther Color:	<u>Yellow</u>	23. Beak Length (S,M,L,VL):	<u>Medium</u>
10. Anthocyanin:	<u>Present</u>	24. Glume Pubescence:	<u>Absent (Glabrous)</u>
11. Plant Height (cm):	<u>76</u>	25. Seed Color:	<u>Red</u>
12. Internodes:	<u>Hollow</u>	26. Seed Shape:	<u>Oval</u>
13. Spike Shape:	<u>Oblong</u>	27. Cheeks:	<u>Rounded</u>
14. Spike Density:	<u>Mid Dense</u>	28. Brush Size (S,M,L.):	<u>Short</u>
15. Spike Curvature:	<u>Inclined</u>	29. Avg 1,000 Kernel Wt (grams):	<u>48.5</u>

#### 30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB4511 but has white seed occurs at a frequency of up to 0.50% (50 out of 10,000 seeds). A variant that is similar to WB4511 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A white head variant may occur at a frequency of 0.1% (10/10,000). An awned variant (bronze or white head) may occur at a frequency of 0.25% (25/10,000).

6. Recognized classes of WB4511 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification method and bulk method to produce breeder seed as needed and all foundation seed. Royalty fees and/ or licensing agreements are anticipated.
7. Commercial seed will likely be ready for sale by the fall of 2021.
8. Application for PVP is anticipated with the option that WB4511 can be sold by variety name only as a class of certified seed.
9. Certified seed production acreage is not to be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jun 9, 2021

Date recommended by the VRB: Aug 17, 2021



# Wheat

## GP 747

### M15-6747# (Exp) (Amended – Name Change)

1. GP 747 (M15-6747#) is a soft red winter wheat developed by Syngenta Crop Protection AG.
2. GP 747 was selected for high yield, lodging and height. A doubled haploid breeding system was used to create 122015W.
3. GP 747 is a medium, awned variety adapted to Missouri, Illinois, Indiana, Kentucky, Ohio, and southern Michigan in the Midwest. It is also adapted to Pennsylvania, and the tidewater area of Virginia in the Mid-Atlantic.
4. GP 747 exhibits above average resistance to powdery mildew, soilborne mosaic virus, and bacterial streak. It is moderately susceptible to fusarium head blight and leaf rust.
5. Identifying characteristics –

1. Kind:	Common, Soft Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Long
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	135	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthocyanin:	Absent	24. Glume Pubescence:	Absent (glabrous)
11. Plant Height (cm):	87.6	25. Seed Color:	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	35

#### 30. Physiological/biochemical Traits:

Variants and frequency: Up to 1% variant plants may be encountered in subsequent generations. These may include talls (>3 inches) and awnless plants.

6. Syngenta Seeds, LLC maintains seed stock and certified classes of Foundation, Registered and Certified. Syngenta Seeds, LLC will maintain the variety at the breeder seed level to produce breeder seed as needed. Royalty fees are anticipated.
7. Certified seed will likely be available Fall of 2020.
8. Plant Variety Protection is anticipated in 2021. GP 747 may only be sold as a class of certified seed.
9. Certified acreage is not published by AOSCA or by individual certifying agencies.

Date this application was submitted: Jul 21, 2021

Date recommended by the VRB: Aug 17, 2021



# Wheat

## Ramsay ACS14138-7653 (Exp)

1. Ramsay (ACS14138-7653) is a hard, red winter wheat developed by Pflanzenzucht Oberlimpurg (Dr. Peter Franck) of Germany and licensed to Nutrien Ag Solutions.
2. Ramsay was developed using a pedigree, single seed descent breeding procedure, with selection for standability, yielding potential, test weight, protein gluten strength.
3. Ramsay has been tested in Nutrien Ag Solution trials in Montana (irrigated and dryland) and in S.E. and S. Central Idaho (irrigated) Table 1. It is well adapted to those conditions in the PNW and MT.
4. Stripe rust was only observed in one year of testing (see Table 2.) and Ramsay was tolerant when the check varieties showed various levels of susceptibility.
5. Identifying characteristics –

Common. Hard Red Winter Wheat			
1. Kind:	Winter	16. Awn Type:	Awned
2. Seasonal Growth Habit:	White	17. Awn Color:	White
3. Coleoptile Color:	Prostrate	18. Glume Color:	White/Amber
4. Juvenile Growth Habit:	Gray-Blue	19. Glume Length:	Medium
5. Leaf Color at Boot:	Erect/Twisted/Waxed	20. Shoulder Shape:	Oblique
6. Flag Leaf at Boot:	White	21. Shoulder Width:	Wide
7. Auricle Color:	159	22. Beak Shape:	Acuminate
8. Day(s) to 50% Heading:	Yellow	23. Beak Length (S,M,L,VL):	Medium
9. Anther Color:	Absent	24. Glume Pubescence:	Absent
10. Anthocyanin:	83	25. Seed Color:	Red
11. Plant Height (cm):	Hollow	26. Seed Shape:	Ovate
12. Internodes:	Oblong	27. Cheeks:	Rounded
13. Spike Shape:	Mid Dense	28. Brush Size (S,M,L.):	Medium
14. Spike Density:	Erect	29. Avg 1,000 Kernel Wt (grams):	44
15. Spike Curvature:			

### 30. Physiological/Biochemical Traits:

Variants and Frequency: A white seed variant may occur at a frequency of up to 10 white seeds/10,000 seeds. An awnless variant may occur at a frequency of up to 4 plants per 10,000 plants. Taller plants (one to two heads taller) may occur at a frequency of up to 10 plants per 10,000 plants). Otherwise, no other variants are known to occur.

6. Recognized classes of seed are Breeder, Foundation Registered, and Certified. Ramsay will be regenerated by head row purification when needed by Nutrien Ag Solutions (NAS). Royalties will be collected by NAS.
7. Certified Seed will be offered for sale in the fall of 2021.
8. Application will be made for PVP protection and the Title V option will NOT be chosen.
9. Seed production acreage of Ramsay is not to be published by AOSCA or other seed certifying agencies.

Date this application was submitted: Jul 2, 2021

Date recommended by the VRB: Sep 3, 2021



# Wheat

## YSC-93

### ML-14-93 (Exp)

1. YSC-93 (experimental cultivar ML-14-93) is a soft white winter wheat (*Triticum aestivum*) developed by Yield Star Cereal Sciences.
2. YSC-93 was selected for yield, phenotypic traits, and resistance to rust, foot and crown rot using bulk/crossing breeding method.
3. YSC-93 has been tested in the Northwest including areas of high rainfall and irrigated wheat production areas in Eastern Washington. It shows good adaptation to higher rainfall zones of the Pacific Northwest and regions with similar agroecology.
4. No specific disease reaction claims are made at this time.
5. Identifying characteristics –

1. Kind:	Common, Soft White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect	20. Shoulder Shape:	Wanting
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	148	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	80	25. Seed Color:	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Mid-dense	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	38
30. Physiological/Biochemical Traits:	None		

Variants and Frequency: True variants may occur as taller plants at a rate of 0.001%. A variant that is similar to YSC-93 but has red seed occurs at a frequency of up to .50% (50 out of 10,000 seeds). An awnless variant may occur at a frequency of 1% (100/10,000).

6. Yield Star Cereals maintains seed stock and certified classes of Foundation, Registered and Certified. Yield Star Cereals will maintain the variety by the head row/progeny method to produce seed as needed.
7. If recommended, certified seed of YSC-93 will be offered for sale in the Spring of 2022.
8. Application for Plant Variety Protection is anticipated and the Title V certification option (sale by variety name only as a class of certified seed) will be elected.
9. Certified acreage is to be published by AOSCA or by individual certifying agencies.

Date this application was submitted: Aug 10, 2021

Date recommended by the VRB: Sep 3, 2021





# Wheat

## YSC-217

### RXW#5 (Exp)

1. YSC-217 (experimental cultivar RXW#5) is a soft white winter wheat (*Triticum aestivum*) developed by Yield Star Cereal Sciences.
2. YSC-217 was selected for yield, phenotypic traits, and resistance to rust, foot and crown rot using bulk/crossing breeding method.
3. YSC-217 has been tested in the Northwest including areas of high rainfall and irrigated wheat production areas in Eastern Washington. It shows good adaptation to higher rainfall zones of the Pacific Northwest and regions with similar agroecology.
4. No specific disease reaction claims are made at this time.
5. Identifying characteristics –

1. Kind:	Common, Soft White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect	20. Shoulder Shape:	Wanting
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	150	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	84	25. Seed Color:	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Mid-dense	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	34
30. Physiological/Biochemical Traits:	None		

Variants and Frequency: True variants may occur as taller plants at a rate of 0.001%. A variant that is similar to YSC-217 but has red seed occurs at a frequency of up to .50% (50 out 10,000 seeds). An awnless variant may occur at a frequency of 1% (100/10,000).

6. Yield Star Cereals maintains seed stock and certified classes of Foundation, Registered and Certified. Yield Star Cereals will maintain the variety by the head row/progeny method to produce seed as needed.
7. If recommended, certified seed of YSC-217 will be offered for sale in the Spring of 2022.
8. Application for Plant Variety Protection is anticipated and the Title V certification option (sale by variety name only as a class of certified seed) will be elected.
9. Certified acreage is to be published by AOSCA or by individual certifying agencies.

Date this application was submitted: Aug 10, 2021

Date recommended by the VRB: Sep 3, 2021



# Barley

AS-007

Y007-3 (Exp)

(Amended – Name Change)

1. AS-007 (Y007-3) is a spring, waxy starch (5-10% amylose), naked caryopsis, six row barley by 21<sup>st</sup> Century Genetics Corp. for the food barley market.
2. AS-007 was developed using the pedigree method of breeding with selection for phenotypic similarity to Tamalpais and waxy starch.
3. AS-007 has been tested under irrigation in central California and dryland North Dakota with primary adaptation for growing conditions and disease tolerances of central California and similar environments.
4. AS-007 has not been tested for any disease reactions. However, barley yellow dwarf and powdery mildew presence in California in 2017-18 and stripe rust in 2018-19 has allowed selection against diseased plants.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>56.5 cm</u>
2. Spike:	<u>Six row</u>	17. Spike Shape:	<u>Oblong</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Mid-dense</u>
4. Juvenile Growth Habit:	<u>Semi-erect</u>	19. Spike Position at Maturity:	<u>Erect</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Covered</u>
6. Leaf Color at Boot:	<u>Green</u>	21. Rachilla Hair Length:	<u>Short</u>
7. Flag Leaf at Boot:	<u>Erect, Not Twisted, Waxy Bloom</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Long</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Rough</u>
10.:Auricle Color:	<u>White</u>	25. Glume Hairiness:	<u>None</u>
11.Heading Date (see below):	<u>50 Days After Planting</u>	26. Glume Awn Surface:	<u>Rough</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Naked</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u></u>
14. Collar Shape:	<u>V-shaped</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Slight</u>	30. Avg 1,000 Kernel Wt (grams):	<u>35</u>

Heading date: 50 days after planting which is: 1 Day(s) (EARLIER) (LATER) than: Tamalpais

Plant height: 56.5 cm, which is 3.2 cm (SHORTER) (TALLER) (SAME AS) Tamalpais

Physiological or biochemical traits: AS-007 has waxy starch as determined by red staining of endosperm at the hard dough stage of seed development

Variants and their frequency: No variants have been observed, but up to 1% tall plants or covered seed or non-waxy seed may be observed in future generations.

6. Recognized classes of AS-007 are breeder, foundation, registered, and certified. 21<sup>st</sup> Century Genetics Corp. will maintain the variety by the head-row method to produce breeder seed as needed. Royalty fees or licensing agreements are anticipated.
7. Certified class seed will likely be available for the 2021 growing season, if accepted as eligible.
8. Application for PVP is anticipated with the option that AS-007 can be sold by variety name only as a class of certified seed.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 22, 2021

Date recommended by the VRB: Aug 17, 2021



# Barley

## AS-Wolf Y039-1 (Exp) (Amended – Name Change)

1. AS-Wolf (Y007-3) is a spring, waxy starch (5-10% amylose), naked caryopsis, six row barley by 21<sup>st</sup> Century Genetics Corp. for the food barley market.
2. AS-Wolf was developed using the pedigree method of breeding with selection for phenotypic similarity to Tamalpais and waxy starch.
3. AS-Wolf has been tested under irrigation in central California and dryland North Dakota with primary adaptation for growing conditions and disease tolerances of central California and similar environments.
4. AS-Wolf has not been tested for any disease reactions. However, barley yellow dwarf and powdery mildew presence in California in 2017-18 and stripe rust in 2018-19 has allowed selection against diseased plants.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>56.5 cm</u>
2. Spike:	<u>Six row</u>	17. Spike Shape:	<u>Oblong</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Mid-dense</u>
4. Juvenile Growth Habit:	<u>Semi-erect</u>	19. Spike Position at Maturity:	<u>Erect</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Covered</u>
6. Leaf Color at Boot:	<u>Green</u>	21. Rachilla Hair Length:	<u>Short</u>
7. Flag Leaf at Boot:	<u>Erect, Not Twisted, Waxy Bloom</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Long</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Rough</u>
10.:Auricle Color:	<u>White</u>	25. Glume Hairiness:	<u>None</u>
11.Heading Date (see below):	<u>50 Days After Planting</u>	26. Glume Awn Surface:	<u>Rough</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Naked</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	
14. Collar Shape:	<u>V-shaped</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Slight</u>	30. Avg 1,000 Kernel Wt (grams):	<u>35</u>

Heading date: 50 days after planting which is: 1 Day(s) (EARLIER) (LATER) than: Tamalpais

Plant height: 56.5 cm, which is 3.2 cm (SHORTER) (TALLER) (SAME AS) Tamalpais

Physiological or biochemical traits: AS-Wolf has waxy starch as determined by red staining of endosperm at the hard dough stage of seed development

Variants and their frequency: No variants have been observed, but up to 1% tall plants or covered seed or non-waxy seed maybe observed in future generations.

6. Recognized classes of AS-Wolf are breeder, foundation, registered, and certified. 21<sup>st</sup> Century Genetics Corp. will maintain the variety by the head-row method to produce breeder seed as needed. Royalty fees or licensing agreements are anticipated.
7. Certified class seed will likely be available for the 2021 growing season, if accepted as eligible.
8. Application for PVP is anticipated with the option that AS-Wolf can be sold by variety name only as a class of certified seed.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 22, 2021

Date recommended by the VRB: Aug 17, 2021



# Barley

## BG 2020 FA5S10-318 (Exp)

1. BG 2020, FA5S10-318 six-rowed spring barley was developed by WestBred/a unit of Monsanto from the cross of 6B95-2482/BG 46e. (Ownership of all barley germplasm has been transferred to Highland Specialty Grains Inc.)
2. BG 2020 was selected for naked plump seed with a agronomically favorable traits as well. These included tillering, standability, and resistance to yellow rust. BG 2020 was developed and advanced through the traditional pedigree breeding method.
3. BG 2020 has been tested and shown adaptation to the northern Palouse, the irrigated Columbia Basin, and the dryland Highway 2 corridor of Washington State and North Idaho.
4. BG 2020 has shown an improvement in tolerance to yellow stripe rust in Eastern Washington that BG 104 has been susceptible to. See YR 0-3 Table 1-15.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>86.1 cm</u>
2. Spike:	<u>6 row</u>	17. Spike Shape:	<u>Strap</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Dense</u>
4. Juvenile Growth Habit:	<u>Erect</u>	19. Spike Position at Maturity:	<u>Erect</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Few</u>
6. Leaf Color at Boot:	<u>Green</u>	21. Rachilla Hair Length:	<u>Short</u>
7. Flag Leaf at Boot:	<u>Erect, No Twist, No Wax</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Short</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Semi-smooth</u>
10.:Auricle Color:	<u>Purple</u>	25. Glume Hairiness:	<u>Middle Only</u>
11.Heading Date (see below):	<u>162 days from 1/1</u>	26. Glume Awn Surface:	<u>Rough</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Naked</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u>n/a</u>
14. Collar Shape:	<u>Closed</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Intermediate</u>	30. Avg 1,000 Kernel Wt (grams):	<u>25.8</u>

Heading date: 162 which is: 3 Days EARLIER than: BG 012

Plant height: 86.1 cm, which is 22.3 cm (TALLER) than: BG 104

### Physiological or biochemical traits:

Variants and Frequency: Covered seed and/or plump seed 18/10,000 (0.18%). Tall plants (2-4 cm) at 4/10,000 (.04%). Long awn plants at 4/10,000 (.04%).

6. Highland Specialty Grains Inc. will maintain breeder seed by planting head rows when necessary. The certified classes of seed shall be: Foundation, Registered, and Certified.
7. Certified seed will possibly be sold in the Spring of 2022.
8. Application will be made for protection in the United States under the Plant Variety Protection Act without Title V. A utility patent will be applied for as well.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 3, 2021

Date recommended by the VRB: Sep 3, 2021



# Barley

## Bighorn

### HO516-388, TR18748 (Exp)

1. Bighorn, HO516-388, TR18748, two-rowed spring barley was developed by Highland Specialty Grains from the cross of BZ509-216/Champion.
2. Agronomically desired rows were selected and advanced based on seed size, standability, and tillering. Bighorn was developed and advanced through a modified bulk pedigree breeding system.
3. Bighorn has shown good adaptation to the Pacific Northwest barley growing areas under both Irrigation and Dryland conditions.
4. Bighorn has not been tested thoroughly enough to make claims of its disease resistance.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>96.5 cm</u>
2. Spike:	<u>Two-row</u>	17. Spike Shape:	<u>Strap</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Mid-Dense</u>
4. Juvenile Growth Habit:	<u>Erect</u>	19. Spike Position at Maturity:	<u>Nodding</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Covered</u>
6. Leaf Color at Boot:	<u>Blue-Green</u>	21. Rachilla Hair Length:	<u>Long</u>
7. Flag Leaf at Boot:	<u>Recurve, Twisted Slightly Waxy</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Long</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Rough</u>
10.: Auricle Color:	<u>Purple</u>	25. Glume Hairiness:	<u>Covered</u>
11. Heading Date (see below):	<u>168.7 days</u>	26. Glume Awn Surface:	<u>Rough</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Covered</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u>Semi-Wrinkled</u>
14. Collar Shape:	<u>V-Shaped</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Full</u>	30. Avg 1,000 Kernel Wt (grams):	<u>51.4</u>

Heading date: 168.7 which is: 2 Day(s) EARLIER than: Altorado

Plant height: 96.5 cm, which is 9.4 cm TALLER Altorado

#### Physiological or Biochemical Traits:

Variants and Frequency: Bighorn is stable and uniform, an off-type that is 3-6 inches taller and may be observed at a frequency of 4/10,000 plants.

6. Highland Specialty Grains and Crop Production Services (CPS) of Canada will maintain breeder seed by planting head rows when necessary. The certified classes of seed shall be: Select, Foundation, Registered, and Certified.
7. Certified Seed will possibly be sold in the Spring of 2023.
8. Application will be made for protection in the United States of America under the Plant Variety Protection Act and in Canada under the Plant Breeder Rights Act.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 3, 2021

Date recommended by the VRB: Sep 3, 2021



# Barley

## Cantu

### HO516-373, TR18747 (Exp)

1. Cantu, HO516-373, TR18747, two-rowed spring barley was developed by Highland Specialty Grains from the cross of BZ509-216/Champion.
2. Agronomically desired rows were selected and advanced based on seed size, standability, and tillering. Cantu was developed and advanced through a modified bulk pedigree breeding system.
3. Cantu has shown good adaptation to the Pacific Northwest barley growing areas under both Irrigation and Dryland conditions.
4. Cantu has not been tested thoroughly enough to make claims of its disease resistance.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>97.5 cm</u>
2. Spike:	<u>Two-row</u>	17. Spike Shape:	<u>Strap</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Mid-Dense</u>
4. Juvenile Growth Habit:	<u>Erect</u>	19. Spike Position at Maturity:	<u>Nodding</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Covered</u>
6. Leaf Color at Boot:	<u>Green</u>	21. Rachilla Hair Length:	<u>Long</u>
7. Flag Leaf at Boot:	<u>Erect, Twisted Slightly Waxy</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Long</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Rough</u>
10. Auricle Color:	<u>Purple</u>	25. Glume Hairiness:	<u>Middle Only</u>
11. Heading Date (see below):	<u>169.7 days</u>	26. Glume Awn Surface:	<u>Rough</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Covered</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u>Semi-Wrinkled</u>
14. Collar Shape:	<u>V-Shaped</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Full</u>	30. Avg 1,000 Kernel Wt (grrams):	<u>49.7</u>

Heading date: 169.7 which is: 1 Day(s) EARLIER than: Altorado

Plant height: 97.5 cm, which is 10.4 cm TALLER Altorado

#### Physiological or Biochemical Traits:

Variants and Frequency: Cantu is stable and uniform, an off-type that is 3-6 inches taller and may be observed at a frequency of 4/10,000 plants.

6. Highland Specialty Grains and Crop Production Services (CPS) of Canada will maintain breeder seed by planting head rows when necessary. The certified classes of seed shall be: Select, Foundation, Registered, and Certified.
7. Certified Seed will possibly be sold in the Spring of 2023.
8. Application will be made for protection in the United States of America under the Plant Variety Protection Act and in Canada under the Plant Breeder Rights Act.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 3, 2021      Date recommended by the VRB: Sep 3, 2021



# Barley

## Ibex

### HO516-350, TR18749 (Exp)

1. Ibex, HO516-350, TR18749, two-rowed spring barley was developed by Highland Specialty Grains from the cross of BZ509-216/BZ509-448.
2. Agronomically desired rows were selected and advanced based on seed size, standability, and tillering. Ibex was developed and advanced through a modified bulk pedigree breeding system.
3. Ibex has shown good adaptation to the Pacific Northwest barley growing areas under both Irrigation and Dryland conditions.
4. Ibex has not been tested thoroughly enough to make claims of its disease resistance.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>96.5 cm</u>
2. Spike:	<u>Two-row</u>	17. Spike Shape:	<u>Strap</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Mid-Dense</u>
4. Juvenile Growth Habit:	<u>Erect</u>	19. Spike Position at Maturity:	<u>Nodding</u>
5. Plant Tillering:	<u>Intermediate</u>	20. Hairiness of Rachis Edge:	<u>Few</u>
6. Leaf Color at Boot:	<u>Green</u>	21. Rachilla Hair Length:	<u>Long</u>
7. Flag Leaf at Boot:	<u>Erect, Twisted Slightly Waxy</u>	22. Lemma Awns:	<u>Straight</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>Long</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>Rough</u>
10.:Auricle Color:	<u>Purple</u>	25. Glume Hairiness:	<u>Middle Only</u>
11.Heading Date (see below):	<u>171.2 days</u>	26. Glume Awn Surface:	<u>Smooth</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Covered</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u>Semi-Wrinkled</u>
14. Collar Shape:	<u>V-Shaped</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Full</u>	30. Avg 1,000 Kernel Wt (grrams):	<u>51.7</u>

Heading date: 171.2 which is: .6 Day(s) LATER than: Altorado

Plant height: 96.5 cm, which is 9.4 cm TALLER Altorado

#### Physiological or Biochemical Traits:

Variants and Frequency: Ibex is stable and uniform, an off-type that is 3-6 inches taller and may be observed at a frequency of 4/10,000 plants.

6. Highland Specialty Grains and Crop Production Services (CPS) of Canada will maintain breeder seed by planting head rows when necessary. The certified classes of seed shall be: Select, Foundation, Registered, and Certified.
7. Certified Seed will possibly be sold in the Spring of 2023.
8. Application will be made for protection in the United States of America under the Plant Variety Protection Act and in Canada under the Plant Breeder Rights Act.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 3, 2021

Date recommended by the VRB: Sep 3, 2021



# Barley

## Rampage HO315-354 (Exp)

1. Rampage is a six-row spring forage barley developed by WestBred/a unit of Monsanto, ownership of all barley germplasm has been transferred to Highland Specialty Grains.
2. Rampage was selected for high tillering, short plant height, and a wide leaf for a forage type of barley. Rampage was developed through a modified bulk pedigree breeding method.
3. Rampage was tested and showed good adaptation to the irrigated acres of Eastern Washington.
4. Rampage has not been tested thoroughly enough to make claims of its disease resistance.
5. Identifying characteristics –

1. Growth Habit:	<u>Spring</u>	16. Plant Height (see below):	<u>88.4 cm</u>
2. Spike:	<u>Six-row</u>	17. Spike Shape:	<u>Clavate</u>
3. Coleoptile Color:	<u>Green</u>	18. Spike Density:	<u>Dense</u>
4. Juvenile Growth Habit:	<u>Prostrate</u>	19. Spike Position at Maturity:	<u>Erect</u>
5. Plant Tillering:	<u>High</u>	20. Hairiness of Rachis Edge:	<u>Covered</u>
6. Leaf Color at Boot:	<u>Dark Green</u>	21. Rachilla Hair Length:	<u>Long</u>
7. Flag Leaf at Boot:	<u>Erect, Twisted, No WB</u>	22. Lemma Awns:	<u>Sessile Hoods</u>
8. Pubescence on Leaf Blade:	<u>No</u>	23. Length of Lemma Awns:	<u>n/a</u>
9. Pubescence on Leaf Sheath:	<u>No</u>	24. Lemma Awn Surface:	<u>n/a</u>
10. Auricle Color:	<u>White</u>	25. Glume Hairiness:	<u>Covered</u>
11. Heading Date (see below):	<u>156.3 days</u>	26. Glume Awn Surface:	<u>Smooth</u>
12. Stem Color:	<u>White</u>	27. Glume/Lemma Adherence:	<u>Covered</u>
13. Neck Shape:	<u>Straight</u>	28. Texture (if covered):	<u>Semi-wrinkled</u>
14. Collar Shape:	<u>Closed</u>	29. Aleurone Color:	<u>Colorless</u>
15. Spike Exsertion:	<u>Slight</u>	30. Avg 1,000 Kernel Wt (grams):	<u>45</u>

Heading date: 156.3 which is: 2.3 Days LATER than: Stockford

Plant height: 88.4 cm, which is 23.4 cm SHORTER than: Stockford

### Physiological or Biochemical Traits:

Variants and Frequency: Rampage is stable and uniform in appearance and performance, however a tall (2-4 inches taller) off type was observed at 6/10,000. An awned off type was observed at a frequency of 4/10,000 plants, Also a 2-row hooded off type was observed at 4/10,000 as well. No other variants are known to occur.

6. Highland Specialty Grains will maintain breeder seed by planting head rows when necessary. The classes of certified seed shall be: Foundation, Registered, and Certified.
7. Certified Seed could be sold in the Fall of 2021.
8. Application will be made for protection in the USA under the Plant Variety Protection Act without title V.
9. Certified seed production acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jun 3, 2021

Date recommended by the VRB: Sep 3, 2021

