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
March 2019

The Association of Official Seed Certifying Agencies (AOSCA), Small Grain Variety Review Board (SGVRB), reviewed the following varieties on March 28, 2019. 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,

James Chastain, Chairman
Small Grains Variety Review Board

2019 AOSCA SMALL GRAIN VARIETY REVIEW BOARD

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	*indicates amendment application for name change			
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Wheat

TCG-Boomlock
T14YU664B (Exp)

1. TCG-Boomlock is a hard red winter wheat (HRW) developed by 21st Century Genetics Corp. (experimental designation T14YU664B).

2. TCG-Boomlock was developed using the pedigree, single seed descent breeding procedure, with selection for standability, yielding potential, protein content, test weight, and bread and dough quality.

3. TCG-Boomlock is adapted to MT. It was tested in MT, UT, and AZ with successful winter production in ND and MT.

4. No claims are made in this application for disease or insect resistance.

5. Identifying characteristics:

1. Kind:	Common, Hard 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:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Waxy	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	170 Julian	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	M
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	94 cm	25. Seed Color	Red
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.):	M
15. Spike Curvature:	Inclined	29. Avg. 1,000 Kernel Wt (grams):	29

30. Physiological/Biochemical Traits:

Variants and Frequency: 1/1000 talls 30 cm above the canopy.

6. Recognized classes of seed are Breeder, Foundation Registered, and Certified. TCG-Boomlock will be regenerated by head row purification when needed.

7. Certified Seed may be offered for sale in 2020.

8. Application will be made for PVP (Title V) protection.

9. Seed production acreage of TCG-Boomlock is not to be published by AOSCA or other seed certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

TCG-Stalwart
T14C840 (Exp)

1. TCG-Stalwart is a hard red spring wheat (HRS) developed by 21st Century Genetics Corp. (experimental designation T14C840).

2. TCG-Stalwart was developed using a pedigree, single seed descent breeding procedure, with selection for solid stem, standability, yielding potential, protein content, test weight, and bread and dough quality (SDS sedimentation). It was also selected for general resistance/tolerance to wheat stem sawfly in ND and MT.

3. TCG-Stalwart is adapted to sawfly impacted areas of ND and MT.

4. No claims are made in this application for disease or insect resistance, the resistance to wheat stem sawfly is based on the solid stem characteristic, actual exposure to wheat stem saw fly has been sporadic. The claim is that the solid stem characteristic is present, which is assumed to provide some tolerance/resistance to wheat stem sawfly, which does appear to be the case for TCG-Stalwart.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Gray Blue	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Waxy	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	65 DAP	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	S
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	79	25. Seed Color	Red
12. Internodes:	Solid	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	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):	29

30. Physiological/Biochemical Traits:

Variants and Frequency: 1/1000 talls 30 cm above the canopy.

6. Recognized classes of seed are Breeder, Foundation Registered, and Certified. TCG-Stalwart will be regenerated by head row purification when needed.

7. Certified Seed may be offered for sale in 2020.

8. Application will be made for PVP (Title V) protection.

9. Seed production acreage of TCG is not to be published by AOSCA or other seed certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

7966204
XA9660 (Exp)

(Amended – Description Change)

Variety Name 7966204

Experimental Designation(s) XA9660

Date SGVRB first recommended this variety Apr 27, 2018

Date(s) any previous amendments were recommended _____

Date this amendment was submitted Jan 09, 2019

1. 7966204 is a hard red spring wheat developed by the Monsanto LLC.
2. In early generations of 7966204, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality and disease resistance.
3. 7966204 is adapted to the hard red spring wheat growing regions of the Pacific Northwest.
4. No claims about disease resistance are made at this time.
5. Identifying characteristics

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Prostrate	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Blue-Green	19. Glume Length:	Long
6. Flag Leaf at Boot:	Erect, Twisted, Wax	20. Shoulder Shape:	Oblique
7. Auricle Color:	Purple	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	166	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	84	25. Seed Color	Red
12. Internodes:	Semi-solid	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to 7966204 but has white seed occurs at a frequency of up to 0.75% (75 out of 10,000 seeds). A variant that is similar to 7412018 but is 15cm to 20cm taller occurs at a frequency of up to .2% (20/10,000). A bronze head variant may occur at a frequency of .1% (10/10,000). An awnless variant may occur at a frequency of .1% (10/10,000).

6. Recognized classes of 7966204 are breeder, foundation, registered, and certified. Monsanto Company will maintain the variety by the head-row purification 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 commercial sale by the fall of 2019.
8. Application for PVP is anticipated with the option that 7966204 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

8161899
XB1503 (Exp)

1. 8161899 (XB1503) is a soft white winter wheat developed by Bayer Crop Science.

2. In early generations of 8161899, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. 8161899 is adapted to the soft white winter wheat growing regions of Michigan and Wisconsin.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Soft White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awnless
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:	Short
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	137	22. Beak Shape:	Obtuse
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Short
10. Anthoncyanin:	Present	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	100	25. Seed Color	White
12. Internodes:	Semi-solid	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Long
15. Spike Curvature:	Nodding	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to 8161899 but has red seed occurs at a frequency of up to 0.50% (50 out of 10,000 seeds). A variant that is similar to 8161899 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze head variant may occur at a frequency of 0.1% (10/10,000). An awned variant may occur at a frequency of 0.1% (10/10,000).

6. Recognized classes of 8161899 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 not planned and descriptive data may be supplied to the PVP database.

9. Certified seed production acreage is not to be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

8441836
XB4710 (Exp)

1. 8441836 (XB4710) is a hard red winter wheat developed by Bayer Crop Science.

2. In early generations of 8441836, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. 8441836 is adapted to the hard red winter wheat growing regions of the Central Plains.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	Red	17. Awn Color:	White
4. Juvenile Growth Habit:	Erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Blue-Green	19. Glume Length:	Short
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	144	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	86	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Nodding	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to 8441836 but has white seed occurs at a frequency of up to 0.85% (85 out of 10,000 seeds). A variant that is similar to 8441836 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze 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 8441836 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 not planned and descriptive data may be supplied to the PVP database.

9. Certified seed production acreage is not to be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

8941019
XB9311 (Exp)

1. 8941019 (XB9311) is a hard red spring wheat developed by Bayer Crop Science.

2. In early generations of 8941019, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. 8941019 is adapted to the hard red spring wheat growing regions of the Pacific Northwest.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	Black
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Short
6. Flag Leaf at Boot:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Apiculate
7. Auricle Color:	Purple	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	68	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	92	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to 8941019 but has white seed occurs at a frequency of up to 0.85% (85 out 10,000 seeds). A variant that is similar to 8941019 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze 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 8941019 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 not planned and descriptive data may be supplied to the PVP database.

9. Certified seed production acreage is not to be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

WB4394
XB4325 (Exp)

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

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 bronze 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 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

WB4595
XB4520 (Exp)

1. WB4595 (XB4520) is a hard red winter wheat developed by Bayer Crop Science.

2. In early generations of WB4595, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB4595 is adapted to the hard red winter wheat growing regions of the Central Plains.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	Red	17. Awn Color:	White
4. Juvenile Growth Habit:	Erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Blue-Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	Purple	21. Shoulder Width:	Wide
8. Day(s) to 50% Heading:	130	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	84	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB4595 but has white seed occurs at a frequency of up to 0.80% (80 out of 10,000 seeds). A variant that is similar to WB4595 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze head variant may occur at a frequency of 0.10% (10/10,000). An awnless variant may occur at a frequency of 0.10% (10/10,000).

6. Recognized classes of WB4595 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 WB4595 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

WB4699
XB4526 (Exp)

1. WB4699 (XB4526) is a hard red winter wheat developed by Bayer Crop Science.

2. In early generations of WB4699, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB4699 is adapted to the hard red winter wheat growing regions of the Central Plains.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard 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:	Blue-Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	Purple	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	153	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	71	25. Seed Color	Red
12. Internodes:	Semi-solid	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):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB4699 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 WB4699 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze 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 WB4699 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 WB4699 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

WB4792
XB4711 (Exp)

1. WB4792 (XB4711) is a hard red winter wheat developed by Bayer Crop Science.

2. In early generations of WB4792, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB4792 is adapted to the hard red winter wheat growing regions of the Central Plains.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	155	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	86	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB4792 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 WB4792 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze 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 WB4792 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 WB4792 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

WB7696
XB9512 (Exp)

1. WB7696 (XB9512) is a hard white spring wheat developed by Bayer Crop Science.

2. In early generations of WB7696, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB7696 is adapted to the hard white spring wheat growing regions of the Pacific Northwest.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard White Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awned
3. Coleoptile Color:	Red	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Oblique
7. Auricle Color:	Purple	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	70	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	82	25. Seed Color	White
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB7696 but has red seed occurs at a frequency of up to 0.50% (50 out 10,000 seeds). A variant that is similar to WB7696 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze 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 WB7696 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 WB7696 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: Jan 9, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

WB9490
XB9510 (Exp)

1. WB9490 (XB9510) is a hard red spring wheat developed by Bayer Crop Science.

2. In early generations of WB9490, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB9490 is adapted to the hard red spring wheat growing regions of California.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awnless
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Wide
8. Day(s) to 50% Heading:	84	22. Beak Shape:	Obtuse
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Short
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (Glabrous)
11. Plant Height (cm):	88	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB9490 but has white seed occurs at a frequency of up to 0.50% (50 out 10,000 seeds). A variant that is similar to WB9490 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze head variant may occur at a frequency of 0.1% (10/10,000). An awned variant may occur at a frequency of 0.1% (10/10,000).

6. Recognized classes of WB9490 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 winter of 2020.

8. Application for PVP is anticipated with the option that WB9490 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: Jan 9, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

WB9699
XB9511 (Exp)

1. WB9699 (XB9511) is a hard red spring wheat developed by Bayer Crop Science.

2. In early generations of WB9699, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB9699 is adapted to the hard red spring wheat growing regions of California.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awned
3. Coleoptile Color:	Red	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Blue-Green	19. Glume Length:	Long
6. Flag Leaf at Boot:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Oblique
7. Auricle Color:	Purple	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	86	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	91	25. Seed Color	Red
12. Internodes:	Semi-solid	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB9699 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 WB9699 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze head variant may occur at a frequency of 0.1% (10/10,000). An awnless variant may occur at a frequency of 0.10% (10/10,000). A pubescent glume variant may occur at a frequency of 0.50% (50 plants per 10,000).

6. Recognized classes of WB9699 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 winter of 2020.

8. Application for PVP is anticipated with the option that WB9699 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: Jan 9, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

WB9990
XC9408 (Exp)

1. WB9990 (XC9408) is a hard red spring wheat developed by Bayer Crop Science.

2. In early generations of WB9990, single spikes were selected based on agronomics and disease resistance. Later generations were selected based on yield, quality, and disease resistance.

3. WB9990 is adapted to the hard red spring wheat growing regions of California.

4. No claims about disease resistance are made at this time.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	16. Awn Type:	Awnless
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Blue-Green	19. Glume Length:	Short
6. Flag Leaf at Boot:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	Purple	21. Shoulder Width:	Wide
8. Day(s) to 50% Heading:	92	22. Beak Shape:	Obtuse
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Short
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	98	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Long
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	48.5

30. Physiological/Biochemical Traits:

Variants and Frequency: A variant that is similar to WB9990 but has white seed occurs at a frequency of up to 0.50% (50 out 10,000 seeds). A variant that is similar to WB9990 but is 15cm to 20cm taller occurs at a frequency of up to 0.2% (20/10,000). A bronze head variant may occur at a frequency of 0.1% (10/10,000). An awned variant may occur at a frequency of 0.1% (10/10,000).

6. Recognized classes of WB9990 are breeder, foundation, registered, and certified. Bayer Crop Science will maintain the variety by the head-row purification 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 winter of 2020.

8. Application for PVP is anticipated with the option that WB9990 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: Jan 9, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

CO15A018 (Exp)

1. CO15A018 (not yet formally named) is a medium-short, medium-maturing semidwarf hard red winter wheat developed by Colorado State University (CSU). Ownership of CO15A018 has been transferred to the Colorado Wheat Research Foundation.

2. CO15A018 is a doubled haploid (DH) "CoAXium Wheat" developed using the wheat-maize hybridization method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, milling and bread baking quality, and tolerance to Aggressor herbicide.

3. CO15A018 was tested throughout the U.S. hard winter wheat region. It is best adapted for dryland production conditions in eastern Colorado, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	141	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):	78	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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	28

30. Physiological/ Biochemical Traits: The owner of the variety requests an Additional Certification Requirement as a condition of eligibility for final certification. All CoAXium™ Wheat Production System seedlots must be submitted to a CoAXium™ Wheat Production System certified seed testing lab and pass the AXigen™ Seed Assay prior to its sale and distribution as Foundation, Registered, or Certified seed to confirm the acceptable, minimum herbicide tolerance level of 92% to Aggressor™ herbicide.

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a white seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of CO15A018 are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties for the variety and trait fees for the herbicide tolerance traits will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of CO15A018 will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that CO15A018 can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of CO15A018 may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Byrd CL Plus
CO13003C (Exp)

1. Byrd CL Plus was tested as experimental number CO13003C. It is a medium-maturity, medium-tall semidwarf hard red winter wheat developed by Colorado State University (CSU). Ownership of Byrd CL Plus has been transferred to the Colorado Wheat Research Foundation.

2. Byrd CL Plus is a two-gene "Clearfield Wheat" that was developed using the backcross breeding method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, milling and bread baking quality, and tolerance to Beyond herbicide.

3. Byrd CL Plus was tested throughout the U.S. hard winter wheat region. It is best adapted for production conditions in eastern Colorado, southeastern Wyoming, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Wax Present, Not Twisted	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	141	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (glabrous)
11. Plant Height (cm):	86	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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	27

30. Physiological/ Biochemical Traits: The owner of the variety requests an Additional Certification Requirement as a condition of eligibility for final certification. All Clearfield Wheat Production System seedlots must be submitted to a Clearfield Wheat Production System certified seed testing lab and pass the Clearfield Confirm Trait Test prior to its sale and distribution as Foundation, Registered, or Certified seed to confirm the acceptable, minimum herbicide tolerance level of 92% to Beyond herbicide.

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a white seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Byrd CL Plus are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Byrd CL Plus will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Byrd CL Plus can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Byrd CL Plus may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Canvas
CO12D1770 (Exp)

1. Canvas was tested as experimental number CO12D1770. It is a medium-maturity, medium-short semidwarf hard red winter wheat developed by Colorado State University (CSU). Ownership of Canvas has been transferred to the Colorado Wheat Research Foundation.

2. Canvas is a doubled haploid (DH) line developed using the wheat-maize hybridization method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, stripe rust and wheat streak mosaic virus resistance, pre-harvest sprouting tolerance, and milling and bread baking quality.

3. Canvas was tested throughout the U.S. hard winter wheat region. It is best adapted for production conditions in eastern Colorado, southeastern Wyoming, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	141	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthcyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	80	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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	26

30. Physiological/Biochemical Traits: N/A

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a white seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Canvas are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Canvas will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Canvas can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Canvas may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Crescent AX
CO14A050 (Exp)

1. Crescent AX was tested as experimental number CO14A050. It is a medium-height, medium-early maturing semidwarf hard red winter wheat developed by Colorado State University (CSU). Ownership of Crescent AX has been transferred to the Colorado Wheat Research Foundation.

2. Crescent AX is a "CoAXium Wheat" that was developed using a modified pedigree breeding method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, milling and bread baking quality, and tolerance to Aggressor herbicide.

3. Crescent AX was tested throughout the U.S. hard winter wheat region. It is best adapted for dryland production conditions in eastern Colorado, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	140	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthcyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	84	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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	32

30. Physiological/ Biochemical Traits: The owner of the variety requests an Additional Certification Requirement as a condition of eligibility for final certification. All CoAXium™ Wheat Production System seedlots must be submitted to a CoAXium™ Wheat Production System certified seed testing lab and pass the AXigen™ Seed Assay prior to its sale and distribution as Foundation, Registered, or Certified seed to confirm the acceptable, minimum herbicide tolerance level of 92% to Aggressor™ herbicide.

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a white seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Crescent AX are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties for the variety and trait fees for the herbicide tolerance traits will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Crescent AX will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Crescent AX can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Crescent AX may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Monarch
CO13D1383 (Exp)

1. Monarch was tested as experimental number CO13D1383. It is a medium-height, medium-maturing semidwarf hard white winter wheat developed by Colorado State University (CSU). Ownership of Monarch has been transferred to the Colorado Wheat Research Foundation.

2. Monarch is a doubled haploid (DH) line developed using the wheat-maize hybridization method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, stripe rust and wheat streak mosaic virus resistance, pre-harvest sprouting tolerance, and milling and bread baking quality.

3. Monarch was tested throughout the U.S. hard winter wheat region. It is best adapted for dryland production conditions in eastern Colorado, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
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):	82	25. Seed Color	White
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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	27

30. Physiological/Biochemical Traits: N/A

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a red seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Monarch are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Monarch will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Monarch can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Monarch may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Snowmass 2.0
CO13D1299 (Exp)

1. Snowmass 2.0 was tested as experimental number CO13D1299. It is a medium-height, medium-maturing semidwarf hard white winter wheat developed by Colorado State University (CSU). Ownership of Snowmass 2.0 has been transferred to the Colorado Wheat Research Foundation.

2. Snowmass 2.0 is a doubled haploid (DH) line developed using the wheat-maize hybridization method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, stripe rust and wheat streak mosaic virus resistance, pre-harvest sprouting tolerance, and milling and bread baking quality.

3. Snowmass 2.0 was tested throughout the U.S. hard winter wheat region. It is best adapted for dryland production conditions in eastern Colorado, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	146	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):	82	25. Seed Color	White
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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	30

30. Physiological/Biochemical Traits: N/A

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a red seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Snowmass 2.0 are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Snowmass 2.0 will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Snowmass 2.0 can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Snowmass 2.0 may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

Whistler
CO13D1783 (Exp)

1. Whistler was tested as experimental number CO13D1783. It is a medium-late maturity, tall semidwarf hard red winter wheat developed by Colorado State University (CSU). Ownership of Whistler has been transferred to the Colorado Wheat Research Foundation.

2. Whistler is a doubled haploid (DH) line developed using the wheat-maize hybridization method. Selection criteria during development included general agronomic adaptation, grain yield and yield stability, test weight, stripe rust and wheat streak mosaic virus resistance, pre-harvest sprouting tolerance, and milling and bread baking quality.

3. Whistler was tested throughout the U.S. hard winter wheat region. It is best adapted for production conditions in eastern Colorado, southeastern Wyoming, western Kansas, western Nebraska, and the Panhandles of both Oklahoma and Texas.

4. No pest reaction claims are made.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Not Twisted, Wax Present	20. Shoulder Shape:	Rounded
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	144	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthcyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	86	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:	Inclined	29. Avg 1,000 Kernel Wt (grams):	26

30. Physiological/Biochemical Traits: N/A

Variants and Frequency: Variants are limited to: (1) extreme tall plants (head height greater than one head length above the main canopy) that occur at a frequency of fewer than 1 in 1,000 plants; (2) plants with brown glumes that occur at a frequency of fewer than 1 in 1,000 plants; (3) plants that produce heads that lack awns at a frequency of fewer than 1 in 1,000 plants; and (4) plants that produce seed with a white seed coat at a frequency of fewer than 1 in 200 plants.

6. Recognized classes of Whistler are breeder, foundation, registered, and certified. Colorado State University will maintain the variety by manual removal of off-types as needed to produce breeder seed and foundation seed. Royalties will be collected through the Colorado Wheat Research Foundation.

7. Certified seed of Whistler will likely be available for planting in fall of 2019.

8. Application for PVP is anticipated with the option that Whistler can be sold by variety name only as a class of certified seed.

9. Certified seed production acreage of Whistler may be published by AOSCA and individual certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 22, 2019

Wheat

XW17L (Exp)

1. XW17L is a soft red winter wheat developed by DuPont Pioneer.

2. The cultivar XW17L was bred and selected using a modified pedigree selection method for the following characteristics in the field environment: disease resistance, plant type, plant height, head type, straw strength, maturity, grain yield, test weight, and milling and baking characteristics.

3. XW17L has shown best adaptation to the northern soft wheat growing regions of the U.S.

4. XW17L has high resistance to stripe rust and very good tolerance to *fusarium* head blight.

5. Identifying characteristics:

1. Kind:	Common, Soft Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Apically awnletted
3. Coleoptile Color:	White	17. Awn Color:	Tan (awnlet color)
4. Juvenile Growth Habit:	Erect	18. Glume Color:	Tan
5. Leaf Color at Boot:	Green	19. Glume Length:	Short
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:	128	22. Beak Shape:	Acute
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	96	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Mid-dense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	38

30. Physiological/Biochemical Traits: Phenol color - fawn

Variants and Frequency: Awned and/or taller plants may occur at a frequency up to 0.1% (10/10,000).

6. Breeder, foundation, and registered seed classes will be maintained and controlled by the DuPont Pioneer Integrated Operations department. Foundation seed will initially be produced from breeders' seed, and thereafter foundation seed will be produced from foundation seed: maintaining the specific identity and purity of the variety as released. Registered seed will be grown from foundation or breeder seed and maintained at a purity level satisfactory to DuPont Pioneer Integrated Operations or the appropriate certifying agency. No royalty fees or licensing agreements are anticipated.

7. Certified seed of XW17L will potentially first be offered for sale in the fall of 2020.

8. Plant variety protection application is anticipated in 2019 and the certification option will not be elected.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Dec 21, 2018 Date recommended by the VRB: May 7, 2019

Wheat

XW17N (Exp)

1. XW17N is a soft white winter wheat developed by DuPont Pioneer.

2. The cultivar XW17N was bred and selected using a modified pedigree selection method for the following characteristics in the field environment: disease resistance, plant type, plant height, head type, straw strength, maturity, grain yield, test weight, and milling and baking characteristics.

3. XW17N has shown best adaptation to the soft white wheat growing regions of the eastern U.S.

4. XW17N has high resistance to stripe rust and powdery mildew, very good tolerance to *fusarium* head blight, and excellent lodging resistance.

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:	Tan
4. Juvenile Growth Habit:	Erect	18. Glume Color:	Tan
5. Leaf Color at Boot:	Green	19. Glume Length:	Short
6. Flag Leaf at Boot:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Wanting
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	159	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Short
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	88	25. Seed Color	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Angular
14. Spike Density:	Dense	28. Brush Size (S,M,L.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	33.2

30. Physiological/Biochemical Traits: Phenol color – dark brown

Variants and Frequency: Awnless and/or taller plants may occur at a frequency up to 0.1% (10/10,000)

6. Breeder, foundation, and registered seed classes will be maintained and controlled by the DuPont Pioneer Integrated Operations department. Foundation seed will initially be produced from breeders' seed, and thereafter foundation seed will be produced from foundation seed: maintaining the specific identity and purity of the variety as released. Registered seed will be grown from foundation or breeder seed and maintained at a purity level satisfactory to DuPont Pioneer Integrated Operations or the appropriate certifying agency. No royalty fees or licensing agreements are anticipated.

7. Certified seed of XW17N will potentially first be offered for sale in the fall of 2020.

8. Plant variety protection application is anticipated in 2019 and the certification option will not be elected.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Dec 21, 2018 Date recommended by the VRB: May 7, 2019

Wheat

TCG - Heartland
M14C1030 (Exp)
(Amended – Name Change)

Variety Name TCG-Heartland

Experimental Designation(s) M14C1030

Date SGVRB first recommended this variety 8/29/18

Date(s) any previous amendments were recommended ___

Date this amendment was submitted 9/17/18

1. TCG – Heartland, experimental designation - M14C1030 is a hard red spring wheat variety developed by 21st Century Genetics and Global Soy Genetics, and owned by Global Soy Genetics.
2. TCG – Heartland was selected for yield, quality, disease tolerance and agronomic characteristics in growth chambers and in the field using modified single seed descent.
3. TCG – Heartland was tested in the Red River Valley of North Dakota/Minnesota and is well-adapted to be a quality hard red spring bread wheat in the wheat production areas of North Dakota and Minnesota.
4. No claims are being made as to the disease and insect resistance of TCG – Heartland.
5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Yellow-Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	62 days after planting	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	75	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Oval
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	36

30. Physiological/Biochemical Traits: None

Variants and Frequency: 1/1000 talls 12 cm above the canopy.

6. Recognized classes of TCG – Heartland are breeder, foundation, registered and certified. Global Soy Genetics will maintain the variety by head-row purification method to produce breeder seed as needed.
7. Certified Seed will be offered for sale in 2019.
8. Application will be made for PVP (Title V) protection.
9. Seed production acreage of TCG – Heartland is not to be published by AOSCA or other seed certifying agencies.

Date this application was submitted: Sep 17, 2018 Date recommended by the VRB: Mar 28, 2019

Wheat

KS14HW106-6-6 (Exp)

1. KS14HW106-6-6 is a hard white winter wheat breeding line. It is developed by Dr. Guorong Zhang at the Agricultural Research Center-Hays, Kansas State University.

2. KS14HW106-6-6 was selected for test weight, yield, baking quality, disease resistance (WSMV, stripe rust, leaf rust, stem rust, SBMV, Hessian fly), and other agronomic traits (PPO, coleoptile length, pre-harvest sprouting, grain shattering, lodging, winter hardiness, maturity) using the modified bulk method.

3. KS14HW106-6-6 was extensively tested in Kansas and is adapted to both central and western Kansas.

4. KS14HW106-6-6 is resistant to leaf rust, wheat soilborne mosaic virus, and Hessian fly, and moderately resistant to stripe rust, stem rust, and wheat streak mosaic virus.

5. Identifying characteristics:

1. Kind:	Common, Hard White Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-erect	18. Glume Color:	White/Amber
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	121	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	M
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	87.5	25. Seed Color	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	S
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	33

30. Physiological/Biochemical Traits: NA

Variants and Frequency: Slightly taller plants that occur at a frequency of less than 1 in 100 plants; red seeded plants that occur at a frequency of less than 2 in 100 plants.

6. Recognized classes are breeder, foundation, registered, and certified seed. Kansas State University will maintain its purity by the head-row method to produce breeder seed as needed.

7. Certified seed will likely be available for planting in the fall of 2019.

8. If this breeding line gets approved for release by the KSU Plant and Genetic Material Release Committee, an application will be submitted for protection under the U.S. Plant Variety Protection Act and the "Certification Option" will be elected (to be sold by variety name only as a class of certified seed).

9. Certified seed production acreage may be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

KS15H116-6-1 (Exp)

1. KS15H116-6-1 is a hard red winter wheat breeding line. It is developed by Dr. Guorong Zhang at the Agricultural Research Center-Hays, Kansas State University.

2. KS15H116-6-1 was selected for test weight, yield, baking quality, disease resistance (WSMV, stripe rust, leaf rust, stem rust, SBMV, Hessian fly), and other agronomic traits (PPO, coleoptile length, grain shattering, lodging, winter hardiness, maturity) using the modified bulk method.

3. KS15H116-6-1 was extensively tested in Kansas and is adapted to the dryland production system in western Kansas.

4. KS15H116-6-1 is resistant to wheat streak mosaic virus, stripe rust, and stem rust, and moderately resistant to leaf rust.

5. Identifying characteristics

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-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:	Narrow
8. Day(s) to 50% Heading:	130	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	M
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	93	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	M
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	32

30. Physiological/Biochemical Traits: NA

Variants and Frequency: Slightly taller plants that occur at a frequency of less than 1 in 100 plants; white seeded plants that occur at a frequency of less than 1 in 1000 plants.

6. Recognized classes are breeder, foundation, registered, and certified seed. Kansas State University will maintain its purity by the head-row method to produce breeder seed as needed.

7. Certified seed will likely be available for planting in the fall of 2019.

8. If this breeding line gets approved for release by the KSU Plant and Genetic Material Release Committee, an application will be submitted for protection under the U.S. Plant Variety Protection Act and the "Certification Option" will be elected (to be sold by variety name only as a class of certified seed).

9. Certified seed production acreage may be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

KS15H161-1-4 (Exp)

1. KS15H161-1-4 is a hard red winter wheat breeding line. It is developed by Dr. Guorong Zhang at the Agricultural Research Center-Hays, Kansas State University.

2. KS15H161-1-4 was selected for test weight, yield, baking quality, disease resistance (WSMV, stripe rust, leaf rust, SBMV, Hessian fly), and other agronomic traits (PPO, coleoptile length, grain shattering, lodging, winter hardiness, maturity) using the modified bulk method.

3. KS15H161-1-4 was extensively tested in Kansas and is adapted to the dryland production system in western Kansas.

4. KS15H161-1-4 is resistant to leaf rust and soilborne mosaic virus, and moderately resistant to stripe rust.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	White
4. Juvenile Growth Habit:	Semi-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:	Narrow
8. Day(s) to 50% Heading:	128	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	M
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	97	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	M
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	30

30. Physiological/Biochemical Traits: NA

Variants and Frequency: Slightly taller plants that occur at a frequency of less than 1 in 100 plants; white seeded plants that occur at a frequency of less than 1 in 1000 plants.

6. Recognized classes are breeder, foundation, registered, and certified seed. Kansas State University will maintain its purity by the head-row method to produce breeder seed as needed.

7. Certified seed will likely be available for planting in the fall of 2019.

8. If this breeding line gets approved for release by the KSU Plant and Genetic Material Release Committee, an application will be submitted for protection under the U.S. Plant Variety Protection Act and the "Certification Option" will be elected (to be sold by variety name only as a class of certified seed).

9. Certified seed production acreage may be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 14, 2019

Wheat

AP Coachman
08PN2001-07 (Exp)

1. AP Coachman (08PN2001-07) is a Soft White Spring wheat bred and developed by Syngenta Participations AG.

2. AP Coachman (08PN2001-07) was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction and end use quality that originated with a single cross made in December of 2008.

3. AP Coachman (08PN2001-07) has shown above average resistance to Hessian Fly. It has shown average milling and baking characteristics. AP Coachman (08PN2001-07) has shown below average tolerance to current races of stripe rust.

4. AP Coachman (08PN2001-07) is primarily adapted to 12 to 18 inch rainfall, dryland production in Eastern Washington and West-central Idaho.

5. Identifying characteristics:

1. Kind:	Common, Soft White Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	171	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):	84.1	25. Seed Color	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	47.5

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.5% of plants were rogued from the Breeder Seed increase. Over ninety percent of the variant plants were taller (8 to 12 cm). Up to 0.5% variant plants may be encountered in subsequent generations. Up to 0.3% red seeds may be encountered in all classes of certified production.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the Spring of 2020.

8. Plant Variety Protection is anticipated in 2019 without the option for Title V.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Kimber CL2
10PN3039-02 (Exp)

1. AP Kimber CL2 is a hard red spring wheat bred and developed by Syngenta Participations AG.

2. AP Kimber CL2 was selected for height, maturity, IMI tolerance, appearance, kernel color, kernel soundness, disease reaction and end use quality that originated with a single cross made in December of 2010.

3. AP Kimber CL2 is primarily adapted to 12 to 18 inch rainfall, dryland production in Eastern Washington, West-central Idaho and Northeastern Oregon.

4. AP Kimber CL2 has shown above average milling and baking characteristics. AP Kimber CL2 has shown moderately resistant tolerance to current races of stripe rust. It contains Als-1 and Als-3 genes conferring tolerance to the BASF herbicide 'Beyond' and has tested resistant to this herbicide in trials.

5. Identifying characteristics

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Elevated
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	173	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	84.2	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	34.7

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.02% of plants were rogued from the Breeder Seed increase. One hundred percent of the variant plants were taller (8 to 12 cm). Up to 0.5% variant plants may be encountered in subsequent generations. Up to 0.3% white seeds may be encountered in all classes of certified production.

6. Syngenta Seeds, LLC maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the Spring of 2020.

8. Plant Variety Protection is anticipated in 2019 and AP Kimber CL2 may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Mondovi CL2
11PN2532-507 (Exp)

1. AP Mondovi CL2 (11PN2532-507) is a soft white spring wheat bred and developed by Syngenta Participations AG.

2. AP Mondovi CL2 (11PN2532-507) was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction, herbicide tolerance, and end use quality that originated with a single cross made in December of 2011.

3. AP Mondovi CL2 (11PN2532-507) is primarily adapted to 12 to 18 inch rainfall, dryland production in Eastern Washington and West-central Idaho. It has shown above average milling and baking characteristics.

4. AP Mondovi CL2 (11PN2532-507) has shown above average resistance to Hessian Fly. It has shown above average milling and baking characteristics. 11PN2352-507 has tested resistant to current races of stripe rust. . It contains Als-1 and Als-3 genes conferring tolerance to the BASF herbicides 'Beyond.'

5. Identifying characteristics:

1. Kind:	Common, Soft White Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Square
7. Auricle Color:	White	21. Shoulder Width:	Medium
8. Day(s) to 50% Heading:	169	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):	92.2	25. Seed Color	White
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	36.2

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.02% of plants were rogued from the Breeder Seed increase. One hundred percent of the variant plants were taller (8 to 12 cm). Up to 0.5% variant plants may be encountered in subsequent generations. Up to 0.3% red seeds may be encountered in all classes of certified production.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the spring of 2020.

8. Plant Variety Protection is anticipated in 2019 and 11PN2352-507 may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 9, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Octane
USW11200024-1-4 (Exp)

1. AP Octane (USW11200024-1-4) is a hard red spring wheat developed by Syngenta Participations AG.

2. AP Octane (USW11200024-1-4) was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction and end use quality that originated with a single cross made in January of 2010.

3. AP Octane (USW11200024-1-4) is primarily adapted to the Sacramento and San Joaquin Valleys. It appears well suited to irrigated and high rainfall production areas of Southern Idaho and the Columbia Basin in Washington as well.

4. AP Octane (USW11200024-1-4) has shown above average tolerance to current races of stripe rust.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Recurved, Twisted, Wax Absent	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	89	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	101	25. Seed Color	Red
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.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	41.2

30. Physiological/Biochemical Traits:

Variants and Frequency: We could expect to see up to 0.8% taller plants (8–12 cm) in subsequent generations.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed. Royalty fees are anticipated.

7. Certified seed stocks of AP Octane (USW11200024-1-4) will be available in the fall of 2019.

8. Plant Variety Protection is anticipated in 2019 and AP Octane (USW11200024-1-4) may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Redeye
05PN044-20 (Exp)

1. AP Redeye is a hard red winter wheat developed by Syngenta Participations AG.

2. AP Redeye was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction and end use quality that originated with a single cross made in January of 2005.

3. AP Redeye is primarily adapted to irrigated and intermediate to high rainfall areas of Washington, north and western Idaho. It appears well suited to irrigated and high rainfall production areas of Southern Idaho as well.

4. AP Redeye has shown above average tolerance to current races of stripe rust.

5. Identifying characteristics

1. Kind:	Common, Hard 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:	Medium
6. Flag Leaf at Boot:	Erect, Twisted, Wax Absent	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	152	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Medium
10. Anthoncyanin:	Present	24. Glume Pubescence:	Absent
11. Plant Height (cm):	91.4	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	44

30. Physiological/Biochemical Traits:

Variants and Frequency: We could expect to see up to 0.5% taller plants (8-12 cm) in subsequent generations. We could also expect to see up to 0.3% white seed in subsequent generations.

6. Syngenta Seeds, LLC maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC will maintain the variety by the head row/progeny method to produce breeder seed as needed. Royalty fees are anticipated.

7. Certified seed stocks of SY Redeye will be available in the fall of 2020.

8. Plant Variety Protection is anticipated in 2019 and AP Redeye may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Renegade
06PN3017-09 (Exp)

1. AP Renegade is a hard red spring wheat bred and developed by Syngenta Participations AG.

2. AP Renegade was selected for straw strength, maturity, plant height, disease package, yield potential and end use quality.

3. AP Renegade is primarily adapted to Washington, Idaho and Montana.

4. AP Renegade has shown moderate resistance reaction to current stripe rust races and is resistant to Pacific Northwest Hessian fly biotype.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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, Twisted, Wax Present	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	162	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	93	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	34

30. Physiological/Biochemical Traits:

Variants and Frequency: Less than 0.1% variant plants were rogued from the Breeder seed increases. The majority of the variant plants were taller height wheat plants (3 to 6 cm). The white seeded variant of approximately 0.01% was identified in the Progeny seed production. Up to 1.0% variant plants may be encountered in subsequent generations, white seed variant up to 35 white seeds per pound.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the Spring of 2019

8. Plant Variety Protection is anticipated in 2018 and AP Renegade may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies

Date this application was submitted: Mar 27, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

AP Venom
USW11200083-1-3 (Exp)

1. AP Venom (USW11200083-1-3) is a hard red spring wheat developed by Syngenta Participations AG.

2. AP Venom (USW11200083-1-3) was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction and end use quality that originated with a single cross made in January of 2010.

3. AP Venom (USW11200083-1-3) is primarily adapted to the Sacramento and San Joaquin Valleys.

4. AP Venom (USW11200083-1-3) has shown above average tolerance to current races of stripe rust. It has shown average milling and baking characteristics.

5. Identifying characteristics:

1. Kind:	Common, Hard Red Spring Wheat		
2. Seasonal Growth Habit:	Spring	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:	Recurved, Twisted, Wax Absent	20. Shoulder Shape:	Elevated
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	89	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	110	25. Seed Color	Red
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.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	38

30. Physiological/Biochemical Traits:

Variants and Frequency: We could expect to see up to 0.8% taller plants (8-12 cm) in subsequent generations.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed. Royalty fees are anticipated.

7. Certified seed stocks of AP Venom (USW11200083-1-3) will be available in the fall of 2019.

8. Plant Variety Protection is anticipated in 2019 and AP Venom (USW11200083-1-3) may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

Rock Star
AP11T2409 (Exp)

1. Rock Star (AP11T2409) is a hard red winter wheat developed by Syngenta Participations AG.

2. Rock Star (AP11T2409) was selected for height, maturity, green leaf duration, low pH tolerance, leaf and stripe rust tolerance, and end-use quality.

3. Rock Star (AP11T2409) is broadly adapted with stable high yields over dryland Central Great Plains, and Western High Plains irrigated and dryland.

4. Rock Star (AP11T2409) has shown above average resistance to stripe rust, Soilbourne Mosaic Virus, and Wheat Streak Mosaic Virus.

5. Identifying characteristics

1. Kind:	Common, Hard Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Awned
3. Coleoptile Color:	White	17. Awn Color:	Tan
4. Juvenile Growth Habit:	Erect	18. Glume Color:	Tan
5. Leaf Color at Boot:	Green	19. Glume Length:	Medium
6. Flag Leaf at Boot:	Recurved, Twisted, Wax Present	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	121 days	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (glabrous)
11. Plant Height (cm):	99 cm.	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Tapering	27. Cheeks:	Angular
14. Spike Density:	Mid Dense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	31 g.

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.2% of the plants were rogued from the breeders seed increase in 2016. The rogued variant plants were taller height wheat plants. Up to 0.2% variant plants may be encountered in subsequent generations. We could expect to see up to 1.8% white seed variant.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed. Royalty fees are anticipated.

7. Certified seed will likely be available Fall of 2019.

8. Plant Variety Protection is anticipated in 2018 and Rock Star 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: Jan 8, 2019 Date recommended by the VRB: Mar 28, 2019

Wheat

SY 576
M14*5576 (Exp)

1. SY 576 is a soft red winter wheat bred and developed by Syngenta Participations AG.

2. SY 576 was selected for grain yield, test weight, maturity, appearance, and disease resistance.

3. SY 576 is primarily adapted to the northern Indiana, southern Michigan, and western Ohio in the Upper Midwest, and the Mid-Atlantic region.

4. SY 576 has shown high levels of resistance to both leaf and stripe rust, while also exhibiting moderate resistance to fusarium head blight. It is moderately susceptible to both soil borne mosaic virus and powdery mildew.

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:	Recurved, Twisted, Wax Absent	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	132	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Present
11. Plant Height (cm):	89	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Lax	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Erect	29. Avg 1,000 Kernel Wt (grams):	39

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.5% of plants were rogued from the Breeders Seed increase in Berthoud, CO. Of these variants, approximately 72% were taller (>3 inches), 17% were deemed off type, and 11% were awnless. Up to 1% variant plants may be encountered in subsequent generations.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the Fall of 2019.

8. Plant Variety Protection is anticipated in 2019 and SY 576 may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

SY Richie
B14-4435 (Exp)

1. SY Richie is a soft red winter wheat bred and developed by Syngenta Participations AG. SY Richie was named in honor of long time Syngenta employee Mark Richie, who was based at the Bay, AR station.

2. SY Richie was selected by using a conventional bulk breeding system. Early generation selections were based on height, maturity and appearance. Yield testing was initiated in 2015 and selection was based on yield, test weight, disease resistance and grain quality scores.

3. SY Richie has been tested in the Mississippi delta region (TN, MO, KY, AR, LA and MS) and the eastern Atlantic coastal area (GA, SC, NC and VA) of the US. The variety performs best in the mid to south Delta and across into the eastern Atlantic coastal plain areas.

4. SY Richie has shown strong resistance to field races of leaf and stripe rust prevalent in the years of 2016, 2017 and 2018. SY Richie has shown resistance to field races of powdery mildew in the east coast region. The variety is susceptible to Hessian Fly.

5. Identifying characteristics:

1. Kind:	Common, Soft Red Winter Wheat		
2. Seasonal Growth Habit:	Winter	16. Awn Type:	Apically Awnletted
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:	Recurved, Twisted, Wax Absent	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	96	22. Beak Shape:	Acute
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Short
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent
11. Plant Height (cm):	90	25. Seed Color	Red
12. Internodes:	Hollow	26. Seed Shape:	Ovate
13. Spike Shape:	Oblong	27. Cheeks:	Rounded
14. Spike Density:	Middense	28. Brush Size (S,M,L.):	Medium
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	29

30. Physiological/Biochemical Traits:

Variants and Frequency: Approximately 0.10 % of the plants were rogued from the Breeder's seed increase in 2018. Approximately 77 % of these rogued variant plants were awned plants and the remainder were taller plants. Up to 2.0% variant plants may be encountered in subsequent generations.

6. Syngenta Seeds, LLC. maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method to produce breeder seed as needed.

7. Certified seed will likely be available in the Fall of 2019.

8. Plant Variety Protection is anticipated in 2019 and SY Richie may only be sold as a class of certified seed.

9. Certified acreage is not to be published by AOSCA and certifying agencies.

Date this application was submitted: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Wheat

SY Wolverine
08BC379-40-1

1. SY Wolverine (08BC379-40-1) is a hard red winter wheat developed by Syngenta Participations AG.

2. SY Wolverine (08BC379-40-1) was selected for height, maturity, green leaf duration, disease reaction, and end use quality.

3. SY Wolverine (08BC379-40-1) is broadly adapted across the Northern, Central, and Western Plains.

4. SY Wolverine (08BC379-40-1) has shown above average leaf rust tolerance.

5. Identifying characteristics:

1. Kind:	Common, Hard 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 Absent	20. Shoulder Shape:	Oblique
7. Auricle Color:	White	21. Shoulder Width:	Narrow
8. Day(s) to 50% Heading:	131 days	22. Beak Shape:	Acuminate
9. Anther Color:	Yellow	23. Beak Length (S,M,L,VL):	Long
10. Anthoncyanin:	Absent	24. Glume Pubescence:	Absent (glabrous)
11. Plant Height (cm):	81 cm.	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.):	Short
15. Spike Curvature:	Inclined	29. Avg 1,000 Kernel Wt (grams):	33 g.

30. Physiological/Biochemical Traits:

Variants and Frequency: We could expect to see up to 1.8% white seed variant.

6. Syngenta Seeds, LLC maintains seed stock and certified classes of Foundation, Registered, and Certified. Syngenta Seeds, LLC. will maintain the variety by the head row/progeny method 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 2018 and SY Wolverine 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: Jan 8, 2019 Date recommended by the VRB: Apr 26, 2019

Barley

BG Katana
FA5S10-321 (Exp)

1. BG Katana, FA5S10-321 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 Katana was selected for naked plump seed with a agronomically favorable traits as well. These included tillering, standability, and resistance to yellow rust. BG Katana was developed and advanced through the traditional pedigree breeding method.

3. BG Katana 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 Katana has shown good tolerance to yellow stripe rust in Eastern Washington that its predecessors have been susceptible to. See YR 0-3 Table 1-14.

5. Identifying characteristics:

1. Growth Habit:	Spring	16. Plant Height (see below):	
2. Spike:	6 row	17. Spike Shape:	Strap
3. Coleoptile Color:	Green	18. Spike Density:	Dense
4. Juvenile Growth Habit:	Erect	19. Spike Position at Maturity:	Erect
5. Plant Tillering:	Intermediate	20. Hairiness of Rachis Edge:	Covered
6. Leaf Color at Boot:	Green	21. Rachilla Hair Length:	Long
7. Flag Leaf at Boot:	Erect, No Twist, No Wax	22. Lemma Awns:	Straight
8. Pubescence on Leaf Blade:	No	23. Length of Lemma Awns:	Short
9. Pubescence on Leaf Sheath:	No	24. Lemma Awn Surface:	Rough
10.:Auricle Color:	White	25. Glume Hairiness:	Banded
11.Heading Date (see below):	165 days from 1/1	26. Glume Awn Surface:	Rough
12. Stem Color:	White	27. Glume/Lemma Adherence:	Naked
13. Neck Shape:	Straight	28. Texture (if covered):	n/a
14. Collar Shape:	V-shaped	29. Aleurone Color:	Colorless
15. Spike Exsertion:	Intermediate	30. Avg 1,000 Kernel Wt (grams:	38

Heading date: 165 which is: 3 Days EARLIER than: BG 012

Plant height: 79.5 cm, which is 12.5 cm (TALLER) than: BG 012

Physiological or Biochemical traits:

Variants and Frequency: Shrunken endosperm and/or covered seed at 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 2020.

8. Application will be made for protection in the United States 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: Dec 20, 2018 Date recommended by the VRB: Apr 14, 2019

Barley

Redrock
HO315-348 (Exp)

1. Redrock (HO315-348) is a two-row spring forage barley was developed by WestBred/a unit of Monsanto, ownership of all barley germplasm has been transferred to Highland Specialty Grains Inc.
2. Agronomically desired rows were selected based on standability, tillering and grain plumpness. Redrock (HO315-348) was advanced through the standard pedigree breeding method.
3. Redrock (HO315-348) has been tested and shown adaptation to the irrigated acres of Eastern Washington.
4. Redrock (HO315-348) has not been tested thoroughly enough to make claims for its disease resistance.
5. Identifying characteristics –

1. Growth Habit:	Spring	16. Plant Height (see below):	
2. Spike:	Two-row	17. Spike Shape:	Oblong
3. Coleoptile Color:	Green	18. Spike Density:	Mid-Dense
4. Juvenile Growth Habit:	Erect	19. Spike Position at Maturity:	Nodding
5. Plant Tillering:	High	20. Hairiness of Rachis Edge:	Few
6. Leaf Color at Boot:	Green	21. Rachilla Hair Length:	Long
7. Flag Leaf at Boot:	Erect, Non-Twisted, Non Waxy	22. Lemma Awns:	Sessile Hoods
8. Pubescence on Leaf Blade:	Yes	23. Length of Lemma Awns:	n/a
9. Pubescence on Leaf Sheath:	No	24. Lemma Awn Surface:	n/a
10.:Auricle Color:	White	25. Glume Hairiness:	Banded
11.Heading Date (see below):		26. Glume Awn Surface:	Rough
12. Stem Color:	White	27. Glume/Lemma Adherence:	Covered
13. Neck Shape:	Straight	28. Texture (if covered):	Semi-wrinkled
14. Collar Shape:	V-shaped	29. Aleurone Color:	Colorless
15. Spike Exsertion:	Intermediate	30. Avg 1,000 Kernel Wt (grrams:	48

Heading date: 155 which is: 1 Day LATER than: Stockford

Plant height: 100.3 cm, which is 13 cm SHORTER than: Stockford

Physiological or Biochemical traits:

Variants and Frequency: Redrock (HO315-348) is stable and uniform in appearance and performance which has been observed through the F6-F10 generations. Redrock (HO315-348) may contain a tall variant (2-4 inches taller) at frequencies of up to 4/10,000 plants (.04%). 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 will possibly be sold in the fall of 2019.
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: Dec 20, 2018 Date recommended by the VRB: Mar 28, 2019

Barley

Vaquero
HO315-315 (Exp)

1. Vaquero (HO315-315) is a two-row spring forage barley was developed by WestBred/a unit of Monsanto, ownership of all barley germplasm has been transferred to Highland Specialty Grains Inc.

2. Agronomically desired rows were selected based on standability, tillering, and grain plumpness. Vaquero (HO315-315) was advanced through the standard pedigree breeding method.

3. Vaquero (HO315-315) has been tested and shown adaptation to the irrigated acres of Eastern Washington.

4. Vaquero (HO315-315) has not been tested thoroughly enough to make claims of its disease resistance.

5. Identifying characteristics –

1. Growth Habit:	Spring	16. Plant Height (see below):	
2. Spike:	Two-row	17. Spike Shape:	Tapering
3. Coleoptile Color:	Green	18. Spike Density:	Mid-dense
4. Juvenile Growth Habit:	Erect	19. Spike Position at Maturity:	Inclined
5. Plant Tillering:	High	20. Hairiness of Rachis Edge:	Covered
6. Leaf Color at Boot:	Dark Green	21. Rachilla Hair Length:	Short
7. Flag Leaf at Boot:	Recurved, Not-Twisted, Non-Waxy	22. Lemma Awns:	Sessile hoods
8. Pubescence on Leaf Blade:	No	23. Length of Lemma Awns:	n/a
9. Pubescence on Leaf Sheath:	No	24. Lemma Awn Surface:	n/a
10.:Auricle Color:	White	25. Glume Hairiness:	Middle Only
11.Heading Date (see below):		26. Glume Awn Surface:	Rough
12. Stem Color:	White	27. Glume/Lemma Adherence:	Covered
13. Neck Shape:	Straight	28. Texture (if covered):	Semi-wrinkled
14. Collar Shape:	Closed	29. Aleurone Color:	Colorless
15. Spike Exsertion:	Full	30. Avg 1,000 Kernel Wt (grrams:	44

Heading date: 81.5 which is: 2 Days later than: Stockford

Plant height: 116 cm, which is 13 cm taller than: Stockford

Physiological or Biochemical traits:

Variants and Frequency: Vaquero (HO315-315) is stable and uniform in appearance and performance which has been observed through the F6-F10 generations. Vaquero (HO315-315) may contain a tall variant (2-4 inches taller) at frequencies of up to 4/10,000 plants (.04%). 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 will possibly be sold in the fall of 2019.

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: Dec 20, 2018 Date recommended by the VRB: Mar 28, 2019

Triticale

APB249
APB470249 (Exp)
(Amended – Description Change)

1. APB249 (Experimental number APB470249) is a spring triticale developed by Arizona Plant Breeders, Inc.

2. APB249 was selected for high forage yield and good feed quality.

3. APB249 has been tested and found to be well adapted to triticale producing regions of the central valley of California.

4 APB249 has excellent forage yield, good feed quality, and is resistant to lodging. Lodging data was taken in 2016 and 2015 at two separate location each year in CA for a total of 4 site years of data.

5. Identifying characteristics:

1. Ploidy:	Hexaploid	15. Awn Color:	White
2. Growth Habit:	Spring	16. Glume Pubescence:	Glabrous
3. Photoperiod Reaction:	Insensitive	17. Glume Color:	White
4. Winterhardiness:	Low	18. Glume Length:	Long
5. Maturity:	Mid-Season	19. Glume Width:	Narrow
6. Height:	Mid-Tall	20. Glume Shoulder Shape:	Oblique
7. Plant Color at Boot Stage:	Blue-Green	21. Glume Beak Shape:	Acuminate
8. Stem Anthocyanin:	Present	22. Coleoptile Color:	White
9. Neck Hairiness:	Moderate	23. Seed Shape:	Ovate
10. Neck Shape:	Wavy	24. Seed Smoothness:	Slightly Wrinkled
11. Flag Leaf at Boot:	Twisted, Erect, Present	25. Seed Brush Area:	Large
12. Spike Density:	Mid-Dense	26. Seed Brush Length:	Short
13. Spike Shape:	Fusiform	27. Seed Color:	Red
14. Spike Awnedness:	Awned	28. Seed Relative Size:	Medium

Unique physiological/Biochemical traits: _____

Variants and Frequency: Plants six inches taller occur at a rate of 1 in every 1,000 plants.

6. Recognized classes of APB249 are breeder, foundation, registered, and certified. Arizona Plant Breeders will maintain the variety by the head-row method to produce breeder's seed as needed. APB249 will have a royalty fee and licensing agreement required.

7. Certified seed of APB249 will most likely be available for sale in the fall of 2019.

8. Application for PVP of APB249 is anticipated. It will not be required to be sold only as a class of certified seed.

9. Certified seed acreage can be published by AOSCA and individual certifying agencies.

Date this application was submitted: Sep 14, 2018 Date recommended by the VRB: Mar 28, 2019

Triticale

Joseong
Iksan26 (Exp)

1. Joseong (Iksan26) is a winter forage triticale (*X Triticosecale* Wittmack) cultivar developed by the breeding team at the Department of Rice and Winter Cereals Crop, NICS, RDA in 2010. After preliminary and advance yield test in Korea for 2 years, the line was given experimental designated as Iksan26. Thereafter, the line was subsequently evaluated for earliness and forage yields in 7 different locations such as Jeju, Iksan, Cheongwon, Yesan, Naju, Daegu, and Jinju from 2008 to 2010 and finally named as Joseong.

2. Joseong (Iksan26) was derived from the cross FAHAD_5/RHINOIR.ID 5+10 5D'5B'//FAHAD_5 by CIMMYT (Mexico) and selected for earliness and agronomic performance.

3. Joseong (Iksan26) was evaluated in, and adapted to, 7 different locations in South Korea, including: Jeju, Iksan, Cheongwon, Yesan, Naju, Daegu, and Jinju. Primary of Joseong in these locations will be forage production. Based on climatic data, Deagu, South Korea is similar to Wichita, Kansas (please see data in table 8). Wichita, KS is at 37° latitude with continental influence in winter (cool and dry) and, monsoonal moisture with thunderstorms in summer (warm and humid). Deagu, South Korea is at 36° latitude with continental influence from China, Manchuria (cool and dry) and monsoonal moisture from Chine Sea in summer (warm and dry). Joseong triticale is adapted to the Willamette Valley of Oregon with intended use for forage and feed grain. Joseong was comparable to our forage triticale checks for grain and forage dry matter yields with significantly earlier heading in 2017 and 2018 performance trials (tables 9).

4 Joseong (Iksan26) has a heading date of April 24, which is 5 days earlier than that of check cultivar Shinyoung. The average forage dry matter yields of Joseong at milk-ripe stage was 14.5 MT/ha, which was lower than 16.5 MT/ha of Shinyoung. This cultivar is recommended for fall sowing crop in the area where daily minimum mean temperatures are averaged higher than -10°C in January, and as a winter crop using whole crop forage before planting rice in South Korea.

5. Identifying characteristics:

1. Ploidy:	Hexaploid	15. Awn Color:	Tan
2. Growth Habit:	Winter	16. Glume Pubescence:	Slightly pubescent
3. Photoperiod Reaction:	Sensitive	17. Glume Color:	Tan
4. Winterhardiness:	Medium	18. Glume Length:	Mid-long
5. Maturity:	Early	19. Glume Width:	Mid-wide
6. Height:	Mid-tall	20. Glume Shoulder Shape:	Elevated
7. Plant Color at Boot Stage:	Green	21. Glume Beak Shape:	Acute
8. Stem Anthocyanin:	Absent	22. Coleoptile Color:	Green
9. Neck Hairiness:	Heavy	23. Seed Shape:	Oval
10. Neck Shape:	Straight	24. Seed Smoothness:	Slightly wrinkled
11. Flag Leaf at Boot:	Erect, No Twist, No Wax	25. Seed Brush Area:	Mid-size
12. Spike Density:	Mid-Dense	26. Seed Brush Length:	Short
13. Spike Shape:	Oblong	27. Seed Color:	Amber
14. Spike Awnedness:	Awned	28. Seed Relative Size:	Medium

Unique Physiological/Biochemical traits: N/A

Variants and Frequency: <2% variability in plant height; <1% variability in spike length

6. Certified classes include Foundation, Registered, and Certified. OreGro Seeds of Albany OR has authority to maintain Joseong triticale. Breeder seed is maintained in long term storage in South Korea and Albany, OR. Certifying agencies have no other responsibility other than to certify production.

7. Upon acceptance by AOSCA, the first certified seed will be available in spring 2019.

8. PVP will not be applied for and data from this application may be forwarded to the PVP office.

9. Publishing seed production data that specifically states Joseong triticale is prohibited.

Date this application was submitted: Jan 3, 2019 Date recommended by the VRB: Apr 22, 2019