

WB-Patron (YU908-017)

1. WB-Patron is a hard red spring wheat bred and developed by WestBred, a unit of Monsanto Company.
2. WB-PATRON was selected for stripe rust resistance, high forage yield, earliness relative to PR 1404, high test weight, high grain yield, forage quality and resistance to lodging. A modified bulk breeding method was used.
3. WB-Patron is adapted to the forage wheat growing areas of California. The primary use for WB-Patron will be for whole plant forage.
4. WB-Patron is resistant to the current field races of stripe rust in California.
5. Identifying characteristics – insert the descriptive term from the Objective Description except where indicated:

- | | |
|--|--|
| 1. <u>Kind</u> : Common Hard Red | 2. <u>Seasonal growth habit</u> : Spring |
| 3. <u>Coleoptile color</u> : White | 4. <u>Juvenile growth habit</u> : Erect |
| 5. <u>Leaf color at boot</u> : Green | 6. <u>Flag leaf at boot</u> : Erect, twisted, waxy |
| 7. <u>Auricle color</u> : White | 8. <u>Days to 50% heading</u> : 88 |
| 9. <u>Anther color</u> : Yellow | 10. <u>Stem color</u> : White |
| 11. <u>Plant height (cm)</u> : 99 | 12. <u>Internodes</u> : Hollow |
| 13. <u>Spike shape</u> : Tapering | 14. <u>Spike density</u> : Lax |
| 15. <u>Spike curvature</u> : Inclined | 16. <u>Awn type</u> : Awnletted |
| 17. <u>Awn color</u> : White | 18. <u>Glume color</u> : White/Amber |
| 19. <u>Glume length</u> : Long | 20. <u>Shoulder shape</u> : Rounded |
| 21. <u>Shoulder width</u> : Narrow | 22. <u>Beak shape</u> : Acuminate |
| 23. <u>Beak length (S, M, L, VL)</u> : L | 24. <u>Glume pubescence</u> : Present |
| 25. <u>Seed color</u> : Red | 26. <u>Seed shape</u> : Elliptical |
| 27. <u>Cheeks</u> : Rounded | 28. <u>Brush size (S,M, L)</u> : L |
| 29. <u>Avg 1,000 kernel wt (g)</u> : 40 | 30. <u>Phenol reaction</u> : Dark Brown |

Physiological/biochemical traits:

Variants and frequency: WB-Patron has been observed for four generations (F5-F8) of reproduction and seed increase and is stable and uniform. WB-Patron has a white seed variant that occurs at a frequency of 0.2%. A taller variant that is 12-30 cm taller occurs at a frequency of up to 0.2%. An awned variant occurs at a frequency of up to 0.2%. The variants are otherwise identical to the variety in all other characteristics.

6. The certified classes of seed to be recognized are Breeder, Foundation, Registered and Certified. WestBred, a unit of Monsanto Company, will maintain the breeder seed by planting spike rows as needed. Monsanto Company will produce all foundation seed either from breeder seed or foundation class seed. Production of registered and certified seed will be by license to associate seed companies. A royalty fee will be collected on all registered and certified seed sales.
7. Certified seed will first be offered for sale in the fall of 2011.
8. Plant Variety Protection has been applied for and the “Certification Option” was not selected.
9. Certified acreage is not to be published by AOSCA and certifying agencies.



'WB-Patron'
Hard Red Spring Wheat

Exhibit A. Origin and Breeding History

'WB-Patron' is a hard red spring wheat that originated from the cross 'PR 1404*2/Expresso', made near Yuma, AZ in March of 2006. 'PR 1404' is a released PVP variety from CEBECO SEEDS BV. Expresso is a released PVP variety from Monsanto Technology LLC. The breeding history of WB-Patron is described below.

Year	Generation	Location	Description
2006	Cross	Yuma, AZ	
2006	BC ₁	Bozeman, MT	Field
2006	F ₁	Bozeman, MT	Growth Chamber
2007	F ₂	Yuma, AZ	Selected plants that carried the heterozygous markers For Yr15 and Yr17.
2007	F ₃	Bozeman, MT	Selected plants that carried either heterozygous Or homozygous markers for Yr15 and Yr17.
2008	F ₄	Yuma, AZ	Selected plants that carried homozygous markers for both genes.
2008	F ₅	Bozeman, MT	F ₄ plant plots were planted and one was designated WB-Patron.
2009-2011	F ₆ -F ₈	Multiple	Yield tested in both forage and grain trials.

WB-Patron was selected for stripe rust resistance, high forage yield, earliness relative to PR 1404, high test weight, high grain yield, forage quality and resistance to lodging.

Four pounds of seed from the 2008 plant plot designated "WB-Patron" was planted near Bozeman, MT in 2009 to produce pre-breeder seed. This pre-breeder seed was used to produce breeder seed near Yuma, AZ in 2010. This breeder seed was used to produce Foundation seed near Yuma, AZ in 2011. Certified seed will be first offered for sale to growers in October 2011.

WB-Patron has been observed for four generations (F5-F8) of reproduction and seed increase and is stable and uniform. WB-Patron has a white seed variant that occurs at a frequency of 0.2%. A taller variant that is 12-30 cm taller occurs at a frequency of up to 0.2%. An awned variant occurs at a frequency of up to 0.2%. The variants are otherwise identical to the variety in all other characteristics as described in Exhibit C.

WB-Patron
Hard Red Spring Wheat

Exhibit B. Statement of Distinctness

WB-Patron most resembles the hard red spring variety PR 1404 but differs in that WB-Patron has the molecular markers for Yr15 and Lr37/Sr38/Yr17 while PR 1404 does not. WB-Patron is resistant to current stripe rust races in California while PR 1404 is moderately resistant.

The proximal loci microsatellite used for Yr15 was Xgwm 413 and the distal loci microsatellite used was Xbarc 8. The 2NS segment contains the genes Lr37/Sr38/Yr17. The two PCR primers used that were specific for 2NS were VENTRIUP AND LN2. This is a dominant marker so a CAPS marker was used (primer URIC) to identify the absence of the 2A-allele in the homozygous 2NS plants.

The reference is <http://maswheat.ucdavis.edu>.

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**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

Exhibit C

**OBJECTIVE DESCRIPTION OF VARIETY
Wheat (*Triticum* spp.)**

NAME OF APPLICANT (S) Monsanto Technology, LLC	TEMPORARY OR EXPERIMENTAL DESIGNATION YU908-017	VARIETY NAME WB-Patron
ADDRESS (Street and No. or RD No., City, State, Zip Code and Country) 800 N. Lindbergh Blvd. St. Louis MO 63167		FOR OFFICIAL USE ONLY PVPO NUMBER

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., 0 9 9 or 0 9) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____ . Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND: <u> 1 </u> 1 = Common 2 = Durum 3 = Club 4 = Other (Specify) _____	2. VERNALIZATION: <u> 1 </u> 1 = Spring 2 = Winter 3 = Other (Specify) _____
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3. COLEOPTILE ANTHOCYANIN: <u> 1 </u> 1 = Absent 2 = Present	4. JUVENILE PLANT GROWTH: <u> 3 </u> 1 = Prostrate 2 = Semi-Erect 3 = Erect
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5. PLANT COLOR: (Boot Stage) <u> 2 </u> 1 = Yellow-Green 2 = Green 3 = Blue-Green	6. FLAG LEAF: (Boot Stage) <table border="0"> <tr> <td><u> 1 </u></td> <td>1 = Erect</td> <td>2 = Recurved</td> </tr> <tr> <td><u> 2 </u></td> <td>1 = Not Twisted</td> <td>2 = Twisted</td> </tr> <tr> <td><u> 2 </u></td> <td>1 = Wax Absent</td> <td>2 = Wax Present</td> </tr> </table>	<u> 1 </u>	1 = Erect	2 = Recurved	<u> 2 </u>	1 = Not Twisted	2 = Twisted	<u> 2 </u>	1 = Wax Absent	2 = Wax Present
<u> 1 </u>	1 = Erect	2 = Recurved								
<u> 2 </u>	1 = Not Twisted	2 = Twisted								
<u> 2 </u>	1 = Wax Absent	2 = Wax Present								

7. EAR EMERGENCE:

 88 Number of Days (Average)

 4 Number of Days Earlier Than * PR 1404

Same As * _____

_____ Number of Days Later Than * _____

*Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

8. ANTHOR COLOR: 1 1 = Yellow 2 = Purple

9. PLANT HEIGHT: (From Soil to Top of Head, Excluding Awns)

96 cm (Average)
 _____ cm Taller Than _____ *
 Same As _____ *
5 cm Shorter Than PR 1404 *

10. STEM:

<u>1</u> A. ANTHOCYANIN 1 = Absent 2 = Present	<u>1</u> D. INTERNODE 1 = Hollow 2 = Semi-Solid 3 = Solid <u>4</u> Number of Nodes
<u>2</u> B. WAXY BLOOM 1 = Absent 2 = Present	<u>1</u> E. PEDUNCLE 1 = Erect 2 = Recurved 3 = Semi-Erect <u>35</u> cm Length
<u>2</u> C. HAIRINESS (last internode of rachis) 1 = Absent 2 = Present	F. AURICLE <u>1</u> Anthocyanin: 1 = Absent 2 = Present <u>2</u> Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

<u>1</u> A. DENSITY 1 = Lax 2 = Middense (Laxidense) 3 = Dense	<u>2</u> C. CURVATURE 1 = Erect 2 = Inclined 3 = Recurved
<u>1</u> B. SHAPE 1 = Tapering 2 = Strap 3 = Clavate 4 = Other (Specify) _____	<u>3</u> D. AWNEDNESS 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES: (At Maturity)

<u>1</u> A. COLOR 1 = White 2 = Tan 3 = Other (Specify) _____	<u>1</u> E. BEAK WIDTH 1 = Narrow 2 = Medium 3 = Wide
<u>3</u> B. SHOULDER 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate 7 = Other (Specify) _____	<u>3</u> F. GLUME LENGTH 1 = Short (ca. 7 mm) 2 = Medium (ca. 8 mm) 3 = Long (ca. 9 mm)
<u>1</u> C. SHOULDER WIDTH 1 = Narrow 2 = Medium 3 = Wide	<u>3</u> G. WIDTH 1 = Narrow (ca. 3 mm) 2 = Medium (ca. 3.5 mm) 3 = Wide (ca. 4 mm)
<u>3</u> D. BEAK 1 = Obtuse 2 = Acute 3 = Acuminate	<u>2</u> H. PUBESCENCE 1 = Not Present 2 = Present

15. HOMOZYGOUS FOR SPECIFIC DISEASE RESISTANCE GENE

Stem rust _____
 Leaf rust _____
 Other _____

16. INSECT: PLEASE SPECIFY BIOTYPE (Where Needed) (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

- 0 Hessian Fly (*Mayetiola destructor*) General _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype A _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype B _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype C _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype D _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype E _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype F _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype G _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype H _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype I _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype J _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype L _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype M _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype N _____
- 0 Hessian Fly (*Mayetiola destructor*) Biotype O _____
- 0 Hessian Fly (*Mayetiola destructor*) (Specify) _____
- 0 Stem Sawfly (*Cephus* spp.) (Specify) _____
- 0 Cereal Leaf Beetle (*Oulema melanopa*) (Specify) _____
- 0 Russian Aphid 1 (*Diuraphis noxia*) _____
- 0 Russian Aphid 2 (*Diuraphis noxia*) _____
- 0 Greenbug (*Schizaphis graminum*) (General) _____
- 0 Greenbug (*Schizaphis graminum*) Biotype A _____
- 0 Greenbug (*Schizaphis graminum*) Biotype B _____
- 0 Greenbug (*Schizaphis graminum*) Biotype C _____
- 0 Greenbug (*Schizaphis graminum*) Biotype E _____
- 0 Greenbug (*Schizaphis graminum*) Other (Specify) _____
- 0 Aphids (Specify) _____
- _____ Other (Specify) _____

17. HIGH MOLECULAR WEIGHT GLUTENIN SUBUNIT PROFILE (Check those that apply):

<u>Glu-A1</u>	<u>Glu-B1</u>	<u>Glu-D1</u>
_____ 1	_____ 6+8	_____ 2+11
_____ 2*	_____ 7+8	_____ 2+12
_____ null	_____ 7+9	_____ 3+12
_____ 1*	_____ 13+16	_____ 5+10
	_____ 13+19	_____ null
	_____ 17+18	

18. TRANSLOCATIONS (1=Present 2=Absent 3=Heterogeneous 4= Not Tested):

- 4 1BL/1RS _____
- 4 1A/1R _____
- 4 2NS/2AS _____
- 4 4DL/4AgS _____
- _____ OTHER (explain) _____
- _____ OTHER (explain) _____

19. IMIDAZOLINONE HERBICIDE TOLERANCE (1=Present 2=Absent 3=Not Tested):

<u>3</u>	<i>Als-1</i>
<u>3</u>	<i>Als-2</i>
<u>3</u>	<i>Als-3</i>

20. ADDITIONAL INFORMATION ON ANY ITEM ABOVE OR GENERAL COMMENTS:

WB-Patron has the molecular markers for Yr15 and Lr37/Sr38/Yr17.



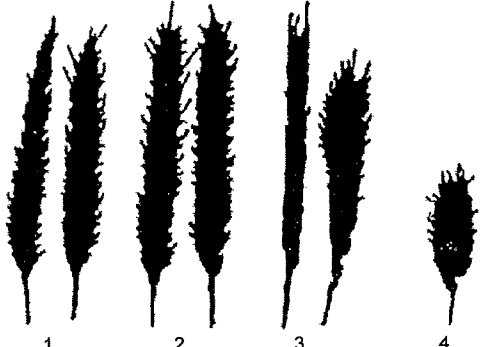

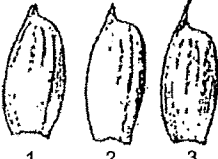
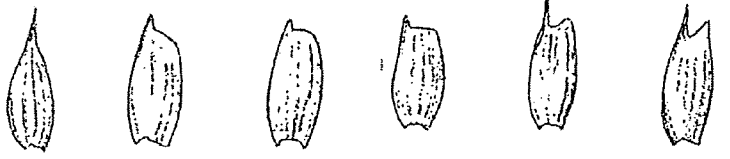

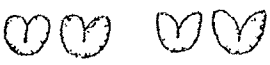
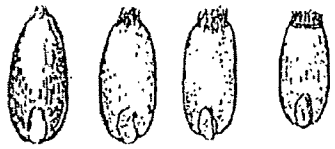
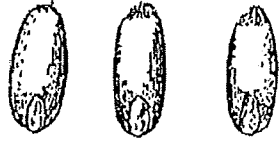



The proximal loci microsatellite used for Yr15 was Xgwm 413 and the distal loci microsatellite used was Xbarc 8. The 2NS segment contains the genes Lr37/Sr38/Yr17. The two PCR primers used that were specific for 2NS were VENTRIUP AND LN2. This is a dominant marker so a CAPS marker was used (primer URIC) to identify the absence of the 2A-allele in the homozygous 2NS plants.

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WHEAT DESCRIPTOR ILLUSTRATIONS

Section Numbers Correspond to the Numbers of the Sections on the Form

<p>4. EARLY PLANT GROWTH HABIT:</p>  <p>1 Prostrate 2 Intermediate 3 Erect</p>	<p>10. (D.) STEM INTERNODE X-SECTION:</p>  <p>1 Hollow 2 Semi-solid 3 Solid</p>	<p>11. (B.) SPIKE SHAPE:</p>  <p>1 Tapering 2 Oblong 3 Clavate 4 Elliptical</p>	
<p>11. (D.) AWNEDNESS:</p>  <p>1 Awnless 2 Apically Awnleted 3 Awnleted 4 Awned</p>	<p>12. (D.) BEAK SHAPE:</p>  <p>1 Obtuse 2 Acute 3 Acuminate</p>	<p>12. (C.) SHOULDER SHAPE:</p>  <p>1 Wanting 2 Oblique 3 Rounded 4 Square 5 Elevated 6 Apiculate</p>	
<p>13. (A.) SEED SHAPE:</p>  <p>1 Ovate 2 Oval 3 Elliptical</p>	<p>13. (B.) CHEEK SHAPE:</p>  <p>1 Rounded 2 Angular</p>	<p>13. (C.) BRUSH SIZE:</p>  <p>1 Small 2 Midsized 3 Large 4 Collared</p>	<p>13. (C.) BRUSH HAIR LENGTH:</p>  <p>1 Short 2 Medium 3 Long</p>
<p>13. (I.) GERM (EMBRYO) SIZE:</p>  <p>1 Small 2 Midsized 3 Large</p>	<p>13. (D.) SEED CREASE WIDTH:</p>  <p>1 Narrow 2 Mid-wide 3 Wide</p>	<p>13. (D.) SEED CREASE DEPTH:</p>  <p>1 Shallow 2 Mid-Deep 3 Deep</p>	

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FORM APPROVED - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

**EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) Monsanto Technology, LLC	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER YU908-017	3. VARIETY NAME WB-Patron <input checked="" type="checkbox"/>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 800 N. Lindbergh Blvd. St. Louis, MO 63167 USA	5. TELEPHONE (Include area code) 815-758-9281	6. FAX (Include area code) 815-758-3117
7. PVPO NUMBER		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. YES NO

9. Is the applicant a U.S. national or a U.S. based entity? If no, give name of country. YES NO

10. Is the applicant the original owner? YES NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

YES NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

YES NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

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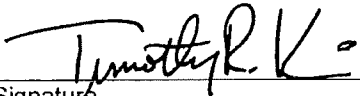
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AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**EXHIBIT F
DECLARATION REGARDING DEPOSIT**

NAME OF OWNER (S) Monsanto Technology, LLC	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 800 N. Lindbergh Blvd. St. Louis, MO 63167 USA	TEMPORARY OR EXPERIMENTAL DESIGNATION YU908-017
		VARIETY NAME WB-Patron
NAME OF OWNER REPRESENTATIVE (S) Timothy R. Kain	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 8350 Minnegan Road Waterman, IL 60556 USA	FOR OFFICIAL USE ONLY
		PVPO NUMBER

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.


Signature

8/29/2011
Date

Submit by Email