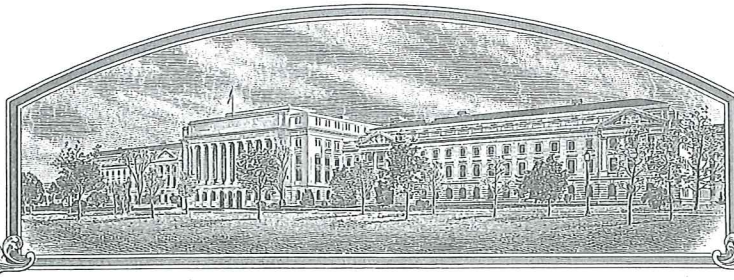


No.

201100479



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Monsanto Technology LLC

Whereas, THERE HAS BEEN PRESENTED TO THE

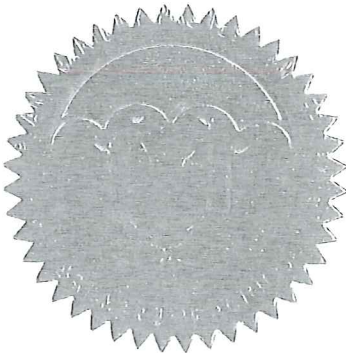
Secretary of Agriculture

An application requesting a certificate of protection for an alleged distinct variety of sexually reproduced, or tuber propagated plant, the name and description of which are contained in the application and exhibits, a copy of which is hereunto annexed and made a part hereof, and the various requirements of LAW in such cases made and provided have been complied with, and the title thereto is, from the records of the PLANT VARIETY PROTECTION OFFICE, in the applicant(s) indicated in the said copy, and Whereas, upon due examination made, the said applicant(s) is (are) adjudged to be entitled to a certificate of plant variety protection under the LAW.

Now, therefore, this certificate of plant variety protection is to grant unto the said applicant(s) and the successors, heirs or assigns of the said applicant(s) for the term of TWENTY years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by LAW, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or conditioning it for propagation, or stocking it for any of the above purposes, or using it in producing a hybrid or different variety therefrom, to the extent provided by the PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'WB-Arrowhead'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this nineteenth day of June, in the year two thousand and thirteen.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
 SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

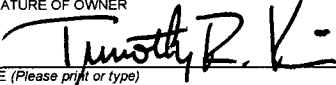
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

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

1. NAME OF OWNER Monsanto Technology, LLC		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME ML9W05-2501	3. VARIETY NAME WB-Arrowhead
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 800 N. Lindbergh Blvd. St. Louis, MO 63167 USA		5. TELEPHONE (include area code) 815-758-9281	FOR OFFICIAL USE ONLY PVPO NUMBER 201100479 FILING DATE 9/2/11
		6. FAX (include area code) 815-758-3117	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Limited Liability Corporation	8. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware	9. DATE OF INCORPORATION March 2, 2000	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Timothy R. Kain 8350 Minnegan Rd, Waterman, IL 60556 Chunping Li 800 North Lindbergh Blvd., St. Louis, MO 63167			FILING AND EXAMINATION FEES: F E E S \$ 4382.00 R E C E I V E D DATE 9/2/11 CERTIFICATION FEE: \$ DATE

11. TELEPHONE (include area code) 815-758-9281	12. FAX (include area code) 815-758-3117	13. E-MAIL trkain@monsanto.com
14. CROP KIND (Common Name) Common Wheat	16. FAMILY NAME (Botanical) Poaceae	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.
15. GENUS AND SPECIES NAME OF CROP Triticum aestivum	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23) <input type="checkbox"/> UNDECIDED
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Exhibit F. Declaration Regarding Deposit g. <input checked="" type="checkbox"/> Voucher Sample (3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) h. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)

SIGNATURE OF OWNER 		SIGNATURE OF OWNER	
NAME (Please print or type) Timothy R. Kain		NAME (Please print or type)	
CAPACITY OR TITLE Patent Scientist	DATE 8/30/2011	CAPACITY OR TITLE	DATE

2011 SEP 2 AM 9:24

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety **or by direct deposit soon after filing**, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to **reproduce** the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVP@mail.usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

SPECIFIC INSTRUCTIONS:

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870. <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)
United States - 9-15-2010

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Submit by Email

“WB-Arrowhead”
Hard Red Winter Wheat

Exhibit A. Origin and Breeding History

“WB-Arrowhead” is a hard red winter wheat that originated from the cross of “Promontory/Karl 92”, made by WestBred, a Unit of Monsanto, near Bozeman, MT in 2000. The F1 seed were planted near Bozeman, MT in October, 2000, the F2 seed harvested in August 2001 and re-planted near Bozeman in October, 2001. Heads were harvested from individual F2 plants in August, 2002, bulked and planted near Bozeman in Oct 2002. Heads were selected from the F3 plants in August 2003 and planted as individual F4 rows near Bozeman in October, 2003. F4 rows were observed for plant height, lodging resistance and overall agronomic appearances. Desired rows were harvested individually in August 2004 and the seed was tested for quality characteristics of hard red winter wheat (test weight, percent protein and protein quality using the SDS Sedimentation test). Selections that had high test weight, protein and SDS values were selected for planting in an F5 plots (5’x7’) at Moses Lake, Washington in October, 2004. The F5 plots were observed for stripe rust and were harvested for yield. The grain was again tested for HRW quality. The better yielding and quality lines were selected for advancement. One such plot was given the designation ML9W05-2501. Yield trials, along with quality analysis for red winter wheat, were conducted on the F6 thru F10 generations in WestBred’s Pacific Northwest winter wheat trials from 2006 through 2010. Table 1 provides agronomic performance of WB-Arrowhead compared to check varieties in WestBred trials for 2009 and 2010 (9 locations). WB-Arrowhead was tested for quality at the Cargill Bake Lab and found to be acceptable for the hard red winter wheat market class (Table 2). Individual heads were harvested from the F6 plots and planted as head rows near Bozeman, MT in the fall of 2007. Uniform rows were harvested individually and planted as separate line rows in the fall of 2008 near Bozeman. Uniform line rows were harvested in August 2009 and bulked to produce Breeder Seed. The Breeder seed was planted in October 2009 to produce Foundation seed, but a hail storm in July 2010 made it impossible to inspect the field for Foundation status. Seed from this field was harvested and again classed as Breeders Seed. Foundation seed planted in October 2010, near Warden, Washington and the name WB-Arrowhead was chosen for the variety. Foundation seed was harvested in August, 2011. The first unencumbered sale of WB-Arrowhead will be in September 2011.

A tall variant that is 1-2 heads taller may occur at a frequency of up to 15 plants per 10,000 plants. Also, a white seed variant may occur at a frequency of up to 25 seed per 10,000 seed, and a white chaffed variant may occur at a frequency of up to 10 plants/10,000 plants. Otherwise, no other variants are known to occur and “WB-Arrowhead” is a stable and uniform variety in appearance and performance over several generations (F8-F10) and growing conditions.

“WB-Arrowhead”
Hard Red Winter Wheat

Exhibit B. Statement of Distinctness

WB-Arrowhead is most similar to the variety Norris. However, the flag leaf of WB-Arrowhead has a waxy coating, whereas those of Norris do not have the waxy coating. Also, the glume shoulders of WB-Arrowhead are elevated, whereas those of Norris are wanting. And Norris is resistant to the grass herbicide ‘Beyond’, whereas WB-Arrowhead is not resistant to ‘Beyond’

The above comparisons, along with the complete Objective Description (Exhibit C) show WB-Arrowhead to be a novel variety of soft white winter wheat.

Table 1. Agonomic Traits of WB-Arrowhead compared to check varieties in WestBred's Washington and Idaho trials - 2009-2010

<u>Entry</u>	<u>Plt. Ht.</u> <u>(inches)</u>	<u>Washington</u>		<u>T.W.</u> <u>(lbs/bu)</u>	<u>Protein</u> <u>%</u>	<u>SED</u> <u>(mm)</u>	<u>Yield in lbs/ac</u>		<u>2-year</u> <u>avg</u>
		<u>Lodging</u> <u>%</u>	<u>YR</u> <u>17-Jun</u>				<u>2009</u> <u>5 loc</u>	<u>2010</u> <u>4 loc</u>	
WB-Arrowhead (-2501)	38	1	0	62.2	10.4	99	6639	8286	7371
Eddy	36	5	2	62.3	11.1	87	6366	6753	6538
AgriPro Paladin	33	0	4	60.7	11.5	99	5058	6493	5695
Whetstone	39	5	1	61.7	11.9	106		7672	
Norwest 553	32	0	0	62.0	11.2	97	6339	7505	6857

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved OMB NO 0581-0055

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

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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 ML9W05-2501	VARIETY NAME WB-Arrowhead
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> 2 </u> 1 = Spring 2 = Winter 3 = Other (Specify) _____
3. COLEOPTILE ANTHOCYANIN: <u> 1 </u> 1 = Absent 2 = Present	4. JUVENILE PLANT GROWTH: <u> 1 </u> 1 = Prostrate 2 = Semi-Erect 3 = Erect
5. PLANT COLOR: (Boot Stage) <u> 3 </u> 1 = Yellow-Green 2 = Green 3 = Blue-Green	6. FLAG LEAF: (Boot Stage) <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: <u>156</u> Number of Days (Average) <u> 2 </u> Number of Days Earlier Than * <u> Boundary </u> Same As <input type="checkbox"/> * _____ <u> 2 </u> Number of Days Later Than * <u> Eddy </u> *Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial	
8. ANTHOR COLOR: <u> 1 </u> 1 = Yellow 2 = Purple	

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

97 cm (Average)
 5 cm Taller Than Eddy *
 Same As Whetstone *
 12 cm Shorter Than Farnum *

10. STEM:

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

11. HEAD: (At Maturity)

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

12. GLUMES: (At Maturity)

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

13. SEED:

1 A. SHAPE

- 1 = Ovate
- 2 = Oval
- 3 = Elliptical

1 B. CHEEK

- 1 = Rounded
- 2 = Angular

3 C. BRUSH

- 1 = Short
- 2 = Medium
- 3 = Long

- 1 1 = Not Collared
2 = Collared

D. CREASE

- 2 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

- 1 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

3 E. COLOR

- 1 = White
- 2 = Amber
- 3 = Red
- 4 = Other (Specify) _____

1 F. TEXTURE

- 1 = Hard
- 2 = Soft
- 3 = Other (Specify) _____

4 G. PHENOL REACTION

- 1 = Ivory
- 2 = Fawn
- 3 = Light Brown
- 4 = Dark Brown
- 5 = Black

43 H. SEED WEIGHT

g/1000 Seed (Whole Number Only)

3 I. GERM SIZE

- 1 = Small
- 2 = Midsize
- 3 = Large

14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

- 0 Stem Rust (*Puccinia graminis* f. sp. *tritici*) Race: _____
- 0 Leaf Rust (*Puccinia recondita* f. sp. *tritici*) Race: _____
- 3 Stripe Rust (*Puccinia striiformis*) Race: _____
- 0 Loose Smut (*Ustilago tritici*) Race: _____
- 0 Tan Spot (*Pyrenophora tritici-repentis*) Race: _____
- 0 Flag Smut (*Urocystis agropyri*) Race: _____
- 0 Halo Spot (*Selenophoma donacis*) Race: _____
- 0 Common Bunt (*Tilletia tritici* or *T. laevis*) Race: _____
- 0 *Septoria nodorum* (Glume Blotch) Race: _____
- 0 Dwarf Bunt (*Tilletia controversa*) Race: _____
- 0 *Septoria avenae* (Speckled Leaf Disease) Race: _____
- 0 Karnal Bunt (*Tilletia indica*) Race: _____
- 0 *Septoria tritici* (Speckled Leaf Blotch) Race: _____
- 3 Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*) Race: _____
- 0 Scab (*Fusarium* spp.) Race: _____
- 4 "Snow Molds" Race: _____
- 0 "Black Point" (Kernel Smudge) Race: _____
- 0 Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.) Race: _____
- 0 Barley Yellow Dwarf Virus (BYDV) Race: _____
- 0 Rhizoctonia Root Rot (*Rhizoctonia solani*) Race: _____
- 0 Soilborne Mosaic Virus (SBMV) Race: _____
- 0 Black Chaff (*Xanthomonas campestris* pv. *translucens*) Race: _____
- 0 Wheat Yellow (Spindle Streak) Mosaic Virus Race: _____
- 0 Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*) Race: _____
- 0 Wheat Streak Mosaic Virus (WSMV) Race: _____
- Other (Specify) _____ Race: _____
- Other (Specify) _____ Race: _____
- Other (Specify) _____ Race: _____
- Other (Specify) _____ Race: _____

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):





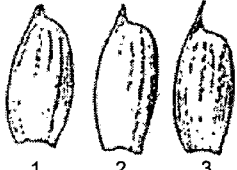
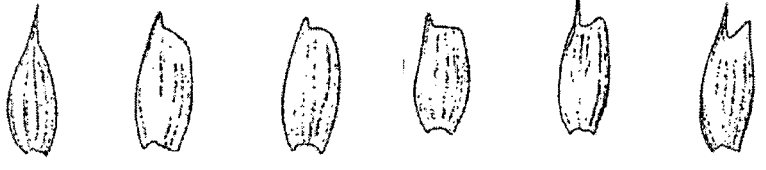
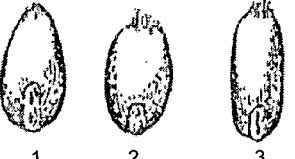

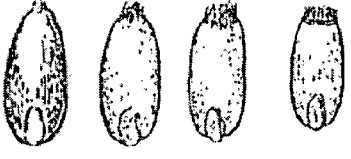
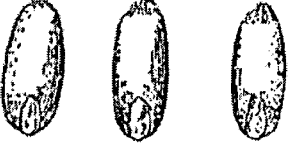
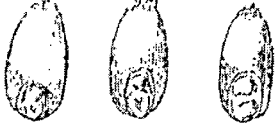


2 Als-1
2 Als-2
2 Als-3

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

Submit by Email

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>	

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 ML9W05-2501	3. VARIETY NAME WB-Arrowhead
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.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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U.S. DEPARTMENT OF AGRICULTURE
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 ML9W05-2501
		VARIETY NAME WB-Arrowhead
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.

Timothy R. Kain
Signature

8/30/2011
Date

Submit by Email