No. 9300293

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

AgriPro Biosciences Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED 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 eighteen 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 USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS PART OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Pontiac'

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* 29th *day of* October *in the year of our Lord one thousand nine hundred and* ninety-three.

Attest:

Kenneth H. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy

Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

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 APPLICANT(S) HybriTech US, a ~~AgriPro Biosciences Inc.~~ Monsanto Company

2. TEMPORARY DESIGNATION ABI88-3143 CGM 01 Jun 1998

3. VARIETY NAME PONTIAC

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
6700 Antioch
Shawnee Mission, Kansas 66204

5. PHONE *(Include area code)*
913-384-4940 (KS)
317-563-3111 (IN)

FOR OFFICIAL USE ONLY
PVPO NUMBER 9300293

6. GENUS AND SPECIES NAME Triticum aestivum

7. FAMILY NAME *(Botanical)* Gramineae

FILING — DATE Aug. 16, 1993 — TIME ☐ A.M. ☐ P.M.

8. KIND NAME Soft Red Winter Wheat

9. DATE OF DETERMINATION July 1990

FEES RECEIVED — AMOUNT FOR FILING $2325.00 — DATE Aug. 16, 1993 — AMOUNT FOR CERTIFICATE $275.00 — DATE Sept. 30, 1993

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware

12. DATE OF INCORPORATION February 8, 1989

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
~~R.E. Heiner~~
6700 Antioch
Shawnee Mission, Kansas 66204
OR
~~Koy Miskin~~
~~R.R. #2, Box 411~~
~~Brookston, IN 47923~~
~~PHONE (Include area code):~~
Mark J. Messmer
HybriTech US
5912 North Meridian
Wichita, KS 67204
316 755 7207
CGM 01 Jun 1998
Fax: 316 755 0072
e-mail: Mark.J.Messmer@Monsanto.Com
CGM 01 Jun 1998

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
- a. [XX] Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- b. [X] Exhibit B, Novelty Statement.
- c. [X] Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
- d. [X] Exhibit D, Additional Description of Variety.
- e. [XX] Exhibit E, Statement of the Basis of Applicant's Ownership.

Exhibit F; Quality & Agronomic Data

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* [X] Yes *(If "Yes," answer items 16 and 17 below)* ☐ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? [XX] Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? [XX] Foundation [X] Registered [XX] Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? ☐ Yes *(If "Yes," give date)* [X] No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? ☐ Yes *(If "Yes," give names of countries and dates)* [XX] No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT RE Heiner — DATE Aug 9, 1993

SIGNATURE OF APPLICANT — DATE

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

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EXHIBIT A.

ORIGIN AND BREEDING HISTORY OF PONTIAC

Parentage: Magnum/Auburn

Date Cross: Fall 1981

Breeding History: The cross between Magnum and Auburn was made in the 1981 fall greenhouse. The F1 was grown in the spring greenhouse of 1982. The F2 and F3 space plants were in the field in 1983 and 1984. Heads were selected from the F3 space plants and the F4 and F5's were grown in the 1985 greenhouse using single seed descent. Sixty-one F6 head rows (Pre-Y1 rows) were grown out in 1987 and two lines were advanced to Y1 yield in 1988. One of these lines was selected to become 88M-3143 due to its strong straw strength characteristics, high yield potential, disease resistance and baking properties. It has been in advanced yield testing from 1989 to 1992 and was in the Uniform Eastern Soft Wheat Nursery in 1992 and 1993 under the experimental number ABI88-3143.

In 1990, one hundred head rows were grown at Brookston, Indiana, and two rows were discarded for being to tall. In 1991, 60 head rows were grown at Berthoud, Colorado, nested in a 0.2A initial seed increase. In 1992, 8,700 pounds of breeders seed were grown in Colorado.

Pontiac has been uniform and stable as observed in the initial and breeder seed production since 1991. Less than 0.5% of the plants were rogued from the breeders seed field in 1992. Approximately 90% of the variant plants were taller and awnless and 10% were awned plants. Up to 1% variant plants may be encountered in subsequent generations.

EXHIBIT B.

NOVELTY STATEMENT PONTIAC

Pontiac is most similar to the soft red winter wheat Cardinal. However, it can be distinguished by the following morphological characteristics:

- Pontiac has a significantly shorter glume length than Cardinal, (see 1992 & 1993 statistical data following pages).
- Pontiac has an awnletted head. Cardinal has an apically awnletted head.
- Pontiac is 8 centimeters shorter than Cardinal.

FORM APPROVED: OMB NO. 0581-0055

EXHIBIT C
(Wheat)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
AgriPro Biosciences Inc.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
6700 Antioch
Shawnee Mission, Kansas 66204

FOR OFFICIAL USE ONLY
PVPO NUMBER 9300293
VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0|8|9] or [0|9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____
[1] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM [redacted] TO:
[1|4|1] FIRST FLOWERING Jan. 1st
[1|4|3] LAST FLOWERING

4. MATURITY (50% *Flowering*): *same maturity as Cardinal
[--|--] NO. OF DAYS *EARLIER* THAN .....
[--|--] NO. OF DAYS *LATER* THAN .....
[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):
[0|9|4] CM. HIGH
[--|--] CM. TALLER THAN .....
[0|8] CM. SHORTER THAN .....
[7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7=Cardinal

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0|5] NO. OF NODES (*Originating from node above ground*)
[2|2] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1|2] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2|1] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LPGS-470-6 (7-81) (Edition of 3-79 may be used)

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'Pontiac"

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FORM GR-470-5 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[3] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[9.0] CM. LENGTH

[1 2] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[1] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[---] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[5.3] MM. LENGTH

[3.3] MM. WIDTH

[3 5] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderately Susceptible 4=Moderately Resistant

[2] STEM RUST (Races) SR5,17,+

[4] LEAF RUST (Races) field races

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[4] POWDERY MILDEW

[0] BUNT

[4] OTHER (Specify) Septoria SBMV, Rhizoctonia

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderately Susceptible 4=Moderately Resistant

[0] SAWFLY

[0] APHID (Syov.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

H5 gene HESSIAN FLY RACES:

[2] GP [0] A [2] B [2] C

[2] D [2] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Cardinal	Seed size	Cardinal
Leaf size	Cardinal	Seed shape	Cardinal
Leaf color	Hancock	Coleoptile elongation	Cardinal
Leaf carriage	Cardinal	Seedling pigmentation	Cardinal

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.T. Briggle and L. P. Reitz. 1963. Classification of Triticum Species and Their Varieties Grown in the United States. Technical Bulletin 1278. United States Department of Agriculture.

(b) T.E. Falls. 1965. A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity. Contribution No. 29 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

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ONE-WAY ANALYSIS OF VARIANCE 1992

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Glume Length
Pontiac vs. Cardinal

TOTAL OBSERVATIONS: 50

	VAR	GLUMLENG
N OF CASES	50	50
MINIMUM	1.000	6.700
MAXIMUM	2.000	9.200
MEAN	1.520	7.948
STANDARD DEV	0.505	0.745

THE FOLLOWING RESULTS ARE FOR:
VAR = 1.000 = Pontiac

TOTAL OBSERVATIONS: 24

	VAR	GLUMLENG
N OF CASES	24	24
MINIMUM	1.000	6.700
MAXIMUM	1.000	7.800
MEAN	1.000	7.258
STANDARD DEV	0.000	0.248

THE FOLLOWING RESULTS ARE FOR:
VAR = 2.000= Cardinal

TOTAL OBSERVATIONS: 26

	VAR	GLUMLENG
N OF CASES	26	26
MINIMUM	2.000	7.800
MAXIMUM	2.000	9.200
MEAN	2.000	8.585
STANDARD DEV	0.000	0.393

DEP VAR:GLUMLENG N: 50 MULTIPLE R: 0.898 SQUARED MULTIPLE R: 0.806
ADJUSTED SQUARED MULTIPLE R: 0.802 STANDARD ERROR OF ESTIMATE: 0.331

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	5.932	0.150	0.000	.	39.520	0.000
VAR	1.326	0.094	0.898	.100E+01	14.137	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	21.953	1	21.953	199.865	0.000
RESIDUAL	5.272	48	0.110		

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Glume Length
Pontiac vs. Cardinal 1992

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 50 CASES
DEPENDENT VARIABLE IS GLUMLENG
GROUPING VARIABLE IS VAR

GROUP	COUNT	RANK SUM
1.000	24	300.500
2.000	26	974.500

MANN-WHITNEY U TEST STATISTIC = 0.500
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 36.781 WITH 1 DF

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One-Way Analysis of Variance 1993
Glume Length
PONTIAC vs. CARDINAL

TOTAL OBSERVATIONS: 50

	VAR	GLUMLENG
N OF CASES	50	50
MINIMUM	1.000	6.400
MAXIMUM	2.000	9.600
MEAN	1.500	8.022
STANDARD DEV	0.505	0.737

THE FOLLOWING RESULTS ARE FOR:
VAR = 1.000 = Pontiac

TOTAL OBSERVATIONS: 25

	VAR	GLUMLENG
N OF CASES	25	25
MINIMUM	1.000	6.400
MAXIMUM	1.000	8.200
MEAN	1.000	7.412
STANDARD DEV	0.000	0.379

THE FOLLOWING RESULTS ARE FOR:
VAR = 2.000 = Cardinal

TOTAL OBSERVATIONS: 25

	VAR	GLUMLENG
N OF CASES	25	25
MINIMUM	2.000	7.700
MAXIMUM	2.000	9.600
MEAN	2.000	8.632
STANDARD DEV	0.000	0.435

DEP VAR:GLUMLENG N: 50 MULTIPLE R: 0.837 SQUARED MULTIPLE R: 0.700
ADJUSTED SQUARED MULTIPLE R: 0.694 STANDARD ERROR OF ESTIMATE: 0.408

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	6.192	0.182	0.000	.	33.956	0.000
VAR	1.220	0.115	0.837	.100E+01	10.578	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	18.605	1	18.605	111.899	0.000
RESIDUAL	7.981	48	0.166		

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Pontiac vs. Cardinal 1993

Glume Length

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 50 CASES
DEPENDENT VARIABLE IS GLUMLENG
GROUPING VARIABLE IS VAR

GROUP	COUNT	RANK SUM
1.000	25	335.500
2.000	25	939.500

MANN-WHITNEY U TEST STATISTIC = 10.500
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 34.510 WITH 1 DF

EXHIBIT D.

ADDITIONAL BOTANICAL DESCRIPTION OF PONTIAC

Pontiac is a soft red winter wheat bred and developed by AgriPro Biosciences Inc. Pontiac is a high yielding, medium height semi-dwarf with strong straw and midseason maturity. Milling characteristics are acceptable and baking properties are good.

Juvenile growth habit is semi-erect. Plant color is green with an erect, twisted flag leaf. Auricle hairs and anthocyanin are absent. Head shape is tapering to strap, awnleted and white at maturity. Glumes are midwide and midlong with square shoulders and obtuse beaks. Seed shape is ovate with rounded cheeks. Seed crease is narrow in width and shallow in depth.

Pontiac is well adapted to the soft wheat region north of Interstate 64 and from Kansas to the east coast.

EXHIBIT E.

STATEMENT OF THE BASIS OF APPLICANTS OWNERSHIP

AgriPro Biosciences Inc. is the applicant for protection in this case being:

a) The incorporated business (registered in Delaware) for and within which regular employees have bred the named variety.

b) The proprietory owner and intending commercial user of the variety.

EXHIBIT F.

QUALITY AND AGRONOMIC DATA

Quality Data . . . . . page 1.

Trial Summary Data . . . . . .page 2.

Agronomic Data . . . . . page 3.

AGRIPRO WHEAT

SOFT RED WINTER WHEAT

YEAR	VARIETY OR LINE	LOC	MILLING BRK FLR %	MILLING TOT FLR %	WH PROT %	BAKING FL PROT %	BAKING C. DIAM mm	BAKING T.G R	NORRIS HARD
92	PONTIAC	FO	34.7	69.4	11.8	10.2	16.6	4	15
92	PONTIAC	FO	34.8	69.8	12.0	10.2	16.7	4	17
92	PONTIAC	CI	31.8	66.4	12.6	10.8	17.1	3	25
92	PONTIAC	CI	30.8	66.4	12.8	10.8	17.0	3	26
91	PONTIAC	BK	36.5	68.5	12.9	11.2	18.2	4	43
91	PONTIAC	BK	35.6	68.5	13.2	11.0	18.0	3	42
91	PONTIAC	FO	37.8	69.6	12.0	10.7	17.3	3	43
90	PONTIAC	CA	36.8	64.1	10.5	8.9	17.4	3	26
90	PONTIAC	FO	46.0	65.5	10.5	8.6	17.3	3	08
90	PONTIAC	BK	37.3	65.9	12.2	10.4	17.0	3	20
89	PONTIAC	PA	41.7	66.4	10.2	8.9	17.4	5	26
89	PONTIAC	BK	38.6	63.8	10.3	8.2	17.6	2	16
88	PONTIAC	BK	34.8	64.1	11.3	9.3	16.9	6	29
	AVERAGE		36.7 6	66.8 6	11.7	9.9 1	17.3 4	4	26

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page 1.

AgriPro Seeds
SOFT WINTER WHEAT TRIAL SUMMARY
LOCATIONS-OVER YEARS
NOVEMBER 12, 1992

VARIETIES: ABI 88-3143 CARDINAL

YEARS: 89 90 91 92

AREA		YIELD Bu/Ac LOCS	ABI 8	CARDI	T.WT. lb/Bu LOCS	ABI 8	CARDI	89 YIELD LOCS	ABI 8	CARDI	90 YIELD LOCS	ABI 8	CARDI	91 YIELD LOCS	ABI 8	CARDI	92 YIELD LOCS	ABI 8	CARDI
REGIONS:																			
CP	*	1	114.0	98.0	1	57.1	56.8		.0	.0		.0	.0		.0	.0	1	114.0	98.0
cp	*	1	114.0	98.0	1	57.1	56.8		.0	.0		.0	.0		.0	.0	1	114.0	98.0
EA		4	93.8	94.3	4	57.5	56.5		.0	.0		.0	.0		.0	.0	4	93.8	94.3
cp	*	1	114.0	98.0	1	57.1	56.8		.0	.0		.0	.0		.0	.0	1	114.0	98.0
ea	*	2	88.6	87.5	2	57.4	56.2		.0	.0		.0	.0		.0	.0	2	88.6	87.5
we		1	84.0	104.3	1	58.1	56.8		.0	.0		.0	.0		.0	.0	1	84.0	104.3
MS		14	60.6	65.7	7	58.4	58.0	1	47.0	57.0	4	47.3	51.8	1	41.0	42.0	8	71.4	76.7
ms		6	63.5	68.2	3	58.1	58.0		.0	.0	3	47.3	55.0		.0	.0	3	79.7	81.3
mm		7	60.7	64.6	3	59.2	57.5	1	47.0	57.0	1	47.0	42.0	1	41.0	42.0	4	72.5	77.8
ss		1	42.0	58.6	1	57.1	59.3		.0	.0		.0	.0		.0	.0	1	42.0	58.6
MW		34	62.1	63.0	12	58.3	56.5	7	69.1	67.3	8	60.8	62.5	9	52.4	53.1	10	66.9	69.4
mw	*	26	61.6	61.0	8	58.0	56.1	6	72.8	69.0	7	62.7	65.4	8	53.8	54.5	5	59.1	55.6
mm		7	60.7	64.6	3	59.2	57.5	1	47.0	57.0	1	47.0	42.0	1	41.0	42.0	4	72.5	77.8
we		1	84.0	104.3	1	58.1	56.8		.0	.0		.0	.0		.0	.0	1	84.0	104.3
SO		4	48.2	52.9	3	56.9	56.7		.0	.0		.0	.0		.0	.0	4	48.2	52.9
so		3	50.2	51.0	2	56.8	55.5		.0	.0		.0	.0		.0	.0	3	50.2	51.0
ss		1	42.0	58.6	1	57.1	59.3		.0	.0		.0	.0		.0	.0	1	42.0	58.6
STATES:																			
AR		5	68.8	73.4	3	58.1	58.0		.0	.0	2	52.5	61.5		.0	.0	3	79.7	81.3
FL	*	1	53.4	38.2	1	58.7	57.4		.0	.0		.0	.0		.0	.0	1	53.4	38.2
GA		1	76.2	91.8	1	54.9	53.5		.0	.0		.0	.0		.0	.0	1	76.2	91.8
IL		10	61.7	65.4	3	61.4	60.1	2	66.5	72.5	3	58.3	55.7	2	52.5	54.0	3	68.0	78.1
IN	*	14	63.5	62.9	5	57.0	55.4	4	72.0	67.8	3	58.0	60.7	5	53.3	53.0	2	80.2	81.5
KS	*	1	39.5	22.5	1	56.9	52.8		.0	.0		.0	.0		.0	.0	1	39.5	22.5
MD		1	98.0	101.0	1	57.0	57.0		.0	.0		.0	.0		.0	.0	1	98.0	101.0
MO		2	35.5	37.0	1	57.6	54.9		.0	.0	1	37.0	42.0		.0	.0	1	33.9	31.9
NC	*	1	114.0	98.0	1	57.1	56.8		.0	.0		.0	.0		.0	.0	1	114.0	98.0
OH		8	66.4	69.1	2	57.9	56.5	1	63.0	55.0	2	68.5	75.5	2	50.0	52.5	3	77.2	80.6
TX		2	31.5	40.8	1	57.1	59.3		.0	.0		.0	.0		.0	.0	2	31.5	40.8
VA	*	1	79.2	73.9	1	57.8	55.3		.0	.0		.0	.0		.0	.0	1	79.2	73.9
ALL					21	57.9	56.7												

THIS DATA REPRESENTS ALL DATA AVAILABLE IN SRWW REGION FROM PUBLIC AND PRIVATE TRIALS, DATING BACK TO 1989

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9300293

Variety Descriptors

Factors supporting area of adaptation:

Yield data summary is attached comparing ABI 88M-3143 to Cardinal.
Varieties are tested and evaluated for yield, agronomic traits, and disease reactions in AgriPro and university trials grown over several years and locations. Milling and baking qualities are evaluated by AgriPro and the USDA Soft Wheat Quality Laboratory. Hessian fly reactions were determined by the USDA Hessian Fly Laboratory. Stem rust reactions were determined by the USDA Wheat Rust Laboratory.

Trait	ABI 88M-3143	Cardinal	
Test weight (lb/bu)	58	57	
Heading date (Julian)	139	139	
Height (in)	37	40	
Baking	C	B	
Milling	B	C	
Winter survival	2	3	(scale 1-9; 1=best)
Lodging	3	3	
Septoria complex	4	4	
Soil borne virus	3	1	
Leaf rust	2	4	
Powdery mildew	2	2	
Rhizoctonia	3	6	
Hessian fly	good	fair	
Resistant to biotyes	C,GP,E,B,D	C,GP	
Susceptible to biotypes	L	E,B,D,L	
Stem rust resistance	SR 5, 17, +	None	