No. 200400008

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Montana Agricultural Experiment Station

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 PURPOSE , OR CONDITIONING IT [illegible]R PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR [illegible]RENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN [illegible]TED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED S[illegible]2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, [illegible]ED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Outlook'

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 fourteenth day of June, in the year two thousand and four.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

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

Form Approved - OMB No. 0581-0055

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: Montana Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME: MT9874

3. VARIETY NAME: Outlook

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*:
202 Linfield Hall
Montana State University
Bozeman MT 50717

5. TELEPHONE *(include area code)*: 406 994 3683

6. FAX *(include area code)*: 406 994 6579

FOR OFFICIAL USE ONLY

PVPO NUMBER: 200400008

FILING DATE: October 10, 2003

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*: Experiment Station

8. IF INCORPORATED, GIVE STATE OF INCORPORATION:

9. DATE OF INCORPORATION:

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Luther Talbert
Plant Sciences and Plant Pathology
Montana State University
Bozeman MT 59717

FEES RECEIVED

FILING AND EXAMINATION FEES: $ 3652.00 DATE 10/10/2003

CERTIFICATION FEE: $ 432.00 DATE 5/17/2004

11. TELEPHONE *(include area code)*: 406 994-5060

12. FAX *(include area code)*: 406 994 1848

13. E_MAIL: usslt@montana.edu

14. CROP KIND *(Common Name)*: wheat

15. GENUS AND SPECIES NAME OF CROP: Triticum aestivum

16. FAMILY NAME *(Botanical)*: Triticeae

17. IS THE VARIETY A FIRST GENERATION HYBRID? ☐ YES ☒ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of Variety
d. ☒ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☒ Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(a) of the Plant Variety Protection Act)*
☒ YES *(If "yes", answer items 20 and 21 below)* ☐ NO *(If "no," go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

22. 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?
☐ YES ☒ 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.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☒ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety will be 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.

SIGNATURE OF OWNER: [signature]

SIGNATURE OF OWNER:

NAME *(Please print or type)*: JEFF JACOBSEN

NAME *(Please print or type)*:

CAPACITY OR TITLE: INTERIM DEPAN + DIRECTOR

DATE: 9/23/03

CAPACITY OR TITLE:

DATE:

PVP application section 18A-Origin and Breeding History

'Outlook' (PI 632252) is a hard red spring wheat (*Triticum aestivum* L.) developed by the Montana Agricultural Experiment Station and released in 2003 to the Montana Foundation Seed Program. Outlook is targeted for production in all areas of Montana based on its resistance to the Russian wheat aphid *(Diuraphis noxia* (Mordvilko)), high yield potential, and good bread-baking characteristics.

Outlook was derived as an F_4 plant selection from the cross PI 372129/2*'Amidon' (PI 527682)//MT7810/MT7926 . PI 372129 is resistant to the Russian wheat aphid due to the presence of resistance gene *Dn4* (Nkonglolo et al., 1991). MT 7810 ('Tezanos Pintos Precos'/'Sonora 64'//'Fortuna' (PI 13596)) was a sister line to 'Glenman' (McNeal et al., 1985). MT 7926 was derived from the cross ND 681/ MT 6830. MT 6830 has the pedigree 'Sheridan' (CI 13586)//CI 13253/*'Centana' (CI 12974). ND 681 was an experimental line from North Dakota State University of unknown pedigree.

The breeding procedure for Outlook included two generations of single seed descent with no selection, and subsequent evaluation for height, maturity, and vigor in space-planted F_4 rows. F_5 head rows were evaluated for height, maturity, grain protein, apparent yield potential, and resistance to the Russian wheat aphid. Selected rows were entered into a single row yield trial in Bozeman, and evaluated for yield potential, grain protein, and dough mixing properties. Superior lines from this nursery, including Outlook, were entered into state-wide yield trials.

Breeder seed was developed by selection for uniformity among 400 head rows. Approximately 300 selected head rows were subsequently grown as four row plots in Bozeman, and aberrant types were discarded. Remaining head rows were bulked to form breeder seed for Outlook.

Outlook has been observed to be uniform and stable over several generations of testing. The exception is that a variant with white chaff and mature plant color occurs at a frequency of 0.03%.

PVP application section 18B-Statement of Distinction

Outlook differs from most hard red spring wheat varieties grown in Montana due to a red plant and chaff color at maturity. **McNeal spring wheat is the variety that most closely resembles Outlook.** McNeal spring wheat has a similar coloration, and is approximately the same height as Outlook. However, Outlook and McNeal differ by reaction to the Russian wheat aphid. Outlook is resistant and McNeal is susceptible.
Outlook has resistance to the Russian wheat aphid based on greenhouse evaluations conducted by S. Haley at Colorado State University in 2000 and 2001. Based on a scoring system of 1 (resistant) to 5 (susceptible), Outlook had an average score of 2.3 compared to an average score of 5.0 for the susceptible McNeal ($P < 0.05$ based on a two-tailed t-test). Outlook also did not display symptoms in a naturally occurring Russian wheat aphid infestation under field conditions at Moccasin, MT in 2000.
Outlook contains the dominant microsatellite marker *gwm106* which is approximately 7 cM from *Dn4* (Liu et al., 2002). McNeal does not contain this marker.

Liu, X. M., C. M. Smith, and B. S. Gill. 2002. Identification of microsatellite markers linked to Russian wheat aphid resistance genes *Dn4* and *Dn6*. Theor. Appl. Genet. 104:1042-1048.

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

Form Approved - OMB No. 0581-0055

Public reporting burden for this collection of information is estimated to average 30 minutes 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. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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

EXHIBIT C
(*Wheat*)

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

NAME OF APPLICANT(S) Montana Agricultural Experiment Station	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or RD No., City, State, and Zip Code) 202 Linfield Hall Montana State University Bozeman MT 59717	PVPO NUMBER 20040008 VARIETY NAME TEMPORARY OR EXPERIMENTAL DESIGNATION

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:

[1] 1=Common 2=Durum 3=Club 4=Other (SPECIFY): _____

2. VERNALIZATION:

[1] 1=Spring 2=Winter 3=Other (SPECIFY): _____

3. COLEOPTILE ANTHOCYANIN:

[1] 1=Absent 2=Present

4. JUVENILE PLANT GROWTH:

[1] 1=Prostrate 2=Semi-erect 3=Erect

5. PLANT COLOR (boot stage):

[2] 1 = Yellow-Green 2 = Green 3 = Blue-Green

6. FLAG LEAF (boot stage):

[1] 1 = Erect 2 = Recurved [1] 1 = Not Twisted 2 = Twisted

7. EAR EMERGENCE:

[0.5] Number of Days Earlier Than Lew *

[0.5] Number of Days Later Than McNeal *

8. ANTHER COLOR:

[1] 1 = Yellow 2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

[0 6] cm Taller Than Newana *

[0 9] cm Shorter Than Amidon *

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

10. STEM:

A. ANTHOCYANIN

[1] 1= Absent 2=Present

B. WAXY BLOOM

[1] 1=Absent 2=Present

C. HAIRINESS (last internode of rachis)

[1] 1=Absent 2=Present

D. INTERNODE (SPECIFY NUMBER)

[1] 1= Hollow 2=Semi-solid 3=Solid

E. PEDUNCLE

[2] 1=Absent 2=Present

[28] cm Length

11. HEAD (at Maturity):

A. DENSITY

[2] 1=Lax 2=Middense 3= Dense

B. SHAPE

[1] 1 = Tapering 2= Strap 3 = Clavate 4 = Other (SPECIFY): _____

C. CURVATURE

[1] 1 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

[4] 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

[ ] 1 = White 2 = Tan 3 = Other (SPECIFY) : Red

B. SHOULDER

[1] 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

C. BEAK

[3] 1 = Obtuse 2 = Acute 3 =Acuminate

D. LENGTH

[3] 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

5

12. GLUMES (at Maturity) *Continued*:

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E. WIDTH

[3] 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)
3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

[1] 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

[2] 1=Rounded 2=Angular

C. BRUSH

[1] 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

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

E. Color

[3] 1=White 2= Amber 3= Red
4= OTHER (Specify)

F. TEXTURE

[1] 1=Hard 2=Soft

G. PHENOL REACTION *(see instructions)*:

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

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[2] Stem Rust *(Puccinia graminis* f. sp. *tritici)*
(mixture of races from E. MT)

[0] Stripe Rust *(Puccinia striiformis)*

[0] Tan Spot *(Pyrenophora tritici-repentis)*

[0] Halo Spot *(Selenophoma donacis)*

[3] *Septoria nodorum* (Glume Blotch)

[0] *Septoria avenae* (Speckled Leaf Disease)

[0] *Septoria tritici* (Speckled Leaf Blotch)

[1] Scab (*Fusarium* spp.)

[0] Leaf Rust *(Puccinia recondita* f. sp. *tritici)*

[0] Loose Smut *(Ustilago tritici)*

[0] Flag Smut *(Urocystis agropyri)*

[0] Common Bunt *(Tilletia tritici* or *T. laevis)*

[0] Dwarf Bunt *(Tilletia controversa)*

[0] Karnal Bunt *(Tilletia indica)*

[0] Powdery Mildew *(Erysiphe graminis* f. sp. *tritici)*

[0] "Snow Molds"

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14. Disease *(Continued)* (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant) 20040008

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

0	"Black Point" (Kernel Smudge)	0	Common Root Rot *(Fusarium, Cochliobolus* and *Bipolaris* spp.*)*
0	Barley Yellow Dwarf Virus (BYDV)	0	Rhizoctonia Root Rot *(Rhizoctonia solani)*
0	Soilborne Mosaic Virus (SBMV)	0	Black Chaff *(Xanthomonas campestris* pv. *translucens)*
0	Wheat Yellow (Spindle Streak) Mosaic Virus	0	Bacterial Leaf Blight *(Pseudomonas syringae* pv. *syringae)*
1	Wheat Streak Mosaic Virus (WSMV)		Other (SPECIFY)
	Other (SPECIFY)		Other (SPECIFY)
	Other (SPECIFY)		Other (SPECIFY)
	Other (SPECIFY)		Other (SPECIFY)

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

0	Hessian Fly *(Mayetiola destructor)*		Other (SPECIFY)
1	Stem Sawfly *(Cephus* spp.)		Other (SPECIFY)
0	Cereal Leaf Beetle *(Oulema melanopa)*		Other (SPECIFY)
2	Russian Aphid *(Diuraphis noxia*		Other (SPECIFY)
0	Greenbug *(Schizaphis graminum)*		Other (SPECIFY)
0	Aphids		Other (SPECIFY)

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

7

PVP application section 18D-Additional Description

Tables 1-7 present data comparing Outlook to other commonly grown hard red spring wheat varieties.

Table 1.

PAIRED T-TEST RESULTS

(1999-2001 all locations)

GRAIN YIELD (BU/AC)

REFERENCE MEAN: MCNEAL 70.7 (N= 29)

ID	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
THATCHER	58.3	29	-12.4	-7.0	.000
FORTUNA	59.2	29	-11.5	-5.6	.000
LEW	60.2	29	-10.5	-5.6	.000
NEWANA	69.5	29	-1.2	-1.1	.270
HI-LINE	66.3	29	-4.4	-4.3	.000
AMIDON	68.3	29	-2.4	-2.0	.053
ERNEST	66.3	29	-4.4	-3.5	.002
SCHOLAR	68.1	29	-2.6	-1.6	.113
WESTBRED926	67.4	29	-3.3	-2.2	.034
Conan	62.7	29	-8.0	-5.2	.000
Reeder	72.6	29	1.9	1.5	.145
MT 9806	71.6	29	.9	.6	.565
OUTLOOK	72.8	29	2.1	1.8	.084

TEST WEIGHT (LB/BU)

REFERENCE MEAN: MCNEAL 59.8 (N= 29)

ID	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
THATCHER	58.5	29	-1.3	-5.1	.000
FORTUNA	60.5	29	.7	2.2	.037
LEW	60.7	29	.9	3.9	.000
NEWANA	59.8	29	-.1	-.2	.805
HI-LINE	59.9	29	.1	.4	.682
AMIDON	60.2	29	.4	1.7	.096
ERNEST	61.1	29	1.3	7.6	.000
SCHOLAR	61.1	29	1.2	5.2	.000
WESTBRED 926	59.6	29	-.3	-1.3	.216
Conan	60.5	29	.7	3.0	.006
Reeder	61.1	29	1.2	5.5	.000
MT 9806	60.3	29	.5	2.0	.060
OUTLOOK	59.4	29	-.5	-3.3	.003

HEADING DATE (JULIAN DAYS; 175= JUNE 24)

REFERENCE MEAN: MCNEAL 174.7 (N= 29)

ID	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
THATCHER	176.0	29	1.2	5.3	.000
FORTUNA	173.1	29	-1.6	-8.5	.000
LEW	175.8	29	1.1	5.3	.000
NEWANA	175.7	29	.9	4.9	.000
HI-LINE	171.5	29	-3.2	-15.3	.000
AMIDON	173.5	29	-1.2	-5.8	.000
ERNEST	173.3	29	-1.5	-6.3	.000
SCHOLAR	174.5	29	-.2	-1.0	.344
WESTBRED 926	170.0	29	-4.8	-13.8	.000
Conan	172.2	29	-2.5	-10.2	.000
Reeder	172.2	29	-2.6	-9.6	.000
MT 9806	173.2	29	-1.5	-6.6	.000
OUTLOOK	175.4	29	.6	3.2	.003

PLANT HEIGHT (INCHES)
REFERENCE MEAN: MCNEAL 31.8 (N= 29)

ID	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
THATCHER	39.0	29	7.2	17.8	.000
FORTUNA	36.3	29	4.5	9.9	.000
LEW	36.6	29	4.8	11.7	.000
NEWANA	29.9	29	-1.9	-6.7	.000
HI-LINE	29.7	29	-2.1	-7.1	.000
AMIDON	36.1	29	4.3	10.5	.000
ERNEST	35.6	29	3.8	11.2	.000
SCHOLAR	34.4	29	2.6	7.3	.000
WESTBRED 926	29.5	29	-2.3	-8.6	.000
Conan	29.8	29	-2.1	-7.2	.000
Reeder	32.3	29	.5	1.7	.096
MT 9806	31.3	29	-.5	-1.8	.083
OUTLOOK	32.3	29	.5	2.2	.037

GRAIN PROTEIN (%)
REFERENCE MEAN: MCNEAL 15.0 (N= 28)

ID	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
THATCHER	15.4	28	.4	2.7	.011
FORTUNA	15.1	28	.0	.2	.831
LEW	15.0	28	-.0	-.2	.876
NEWANA	14.4	27	-.7	-5.3	.000
HI-LINE	15.3	28	.3	1.6	.118
AMIDON	15.1	28	.1	.4	.719
ERNEST	15.9	28	.9	7.1	.000
SCHOLAR	15.5	28	.5	3.5	.001
WESTBRED 926	15.4	28	.3	3.0	.006
Conan	15.2	28	.2	1.2	.255
Reeder	15.3	28	.3	1.9	.063
MT 9806	15.8	28	.8	4.5	.000
OUTLOOK	14.8	28	-.2	-1.7	.100

Table 1. 1999-2001 GRAIN YIELD (BU/AC) SUMMARY FOR OUTLOOK COMPARED TO OTHER VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

	DISTRICT 1 - KALISPELL				DISTRICT 2 - BOZEMAN IRRIGATED				DISTRICT 2 - BOZEMAN DRYLAND			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	119.8	123.3	121.5	121.5	103.8	87.4	92.0	94.4	63.0	66.6	78.2	69.3
THATCHER	103.5	110.7	115.6	109.9	83.6	63.9	64.4	70.6	54.0	54.4	60.9	56.4
FORTUNA	96.6	111.9	106.8	105.1	91.7	52.7	73.5	72.6	64.8	65.1	69.0	66.3
LEW	99.0	121.1	116.4	112.2	95.8	65.8	73.2	78.2	60.8	63.3	69.1	64.4
NEWANA	122.3	126.3	130.0	126.2	108.4	92.0	87.6	96.0	64.0	64.5	72.9	67.1
HI-LINE	113.7	120.9	116.6	117.0	100.4	87.3	85.6	91.1	66.0	67.7	82.3	72.0
AMIDON	110.7	121.7	125.5	119.3	95.7	84.9	76.1	85.6	65.1	66.8	75.1	69.0
ERNEST	108.2	118.7	120.4	115.8	90.8	75.2	78.5	81.5	63.9	65.8	77.3	69.0
SCHOLAR	117.1	122.2	138.6	126.0	95.5	84.6	81.1	87.0	65.8	70.0	74.9	70.2
WESTBRED 926	106.3	128.3	142.1	125.6	104.4	65.4	80.2	83.3	69.8	69.7	72.9	70.8
Conan	99.6	114.8	104.3	106.2	91.8	71.0	80.1	81.0	62.5	65.3	73.6	67.1
Reeder	111.1	118.1	138.0	122.4	94.0	72.8	90.5	85.8	72.7	72.3	80.1	75.0
MT 9806	122.9	123.2	149.7	131.9	91.0	85.6	88.3	88.3	67.5	71.2	76.2	71.6
OUTLOOK	113.3	124.6	142.5	126.8	106.0	83.9	92.7	94.2	69.4	77.1	80.2	75.6
AVERAGE	110.3	120.4	126.3	119.0	96.6	76.6	81.7	85.0	65.0	67.1	74.5	68.9
C.V. (%)				5.76				7.68				3.29
LSD (.05)				11.52				10.95				3.79

	DISTRICT 3 - HUNTLEY DRYLAND				DISTRICT 3 - HUNTLEY IRRIGATED			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	40.8	53.4	35.6	43.3	130.1	90.5	110.6	110.4
THATCHER	31.1	48.9	35.4	38.5	98.3	81.7	106.8	95.6
FORTUNA	38.5	41.9	25.4	35.3	92.7	93.2	99.2	95.0
LEW	33.1	48.0	33.9	38.3	91.1	86.7	99.3	92.4
NEWANA	36.4	46.2	35.0	39.2	122.7	96.1	112.4	110.4
HI-LINE	37.5	57.2	29.0	41.3	117.1	89.7	107.2	104.6
AMIDON	34.6	49.6	34.5	39.6	132.3	92.2	123.9	116.1
ERNEST	34.1	42.8	30.9	35.9	118.7	103.3	114.8	112.3
SCHOLAR	36.4	47.5	32.4	38.8	112.5	101.8	121.1	111.8
WESTBRED 926	39.9	54.1	22.9	39.0	119.7	89.7	103.6	104.3
Conan	38.7	41.7	26.3	35.6	95.5	91.0	101.5	96.0
Reeder	45.5	48.6	32.7	42.3	123.9	96.5	116.0	112.1
MT 9806	38.4	55.3	30.8	41.5	121.0	102.5	121.5	115.0
OUTLOOK	40.0	58.8	29.3	42.7	125.1	99.7	117.0	113.9
AVERAGE	37.5	49.6	31.0	39.4	114.3	93.9	111.1	106.4
C.V. (%)				11.30				6.58
LSD (.05)				7.47				11.74

2004 0000 8

Table 2. 1999-2001 GRAIN YIELD (BU/AC) SUMMARY FOR OUTLOOK COMPARED TO OTHER VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

	DISTRICT 4 - MOCCASIN			DISTRICT 5 - HAVRE DRYLAND				DISTRICT 5 - CONRAD DRYLAND			
ID	1999	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	48.9	47.5	48.2	49.2	40.2	18.9	36.1	61.7	38.8	13.4	37.95
THATCHER	38.9	35.0	36.9	32.5	30.4	18.4	27.1	53.4	33.4	14.4	33.75
FORTUNA	42.8	40.4	41.6	35.9	35.9	16.7	29.5	57.7	39.2	14.1	37.01
LEW	41.6	36.8	39.2	37.2	35.5	17.9	30.2	45.9	38.7	16.1	33.58
NEWANA	42.4	38.7	40.5	45.9	35.6	21.5	34.4	64.4	46.3	15.1	41.92
HI-LINE	46.5	38.0	42.2	45.3	37.6	19.7	34.2	59.3	39.1	12.7	37.03
AMIDON	44.1	43.4	43.8	40.4	35.9	22.2	32.8	50.9	35.6	16.1	34.2
ERNEST	41.8	34.3	38.0	39.9	37.3	19.6	32.3	55.3	37.5	16.6	36.49
SCHOLAR	46.2	39.9	43.1	42.2	38.5	21.0	33.9	51.5	44.8	16.5	37.58
WESTBRED 926	44.5	38.1	41.3	41.9	38.0	18.7	32.9	59.8	46.5	13.0	39.76
Conan	37.4	40.3	38.9	47.8	36.0	20.4	34.8	55.2	42.6	15.1	37.63
Reeder	48.7	43.6	46.2	49.1	43.3	22.5	38.3	61.5	47.6	17.1	42.05
MT 9806	44.6	42.0	43.3	46.3	35.7	20.0	34.0	53.9	42.2	13.5	36.5
OUTLOOK	46.0	42.3	44.1	44.1	41.0	22.9	36.0	54.8	44.4	15.2	38.14
AVERAGE	43.9	40.0	42.0	42.7	37.2	20.0	33.3	56.1	41.2	14.9	37.4
C.V. (%)			5.00				7.79				9.55
LSD (.05)			4.53				4.36				5.99

	DISTRICT 6- SIDNEY DRYLAND				DISTRICT 6 - SIDNEY IRRIGATED			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	54.4	60.3	48.2	54.3	87.9	101.6	62.6	84.0
THATCHER	46.2	51.4	51.0	49.5	54.8	76.2	41.4	57.5
FORTUNA	49.1	54.4	40.1	47.9	62.4	78.3	28.2	56.3
LEW	46.1	55.3	44.0	48.5	54.2	77.7	42.2	58.1
NEWANA	55.7	61.9	53.0	56.9	79.0	89.6	48.6	72.4
HI-LINE	48.6	54.1	39.0	47.3	71.4	87.6	46.5	68.5
AMIDON	61.0	60.6	50.8	57.5	85.9	99.5	45.0	76.8
ERNEST	54.4	56.1	51.1	53.9	90.4	99.7	45.2	78.5
SCHOLAR	59.5	56.1	51.6	55.7	71.1	90.8	45.1	69.0
WESTBRED 926	54.1	58.4	46.3	52.9	81.4	91.2	52.4	75.0
Conan	51.7	51.0	44.4	49.0	81.0	80.3	56.7	72.7
Reeder	65.3	67.4	54.3	62.3	95.5	111.1	66.8	91.2
MT 9806	59.7	58.1	57.5	58.5	83.4	101.8	71.2	85.5
OUTLOOK	59.8	63.4	54.8	59.3	85.4	109.9	66.9	87.4
AVERAGE	54.7	57.7	49.0	53.8	77.4	92.5	51.4	73.8
C.V. (%)				5.54				8.18
LSD (.05)				5.00				10.12

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Table 3. 1999-2001 TEST WEIGHT (LB/BU) SUMMARY FOR OUTLOOK COMPARED TO OTHER VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

	DISTRICT 1 - KALISPELL				DISTRICT 2 - BOZEMAN IRRIGATED				DISTRICT 2 - BOZEMAN DRYLAND			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	62.0	62.3	62.5	62.3	62.2	61.8	61.7	61.9	60.4	60.0	59.3	59.8
THATCHER	61.7	60.9	62.0	61.5	62.2	59.3	61.0	60.8	55.6	58.0	58.2	57.3
FORTUNA	62.7	63.0	64.3	63.3	63.5	62.0	63.6	63.0	61.9	61.9	61.7	61.9
LEW	62.9	63.9	64.0	63.6	64.3	62.6	62.3	63.1	60.8	61.3	61.8	61.2
NEWANA	61.8	62.9	61.8	62.2	62.1	60.4	59.7	60.7	58.5	59.2	57.8	57.9
HI-LINE	62.3	62.9	63.4	62.9	63.2	62.6	62.3	62.7	59.6	59.8	61.1	60.4
AMIDON	62.2	62.2	62.9	62.5	62.4	61.3	61.7	61.8	58.7	60.4	60.0	59.7
ERNEST	63.5	63.4	64.2	63.7	63.5	62.2	62.6	62.8	59.5	61.7	61.1	60.6
SCHOLAR	63.1	62.7	61.6	62.5	63.4	61.8	62.1	62.4	60.6	60.7	60.6	60.6
WESTBRED 926	61.4	62.8	62.6	62.3	62.6	61.3	59.0	61.0	58.1	59.7	58.9	58.4
Conan	61.3	62.3	62.5	62.0	62.1	61.4	61.3	61.6	60.2	61.0	60.3	60.4
Reeder	63.0	62.7	61.7	62.5	62.9	61.9	62.7	62.5	61.0	61.7	60.7	61.1
MT 9806	62.6	63.1	62.4	62.7	62.7	62.0	62.3	62.3	60.8	60.5	59.7	60.2
OUTLOOK	61.5	61.7	61.9	61.7	61.4	61.0	60.6	61.0	58.7	59.3	59.2	58.9
AVERAGE	62.3	62.6	62.7	62.5	62.8	61.5	61.6	62	59.6	60.4	60	59.9
C.V. (%)				0.89				1.27				1.07
LSD (.05)				0.94				1.32				1.08

	DISTRICT 3 - HUNTLEY DRYLAND				DISTRICT 3 - HUNTLEY IRRIGATED			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	53.9	57.1	59.6	56.9	63.9	59.2	61.9	61.7
THATCHER	51.4	57.1	60.0	56.2	61.9	57.0	62.5	60.4
FORTUNA	57.6	59.0	58.9	58.5	64.0	61.3	61.9	62.4
LEW	53.0	59.7	61.2	58.0	63.2	61.8	63.3	62.8
NEWANA	53.9	58.3	60.9	57.7	63.6	59.7	62.2	61.8
HI-LINE	51.7	57.8	59.9	56.5	64.0	61.1	61.8	62.3
AMIDON	56.8	58.7	60.1	58.5	61.4	61.3	62.5	61.7
ERNEST	56.1	59.7	60.5	58.8	63.5	60.5	63.1	62.4
SCHOLAR	57.8	60.2	60.9	59.6	63.3	61.4	63.2	62.6
WESTBRED 926	53.8	58.6	59.8	57.4	63.4	59.2	62.0	61.5
Conan	55.0	58.6	60.4	58.0	62.3	59.9	62.3	61.5
Reeder	56.7	59.4	60.9	59.0	63.3	61.2	63.5	62.7
MT 9806	52.8	59.3	60.7	57.6	59.2	60.6	63.0	60.9
OUTLOOK	53.3	57.8	60.3	57.1	62.4	60.4	61.9	61.6
AVERAGE	54.6	58.7	60.3	57.8	62.8	60.3	62.5	61.9
C.V. (%)				2.08				1.73
LSD (.05)				2.02				1.79

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Table 3. 1999-2001 TEST WEIGHT (LB/BU) SUMMARY FOR OUTLOOK COMPARED TO OTHER VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

	DISTRICT 4 - MOCCASIN			DISTRICT 5 - HAVRE DRYLAND				DISTRICT 5 - CONRAD DRYLAND			
ID	1999	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	55.1	58.3	56.7	56.6	57.4	57.7	57.2	61.1	58.1	60.2	59.8
THATCHER	55.3	59.6	57.4	53.8	55.9	55.5	55.1	59.6	56.3	58.7	58.2
FORTUNA	57.9	58.6	58.2	57.9	59.2	57.2	58.1	61.6	59.8	60.6	60.7
LEW	58.8	58.7	58.8	57.0	58.5	58.1	57.9	58.6	59.1	60.9	59.5
NEWANA	57.5	55.0	56.2	55.0	57.7	59.6	57.4	62.2	59.9	62.7	61.6
HI-LINE	56.1	58.1	57.1	57.1	56.0	56.4	56.5	60.2	58.7	60.9	59.9
AMIDON	58.0	58.7	58.3	57.0	59.1	57.7	57.9	59.3	58.7	61.3	59.8
ERNEST	58.8	58.6	58.7	57.4	59.7	58.0	58.4	62.1	59.8	62.3	61.4
SCHOLAR	59.9	58.4	59.1	58.1	60.7	59.4	59.4	61.5	60.0	62.3	61.3
WESTBRED 926	56.6	58.1	57.4	56.6	56.5	58.3	57.1	60.4	58.3	62.3	60.3
Conan	59.0	58.6	58.8	58.2	59.4	59.5	59.0	61.7	59.7	62.5	61.3
Reeder	59.9	57.7	58.8	58.6	60.1	58.2	59.0	61.9	60.5	62.5	61.6
MT 9806	58.2	57.7	57.9	57.5	57.8	57.4	57.6	61.3	58.9	61.8	60.7
OUTLOOK	54.9	56.6	55.8	56.6	56.9	56.9	56.8	61.3	57.1	60.8	59.7
AVERAGE	57.6	58.0	57.8	57.0	58.2	57.8	57.7	60.9	58.9	61.4	60.4
C.V. (%)			2.32				1.52				1.18
LSD (.05)			2.97				1.47				1.20

	DISTRICT 6 - SIDNEY DRYLAND				DISTRICT 6 - SIDNEY IRRIGATED			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	60.8	61.4	60.0	60.7	61.2	61.1	58.1	60.1
THATCHER	59.7	61.4	59.0	60.0	57.3	59.9	57.2	58.1
FORTUNA	62.0	61.4	58.5	60.6	59.6	61.4	52.4	57.8
LEW	62.2	63.1	60.7	62.0	60.3	60.8	58.6	59.9
NEWANA	61.2	62.2	60.3	61.2	60.1	59.6	57.2	59.0
HI-LINE	61.8	62.4	60.4	61.5	59.9	60.2	55.6	58.5
AMIDON	61.5	61.7	60.0	61.1	61.8	60.7	57.8	60.1
ERNEST	62.7	63.1	60.6	62.1	62.5	62.3	59.0	61.3
SCHOLAR	61.8	63.0	61.3	62.0	61.3	60.9	59.3	60.5
WESTBRED 926	61.7	61.2	58.4	60.4	60.2	59.1	56.6	58.7
Conan	62.3	62.0	60.7	61.7	60.9	59.1	59.9	60.0
Reeder	62.3	62.0	60.9	61.7	62.9	60.6	59.4	61.0
MT 9806	61.7	62.5	61.0	61.7	61.4	60.2	60.1	60.6
OUTLOOK	60.8	61.0	59.8	60.6	60.5	59.1	57.8	59.1
AVERAGE	61.6	62.0	60.1	61.2	60.7	60.4	57.8	59.6
C.V. (%)				0.87				2.16
LSD (.05)				0.89				2.16

2004 0008

Table 4. 1999-2001 HEADING DATE (JULIAN DAYS; 175= JUNE 24) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEAT VARIETIES GROWN ACROSS MONTANA

(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

ID	DISTRICT 1 - KALISPELL				DISTRICT 2 - BOZEMAN IRRIGATED				DISTRICT 2 - BOZEMAN DRYLAND			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	176	172	177	175	183	179	178	180	183	180	176	180
THATCHER	179	176	176	177	183	180	179	181	185	180	178	181
FORTUNA	175	173	175	175	182	178	176	179	182	177	174	178
LEW	179	175	177	177	183	181	179	181	186	180	176	181
NEWANA	178	175	176	176	185	180	179	181	186	180	178	181
HI-LINE	172	171	174	172	179	176	175	177	180	175	172	176
AMIDON	177	173	176	176	181	177	175	178	182	177	175	178
ERNEST	176	172	175	175	180	177	175	177	182	178	175	178
SCHOLAR	177	173	176	176	182	178	177	179	184	179	175	179
WESTBRED 926	171	165	173	169	179	174	173	175	181	174	172	176
Conan	173	170	175	172	180	177	175	177	182	176	173	177
Reeder	174	172	174	173	181	175	175	177	182	177	174	178
MT 9806	175	172	176	174	181	177	177	178	182	177	173	177
OUTLOOK	179	174	179	177	182	181	180	181	183	181	177	180
AVERAGE	176	172	176	175	182	178	177	179	183	178	175	179
C.V. (%)				0.68				0.78				0.43
LSD (.05)				1.99				2.33				1.29

ID	DISTRICT 3 - HUNTLEY DRYLAND				DISTRICT 3 - HUNTLEY IRRIGATED			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	171	166	162	166	169	163	169	167
THATCHER	171	165	163	167	171	162	168	167
FORTUNA	169	164	160	165	167	160	168	165
LEW	172	166	163	167	171	162	170	168
NEWANA	171	168	163	167	169	162	170	167
HI-LINE	167	162	158	162	166	158	165	163
AMIDON	170	164	160	165	169	161	167	166
ERNEST	171	165	161	166	169	160	167	165
SCHOLAR	171	164	161	165	171	159	167	166
WESTBRED 926	165	159	157	160	165	155	162	161
Conan	167	162	159	163	167	158	165	163
Reeder	167	161	159	162	167	159	163	163
MT 9806	170	163	160	164	170	159	167	165
OUTLOOK	171	166	162	166	171	163	168	167
AVERAGE	169	164	161	165	169	160	167	165
C.V. (%)				0.36				0.64
LSD (.05)				0.99				1.76

2004 0000 8

Table 4. 1999-2001 HEADING DATE (JULIAN DAYS; 175= JUNE 24) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEAT VARIETIES GROWN ACROSS MONTANA

(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

ID	DISTRICT 4 - MOCCASIN			DISTRICT 5 - HAVRE DRYLAND				DISTRICT 5 - CONRAD DRYLAND			
	1999	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	186	179	183	174	177	175	175	183	179	176	179
THATCHER	188	181	184	175	179	177	177	185	181	178	181
FORTUNA	184	175	180	174	174	173	174	182	179	174	178
LEW	188	180	184	175	179	175	176	184	181	175	180
NEWANA	187	180	184	175	178	175	176	183	179	176	179
HI-LINE	182	177	180	174	173	173	173	181	177	173	177
AMIDON	185	177	181	174	175	175	175	183	178	175	179
ERNEST	184	177	180	176	173	174	174	182	179	175	179
SCHOLAR	186	179	183	175	175	176	175	185	180	176	180
WESTBRED 926	181	176	179	174	172	172	173	181	174	173	176
Conan	183	178	180	175	173	175	174	181	178	174	178
Reeder	184	176	180	175	173	173	174	182	178	174	178
MT 9806	185	178	181	175	174	174	174	182	179	175	179
OUTLOOK	187	180	183	175	176	174	175	183	179	176	179
AVERAGE	185	178	182	175	175	174	175	183	179	175	179
C.V. (%)			0.43				0.70				0.40
LSD (.05)			1.67				2.05				1.21

ID	DISTRICT 6 - SIDNEY DRYLAND				DISTRICT 6 - SIDNEY IRRIGATED			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	172	168	175	172	172	165	182	173
THATCHER	173	169	176	173	174	167	184	175
FORTUNA	170	165	173	169	172	162	181	171
LEW	174	169	176	173	173	166	184	174
NEWANA	173	169	176	173	174	165	184	174
HI-LINE	168	164	172	168	169	160	180	170
AMIDON	171	166	175	171	172	163	181	172
ERNEST	170	165	173	170	170	162	180	171
SCHOLAR	173	168	175	172	172	163	183	173
WESTBRED 926	166	161	170	166	167	160	178	168
Conan	169	164	173	169	171	162	181	171
Reeder	169	164	174	169	169	161	180	170
MT 9806	170	164	174	170	172	162	180	172
OUTLOOK	173	169	175	172	174	165	182	174
AVERAGE	171	166	174	170	172	163	181	172
C.V. (%)				0.34				0.36
LSD (.05)				0.97				1.04

2004 0008

Table 5. 1999-2001 PLANT HEIGHT (IN.) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEAT VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

ID	DISTRICT 1 - KALISPELL				DISTRICT 2 - BOZEMAN IRRIGATED				DISTRICT 2 - BOZEMAN DRYLAND			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	38.7	32.4	33.4	34.8	38.7	39.1	34.5	37.4	33.6	35.3	33.2	34.0
THATCHER	45.9	42.6	39.4	42.6	46.7	47.5	43.8	46.0	41.9	44.7	41.3	42.6
FORTUNA	39.4	41.0	38.5	39.6	43.9	45.6	38.3	42.6	41.8	42.4	37.5	40.6
LEW	40.6	40.0	41.1	40.6	43.7	44.1	41.3	43.1	40.2	42.2	38.5	40.3
NEWANA	35.4	30.7	30.6	32.3	35.7	36.0	32.8	34.9	30.9	33.3	31.0	31.7
HI-LINE	36.1	30.4	31.6	32.7	36.2	35.3	29.9	33.8	33.5	33.4	28.9	31.9
AMIDON	42.9	38.2	39.4	40.2	41.4	43.1	40.2	41.6	38.5	42.2	37.6	39.4
ERNEST	41.9	36.9	38.2	39.0	42.4	42.7	41.2	42.1	38.2	42.0	36.9	39.0
SCHOLAR	40.0	35.5	35.6	37.1	40.8	41.9	38.1	40.2	37.5	38.6	36.4	37.5
WESTBRED 926	35.1	30.2	32.0	32.4	36.3	35.5	30.6	34.1	32.5	32.3	30.0	31.6
Conan	35.6	29.9	31.8	32.4	34.7	36.0	31.9	34.2	31.6	33.7	30.3	31.8
Reeder	39.7	32.2	35.5	35.8	38.9	39.4	34.7	37.7	36.6	37.7	31.6	35.3
MT 9806	36.3	31.4	32.8	33.5	37.1	37.5	33.8	36.1	33.1	34.7	31.7	33.2
OUTLOOK	37.7	33.2	33.7	34.9	37.7	40.2	35.9	37.9	32.0	36.2	32.2	33.5
AVERAGE	38.9	34.6	35.3	36.3	39.6	40.3	36.2	38.7	35.9	37.8	34.1	35.9
C.V. (%)				3.78				5.72				2.86
LSD (.05)				2.30				3.71				1.72

ID	DISTRICT 3 - HUNTLEY DRYLAND				DISTRICT 3 - HUNTLEY IRRIGATED			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	30.9	31.2	22.9	28.3	37.3	34.1	34.4	35.3
THATCHER	39.7	38.3	31.1	36.3	45.9	43.1	41.6	43.5
FORTUNA	39.0	35.8	25.8	33.5	39.8	39.7	41.9	40.5
LEW	33.3	35.9	28.1	32.4	42.5	37.8	40.2	40.2
NEWANA	26.2	26.5	24.5	25.7	34.6	32.5	33.6	33.6
HI-LINE	30.0	28.2	21.1	26.5	33.4	30.9	32.4	32.2
AMIDON	36.6	34.6	24.1	31.8	43.6	37.2	40.8	40.6
ERNEST	34.5	35.8	26.1	32.1	39.8	39.8	40.8	40.1
SCHOLAR	34.4	33.7	24.6	30.9	40.9	36.3	38.6	38.6
WESTBRED 926	31.2	29.5	19.1	26.6	34.3	29.6	32.2	32.0
Conan	28.4	27.6	19.7	25.2	33.8	32.2	31.5	32.5
Reeder	32.5	31.0	20.8	28.1	36.6	33.7	35.6	35.3
MT 9806	31.7	29.2	24.4	28.4	36.1	33.9	30.8	33.6
OUTLOOK	31.0	31.8	25.8	29.5	39.3	35.0	36.1	36.8
AVERAGE	32.8	32.1	24.2	29.7	38.4	35.4	36.5	36.8
C.V. (%)				5.97				3.53
LSD (.05)				2.97				2.18

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Table 5. 1999-2001 PLANT HEIGHT (IN.) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEAT VARIETIES GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

ID	DISTRICT 4 - MOCCASIN			DISTRICT 5 - HAVRE DRYLAND				DISTRICT 5 - CONRAD DRYLAND			
	1999	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	32.9	31.3	32.1	29.5	30.7	18.2	26.1	33.0	29.0	21.0	27.7
THATCHER	40.0	35.5	37.8	39.2	32.4	20.0	30.5	40.0	37.0	26.0	34.3
FORTUNA	35.8	34.0	34.9	37.1	32.8	19.4	29.8	38.0	36.0	23.0	32.3
LEW	37.1	36.4	36.7	39.0	33.4	20.3	30.9	37.0	34.0	21.0	30.7
NEWANA	28.8	29.9	29.4	30.3	27.2	19.5	25.6	31.0	28.0	19.0	26.0
HI-LINE	31.3	30.3	30.8	31.8	27.3	18.1	25.7	34.0	27.0	19.0	26.7
AMIDON	36.7	34.6	35.7	36.4	32.1	19.1	29.2	38.0	33.0	22.0	31.0
ERNEST	35.1	33.2	34.2	36.4	32.1	20.1	29.5	38.0	34.0	22.0	31.3
SCHOLAR	33.4	31.9	32.7	36.1	31.7	19.1	29.0	39.0	32.0	21.0	30.7
WESTBRED 926	30.6	28.0	29.3	29.0	28.3	18.2	25.2	32.0	28.0	20.0	26.7
Conan	30.2	33.4	31.8	30.5	27.8	17.5	25.3	33.0	29.0	20.0	27.3
Reeder	33.3	30.8	32.1	34.7	30.2	19.1	28.0	35.0	29.0	20.0	28.0
MT 9806	32.6	30.4	31.5	32.5	29.7	19.6	27.2	34.0	30.0	21.0	28.3
OUTLOOK	32.2	30.6	31.4	32.9	28.5	19.3	26.9	33.0	30.0	22.0	28.3
AVERAGE	33.6	32.2	32.9	34.0	30.3	19.1	27.8	35.4	31.1	21.2	29.2
C.V. (%)			3.84				5.83				4.40
LSD (.05)			2.73				2.72				2.16

ID	DISTRICT 6 - SIDNEY DRYLAND				DISTRICT 6 - SIDNEY IRRIGATED			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	29.6	28.9	27.9	28.8	37.9	36.5	26.5	33.6
THATCHER	40.0	36.1	35.8	37.3	42.7	42.0	32.0	38.9
FORTUNA	36.2	33.2	30.5	33.3	38.2	37.7	31.9	35.9
LEW	37.6	35.3	32.5	35.1	38.3	39.7	31.8	36.6
NEWANA	28.3	28.1	26.8	27.7	35.9	34.3	25.7	32.0
HI-LINE	28.1	27.3	25.5	27.0	33.5	32.2	24.5	30.1
AMIDON	38.8	32.4	31.5	34.2	40.4	37.1	34.3	37.2
ERNEST	33.5	32.0	31.3	32.3	38.1	37.6	32.0	35.9
SCHOLAR	35.9	31.9	31.5	33.1	36.8	35.2	30.0	34.0
WESTBRED 926	28.6	26.8	22.8	26.1	34.1	31.8	26.0	30.6
Conan	28.8	26.4	23.9	26.4	35.3	32.5	26.0	31.3
Reeder	31.1	28.2	26.7	28.7	38.3	35.9	28.5	34.2
MT 9806	31.1	29.1	26.9	29.0	35.7	34.2	27.4	32.5
OUTLOOK	31.4	30.1	28.0	29.8	37.7	36.6	27.5	34.0
AVERAGE	32.8	30.4	28.7	30.6	37.4	36.0	28.9	34.1
C.V. (%)				3.47				3.55
LSD (.05)				1.78				2.03

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Table 6. 1999-2001 GRAIN PROTEIN (%) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEATS GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

	DISTRICT 1 - KALISPELL			DISTRICT 2 - BOZEMAN IRRIGATED				DISTRICT 2 - BOZEMAN DRYLAND			
ID	1999	2000	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	13.5	15.4	14.5	14.0	14.9	15.6	14.8	16.2	15.7	14.7	15.5
THATCHER	13.6	14.9	14.3	13.2	15.7	15.3	14.7	17.7	16.7	15.7	16.7
FORTUNA	13.0	15.3	14.2	14.2	15.3	14.7	14.7	15.8	15.9	14.3	15.3
LEW	13.4	14.4	13.9	13.3	14.4	15.0	14.2	16.3	15.0	14.8	15.4
NEWANA	12.1	14.1	13.1	12.1	13.5	14.1	13.2	16.3	15.0	14.6	15.3
HI-LINE	12.7	15.5	14.1	13.9	14.5	14.3	14.2	15.8	15.7	14.7	15.4
AMIDON	13.7	15.1	14.4	14.5	15.3	14.8	14.9	16.4	15.9	14.6	15.6
ERNEST	13.7	15.9	14.8	15.4	16.7	15.7	15.9	17.1	16.4	15.2	16.2
SCHOLAR	14.0	15.6	14.8	13.9	15.4	15.4	14.9	17.0	16.5	15.4	16.3
WESTBRED 926	13.4	15.2	14.3	13.3	15.0	15.3	14.5	16.4	16.1	14.6	15.7
Conan	13.2	15.3	14.3	14.2	15.5	14.6	14.8	16.2	16.3	14.8	15.8
Reeder	13.8	15.8	14.8	13.8	15.3	16.0	15.0	16.5	16.3	15.3	16.0
MT 9806	13.5	15.1	14.3	15.5	15.6	15.6	15.6	16.9	16.2	16.0	16.4
OUTLOOK	12.9	14.6	13.8	13.8	14.1	15.1	14.3	15.8	14.5	14.6	15.0
AVERAGE	13.3	15.2	14.2	13.9	15.1	15.1	14.7	16.5	15.9	15.0	15.8
C.V. (%)			2.27				4.10				2.07
LSD (.05)			0.70				1.01				0.55

	DISTRICT 3 - HUNTLEY DRYLAND				DISTRICT 3 - HUNTLEY IRRIGATED			
ID	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	18.1	18.0	14.9	17.0	15.1	14.8	13.5	14.5
THATCHER	18.9	17.8	14.9	17.2	15.2	16.8	14.9	15.6
FORTUNA	16.7	17.9	15.1	16.6	14.9	15.3	14.8	15.0
LEW	18.4	17.8	13.6	16.6	14.9	13.7	13.9	14.2
NEWANA	17.2	17.7	15.4	16.8	13.2	14.9	12.8	13.6
HI-LINE	17.8	17.7	17.0	17.5	14.1	13.8	14.9	14.3
AMIDON	17.9	17.2	15.7	16.9	14.8	13.9	14.4	14.4
ERNEST	18.6	18.0	16.0	17.5	15.3	16.8	13.8	15.3
SCHOLAR	19.1	17.6	15.7	17.5	14.9	15.5	14.0	14.8
WESTBRED 926	18.2	17.6	15.9	17.2	14.6	15.1	14.8	14.8
Conan	17.9	16.4	17.0	17.1	14.0	15.4	14.9	14.8
Reeder	17.2	17.1	17.2	17.2	14.8	15.4	13.8	14.7
MT 9806	18.4	17.8	15.9	17.4	14.5	15.1	13.4	14.3
OUTLOOK	17.8	16.5	13.7	16.0	14.5	14.2	13.8	14.2
AVERAGE	18.0	17.5	15.6	17.0	14.6	15.1	14.1	14.6
C.V. (%)				4.85				4.61
LSD (.05)				1.39				1.13

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Table 6. 1999-2001 GRAIN PROTEIN (%) SUMMARY FOR OUTLOOK COMPARED TO OTHER SPRING WHEATS GROWN ACROSS MONTANA
(C.V.'s and LSD's are derived from the combined analysis of years at each location seperately)

ID	DISTRICT 4 - MOCCASIN			DISTRICT 5 - HAVRE DRYLAND				DISTRICT 5 - CONRAD DRYLAND			
	1999	2001	AVERAGE	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	16.1	16.2	16.2	15.9	15.7	17.0	16.2	12.4	14.5	14.8	13.9
THATCHER	16.8	17.2	17.0	16.6	17.6	17.8	17.3	11.9	15.4	13.9	13.7
FORTUNA	15.4	16.4	15.9	14.5	15.6	16.6	15.6	13.2	15.0	15.3	14.5
LEW	15.4	18.3	16.9	16.0	16.2	17.3	16.5	12.9	14.7	14.6	14.1
NEWANA	15.8	16.2	16.0	15.1	15.7	16.3	15.7	12.0	14.3	14.7	13.7
HI-LINE	16.3	18.4	17.4	16.0	17.9	17.8	17.2	12.5	15.3	16.5	14.8
AMIDON	15.2	17.7	16.5	14.0	15.4	16.6	15.3	13.0	14.8	15.2	14.3
ERNEST	16.1	18.0	17.1	16.3	16.8	18.5	17.2	12.7	16.0	15.2	14.6
SCHOLAR	15.5	19.3	17.4	15.5	15.6	17.8	16.3	12.9	14.8	15.1	14.3
WESTBRED 926	16.4	18.1	17.3	15.8	16.4	17.1	16.4	13.3	15.6	15.4	14.8
Conan	16.3	16.8	16.6	14.8	16.1	17.1	16.0	12.9	14.6	15.3	14.3
Reeder	15.2	17.0	16.1	16.5	15.5	17.0	16.3	12.9	14.1	14.3	13.8
MT 9806	16.2	18.6	17.4	16.1	17.5	19.0	17.5	14.6	15.1	17.1	15.6
OUTLOOK	15.4	16.9	16.2	14.9	16.5	16.7	16.0	12.7	14.5	14.8	14.0
AVERAGE	15.9	17.5	16.7	15.6	16.3	17.3	16.4	12.9	14.9	15.2	14.3
C.V. (%)			4.56				3.04				3.64
LSD (.05)			1.64				0.84				0.87

ID	DISTRICT 6 - SIDNEY DRYLAND				DISTRICT 6 - SIDNEY IRRIGATED			
	1999	2000	2001	AVERAGE	1999	2000	2001	AVERAGE
MCNEAL	12.2	13.4	14.7	13.4	13.5	14.1	16.1	14.6
THATCHER	12.4	13.1	14.2	13.2	13.4	13.9	17.0	14.8
FORTUNA	12.6	13.1	15.1	13.6	14.7	14.3	16.8	15.3
LEW	12.1	13.3	14.4	13.3	14.8	14.8	16.7	15.4
NEWANA	11.9	12.7	0.0	12.9	12.4	13.8	14.8	13.7
HI-LINE	13.0	13.6	14.8	13.8	13.8	14.9	15.9	14.9
AMIDON	13.5	14.0	14.3	13.9	13.9	15.1	15.6	14.9
ERNEST	14.3	14.5	15.8	14.9	14.3	15.4	16.4	15.4
SCHOLAR	12.8	14.9	15.1	14.3	13.6	14.9	16.4	15.0
WESTBRED 926	12.2	14.4	14.8	13.8	14.2	14.6	16.6	15.1
Conan	12.7	14.2	15.2	14.0	14.0	14.7	15.4	14.7
Reeder	12.0	14.1	15.6	13.9	13.8	15.4	16.4	15.2
MT 9806	13.4	15.3	14.9	14.5	14.4	15.2	15.5	15.0
OUTLOOK	12.9	14.3	15.2	14.1	13.6	15.1	15.5	14.7
AVERAGE	12.7	13.9	14.9	13.9	13.9	14.7	16.1	14.9
C.V. (%)				3.60				3.28
LSD (.05)				1.04				0.82

2004000 8

Table 7. 1999-2000 (9 LOCATIONS) MILLING AND BAKING SUMMARY FOR OUTLOOK COMPARED TO SELECTED SPRING WHEATS GROWN IN THE ADVANCED SPRING WHEAT NURSERY ACROSS MONTANA

VARIETY	FLOUR PROTEIN %	FLOUR YIELD %	FLOUR ASH %	MIXOGRAPH ABSORPTION %	MIXOGRAPH TIME (MIN.)	BAKE ABSORPTION %	BAKE MIX TIME (MIN.)	LOAF VOLUME (CC.)
FORTUNA	12.3	69.4	0.43	61.3	2.9	71.4	4.3	1023
HI-LINE	12.3	63.5	0.42	61.7	4.3	73.0	7.7	1122
MCNEAL	11.9	66.2	0.41	61.9	4.9	73.8	9.0	1060
AMIDON	12.5	69.2	0.43	62.3	3.0	71.8	4.4	1060
ERNEST	13.0	68.5	0.40	63.0	3.4	73.0	7.2	1101
WESTBRED 926	12.3	66.9	0.44	61.5	3.8	71.6	5.7	1075
SCHOLAR	12.5	69.5	0.44	62.2	2.7	71.9	3.8	1030
REEDER	12.7	67.2	0.37	61.7	2.9	71.8	4.2	1051
OUTLOOK	12.2	68.3	0.42	61.8	3.2	72.3	4.7	1053
NURSERY AVG.	12.1	66.7	0.42	61.2	3.7	71.8	5.6	1061

2004008

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AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

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 APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Montana Agricultural Experiment Station	MT 9874	Outlook

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	5. TELEPHONE *(include area code)*	6. FAX *(include area code)*
202 Linfield Hall Montana State University Bozeman MT 59717	406 994-3683	406 994-6579
	7. PVPO NUMBER 20040008	

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

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country

MAH 04/06/2004

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

a. If 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 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 *(if needed, use reverse for extra space)*:

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of 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 final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are 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 compete this information collection is estimated to average 10 minutes 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.

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