No. 200300350

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Cereal Research Centre - Agriculture and Agri-Food Canada

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 [illegible]ORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible] PURPOSE , OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE [illegible] OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PR[illegible] BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SH[illegible] SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBE[illegible]NERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Snowbird'

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 twenty-sixth day of July, in the year two thousand and five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

[illegible] 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: Cereal Research Centre - Agriculture and Agri-Food Canada
MH 12-8-2004

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME: BW 264

3. VARIETY NAME: Snowbird

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*: 195 Dafoe Rd. Winnipeg, Manitoba Canada R3T 2M9

5. TELEPHONE *(include area code)*: (204) 984-5707

6. FAX *(include area code)*: (204) 984-0797

FOR OFFICIAL USE ONLY

PVPO NUMBER: 200300350

FILING DATE: September 29, 2003

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*: Branch of a Department of the Canadian Gov't

8. IF INCORPORATED, GIVE STATE OF INCORPORATION: NA

9. DATE OF INCORPORATION:

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Quality Assured Seeds Inc.
418B McDonald St.
Regina, Saskatchewan Canada
S4N 6E1

FEES RECEIVED
FILING AND EXAMINATION FEES: $ 3652.00 DATE 9/29/2003
CERTIFICATION FEE: $ 432.00 DATE 6/14/2005

11. TELEPHONE *(include area code)*: (306) 791-0500

12. FAX *(include area code)*: (306) 791-0555

13. E-MAIL: bandrew@qas-online.com

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

15. GENUS AND SPECIES NAME OF CROP:

16. FAMILY NAME *(Botanical)*: triticum acstivum

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

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (*OPTIONAL*) ☐ YES ☑ NO
IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____

19. 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 ($3,652), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. 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 21 and 22 below)* ☐ NO *(If "no", go to item 23)*

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☑ YES ☐ NO
IF YES, WHICH CLASSES? [3] FOUNDATION [2] REGISTERED [1] CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☑ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
[3] FOUNDATION [2] REGISTERED [1] CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

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?
☐ 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.)*

24. 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.)*

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.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
Brian Andrew			
NAME *(Please print or type)*		NAME *(Please print or type)*	
Brian Andrew		Brian Andrew	
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Portfolio Manager - Cereals	Sept 19/03	Portfolio Manager - Cereals	

(See reverse for instructions and information collection burden statement)

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ST-470 (04-03) designed by the Plant Variety Protection Office using Word 2002.

NSTRUCTIONS

2003 0035 0

GENERAL: 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; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties 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; (4) check drawn on a U.S. bank for $3,652 ($432 filing fee and $3,220 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. 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 check payable to "Treasurer of the United States" in the amount of $432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 http://www.ams.usda.gov/lsg/seed.htm.

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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 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.)*

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).)*

Canada/2000-04-20/Application # 00-2207/Plant Breeders Rights

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.)*

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, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (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 USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

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Exhibit A. Origin and Breeding of Snowbird (BW 264)

BW 264 was selected from the cross of a white seeded isogenic line of RL4237*6//Thatcher/Poso48, where Poso48 is the source of white seed color. The final cross was made in 1994 at the Agriculture and Agri-Food Canada Cereal Research Center, Winnipeg. Doubled Haploid lines were produced using the maize pollination procedure from F1 plants. Double haploid lines were grown in a disease/dormancy nursery in 1996, and 30 lines were entered into the Hard White B test in 1997 and one of these was designated RL 4871 and entered into the Central Bread Wheat Cooperative test in 1998 as BW 264. The breeder lines derive from heads taken at random from a third generation increase plot. These were grown in isolation as rows at Glenlea in 1998, as plots at Lincoln, New Zealand 1998/99 and again as plots in Indian Head in 1999.

Snowbird has been reproduced and judged stable for the past eight generations. Three generations in Western Canadian Co-op Trials for variety registration and five generations of Pedigreed seed production. Snowbird is uniform for all traits as described in Exhibit C (Objective Description of Variety). Snowbird shows no variants other that that would normally be expected due to environment.

The line RL4236 should in fact read 'RL4137'. RL4137 is a hard red spring wheat breeding line developed at the Cereal Research Centre of Agriculture and Agri-Food Canada around 1960. RL4137 has the parentage: Frontana/3/McMurachy/Exchange/3/2*Regent/Canus/5/Thatcher*6/Kenya Farmer which indicates it is cross between a Thatcher derivative and a Frontana derivative. RL4137 is present in the pedigrees of many Canadian varieties (i.e. Columbus, AC Domain, AC Majestic, Harvest) because of its excellent preharvest sprouting resistance.

F1- Selection for plants with white seed coat alleles.
DH1 – Selection for lines resistant to leaf rust, stem rust, acceptable maturity and plant height, resistance to lodging, strong straw, adequate preharvest resistance.
DH2 - Selection for lines resistant to leaf rust, stem rust, appropriate maturity, strong straw, grain yield.
DH3 – Entered in western Canadian registration trial.

Exhibit B (Statement of Distinctness)

Snowbird, the candidate variety, was compared to two reference varieties, AC Domain (R1) and AC Barrie (R2). Testing was conducted at two Canadian locations over a two-year period: Indian Head, SK in 2000 and Glenlea, MB in 2001. The following characteristics are most useful in distinguishing Snowbird from the reference varieties:

Heading (number of days from planting to 50 percent of heads fully emerged from boot) [2001/2000]

	Snowbird (CV)	AC Domain (R1)	AC Barrie (R2)
No. of days	48/74	48/74	50/75

Height (cm) – (stem, plus spike, including awns)

	Snowbird	AC Domain	AC Barrie
Mean – 2000 Mean - 2001	96.5 94	91.3 91	95.5 90
Range	86 – 100	87 – 94	84 – 96
Standard deviation	3.4	2.0	3.4
No. Measured	20	20	20

Spike: length (cm) – (excluding awns and awnlets – use first tiller)

	Snowbird	AC Domain	AC Barrie
Mean – 2000 Mean - 2001	7.0 7.2	7.5 6.7	8.0 7.5
Range	6.5 – 7.7	5.9 – 7.5	6.7 – 8.6
Standard deviation	0.43	0.47	0.53
No. Measured	10	10	10

Kernel: type

		Snowbird	AC Domain	AC Barrie
Soft white	1	3	4	4
Soft red	2			
Hard white	3			
Hard red	4			
Other	5			

The degree of resemblance between Snowbird and the varieties AC Domain and AC Barrie depends on the characteristic being considered. Nevertheles, in the field, Snowbird most closely resembles AC Barrie except that Snowbird has white seeds and AC Barrie is a red seeded wheat.

Kernel: Colour

		Snowbird	AC Domain	AC Barrie
White	1	1	5	3 – 5
Light red	2			
Medium Red	3			
Dark Red	4			
Amber	5			
Purple	6			
Other	7			

In summary, the distinguishing features are:

- ✓ Snowbird is earlier heading than AC Barrie.
- ✓ Snowbird is taller than AC Domain and AC Barrie.
- ✓ Snowbird has a shorter spike than AC Barrie.
- ✓ Snowbird has a hard white kernel; AC Domain and AC Barrie have hard red kernels.
- ✓ Snowbird is a white seeded wheat; AC Domain is amber seeded; AC Barrie is medium red to amber seeded.

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 val 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.

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Exhibit C

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

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

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
Agriculture & Agri-Food Canada	BW264	Snowbird
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)		[redacted]
195 Dafoe Rd., Winnipeg, Manitoba, Canada R3T 2M9		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:

[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:

[3] 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)

[2] 1 = Erect 2 = Recurved
[2] 1 = Not Twisted 2 = Twisted
[2] 1 = Wax Absent 2 = Wax Present

7. EAR EMERGENCE:

[0][4][8] Number of Days (Average)
[0][1] Number of Days Earlier Than * AC Barrie
Same As * AC Domain
[ ][ ] Number of Days Later Than * _____

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

8. ANTHER COLOR:

[1] 1 = Yellow 2 = Purple

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

[0 9 7] cm (Average)

[0 1] cm Taller Than AC Barrie *

Same As _____ *

[ ] cm Shorter Than _____ *

10. STEM:

A. ANTHOCYANIN

[1] 1 = Absent 2 = Present

B. WAXY BLOOM

[2] 1 = Absent 2 = Present

C. HAIRINESS (last internode of rachis)

[1] 1 = Absent 2 = Present

D. INTERNODE

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

[ ] Number of Nodes

E. PEDUNCLE

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

[ ] cm Length

F. AURICLE

[1] Anthocyanin 1 = Absent 2 = Present

[1] Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

A. DENSITY

[2]
1 = Lax
2 = Middense (Laxidense)
3 = Dense

B. SHAPE

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

C. CURVATURE

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

D. AWNEDNESS

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

12. GLUMES: (At Maturity)

A. COLOR

[1]
1 = White
2 = Tan
3 = Other (Specify) _____

B. SHOULDER

[3]
1 = Wanting 2 = Oblique
3 = Rounded 4 = Square
5 = Elevated 6 = Apiculate
7 = Other (Specify) _____

C. SHOULDER WIDTH

[2]
1 = Narrow
2 = Medium
3 = Wide

D. BEAK

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

E. BEAK WIDTH

[2]
1 = Narrow
2 = Medium
3 = Wide

F. GLUME LENGTH

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

G. WIDTH

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

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13. SEED:

A. SHAPE

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

B. CHEEK

[1] 1 = Rounded
2 = Angular

C. BRUSH

[2] 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

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

F. TEXTURE

[1] 1 = Hard
2 = Soft
3 = Other (Specify) _____

G. PHENOL REACTION (See Instructions)

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

H. SEED WEIGHT

[32] g/1000 Seed (Whole number only)

I. GERM SIZE

[2] 1 = Small
2 = Midsize
3 = Large

---

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

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[4]	Stem Rust (*Puccinia graminis* f. sp. *tritici*)	[2]	Leaf Rust (*Puccinia recondita* f. sp. *tritici*)
[0]	Stripe Rust (*Puccinia striiformis*)	[4]	Loose Smut (*Ustilago tritici*)
[1]	Tan Spot (*Pyrenophora tritici-repentis*)	[0]	Flag Smut (*Urocystis agropyri*)
[0]	Helo Spot (*Selenophoma donacis*)	[3]	Common Bunt (*Tilletia tritici* or *T. laevis*)
[1]	*Septoria nodorum* (Glume Blotch)	[0]	Dwarf Bunt (*Tilletia controversa*)
[0]	*Septoria avenae* (Speckled Leaf Disease)	[0]	Karnal Bunt (*Tilletia indica*)
[1]	*Septoria tritici* (Speckled Leaf Blotch)	[1]	Powdery Mildew (*Erisiphe graminis* f. sp. *tritici*)
[3]	Scab (*Fusarium* spp.)	[0]	"Snow Molds"
[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*)
[0]	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) _____
[0]	Stem Sawfly (*Cephus* spp.)	[ ]	Other (Specify) _____
[0]	Cereal Leaf Beetle (*Oulema melanopa*)	[ ]	Other (Specify) _____

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

PLEASE SPECIFY BIOTYPE (Where Needed)

0	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:

WHEAT DESCRIPTOR ILLUSTRATIONS

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

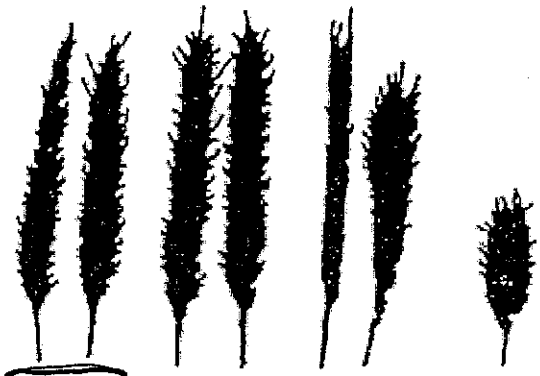
4. EARLY PLANT GROWTH HABIT:

1 Prostrate | 2 Intermediate | **3 Erect**

10. STEM INTERNODE X-SECTION:

1 Hollow | 2 Semi-solid | 3 Solid

11. SPIKE SHAPE:

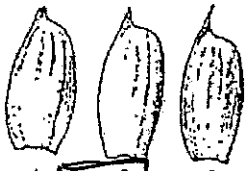


1 Tapering | 2 Oblong | 3 Clavate | 4 Elliptical

11. AWNEDNESS:

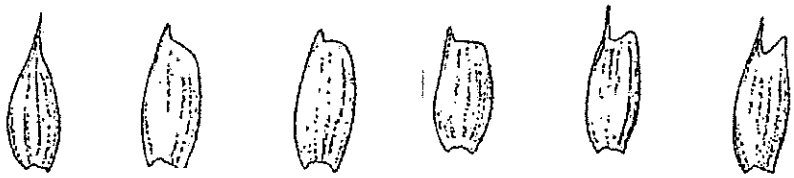
1 Awnless | **2 Apically Awnleted** | 3 Awnleted | 4 Awned

12. BEAK SHAPE:



1 Obtuse | **2 Acute** | 3 Acuminate

12. SHOULDER SHAPE:



1 Wanting | **2 Oblique** | 3 Rounded | 4 Square | 5 Elevated | 6 Apiculate

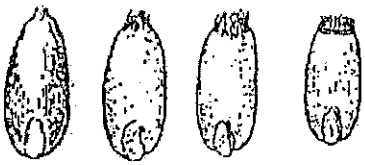
13. SEED SHAPE:

1 Ovate | **2 Oval** | 3 Elliptical

13. CHEEK SHAPE:

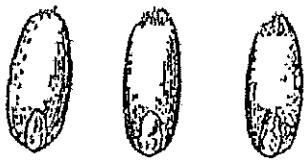
1 Rounded | 2 Angular

13. BRUSH SIZE



1 Small | **2 Midsized** | 3 Large | 4 Collared

13. BRUSH HAIR LENGTH:



1 Short | **2 Medium** | 3 Long

13. GERM (EMBRYO) SIZE:

1 Small | **2 Midsized** | 3 Large

13. SEED CREASE WIDTH:

1 Narrow | **2 Mid-wide** | 3 Wide

13. SEED CREASE DEPTH:

1 Shallow | **2 Mid-Deep** | 3 Deep

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Summary of Snowbird Quality data. (Quality evaluations were determine by the Grain Research Laboratory on composite samples from the Central Bı

Grain Quality

NAME	BW_KEY	ENTRY	CHECK	Test Weight (kg/hl)	Seed Mass (mg)	Grain Protein (%)	Flour Protein (%)	Protein Loss on Milling (%)	Falling Number (sec)	Amylograph
Neepawa	BW 2	1		80.333	32.133	14.500	13.667	0.833	395.00	608.33
Roblin	BW 92	2		79.800	34.767	15.300	14.600	0.700	338.33	428.33
AC Majestic	BW 173	3		80.867	33.333	14.667	14.000	0.667	431.67	1041.67
McKenzie	BW 205	4		81.900	33.633	14.433	13.700	0.733	395.00	691.67
AC Barrie	BW 661	5		81.933	34.667	14.267	13.533	0.733	400.00	698.33
Snowbird	**BW 264**	**7**		**81.533**	**34.100**	**14.267**	**13.633**	**0.633**	**408.33**	**1066.67**
GRAND MEAN				81.061	33.772	14.572	13.856	0.717	394.722	755.833
CHECK MEAN				80.967	33.707	14.633	13.900	0.733	392.000	693.666
CV				0.586	2.437	1.118	1.084	8.056	8.02	14.12
LSD				0.532	0.922	0.183	0.168	0.065	35.47	119.59

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(1998-2000) using AACC approved methods).

				Farinograph				Bread Making [Canadian Short Process (CPS)]			
KJ_Colour	AG_Colour	SDMEG	Particle Size Index (%)	Flour Absorption	Dough Development Time (min)	MTI	Stability (min)	Loaf Volume (ml)	Appearance	Crumb Structure	Crumb Colour
-2.250	77.33	6.300	55.33	65.867	4.4167	33.33	6.5000	1146.67	8.000	5.933	7.93
-2.000	75.00	5.200	58.33	66.400	7.5833	21.67	17.0000	1150.00	7.733	6.167	8.03
-2.150	75.00	6.333	53.33	66.933	5.0833	36.67	6.3333	1115.00	7.800	6.100	8.16
-2.150	75.67	7.133	51.00	67.400	5.0833	36.67	7.0000	1071.67	7.700	6.100	8.06
-2.300	78.00	6.233	55.00	63.833	5.6667	36.67	9.3333	1115.00	7.667	6.233	8.03
-2.550	**79.33**	**6.233**	**55.33**	**66.200**	**5.4167**	**35.00**	**7.3333**	**1073.33**	**7.400**	**6.033**	**8.06**
-2.233	76.722	6.239	54.720	66.106	5.542	33.335	8.917	1111.945	7.717	6.094	8.05
-2.170	76.200	6.240	54.598	66.087	5.567	33.002	9.233	1119.668	7.780	6.107	8.04
-10.405	2.24	3.933	1.79	0.955	7.2274	8.22	22.4766	1.71	2.049	2.518	1.57
0.343	1.93	0.275	1.10	0.707	0.4487	3.07	2.2454	21.35	0.177	0.172	0.14

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BW264
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Snowbird
compile

PBRO

Plant Breeders' Rights Office

WHEAT
OBJECTIVE
DESCRIPTION

***Triticum* L.**

To be completed in connection with an application for Plant Breeders' Rights. Completed forms are to be returned to:

The Commissioner of Plant Breeders' Rights
59 Camelot Drive
Nepean, Ontario, Canada
K1A 0Y9

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03 SEP 29 P2:48

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A. THE OBJECTIVE DESCRIPTION FORM

1. The objective description form lists characteristics to be used as the basis for developing the description of wheat varieties. It is recommended that the form be completed in as much detail as possible to ensure that an accurate description of the variety is on record.

2. The form must be completed as part of the examination requirements for Plant Breeders' Rights. The description of the variety will be published in the *Plant Varieties Journal*.

3. Information on this document may be accessible or protected as required under the provisions of the Access to Information Act. Information that could cause you or your organization injury if released is protected from disclosure as defined in Section 20 of the Access to Information Act.

B. TEST GUIDELINES

1. The objective description form must be completed based on tests and trials conducted in Canada by the applicant in order to show that the candidate variety is distinct, uniform and stable.

2. The PBRO recommends the use of the UPOV (International Union for the Protection of New Varieties of Plants) test guidelines for wheat (see Appendix I).

3. Protocols used for the trials (e.g. plot size, no. of replications, no. of plants, plant spacing) and any statistical data that may be necessary to support the description should be attached to the present form. The location of the trial site from which data is collected must be clearly indicated.

4. Observations for both the candidate and reference varieties must be taken from plants grown at the same site under the same conditions. A minimum of two growing seasons of tests and trials is required.

5. It is recommended that the breeder retain the raw data (e.g. leaf measurements) in the event that the data are required by the PBRO to verify test results. If raw data are not available, the breeder may be required to do further trials.

C. REFERENCE VARIETIES

1. Candidate varieties must be compared to the most similar variety(ies) presently grown in Canada. If there is also another similar candidate variety(ies), and/or another similar foreign variety(ies), these varieties must also be used for comparison. The applicant selects the reference varieties and must describe them concurrently by the same characteristics used for the candidate variety. In the case of crops requiring registration under the Seeds Act, at least one of the reference varieties must be a registered variety.

D. CHARACTERISTICS

1. To assess distinctness the characteristics described in the objective description should be used. Additional characteristics will be accepted (please attach to the back of the form).

2. All characteristics used to describe the candidate variety must be described for all reference varieties. Both the candidate variety and the reference variety(ies) must be described for all

characteristics designated on the form with an asterisk (*). Optional characteristics should also be described to ensure that a complete description of the variety is on record.

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3. A rating system of 1-9 provides a scale for describing most characteristics in this form. To rate characteristics select a value that best corresponds to the state indicated. Characteristics may be rated with intermediate values where the characteristic grades gradually from one extreme to another. For example, where the states for a characteristic are described as: small(3), medium(5), large(7), other values of 1, 2, 4, 6, 8 or 9 may be selected.

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4. Each characteristic on this form has been arranged in a table format allowing the candidate variety (CV) and up to four reference varieties (R1 to R4) to be described (if additional reference varieties are used, another form may be attached).

5. Each characteristic must be described for two years of observation. A rating (1-9) must be given for each year, or a measurement including the standard deviation should be described for both years. An overall summary should be presented as an average of both years.

E. PHOTOGRAPHS

1. Applicants must submit comparative photographs of characteristics which clearly demonstrate that the candidate variety is distinct from the reference variety(ies). For example, the photographs may compare leaf shapes, flower colour, or fruit shape. Macro photography may be required to illustrate small details such as pubescence, petal spotting, or stamen and anther characteristics.

2. The photographs must be based on plant material from the tests and trials used to complete this form.

3. The photographs should be submitted in print format. Both the candidate and reference varieties should be in the same frame of the photograph.

4. The candidate and reference varieties should be clearly labelled in the photographs. Where suitable, photographs taken indoors should be against a grey-neutral background. Photographs taken outdoors should be taken on an overcast day, not in full sun.

F. LEGEND

(*) Characteristics which must always be included when completing the objective description form, except when the state of expression of a preceding characteristic renders this impossible.

(+) See methods and illustrations in Appendix II.

CV Candidate variety

R1-R4 Reference varieties

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G. WHEAT OBJECTIVE DESCRIPTION

(i) Name and address of the person completing this form:

DR GAVIN HUMPHREYS
CEREAL RESEARCH CENTRE, MAFC
195 DAFOE RD
WINNIPEG MB, R3T 2M9

(ii) Reference varieties: In the table below fill out the denomination of the reference variety(ies) which will be used when describing the candidate variety.

REFERENCE VARIETIES

R1	R2	R3	R4
AC DOMAIN	AC BARRIE		

(iii) Testing location: Indicate the location(s) and year(s) of variety testing. If more than one location was used, indicate the characteristics (objective description numbers) and corresponding location.

INDIAN HEAD, SK, 2000
GLENLEA MB, 2001

iv) Describe the protocols used for the tests and trials (plot size, number of plants, number of replications, plant spacing, etc.)

2001 PLOT SIZE 5 ROW PLOT, 14 ft. long, 6" spacing
12" between plots. 2.25 m² harvested area
EXPERIMENT: 10 ENTRIES, 4 REPS RCBD
2000 Plot Size 30 OR 50 m row, 4 rows per entry, 23 cm between rows
Seeding Rate: 6-7.5g/row per 10m.

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1.0 CLASSIFICATION (*)

1.1 Botanical name : Genus: *Triticum* RECEIVED USDA-ARS-PVPO

Species: aestivum

Subspecies: '03 SEP 29 P2:48

1.2 Kind of wheat (check box) :

- [x] 1. common
- [ ] 2. durum
- [ ] 3. other (specify) _____

1.3 Denomination : proposed variety name : SNOWBIRD

2.0 SEASONAL TYPE (*)

		CV	R1	R2	R3	R4
spring	1	1	1	1		
winter	2					
other (specify)_____	3					

3.0 CHARACTERISTICS OF SEEDLINGS (4-leaf stage)

3.1 Coleoptile : intensity of anthocyanin colouration (+)

absent or very weak	1					
weak	3					
medium	5					
strong	7					
very strong	9					

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3.2 Pubescence of sheaths of lower leaves

		CV	R1	R2	R3	R4
glabrous	1	2	2	2		
pubescent	9					

3.3 Pubescence on blades of lower leaves

glabrous	1	2	2	2		
pubescent	9					

4.0 PLANTS CHARACTERISTICS (Observe these charateristics at booting stage unless otherwise indicated)

4.1 Growth habit (observe when plants have developed the main shoot and 5-9 tillers)
(*) (+)

erect	1	2	2	2		
semi-erect	3					
intermediate	5					
semi-prostrate	7					
prostrate	9					

4.2 Flag leaf : length (cm) (2000) 22.2 22.6 24.4 – See attached data

mean (2001)		18.4	17.4	16.0		
range		13.6-24.0	13.1-22.0	12.6-18.9		
standard deviation		23.9	23.2	20.1		
number measured		20	20	20		

4.3 Flag leaf : width (mm) (2000) 15 15 15 – See attached data

mean (2001)		14	13	15		
range		12-15	12-15	13-16		
standard deviation		0.9	0.8	0.8		
number measured		20	20	20		

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4.4 Flag leaf : frequency of plants with recurved/drooping flag leaves

		CV	R1	R2	R3	R4
absent or very low (all flag leaves are rectilinear)	1	3/3	2/5	7/5		
low (≈ 1/4 of plants with recurved flag leaves)	3					
medium (≈ 1/2 of plants with recurved flag leaves)	5					
high (≈ 3/4 of plants with recurved flag leaves)	7					
very high (all flag leaves are recurved)	9					

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4.5 Flag leaf : pubescence of blade

glabrous	1	2	2	2		
pubescent	9					

4.6 Flag leaf sheath : pubescence

glabrous	1	2	2	2		
pubescent	9					

4.7 Flag leaf auricles : anthocyanin colouration

absent or very weak	1	1	1	3		
weak	3					
medium	5					
strong	7					
very strong	9					

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4.9 Flag leaf sheath : glaucosity (waxy bloom) (observe strongest expression)
(*)

		CV	R1	R2	R3	R4
absent or very weak	1	3-5	3-7	5-7		
weak	3					
medium	5					
strong	7					
very strong	9					

5.0 CHARACTERISTICS OF PLANTS AFTER HEADING

5.1 Heading (number of days from planting to 50% of heads fully emerged from boot)
(*)

number of days	48/74	48/74	50/75			2001/20 Data

5.2 Maturity

early	3	83/114	83/113	81/118			2001/20 Data
medium	5						
late	7						

5.3 Height (cm) (stem plus spike, including awns)
(*) (2000) 96.5 91.3 95.5 – See Attached Sheet

mean (2001)	94	91	90			
range	86-100	87-94	84-96			
standard deviation	3.4	2.0	3.4			
number measured	20	20	20			

5.4 Culm : glaucosity of neck (waxy bloom) (observe strongest expression)

absent or very weak	1	3	4	3		
weak	3					
medium	5					
strong	7					
very strong	9					

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5.5 Culm : shape of neck (at maturity)

(+)

		CV	R1	R2	R3	R4
straight	1	3	3	3		
curved	9					

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5.6 Straw : pith in cross-section (halfway between base of spike and stem node below)

(*) (+)

thin	3	3	3	3		
medium	5					
thick	7					

5.7 Straw : anthocyanin colouration at maturity

absent	1	1	1	1		
present	9					

6.0 SPIKE CHARACTERISTICS

6.1 Spike : shape

(*) (+)

tapering	1	1-2	1-2	1-2		
parallel sided	2					
semi-clavate	3					
clavate	4					
fusiform	5					
other (specify) _____	6					

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6.2 Spike : density
(*) (+)

		CV	R1	R2	R3	R4
very lax	1	4-5	4-5	4-5		
lax	3					
medium	5					
dense	7					
very dense	9					

~~6.3 Spike : attitude (at maturity)~~

erect	(upright to 30°)	1	1	1	1		
incline	(30° to 90°)	2					
nodding	(> 90°)	3					

6.4 Spike : glaucosity (waxy bloom) (observe strongest expression)
(*)

absent or very weak	1	3	3	3		
weak	3					
medium	5					
strong	7					
very strong	9					

6.5 Spike : colour (at maturity)
(*)

white	1	1	1	1		
coloured (specify) _____	2					

6.6 Spike : awnedness
(*) (+)

both absent	1	2	2	2		
awnlets present	2					
awns present	3					

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6.7 Spike : length of awns or awnlets at tip of spike (not applicable if awns and awnlets are absent) (*)

		CV	R1	R2	R3	R4
very short	1	1-3	1-3	1-3		
short	3					
medium	5					
long	7					
very long	9					

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6.8 Spike : awn attitude (not applicable if awnless)

appressed	1	2	1-2	1-2		
spreading	9					

6.9 Spike : colour of awns (not applicable if awnless)

white	1	1	1	1		
light brown	2					
brown	3					
black	4					

7.0 7.5 8.0 - 2000 data

6.10 Spike : length (excluding awns and awnlets - use first tiller)

mean (cm) (2001)		7.2	6.7	7.5		
range		6.5-7.7	5.9-7.5	6.7-8.6		
standard deviation		0.43	0.47	0.53		
no. measured		10	10	10		

6.11 Spike : hairiness of convex surface of apical rachis segment (+)

absent or very sparse	1	3	3	3		
sparse	3					
medium	5					
dense	7					
very dense	9					

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7.0 LOWER GLUME CHARACTERISTICS (Observe spikelets at central one-third of spike at maturity)

7.1 Lower glume : width

		CV	R1	R2	R3	R4
narrow	3	5	5	5		
medium	5					
wide	7					

7.2 Lower glume : length

short	3		5	5		
medium	5					
long	7					

7.3 Lower glume : pubescence

glabrous	1	2	2	2		
pubescent	9					

7.4 Lower glume : shape of shoulder (+)

sloping	1	3	3	3		
slightly sloping	3					
straight	5					
elevated	7					
strongly elevated with 2nd point present	9					

7.5 Lower glume : shoulder width (+)

absent or very narrow	1	3-5	3-4	3-5		
narrow	3					
medium	5					
broad	7					
very broad	9					

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7.6 Lower glume : shape of beak
(+)

		CV	R1	R2	R3	R4
straight	1	3	3	3		
slightly curved	3					
moderately curved	5					
strongly curved	7					
geniculate	9					

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7.7 Lower glume : beak length

very short	1	3	3	3		
short	3					
medium	5					
long	7					
very long	9					

7.8 Lower glume : extent of internal hairs
(+)

sparse	3	3	3	3		
medium	5					
dense	7					

8.0 LEMMA CHARACTERISTICS (Observe lowest lemma on mature primary kernels from the central one-third of spike)

8.1 Lemma : beak shape
(+)

straight	1	3	3	3-5		
slightly curved	3					
moderately curved	5					
strongly curved	7					
geniculate	9					

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9.0 KERNEL CHARACTERISTICS (Observe these characteristics on the mature primary kernels from the central one-third of spike)

NOTE: All kernel characteristics required for Plant Breeders Rights must be obtained from the Canadian Grain Commission.

9.1 Kernel : type
(*)

		CV	R1	R2	R3	R4
soft white	1	3	4	4		
soft red	2					
hard white	3					
hard red	4					
other (specify) _____	5					

9.2 Kernel : colour
(*)

white	1	1	5	3-5		
light red	2					
medium red	3					
dark red	4					
amber	5					
purple	6					
other (specify) _____	7					

9.3 Kernel : size
(+)

small	3	[illegible]	[illegible]	[illegible]		
medium	5					
large	7					
very large	9					

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9.4 Kernel : length

		CV	R1	R2	R3	R4
short	3					
midlong	5					
long	7					

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9.5 Kernel : width

narrow	3					
midwide	5					
wide	7					

9.6 Kernel : weight (grams per 1000 kernels)

grams	36.1	36.7	36.2		
number of measurements taken	4	4	4		

9.7 Kernel : shape
(*) (+)

oval	1	1	1	1		
broad elliptical	2					
elliptical	3					
other (specify) _____	4					

9.8 Kernel : cheek shape

rounded	1	1	1	1		
angular	2					

9.9 Kernel : length of brush hairs
(+)

short	3	5	5	5		
midlong	5					
long	7					

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9.10 Kernel : size of germ (embryo) observed form dorsal view

		CV	R1	R2	R3	R4
small	3	5				
midsize	5					
large	7					

9.11 Kernel : shape of germ (embryo)
(+)

round	1	2	2	2		
oval	2					
broad elliptical	3					
elliptical	4					
other (specify) _____	5					

9.12 Kernel : width if crease
(+)

narrow	3	5	5	5		
midwide	5					
wide	7					

9.13 Kernel : depth of crease
(+)

shallow	1	5	5	5		
mid-deep	2					
deep	3					
pitted	4					
other (specify) _____	5					

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9.14 Kernel: colouration of phenol (+)

		CV	R1	R2	R3	R4
none or very light	1					
light	3					
medium	5					
dark	7					
very dark	9					

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10.0 AGRONOMIC CHARACTERISTICS

10.1 Resistance to shattering

not tested	0	0	0	0		
poor	3					
fair	5					
good	7					

10.2 Tolerance to drought

not tested	0	0	0	0		
poor	3					
fair	5					
good	7					

10.3 Winter survival

not applicable	0	0	0	0		
poor	3					
fair	5					
good	7					

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10.4 Pre-harvest sprouting tendency

		CV	R1	R2	R3	R4
not tested	0	5-7	7	5-7		
poor	3					
fair	5					
good	7					

11.0 QUALITY CHARACTERISTICS

11.1 Bread

not applicable	0	7	7	7		
poor	3					
fair	5					
good	7					

11.2 Pastry and biscuit quality

not applicable	0	0	0	0		
poor	3					
fair	5					
good	7					

11.3 Macaroni quality

not applicable	0	0	0	0		
poor	3					
fair	5					
good	7					

11.4 Wheat protein (percentage)

state percentage	14.3	Ø	14.3		

*Mean of 3 years (1998-2000) in Central Bread Wheat Coop Test.

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12.0 REACTION TO DISEASES

0 - not tested
1 - resistant
3 - moderately resistant
5 - moderately susceptible
7 - susceptible
9 - highly susceptible

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		CV	R1	R2	R3	R4
12.1	Common root rot: *Cochliobolus sativus* *Fasarium* species	0	0	0		
12.2	Browning root rot: *Pythium* species	0	0	0		
12.3	Snow mold: *Typhula* species *Monographella nivalis* *Coprinus psychromorbidus* *Myriosclerotinia borealis*	0	0	0		
12.4	Take-all root rot: *Gaeumannomyces graminis* var. *tritici*	0	0	0		
12.5	Spot blotch: *Cochliobolus sativus*	0	0	0		
12.6	Black point and smudge: *Cochliobolus sativus* *Alternaria* species *Pseudomonas syrangae pv. atrofaciens*	0	0	0		
12.7	Tan spot: *Pyrenophora tritici-repentis*	5-7	7	7		
12.8	Septoris avenae blotch: *Septoria avenae* f. sp. *triticea*	0	0	0		
12.9	Septoria tritici blotch: *Septoria tritici*	7	7	7		
12.1	Septoria nodorum blotch: (glume blotch) *Septoria nodorum*	5	7	5-7		
12.11	Powdery mildew: *Erysiphe graminis*, f.sp. *tritici*	0	0	0		
12.12	Fusarium head blight: *Fusarium graminearum* *Fusarium* species	3-5	0	3-5		
12.13	Ergot: *Claviceps purpurea*	0	0	0		
12.14	Common bunt: *Tilletia caries* *Tilletia foetida*	3	3	5		
12.15	Dwarf bunt: *Tilletia controversa*	0	0	0		

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		CV	R1	R2	R3	R4
12.16	Loose smut: *Ustilago tritici*	1-3	3	1		
12.17	Leaf rust: *Puccinia triticina*	1	1-3	3-5		
12.18	Stem rust: *Puccinia graminis* f.sp. *tritici*	3-5	1	1		
12.19	Stripe rust: *Puccinia striiformis*	0	0	0		
12.2	Bacterial blights: *Xanthomonas translucens* *Pseudomonas syringae* pv. *atrofaciens*	0	0	0		
12.21	Spindle streak mosaic virus	0	0	0		
12.22	Wheat streak mosaic virus	0	0	0		
12.23	Yellow dwarf Barley yellow dwarf virus	0	0	0		
12.24	other (specify) _____					

13.0 REACTION TO INSECTS

0 - not tested
1 - resistant
3 - moderately resistant
5 - moderately susceptible
7 - susceptible
9 - highly susceptible

13.1	aphids (specify type) _____					
13.2	army worm					
13.3	cereal leaf beetle					
13.4	grasshopper					
13.5	nematode					
13.6	sawfly					
13.7	other (specify) _____					

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14.0 REACTION TO PESTICIDES

0 - not tested
3 - resistant
5 - tolerant
7 - susceptible

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		CV	R1	R2	R3	R4
14.1	Fungicide: specify chemical(s)					
14.2	Insecticide: specify chemical(s)					
14.3	Herbicide: specify chemical(s)					
14.4	Other: specify chemical(s)					

15.0 Describe traits of the candidate variety that aid in its identification, i.e. electrophoresis - please attach data and the corresponding protocol.

Snowbird is a later maturing, tall, awnless, white seeded, spring wheat variety.

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16.0 Describe any off-types and variants observed during seed increase of this variety. The frequency of occurrence of variants should be noted.

(*)

17.0 Indicate which characteristics are most useful in distinguishing the candidate variety from the reference variety(ies). Use objective description key numbers.

(*)

5.1 Heading: AC Barrie is later heading than Snowbird
5.3 Plant height: Snowbird is talker than both AC Domain and AC Barrie
6.10 Spike length: AC Barrie has longer spike than Snowbird.
9.1 Kernel type: Snowbird is a hard white kernel
9.2 Kenel colour: Snowbird is a white seeded wheat.
12.18 Stem Rust Reaction: Snowbird was rated MRMS for Stem Rust.

18.0 Additional comments and characteristics.

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APPENDIX I

RECOMMENDED UPOV TEST GUIDELINES

USDA-AMS PVPO

Note: The following UPOV guidelines are optional. Protocols must be submitted when alternate procedures are used.

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Conduct of tests:

1. The minimum duration of tests should be two similar growing periods.

2. The tests should normally be conducted at on place. In any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The field tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. As a minimum, each test should include a total of 2000 plants which should be divided between two or more replicates and, if used, 100 ear-rows. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

Methods and observations

1. All observations for assessment of distinctness and stability should be made on 20 plants or parts of 20 plants.

2. For homogeneity of characteristics which are assessed on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), the number of aberrant plants or parts of plants should not exceed 5 in 2000.

3. For homogeneity of characteristics which are assessed on single ear-rows, plants or parts of plants (visual assessment by observations of a number of individual ear-rows, plants or parts of plants) the number of aberrant ear-rows, plants or parts of plants should not exceed 3 in 100.

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APPENDIX II

METHODS AND ILLUSTRATIONS

3.1 Coleoptile: intensity of anthocyanin colouration

(Method for the determination of anthocyanin colouration)

(1) Place 20 non-dormant seeds on moistened filter paper covered with a petri dish lid during germination and place in the laboratory or greenhouse.

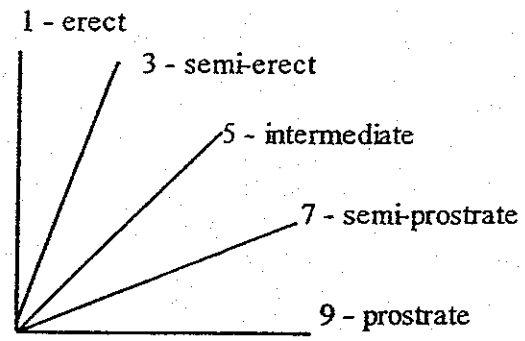
(2) After the coleoptiles have reached a length of about 1 cm in darkness, they are placed in artificial light (daylight equivalent), 12,000 to 15,000 lux continuously for 3-4 days at 15 to 20°C.

(3) Make the assessment on the anthocyanin colour about one week after coleoptiles are fully developed.

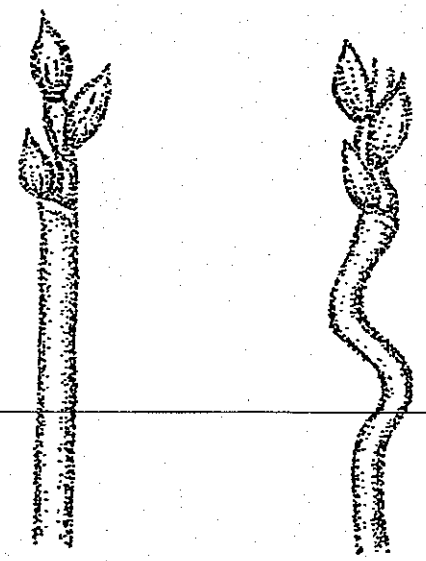
(4) The reference variety(ies) should be included.

4.1 Growth habit

The growth habit should be assessed visually from the attitude of the leaves and tillers. The angle formed by the outer leaves and the tillers with an imaginary middle axis should be used.

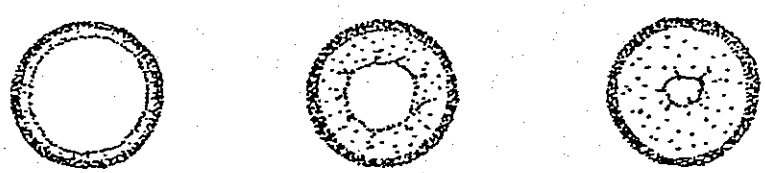


5.5 Culm : shape of neck (at maturity)



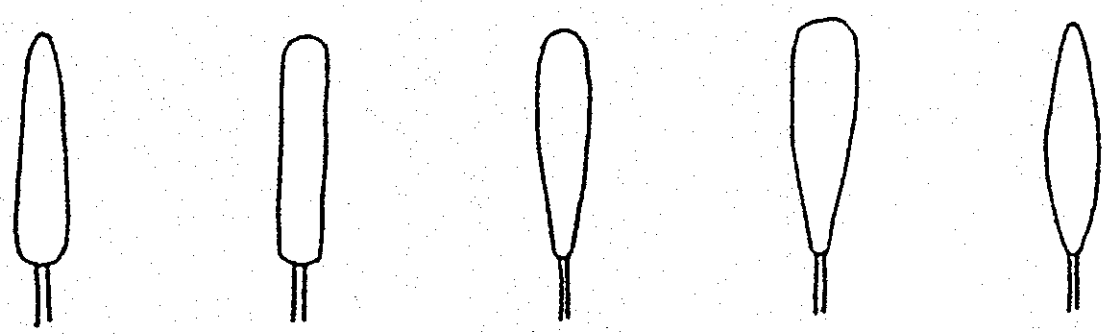
1 - straight 9 - curved

5.6 Straw : pith in cross-section (halfway between base of spike and stem node below)



3 - thin 5 - medium 7 - thick

6.1 Spike : shape



1 - tapering 2 - parallel sided 3 - semi-clavate 4 - clavate 5 - fusiforme

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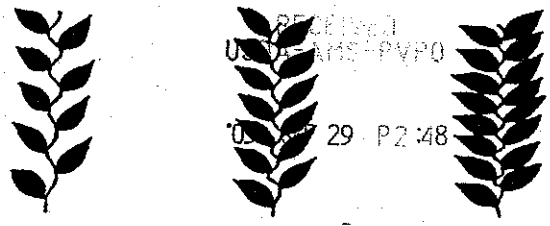
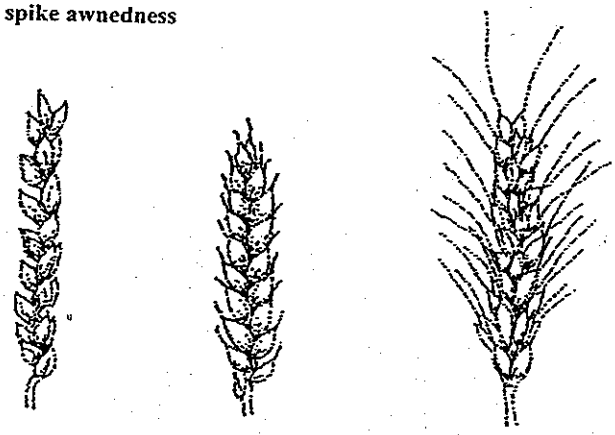
6.2 **Spike : density**



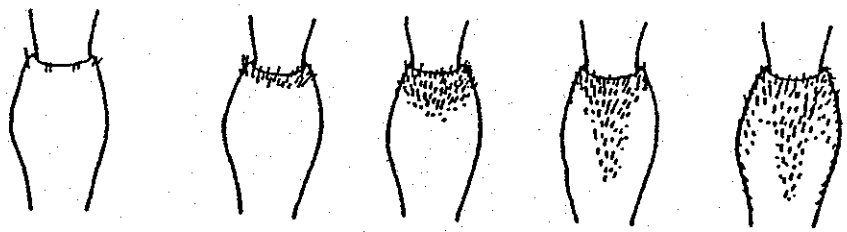
3 - lax 5 - medium 7 - dense

6.6 **Spike : spike awnedness**



1 - both absent 2 - awnlets present 3 - awns present

6.11 **Spike : hairiness of convex surface of apical rachis segment**



1 - absent or very sparse 3 - sparse 5 - medium 7 - dense 9 - very dense

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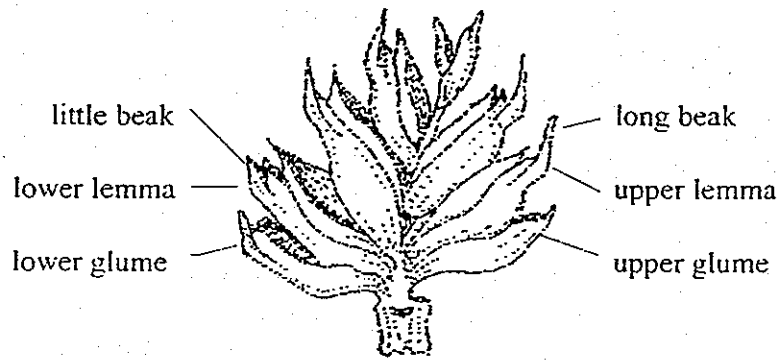
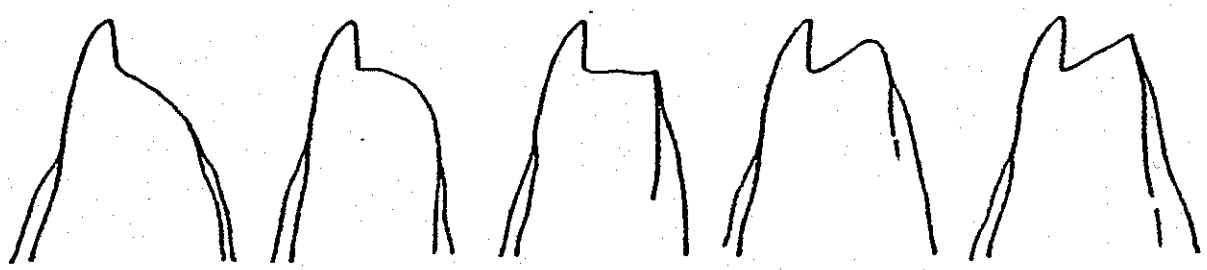
7.1 to 7.8 Wheat spikelet: location of the lower glume (below the lemma with the little beak)

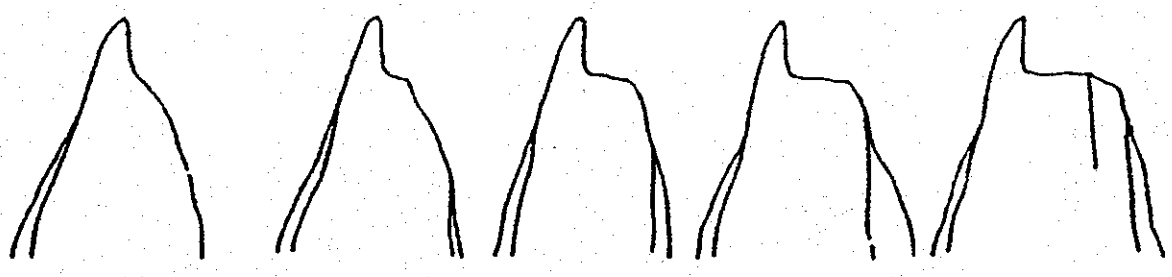


7.4 Lower glume : shape of shoulder



1 - sloping | 3 - slightly sloping | 5 - straight | 7 - elevated | 9 - strongly elevated with 2nd point present

7.5 Lower glume : shoulder width



1 - absent or very narrow | 3 - narrow | 5 - medium | 7 - broad | 9 - very broad

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7.6 Lower glume : shape of beak

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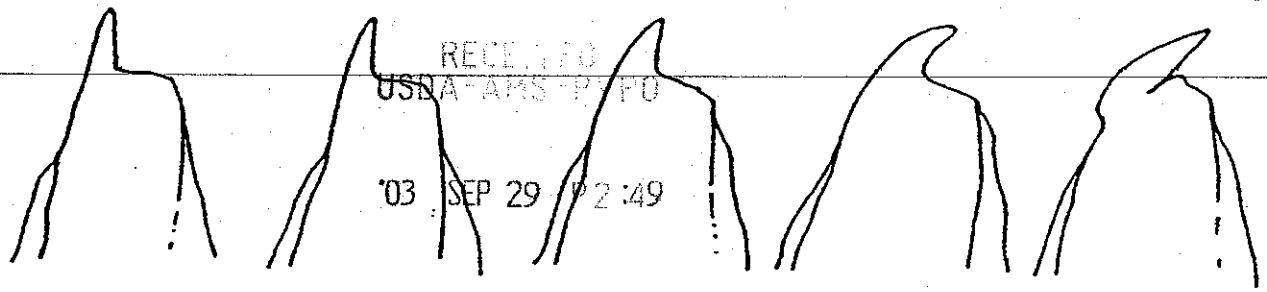
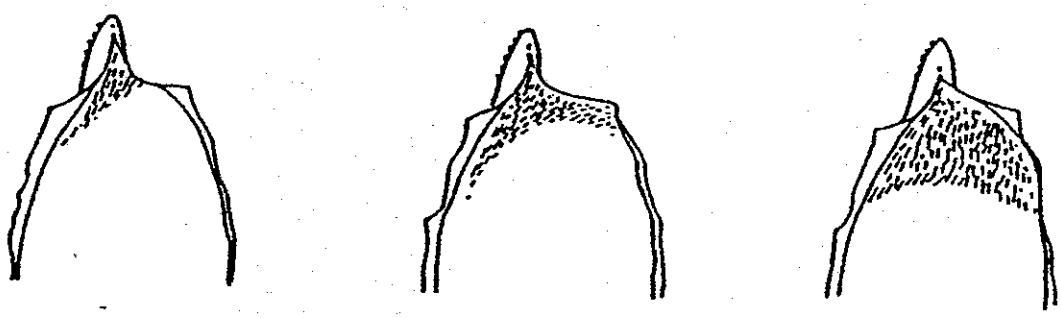


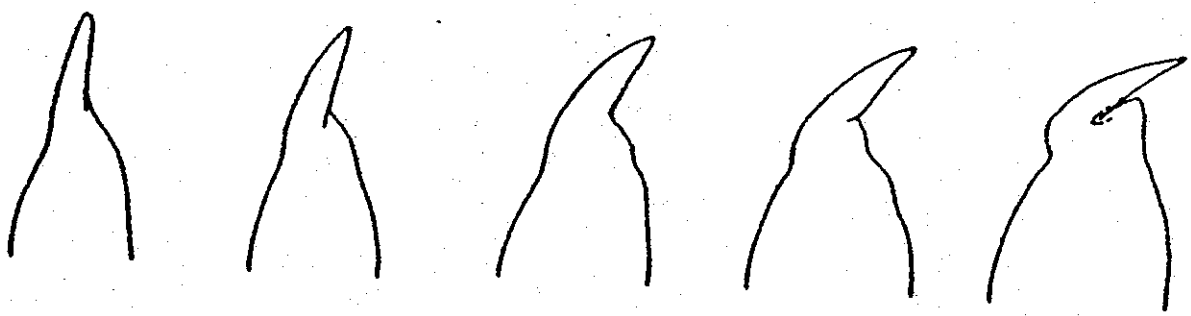
1 - straight | 3 - slightly curved | 5 - moderately curved | 7 - strongly curved | 9 - geniculate

7.8 Lower glume : extent of internal hairs



3 - sparse | 5 - medium | 9 - dense

8.1 Lemma : beak shape



1 - straight | 3 - slightly curved | 5 - moderately curved | 7 - strongly curved | 9 - geniculate

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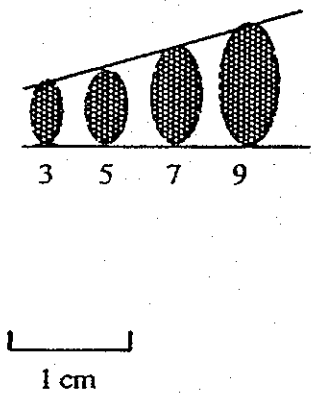
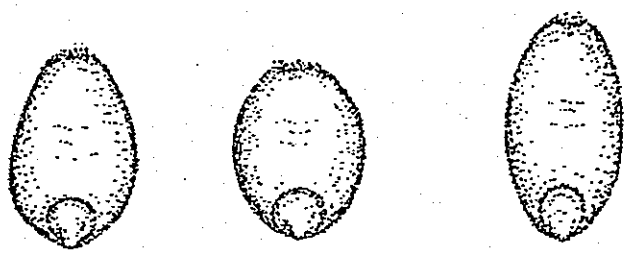
9.3 Kernel : size

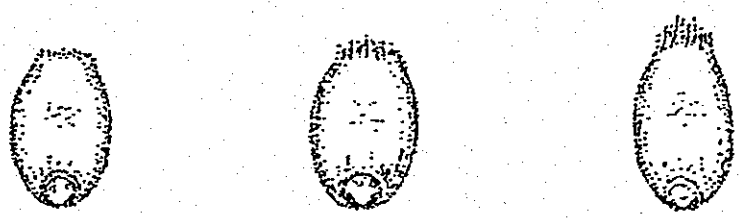


9.7 Kernel : shape



1 - oval 2 - broad elliptical 3 - elliptical

9.9 Kernel : length of brush hairs



3 - short 5 - midlong 7 - long

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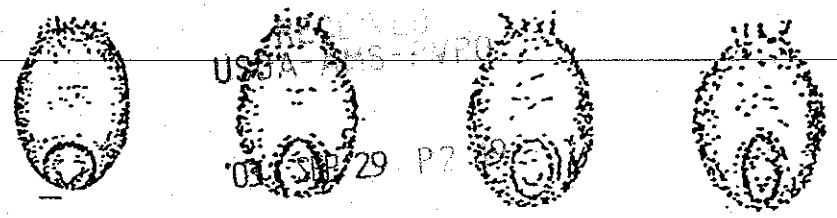
9.11 Kernel : shape of germ (embryo)



1 - round 2 - oval 3 - broad elliptical 4 - elliptical

9.12 Kernel : width of crease

3 - narrow 5 - midwide 7 - wide

9.13 Kernel : depth of crease

1 - shallow 2 - mid-deep 3 - deep 4 - pitted

9.14 Kernel : colouration of phenol

(Procedure for determining the reaction of wheat seeds to phenol)

(1) Obtain 20 seeds from a uniformly mixed sample.

(2) Soak seeds in distilled water for 16 to 20 hours.

(3) Rinse seed with tap water and remove excess water from the seed surface.

(4) Place two 9 cm filter papers in a petri dish.

(5) Place the seed on the filter paper within the petri dish. Remember to carefully orient the seed so that the crease side faces down.

(6) Using a pipette, evenly distribute a 1% solution of freshly prepared phenol solution over the seeds. The seeds should be 3/4 covered by 1% phenol solution.

(7) Cover the petri dishes and place them in a laboratory out of direct sunlight at a temperature oscillating between 18 and 20°C.

(8) Make observations four hours after adding the 1% phenol solution. It is recommended that a book of means and colourimetric nomenclature chart be used to evaluate the colour.

(9) The reaction of phenol solution on treated seed is difficult to interpret. Seed treated with *Panogen* and certain other products may provide reliable results, however, seed treated with *Vitaflo* do not react to phenol. As a result, seeds treated with *Vitaflo* need to have the pesticide removed before subjecting them to this test. This can be done using the following procedure:

Pour 75 ml of methanol in a beaker containing 400 seeds. Stir the seed in solution for 5 minutes using a glass stirring rod. Decant the methanol and rinse the seed in running water for 2 minutes.

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2000 PBR Test (Indian Head, SK) - Plant Height (cm) Measurements

	Snowbird	AC Domain	AC Barrie
Mean	96.5	91.3	95.5
Min	90	80	84
Max	104	98	104
Std	3.7	4.3	4.6
N	25	25	25

2000 PBR Test (Indian Head, SK) - Flag Leaf Measurements (Length & Width, mm)

	Flag Leaf Measurements					
	Snowbird Length mm	Snowbird Width mm	AC Domain Length mm	AC Domain Width mm	AC Barrie Length mm	AC Barrie Width mm
Mean	222.8	14.8	225.6	15.0	242.2	17.1
Max	269	18	277	17	311	19
Min	171	11	202	13	189	15
St. Dev.	25.6	1.7	19.1	1.1	26.0	1.1
N	31	31	31	31	31	31

Snowbird (BW 264)

Crop Kind: Hard White Spring Wheat
Scientific Name: Triticum aestivum L.
Breeders: D.G. Humphries, T.F. Townley-Smith, E.M. Czarnecki.
Agriculture and Agri-Food Canada, Cereal Research Center, Winnipeg MB

Performance and Adaptation:

Area of Adaptation: Wheat growing area of Western Canada
Strengths: White seed and flour color and good yield level
Weakness: Small kernel size

Description: Snowbird is a white seeded, hollow stemmed wheat which has quality similar to the current CWRS class of wheat

In two years of testing in the Central Bread Wheat Coop trials, Snowbird yielded 14.6% more than Neepawa, 15.6% more than Roblin, 7% more than AC Majestic, 5.6% more than AC Barrie and 8.5% less than McKenzie. It was 4 cm shorter than Neepawa, but slightly taller than the other check varieties. Snowbird had slightly better lodging resistance scores than Neepawa and McKenzie. Snowbird is later maturing than check varieties

Snowbird is resistant to the prevalent races of leaf rust, moderately resistant to stem rust, loose smut and common root rot and similar to Roblin in resistance to tan spot, Septoria tritici and Septoria nodorum. It appears to be similar to Neepawa in reaction to fusarium head blight.

Table 1. Central Bread Wheat Cooperative Test 1998-99
Average Yields '00kg/ha

	Mantoba			Saskatchewan			Overall			
Variety	1998	1999	Mean	1998	1999	Mean	1998	1999	Mean	%
Neepawa	32.9	31.7	32.3	36.1	39	37.6	34.5	35.3	34.9	100
Roblin	31.8	33.8	32.8	35	37.5	36.3	33.4	35.7	34.6	99
AC Majestic	36.8	33.3	35.1	39.2	40.1	39.7	38	36.7	37.4	107
McKenzie	41.7	46.6	44.2	40.9	45.3	43.1	41.3	46	43.7	125
AC Barrie	35.5	36.2	35.9	37.6	41.5	39.6	36.6	38.9	37.8	108
Snowbird	40	40.8	40.4	39.3	39.9	39.6	39.6	40.4	40	115

Table 2 Central Bread Wheat Cooperative Test 1998-99
Average Agronomic Data

Variety	Maturity Manitoba	Maturity Sask	Maturity Overall	Lodging	Height (cm)	Test Weight	Seed Weight	Falling #'s	Sprouting Score
Neepawa	89.5	98.1	93.8	3.3	103	78.2	31.9	343	4.5
Roblin	88.8	96.7	92.7	2	96	77.6	34.6	204	8.4
AC Majestic	90.2	101.4	95.8	2.3	97	78.6	33.3	476	1.6
McKenzie	91.1	98.1	94.6	3.3	97	80.1	33.2	382	2.7
AC Barrie	90.5	99.6	95.1	2.5	98	79.6	33.9	364	5.1
Snowbird	90.8	98.9	96.4	2.8	99	79.3	31.7	354	4.8

Table 3 Disease Data 1998-99 (rating or % reaction)

Variety	Leaf Rust	Stem Rust	Root Rot	Loose Smut	Common Bunt	FHB Wpg
Neepawa	MS	R	11	R	MS	40
Roblin	M	R	20	R	S	70
AC Majestic	MR	R	15	R	MR	34
McKenzie	R	R	9	R	R	39
AC Barrie	MR	R	21	R	MR	29
Snowbird	R	R	21	R	MR	26

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Falling Numbers (seconds) for Snowbird and Kanata compared to Check varieties and Harvest (BW259) over 3 years of testing (1998-2000) in the Central Bread Wheat Cooperative Test.

		1998		1999		2000	
Variety	**Class**	**Field Weathered***	**Artificially Weathered****	**Field Weathered**	**Artificially Weathered**	**Field Weathered**	**Artificially Weathered**
Neepawa	CWRS	311	193	375	292	251	243
Roblin	CWRS	86	167	321	153	99	135
AC Majestic	CWRS	489	304	463	409	343	387
McKenzie	CWRS	366	352	397	365	384	410
AC Barrie	CWRS	302	391	426	340	216	367
Kanata	CWHW	334	232	260	257	204	396
Snowbird	CWHW	409	339	299	279	145	327
Harvest	CWRS	451	329	416	409	345	563

* = Grain harvested from a Sprouting nursery at Glenlea, MB 4-6 weeks after physiological maturity.
** = Grain from wheat heads weathered for 48 hours in a rain simulator.

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Report on the

Central Bread Wheat Cooperative Tests

~ 2000 ~

Rapport sur les

Essais Cooperatifs du Blé Panifiable

~ 2000 ~

Not for publication

Ne pas publier

Conducted by the Prairie Registration Recommending Committee on Grain

Conduit par le Comité pour Recommendations D'Enregisterement de Céréales des Prairies

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Description of Tests

A uniform set of 30 cultivars was tested at each location using a 6 x 5 rectangular lattice design with 3 replicates. Seed was packaged at the Cereal Research Centre (AAFC), Winnipeg, on the basis of 350 seeds per square metre. The seed source of the first year entries was increase plots grown and rogued at Lincoln, New Zealand with the exceptions of BW 280 and BW 283-287 which were supplied by the contributors. The source of seed for all other entries was 1998 increase plots grown and rogued at Indian Head, SK.

The 10 test sites and cooperators were:

Zone 1	Cooperator	Site	Seeding Date	Plot Size: (area harvested)
Cereal Research Centre	F. Townley-Smith	Glenlea	May 23	3.25 m^2
Morden Research Station	G. Dyck	Morden	May 23	3.60 m^2
Special Crops Substation	F. Townley-Smith	Portage	May 19	3.25 m^2
Brandon Research Centre	M. Therrien/R. Svistovski	Brandon	May 09	3.66 m^2
United Grain Growers	K. McCallum	Elgin	May 04	3.60 m^2
I.H. Experimental Farm	D.T. Gehl / D. Green	Indian Head	May 28	2.76 m^2
Zone 2				
Regina Research Station	R.A. Ferguson	Regina	May 09	2.74 m^2
Crop Development Centre	P.R. Hucl	Kernen	May 19	4.46 m^2
United Grain Growers	J. Dyck	Kelvington	May 20	3.60 m^2
Melfort Research Station	C. Vera	Melfort	June 08	5.76 m^2

Grain from 8 sites (Glenlea, Morden, Portage, Indian Head, Regina, Kernen, Kelvington, and Melfort) was made into a 12 kg composite for quality assessment. The composite sample was milled and evaluated at the Grain Research Laboratory. Other samples were provided for the Inspection Division of the Canadian Grain Commission, for their comments on kernel type and sample appearance. Falling numbers were provided by J. Noll.

Disease ratings were provided from special tests by M. Fernandez, T. Fetch, D.A. Gaudet, J.A. Gilbert, B. McCallum, and J. Menzies. The multi-year means were supplied by S. Woods. This report was prepared at the Cereal Research Centre, Winnipeg with the assistance of D. Dueck.

T.F. Townley-Smith, D.G. Humphreys, and J.B. Thomas

Table I **List of Entries** CBW Coop 2000

Year	ES	Station No.	Cultivar or Cross	Abbrev.	Source
Ck	BW 2	RL 4200	Neepawa	Np	
Ck	BW 92	RL 4483	Roblin	Rl	
Ck	BW 173	RL 4681	AC Majestic	AC Maj	
Ck	BW 205	SWP924-017	McKenzie	McK	
Ck	BW 661	8405-BK3C	AC Barrie	AC Bar	
3	BW 243	SWP950-252	CDC Teal//Grandin/PT819		SWP
3	BW 256	UGG96-2428	N93-2410/AC Majestic		UGG/AgriPro
3	BW 259	RL4841	AC Domain*2/ND 640	91B14-BP2E	AAFC/CRC
3	BW 263	RL4861(white)	RL4137*6//Tc/Poso48/3/AC Domain	94B46*D70	AAFC/CRC
3	BW 264	RL4871(white)	RL4137*6//Tc/Poso48/3/AC Domain	94B46*H79	AAFC/CRC
2	BW 267	UGG97-2627	N94-2189/N92-2308		UGG/AgriPro
2	BW 270	RL4887	BW 165/RL4660		AAFC/CRC
2	BW 271	RL4892	AC Domain*2/AC Cora		AAFC/CRC
2	BW 274	RL4901	Pasqua*2/Ning 8331		AAFC/CRC
2	BW 275	RL4868(white)	RL4137*6//Tc/Poso48/3/AC Domain	94B46*F72	AAFC/CRC
1	BW 280	W98001	AC Barrie/McKenzie		WBWB 25
1	BW 281	W98139	AC Barrie/AC Domain		CBWB 6
1	BW 282	W98190	AC Elsa/AC Barrie		CBWB 9
1	BW 283	98S2086-93-6	AC Barrie*2//Butte86*6/FS4		UGG/AgriPro
1	BW 284	98S2086-124-4	AC Barrie*2//Butte86*6/FS4		UGG/AgriPro
1	BW 285	98S2086-124-7	AC Barrie*2//Butte86*6/FS4		UGG/AgriPro
1	BW 286	UGG98-2321	N93-2210/BW193		UGG/AgriPro
1	BW 287	UGG89-2366	N94-2151/AC Splendor		UGG/AgriPro
1	BW 288	RL4918	AC Domain*2/AC Cora	92B03-DM1D$	CBWB 14
1	BW 289	RL4920	AC Cora*2/AC Domain	92B04-BA4C$	CBWB 16
1	BW 290	RL4921	Grandin/SD 3055	92B21-KC3A	CBWB 17
1	BW 291	RL4927	AC Domain*2/Sumai 3	93B42-AD5A	CBWB 23
1	BW 292	RL4932	Caldwell/88B27-D3A1C	94B27-Q3C	CBWB 28
1	BW 293	RL4933	Grandin*2/Caldwell	94B43-U1A	CBWB 29
1	BW 294	RL4954(white)	95B02*D188/95B02*C44		HWB 16

Parentage:

PT819 = Columbus/Butte
RL4137 = Frontana/3/McMurachy/Exchange//2*Redman/4/Tc*6/Kenya Farmer
ND640 = Columbus/Butte
BW165 – BW90*2/BW553
RL4660 = BW87/Katepwa
BW193 = Roblin/3/Columbus*3//Saric/Neepawa
SD3055 = ND604/SD2971
88B27 = Roblin*4/BW553
95B02 = Sun231A/AC Domain

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Table III

Yield ('00 kg/ha)

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	25.2	54.0	39.1	38.8	39.3	38.3	32.7	40.8	37.3	30.6	35.9	37.4
BW 92	Roblin	26.0	61.6	43.1	36.8	41.9	40.0	36.7	34.4	35.5	28.6	35.0	38.1
BW 173	AC Majestic	29.1	66.3	44.6	44.3	46.1	45.9	42.2	41.5	33.3	33.1	39.2	42.2
BW 205	McKenzie	37.5	64.0	50.1	45.4	49.2	50.2	42.9	48.8	44.3	38.9	45.0	46.9
BW 661	AC Barrie	33.4	63.9	46.3	44.1	46.9	43.4	36.9	45.2	40.5	33.8	39.9	43.0
BW 243	SWP950-252	29.4	67.9	47.1	44.2	47.1	34.7	35.5	48.4	37.3	32.1	37.6	41.8
BW 256	UGG96-2428	33.2	63.2	43.6	41.6	45.4	41.5	36.8	34.2	26.4	29.1	33.6	38.9
BW 259	RL4841	32.0	72.1	49.5	46.2	50.0	43.4	34.9	43.4	41.9	33.0	39.3	44.1
BW 263	RL4861(white)	27.3	62.1	41.0	40.5	42.7	42.0	30.1	38.5	34.7	30.6	35.2	38.5
BW 264	RL4871(white)	29.4	66.5	48.0	45.9	47.4	42.8	37.5	42.3	38.4	31.0	38.4	42.4
BW 267	UGG97-2627	37.2	67.1	51.7	48.9	51.2	48.6	42.2	47.6	42.4	33.6	42.9	46.6
BW 270	RL4887	31.1	70.9	48.4	44.9	48.8	47.8	37.1	38.6	33.4	31.2	37.6	42.6
BW 271	RL4892	32.0	67.5	45.6	44.6	47.4	39.5	31.3	43.6	38.4	33.0	37.1	41.7
BW 274	RL4901	35.3	66.1	47.3	49.9	49.6	46.9	41.6	44.6	36.5	32.6	40.5	44.5
BW 275	RL4868(white)	29.6	58.0	44.8	42.6	43.8	42.7	35.9	42.4	35.9	30.3	37.4	40.2
BW 280	W98001	36.4	66.3	52.6	49.8	51.3	48.8	40.0	44.3	42.8	35.6	42.3	46.3
BW 281	W98139	31.7	68.4	51.6	44.9	49.1	39.8	34.4	44.2	40.2	32.3	38.2	43.0
BW 282	W98190	32.6	67.2	46.4	44.1	47.6	48.2	34.8	43.9	41.2	33.7	40.3	43.6
BW 283	98S2086-93-6	27.4	63.8	45.2	40.8	44.3	42.7	34.0	45.7	34.6	31.0	37.6	40.6
BW 284	98S2086-124-4	24.2	60.1	39.7	42.8	41.7	36.7	34.0	41.3	32.8	28.0	34.6	37.7
BW 285	98S2086-124-7	33.3	59.8	44.9	44.4	45.6	41.9	35.9	40.6	35.9	29.7	36.8	40.7
BW 286	UGG98-2321	33.4	67.5	47.8	44.3	48.2	48.1	40.8	45.3	36.8	31.6	40.5	43.9
BW 287	UGG89-2366	26.5	67.8	46.6	37.1	44.5	38.6	34.5	46.6	38.6	29.9	37.6	40.7
BW 288	RL4918	34.4	67.0	42.8	41.0	46.3	39.1	32.4	40.6	39.2	34.3	37.1	41.2
BW 289	RL4920	34.1	64.6	48.6	46.3	48.4	42.7	35.3	42.6	37.1	31.4	37.8	42.5
BW 290	RL4921	32.6	77.7	46.5	42.0	49.7	35.4	38.2	46.5	36.0	31.2	37.5	42.9
BW 291	RL4927	31.2	64.4	47.5	40.6	45.9	37.3	33.8	38.6	35.4	28.9	34.8	39.7
BW 292	RL4932	33.9	64.0	47.7	40.7	46.6	41.5	35.0	37.2	34.3	31.2	35.8	40.6
BW 293	RL4933	28.8	61.4	44.3	40.5	43.7	35.2	29.6	33.9	30.6	29.7	31.8	37.1
BW 294	RL4954(white)	28.0	67.4	46.3	43.6	46.3	48.4	40.4	48.6	43.6	33.2	42.8	44.4
	Mean	31.2	65.3	46.3	43.4	46.5	42.4	36.2	42.5	37.2	31.8	38.0	41.8
	LSD	5.8	4.1	3.0	3.1	3.6	4.4	3.8	1.5	3.6	5.1	3.3	2.6
	N					4						5	9

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Table IV

Rank of Yield

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	29	30	30	28	30	25	26	21	13	21	23	29
BW 92	Roblin	28	25	26	30	28	20	13	28	21	29	26	27
BW 173	AC Majestic	22	14	23	12	19	9	2	19	27	8	10	15
BW 205	McKenzie	1	19	4	7	6	1	1	1	1	1	1	1
BW 661	AC Barrie	8	21	17	15	15	10	11	9	7	4	8	9
BW 243	SWP950-252	20	5	13	14	14	30	16	3	13	13	14	16
BW 256	UGG96-2428	11	23	25	21	22	18	12	29	30	27	29	25
BW 259	RL4841	14	2	5	5	3	10	19	15	5	9	9	6
BW 263	RL4861(white)	26	24	28	26	27	16	29	26	23	21	25	26
BW 264	RL4871(white)	20	13	8	6	12	12	9	18	11	19	11	14
BW 267	UGG97-2627	2	11	2	3	2	3	2	4	4	6	2	2
BW 270	RL4887	18	3	7	8	8	7	10	24	26	16	14	12
BW 271	RL4892	14	7	19	10	12	22	28	14	11	9	20	17
BW 274	RL4901	4	16	12	1	5	8	4	10	17	11	5	4
BW 275	RL4868(white)	19	29	22	19	25	13	14	17	19	23	19	23
BW 280	W98001	3	14	1	2	1	2	7	11	3	2	4	3
BW 281	W98139	16	4	3	8	7	21	22	12	8	12	12	9
BW 282	W98190	12	10	16	15	11	5	20	13	6	5	7	8
BW 283	98S2086-93-6	25	22	20	23	24	13	23	7	24	19	14	21
BW 284	98S2086-124-4	30	27	29	18	29	27	23	20	28	30	28	28
BW 285	98S2086-124-7	10	28	21	11	21	17	14	22	19	25	22	19
BW 286	UGG98-2321	8	7	9	12	10	6	5	8	16	14	5	7
BW 287	UGG89-2366	27	6	14	29	23	24	21	5	10	24	14	19
BW 288	RL4918	5	12	27	22	17	23	27	22	9	3	20	18
BW 289	RL4920	6	17	6	4	9	13	17	16	15	15	13	13
BW 290	RL4921	12	1	15	20	4	28	8	6	18	16	18	11
BW 291	RL4927	17	18	11	25	20	26	25	24	22	28	27	24
BW 292	RL4932	7	19	10	24	16	18	18	27	25	16	24	21
BW 293	RL4933	23	26	24	26	26	29	30	30	29	25	30	30
BW 294	RL4954(white)	24	9	17	17	17	4	6	2	2	7	3	5

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Table V

Maturity (days)

CBW Coop 2000

Entry	Station No.	ZONE 1 Mord	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	89.7	100.7	95.2	109.4	106.7	91.5	90.7	100.0	99.7	98.4
BW 92	Roblin	88.5	98.3	93.4	107.7	104.9	91.5	88.8	92.0	97.0	95.9
BW 173	AC Majestic	90.1	103.1	96.6	111.5	109.4	94.0	92.1	104.0	102.2	100.6
BW 205	McKenzie	90.0	99.9	95.0	111.5	109.0	91.5	89.3	92.7	98.8	97.7
BW 661	AC Barrie	90.7	103.4	97.0	111.5	110.4	92.0	91.0	103.0	101.6	100.3
BW 243	SWP950-252	91.3	103.9	97.6	115.0	110.0	95.0	93.5	93.3	101.4	100.3
BW 256	UGG96-2428	92.9	103.7	98.3	114.4	111.7	94.0	93.2	108.3	104.3	102.6
BW 259	RL4841	88.8	101.7	95.2	111.2	109.1	92.5	90.8	97.7	100.2	98.8
BW 263	RL4861(white)	88.1	99.7	93.9	111.5	108.7	91.5	88.6	101.0	100.3	98.5
BW 264	RL4871(white)	90.7	103.6	97.2	112.7	108.8	93.0	91.8	99.3	101.1	100.0
BW 267	UGG97-2627	93.7	104.6	99.2	115.0	112.5	96.0	94.7	103.0	104.2	102.8
BW 270	RL4887	89.5	99.9	94.7	109.3	108.2	91.0	89.6	97.0	99.0	97.8
BW 271	RL4892	90.2	101.4	95.8	112.7	109.9	91.5	89.3	101.0	100.9	99.4
BW 274	RL4901	92.4	103.7	98.0	114.0	109.6	94.0	93.3	105.0	103.2	101.7
BW 275	RL4868(white)	91.3	103.7	97.5	110.0	110.3	95.0	87.9	101.7	101.0	100.0
BW 280	W98001	90.4	101.5	96.0	110.7	110.7	92.0	89.0	98.3	100.2	99.0
BW 281	W98139	91.7	101.3	96.5	109.9	107.6	91.0	88.0	94.0	98.1	97.6
BW 282	W98190	88.9	100.1	94.5	110.2	107.0	91.5	89.3	101.7	99.9	98.4
BW 283	98S2086-93-6	90.9	101.7	96.3	112.6	107.0	93.0	90.7	104.7	101.6	100.1
BW 284	98S2086-124-4	91.1	101.3	96.2	111.9	107.1	94.0	90.3	99.0	100.5	99.2
BW 285	98S2086-124-7	90.8	101.3	96.1	112.1	106.9	92.5	91.9	100.7	100.8	99.4
BW 286	UGG98-2321	91.6	102.3	97.0	110.9	108.8	93.5	89.9	99.0	100.4	99.4
BW 287	UGG89-2366	89.8	100.7	95.3	112.1	109.0	91.0	90.8	95.0	99.6	98.3
BW 288	RL4918	90.5	102.0	96.2	113.6	109.2	91.0	90.3	95.7	100.0	98.9
BW 289	RL4920	87.6	98.9	93.2	107.7	106.8	91.5	89.6	98.3	98.8	97.2
BW 290	RL4921	92.4	103.2	97.8	115.0	109.5	96.0	95.6	100.3	103.3	101.7
BW 291	RL4927	92.3	103.6	97.9	116.3	108.9	95.0	91.7	99.0	102.2	101.0
BW 292	RL4932	89.1	103.0	96.1	112.1	108.8	94.5	92.0	102.9	102.1	100.3
BW 293	RL4933	93.9	104.5	99.2	117.6	112.0	96.5	96.1	110.7	106.6	104.5
BW 294	RL4954(white)	93.8	104.2	99.0	114.7	112.3	96.5	92.6	108.7	105.0	103.3
	Mean	90.8	102.0	96.4	112.2	109.0	93.1	91.1	100.2	101.1	99.8
	LSD	2.5	1.9	1.5	2.5	2.0	1.6	2.4	6.8	2.5	1.8
	N			2							

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Table VI

Lodging (1=erect, 9=flat)

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Zone Mean	ZONE 2 InHd	Regi	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	4.7	6.7	1.0	4.1	3.6	1.7	1.3	1.0	1.9	2.9
BW 92	Roblin	5.3	5.0	1.6	4.0	2.0	1.4	1.3	1.3	1.5	2.6
BW 173	AC Majestic	4.3	6.0	1.1	3.8	1.9	1.0	2.4	1.0	1.6	2.5
BW 205	McKenzie	3.7	6.0	1.0	3.6	3.0	1.3	1.2	1.7	1.8	2.6
BW 661	AC Barrie	5.0	5.7	1.0	3.9	2.0	1.3	1.1	1.0	1.4	2.5
BW 243	SWP950-252	4.0	1.3	1.0	2.1	1.5	1.0	1.0	1.0	1.1	1.6
BW 256	UGG96-2428	4.3	4.3	0.9	3.2	2.2	1.4	3.6	1.0	2.0	2.5
BW 259	RL4841	4.0	2.0	1.0	2.3	2.1	1.0	1.0	1.0	1.3	1.7
BW 263	RL4861(white)	5.3	2.7	1.0	3.0	1.7	1.0	1.7	1.0	1.3	2.1
BW 264	RL4871(white)	5.3	5.3	1.1	3.9	3.3	1.3	1.1	1.0	1.6	2.6
BW 267	UGG97-2627	3.7	5.7	1.0	3.4	2.6	1.0	2.7	1.0	1.8	2.5
BW 270	RL4887	5.7	5.0	1.6	4.1	3.0	1.7	2.4	1.7	2.2	3.0
BW 271	RL4892	4.7	2.3	1.4	2.8	1.4	1.0	1.0	1.0	1.1	1.8
BW 274	RL4901	3.7	5.3	0.9	3.3	3.1	1.0	2.4	1.0	1.9	2.5
BW 275	RL4868(white)	6.0	6.3	2.7	5.0	3.3	1.2	1.4	1.0	1.7	3.1
BW 280	W98001	5.0	5.0	1.0	3.7	2.3	1.3	1.7	1.0	1.6	2.5
BW 281	W98139	6.0	6.7	1.1	4.6	2.4	1.0	1.3	1.0	1.4	2.8
BW 282	W98190	4.3	2.3	1.0	2.6	2.1	1.0	2.0	1.0	1.5	2.0
BW 283	98S2086-93-6	4.7	6.3	1.0	4.0	2.1	2.0	1.0	1.0	1.5	2.6
BW 284	98S2086-124-4	5.3	6.0	2.0	4.4	2.7	2.0	0.9	1.3	1.8	2.9
BW 285	98S2086-124-7	6.0	7.3	1.0	4.8	2.9	1.7	1.7	1.0	1.8	3.1
BW 286	UGG98-2321	4.0	3.0	1.0	2.7	1.7	1.0	1.0	1.0	1.2	1.8
BW 287	UGG89-2366	5.7	3.0	1.3	3.3	2.8	1.0	0.9	1.0	1.4	2.2
BW 288	RL4918	3.0	1.0	1.1	1.7	1.9	1.1	1.7	1.0	1.4	1.5
BW 289	RL4920	5.0	6.0	0.9	4.0	3.1	1.4	1.3	1.0	1.7	2.7
BW 290	RL4921	3.7	4.3	1.0	3.0	1.5	1.0	3.7	1.0	1.8	2.3
BW 291	RL4927	2.7	5.3	1.1	3.0	2.9	1.0	1.9	1.0	1.7	2.3
BW 292	RL4932	4.7	2.3	0.9	2.6	1.9	1.0	1.8	1.0	1.4	1.9
BW 293	RL4933	2.0	1.0	0.9	1.3	1.1	1.0	4.6	1.0	1.9	1.6
BW 294	RL4954(white)	2.7	2.0	0.9	1.9	1.1	1.0	1.4	1.0	1.1	1.4
	Mean	4.5	4.4	1.2	3.3	2.3	1.2	1.7	1.1	1.6	2.3
	LSD	1.2	2.1	1.1	1.8	1.2	0.6	0.7	0.3	0.9	0.9
	N				3					4	7

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Table VII

Height (cm)

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	92	113	101	104	103	113	110	103	93	100	104	103
BW 92	Roblin	85	105	90	97	94	108	107	99	89	98	100	98
BW 173	AC Majestic	87	105	96	101	97	105	108	103	92	99	101	100
BW 205	McKenzie	91	104	94	103	98	106	108	102	88	101	101	100
BW 661	AC Barrie	94	112	99	105	102	111	110	101	93	98	103	103
BW 243	SWP950-252	85	101	93	95	94	96	102	97	90	98	97	95
BW 256	UGG96-2428	89	109	101	104	101	106	109	107	97	105	105	103
BW 259	RL4841	87	102	90	100	95	100	101	98	90	94	97	96
BW 263	RL4861(white)	85	103	91	99	94	102	99	95	87	93	95	95
BW 264	RL4871(white)	90	109	96	110	101	110	111	104	96	97	104	103
BW 267	UGG97-2627	84	94	90	97	91	101	95	92	86	87	92	92
BW 270	RL4887	96	115	99	110	105	114	112	104	95	103	106	105
BW 271	RL4892	93	106	94	102	99	105	103	100	93	99	100	100
BW 274	RL4901	90	114	98	108	102	109	114	107	95	107	106	105
BW 275	RL4868(white)	96	111	97	107	103	107	110	107	96	103	105	104
BW 280	W98001	89	104	94	101	97	107	105	98	92	95	99	98
BW 281	W98139	89	106	94	102	98	102	104	99	93	97	99	98
BW 282	W98190	86	98	93	95	93	104	100	99	91	95	98	96
BW 283	98S2086-93-6	93	111	99	106	102	109	109	103	92	102	103	103
BW 284	98S2086-124-4	96	111	99	105	103	105	111	102	92	100	102	102
BW 285	98S2086-124-7	93	110	98	102	101	102	111	106	90	104	102	102
BW 286	UGG98-2321	83	102	92	96	93	102	101	98	85	90	95	94
BW 287	UGG89-2366	88	103	93	97	95	103	103	98	90	99	99	97
BW 288	RL4918	92	105	96	99	98	100	102	100	94	99	99	98
BW 289	RL4920	94	111	100	104	102	106	112	108	91	100	103	103
BW 290	RL4921	81	97	88	86	88	93	96	95	91	84	92	90
BW 291	RL4927	94	111	100	104	103	107	109	102	98	101	103	103
BW 292	RL4932	90	110	97	104	100	107	112	103	95	100	103	102
BW 293	RL4933	80	95	89	91	89	86	99	94	92	86	91	90
BW 294	RL4954(white)	82	96	87	93	90	87	92	87	84	87	87	88
	Mean	89	106	95	101	98	104	106	100	92	97	100	99
	LSD	4	4	4	7	3	5	4	4	4	5	4	2

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Table VIII

Miscellaneous Cultivar Data

CBW Coop 2000

Entry	Station No.	MKWT	% Germination	Colour	Type	Appearance	Falling Number Field	Falling Number Artificial*	Sprouting Score (1-9)
BW 2	Neepawa	40.9	96	red	CWRS	Satisfactory	251	234	5.8
BW 92	Roblin	38.5	100	red	CWRS	Satisfactory	99	135	7.8
BW 173	AC Majestic	49.0	50	red	CWRS	Satisfactory	343	387	2.1
BW 205	McKenzie	36.1	96	red	CWRS	Satisfactory	384	410	2.0
BW 661	AC Barrie	42.0	90	red	CWRS	Satisfactory	216	367	5.4
BW 243	SWP950-252	31.9	98	red	CWRS	Satisfactory	271	460	1.5
BW 256	UGG96-2428	34.7	100	red	CWRS	Satisfactory	283	451	1.9
BW 259	RL4841	34.8	98	red	CWRS	Satisfactory	345	563	1.5
BW 263	RL4861(white)	30.0	98	white	CW Feed	Satisfactory	204	396	3.1
BW 264	RL4871(white)	32.3	100	white	CW Feed	Satisfactory	145	327	2.8
BW 267	UGG97-2627	29.9	100	red	CWRS	Satisfactory	203	302	6.7
BW 270	RL4887	34.0	98	red	CWRS	Satisfactory	125	233	8.1
BW 271	RL4892	31.2	100	red	Withdrawn by Contributor		395	513	1.8
BW 274	RL4901	36.6	100	red	CWRS	Satisfactory	204	388	2.3
BW 275	RL4868(white)	37.7	96	white	CW Feed	Satisfactory	146	305	2.4
BW 280	W98001	33.5	94	red	CWRS	Satisfactory	297	381	7.1
BW 281	W98139	51.7	72	red	CWRS	Satisfactory	303	478	2.1
BW 282	W98190	53.0	98	red	CWRS	Satisfactory	218	265	6.5
BW 283	98S2086-93-6	42.6	100	red	CWRS	Satisfactory	86	218	5.0
BW 284	98S2086-124-4	42.2	100	red	Withdrawn by Contributor		205	314	4.3
BW 285	98S2086-124-7	43.8	98	red	CWRS	Satisfactory	172	255	6.0
BW 286	UGG98-2321	38.0	100	red	CWRS	Satisfactory	321	390	4.8
BW 287	UGG89-2366	29.5	100	red	Withdrawn by Contributor		200	290	3.2
BW 288	RL4918	51.3	36	red	Withdrawn by Contributor		298	414	1.8
BW 289	RL4920	42.5	88	red	CWRS	Satisfactory	349	352	1.9
BW 290	RL4921	46.3	98	red	Withdrawn by Contributor		58	142	8.1
BW 291	RL4927	43.7	64	red	Withdrawn by Contributor		358	459	1.7
BW 292	RL4932	38.1	96	red	CWRS	Satisfactory	163	308	6.4
BW 293	RL4933	40.0	98	red	Withdrawn by Contributor		118	219	6.3
BW 294	RL4954(white)	32.5	100	white	CW Feed	Satisfactory	194	359	1.6
						Mean	232	344	4.1
						LSD	50	~	2.0
						N	2	2	2

* = Heads weathered for 48 hours in a rain simulator

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Table IX

Test Weight (kg/hl)

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Bran	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	72.6	75.7	73.0	69.3	78.0	73.7	72.8	76.5	80.2	75.9	78.2	76.7	75.2
BW 92	Roblin	72.7	75.6	73.0	66.1	76.3	72.7	71.7	74.0	76.7	75.6	77.6	75.1	73.9
BW 173	AC Majestic	75.2	77.0	75.1	71.7	78.9	75.6	76.3	78.3	80.7	75.9	78.2	77.9	76.7
BW 205	McKenzie	76.4	78.1	76.4	74.1	79.6	76.9	76.4	78.9	79.9	77.2	78.4	78.2	77.5
BW 661	AC Barrie	75.7	77.8	75.5	71.9	80.1	76.2	76.1	79.8	81.3	78.8	79.8	79.2	77.7
BW 243	SWP950-252	77.8	79.3	77.6	74.1	80.3	77.8	77.7	80.5	82.4	79.0	79.7	79.9	78.8
BW 256	UGG96-2428	76.3	77.7	76.1	73.6	80.1	76.8	76.9	79.6	80.7	77.7	77.7	78.5	77.6
BW 259	RL4841	75.2	77.6	76.3	72.3	79.8	76.3	75.5	78.5	80.5	78.0	78.3	78.2	77.2
BW 263	RL4861(white)	75.0	77.7	74.7	71.1	80.2	75.7	75.0	78.5	80.7	77.1	79.5	78.2	77.0
BW 264	RL4871(white)	76.4	77.6	75.5	72.9	79.7	76.5	75.3	78.8	80.6	77.3	77.8	77.9	77.2
BW 267	UGG97-2627	76.4	77.6	75.0	73.6	79.6	76.4	76.4	79.9	81.0	77.8	78.1	78.6	77.5
BW 270	RL4887	76.6	79.1	76.5	73.9	79.9	77.2	76.4	78.6	82.0	78.9	84.4	80.1	78.6
BW 271	RL4892	75.4	77.8	75.5	72.1	69.5	74.1	75.6	78.9	80.8	77.9	77.9	78.2	76.1
BW 274	RL4901	77.0	78.5	75.9	73.6	79.0	76.8	77.9	79.9	81.6	78.0	78.1	79.1	78.0
BW 275	RL4868(white)	77.2	78.3	76.3	74.0	81.2	77.4	76.5	79.9	81.7	78.5	80.6	79.5	78.4
BW 280	W98001	75.3	77.6	75.4	72.6	79.2	76.0	75.1	78.5	80.3	78.1	79.2	78.2	77.1
BW 281	W98139	74.4	76.5	74.9	70.6	78.3	74.9	75.2	77.8	80.1	77.7	80.0	78.2	76.6
BW 282	W98190	76.9	79.5	77.1	74.0	80.5	77.6	76.8	79.7	81.7	79.4	80.8	79.7	78.6
BW 283	98S2086-93-6	75.1	77.9	75.7	70.6	78.7	75.6	76.3	77.7	80.7	78.1	78.7	78.3	77.0
BW 285	98S2086-124-7	73.9	76.7	74.8	71.5	78.5	75.1	74.7	77.5	80.5	77.4	78.7	77.8	76.4
BW 286	UGG98-2321	74.6	77.4	73.7	70.4	78.0	74.8	74.0	77.8	80.2	75.9	77.2	77.0	75.9
BW 288	RL4918	76.5	78.0	75.7	72.2	79.3	76.3	75.9	78.6	80.6	77.8	79.7	78.5	77.4
BW 289	RL4920	75.4	76.5	75.1	72.3	79.1	75.7	73.9	77.1	80.3	76.6	78.5	77.3	76.5
BW 290	RL4921	74.4	76.5	72.7	69.1	75.7	73.7	73.1	77.3	79.0	75.4	77.0	76.3	75.0
BW 291	RL4927	75.5	78.0	76.3	73.7	80.8	76.9	77.1	79.0	81.3	78.3	78.4	78.8	77.8
BW 292	RL4932	74.1	76.5	73.9	70.5	78.5	74.7	75.6	78.6	80.8	77.6	78.0	78.1	76.4
BW 293	RL4933	76.6	76.4	75.1	70.4	78.2	75.3	75.6	78.6	80.8	77.5	78.9	78.3	76.8
BW 294	RL4954(white)	78.8	80.4	79.6	74.8	81.9	79.1	78.9	81.7	82.9	80.4	79.6	80.7	79.9
	Mean	75.6	77.6	75.4	72.0	78.9	75.9	75.7	78.6	80.7	77.6	78.9	78.3	77.1
	LSD						1.3						1.0	0.8
	N						5						5	10

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Table X

Seed Mass (g/1000 kernels)

CBW Coop 2000

Entry	Station No.	ZONE 1 Glen	Port	Mord	Bran	Elgi	Zone Mean	ZONE 2 InHd	Regi	Kern	Kelv	Melf	Zone Mean	Overall Mean
BW 2	Neepawa	26.3	28.1	27.4	22.9	27.3	26.4	27.4	28.5	30.6	30.5	29.5	29.3	27.8
BW 92	Roblin	29.1	31.4	29.5	24.2	28.4	28.5	27.9	31.1	29.5	30.6	29.8	29.8	29.1
BW 173	AC Majestic	26.4	28.7	29.8	24.5	29.0	27.7	31.4	32.1	32.8	31.9	31.9	32.0	29.8
BW 205	McKenzie	29.0	30.8	31.0	26.9	29.3	29.4	29.6	31.8	29.7	32.3	28.5	30.4	29.9
BW 661	AC Barrie	28.0	31.0	30.9	23.9	31.5	29.0	30.9	32.4	32.8	35.2	33.8	33.0	31.0
BW 243	SWP950-252	26.1	31.1	29.6	23.7	27.6	27.6	29.0	29.8	31.3	29.5	31.0	30.1	28.9
BW 256	UGG96-2428	28.5	31.7	33.2	26.1	32.1	30.3	33.5	34.6	33.6	34.6	34.1	34.1	32.2
BW 259	RL4841	28.3	31.5	32.2	24.9	30.9	29.5	29.1	30.7	33.2	33.2	29.4	31.1	30.3
BW 263	RL4861(white)	25.2	28.5	27.9	21.4	27.8	26.2	27.5	27.8	30.2	29.9	29.6	29.0	27.6
BW 264	RL4871(white)	27.7	31.2	30.4	25.0	30.4	28.9	28.9	31.0	32.1	31.7	30.5	30.8	29.9
BW 267	UGG97-2627	31.4	32.2	32.7	27.0	30.3	30.7	32.9	31.3	33.0	33.7	28.5	31.9	31.3
BW 270	RL4887	28.6	31.8	33.4	27.1	30.7	30.3	31.7	30.7	31.2	32.9	29.8	31.3	30.8
BW 271	RL4892	28.8	30.7	31.2	23.1	29.4	28.6	28.4	30.8	32.4	32.2	29.8	30.7	29.7
BW 274	RL4901	30.9	31.8	34.0	28.7	32.4	31.6	34.3	37.4	35.9	36.4	34.1	35.6	33.6
BW 275	RL4868(white)	26.8	28.5	29.9	23.0	28.6	27.3	26.3	28.5	30.4	31.9	31.4	29.7	28.5
BW 280	W98001	25.9	27.6	28.9	23.5	28.5	26.9	27.5	28.2	30.5	31.7	32.1	30.0	28.4
BW 281	W98139	26.7	30.1	32.1	24.4	29.5	28.6	27.4	29.5	33.0	32.2	30.8	30.6	29.6
BW 282	W98190	28.6	31.0	31.2	25.7	30.6	29.4	30.5	28.7	30.4	32.0	30.0	30.3	29.9
BW 283	98S2086-93-6	28.7	33.2	33.2	26.4	31.4	30.5	31.2	30.6	32.9	32.1	32.5	31.8	31.2
BW 285	98S2086-124-7	27.4	32.8	33.2	27.9	32.2	30.7	31.2	32.0	33.5	34.9	30.9	32.5	31.6
BW 286	UGG98-2321	29.6	33.7	32.1	26.7	33.3	31.1	32.9	35.2	34.4	33.1	29.5	33.0	32.0
BW 288	RL4918	32.1	33.1	35.6	25.2	31.0	31.4	31.0	32.7	34.9	33.1	31.5	32.6	32.0
BW 289	RL4920	28.1	29.3	31.0	24.4	28.7	28.3	27.4	28.0	31.0	29.9	27.1	28.7	28.5
BW 290	RL4921	33.3	35.6	36.0	27.1	36.0	33.6	34.7	37.7	37.5	40.5	34.6	37.0	35.3
BW 291	RL4927	25.3	28.6	30.7	22.9	28.8	27.3	26.0	28.2	29.9	29.7	26.1	28.0	27.6
BW 292	RL4932	29.1	31.9	32.1	25.4	30.6	29.8	30.7	31.6	32.3	34.4	30.2	31.8	30.8
BW 293	RL4933	27.2	27.0	30.9	22.8	26.5	26.9	26.5	25.9	31.5	34.6	28.0	29.3	28.1
BW 294	RL4954(white)	35.2	34.3	36.6	29.8	34.2	34.0	34.9	37.3	38.4	42.2	37.0	37.9	36.0
	Mean	28.5	31.0	31.7	25.2	30.2	29.3	30.0	31.2	32.5	33.1	30.8	31.5	30.4
	LSD						1.2						1.6	1.1
	N						5						5	10

Note: BW 284 and BW 287 were discontinued prior to seed mass determination.

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Table XI

Disease Data (rating and/or reaction)

CBW Coop 2000

Entry	Station No.	Stem Rust	Leaf Rust	Loose Smut	Common Bunt	FHB	S.nodo. MKW reduc	S.nodo Score [b]	S.triti. MKW reduc	S.triti Score [b]
BW 2	Neepawa	tr R	50 S	0 R a	22 I	20 MR	11.5	9.0	11.4	11.0
BW 92	Roblin	0 R	40 MS	9 R	44 S	42 S	15.7	8.7	16.7	11.0
BW 173	AC Majestic	0 R	15 MRMS	23 MR	10 R	24 I	12.4	8.3	10.0	11.0
BW 205	McKenzie	0 R	tr R	38 I	0 VR	30 I	8.9	9.0	8.8	11.0
BW 661	AC Barrie	0 R	20 MRMS	3 R	39 S	22 I	1.4	8.0	2.3	11.0
BW 243	SWP950-252	0 R	10 MRMS	4 R	2 VR	30 I	8.9	8.0	5.4	11.0
BW 256	UGG96-2428	tr R	10 MRMS	35 MR	16 I	19 MR	11.1	8.0	8.7	10.7
BW 259	RL4841	0 R	10 MR	0 R a	26 MS	32 MS	10.0	9.0	6.3	11.0
BW 263	RL4861(white)	tr R	5 MR	61 MS	38 S	23 I	6.8	8.7	6.7	11.0
BW 264	RL4871(white)	tr R	5 MR	33 MR	10 R	27 I	6.2	8.3	11.4	11.0
BW 267	UGG97-2627	2 RMR	10 MR	5 R	10 MR	23 I	3.5	8.7	6.4	11.0
BW 270	RL4887	0 R	5 MR	9 R	16 I	30 MS	15.2	9.0	9.4	11.0
BW 271	RL4892	0 R	15 MRMS	33 MR a	- -	29 I	5.1	9.0	5.3	11.0
BW 274	RL4901	0 R	tr R	8 R	21 I	34 MS	12.6	8.3	6.9	10.0
BW 275	RL4868(white)	1 RMR	15 MRMS	47 I	44 S	21 I	11.5	8.7	7.4	11.0
BW 280	W98001	0 R	5 MR	36 I	0 VR	33 MS	14.7	9.3	13.3	11.0
BW 281	W98139	0 R	10 MR	55 I	6 R	36 MS	13.8	9.0	15.4	11.0
BW 282	W98190	0 R	10 MR	7 R	15 MR	36 MS	11.8	8.0	9.5	11.0
BW 283	98S2086-93-6	tr R	tr R	23 MR	13 MR	44 S	9.4	8.0	7.9	11.0
BW 284	98S2086-124-4	tr R	tr R	3 R	- -	33 MS	9.2	8.0	5.1	10.3
BW 285	98S2086-124-7	0 R	3 R	14 R	22 I	38 MS	16.6	8.0	9.7	10.3
BW 286	UGG98-2321	0 R	tr R	10 R	21 I	30 MS	15.2	8.3	12.5	10.7
BW 287	UGG89-2366	0 R	10 MRMS	6 R	9 R	38 MS	9.6	9.0	14.8	11.0
BW 288	RL4918	tr R	tr R	0 R	14 MR	34 MS	9.7	8.3	15.5	11.0
BW 289	RL4920	tr R	tr R	0 R	6 R	21 I	10.9	8.7	9.0	11.0
BW 290	RL4921	0 R	15 MS	25 MR a	10 MR	30 I	15.9	9.0	14.4	11.0
BW 291	RL4927	0 R	5 MR	8 R	11 MR	34 MS	11.6	8.7	12.3	11.0
BW 292	RL4932	tr R	10 MRMS	27 MR	64 S	22 I	7.6	8.0	5.7	10.7
BW 293	RL4933	tr R	25 MS	27 MR	38 S	23 I	16.5	9.0	12.4	11.0
BW 294	RL4954(white)	2 RMR	10 MRMS	40 I a	31 S	49 S	13.8	9.0	9.7	11.0

a = assessment made on less than 10 plants
b = McFadden's Scale <5 = R; 6 = MR; 7 = I; 8-9 = MS; 10-11 = S

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Table XII

Seedling Rust Reaction

CBW Coop 2000

Entry	Station No.	Leaf rust races 185-1 MBDS	128-1 MBRJ	74-2 MGBJ	77-2 TJBJ	Stem rust races TMR	TPM	RTH	QTH	QFC
BW 2	Neepawa	3+	3+	3+	3+	;2+	12-	;2	6(2+-)	0
BW 92	Roblin	3+	3+	22-	23	0;	;1-	;1	12+	0;
BW 173	AC Majestic	11-	11-	12-c	1+2c	0	0;	;1=	;1-	0;
BW 205	McKenzie	;1-1=	;	;1=	;	0;	0;	1+-	;1	0;
BW 661	AC Barrie	11+	11-	1+2c	1+2	;2	;1+	;2	12+	0;
BW 243	SWP950-252	1+2+c	;11-	2-c	;1-2-c	0;	;1-	;2-	7(;1+) 1(23)	;
BW 256	UGG96-2428	12-	;11-	12-c	;2-c	;1-	;1-	;1-	1	0;
BW 259	RL4841	;11-	;1-	11-	1-2-	0;	0;	;1-	;1-	0;
BW 263	RL4861(white)	1+2-	1-	2	22-	0	4	2+-	13-	0;
BW 264	RL4871(white)	11-2-c	;11-	1+2-c	2-c	0;	0;	22+	2+-	0;
BW 267	UGG97-2627	;1-2=c	1-	;1-	;1-	0	0	12+	13	0;
BW 270	RL4887	3+	;2=3	;2-	;2-2=	;1=	;1-	;2	;1	0;
BW 271	RL4892	;2=c	11-	2-2=	2-	0;	0;	6(;1) 1(23)	;1	;1-
BW 274	RL4901	2+3	;1-2=	2-2=	;2-	0;	7(;1-) 1(12)	;1	;1-	0
BW 275	RL4868(white)	11-	;1-	1+2-c	1+2-	0;	0;	12-	;1+	0;
BW 280	W98001	;1-	;	;	;1-	;1-	;1	;2-	12	;1=
BW 281	W98139	;2-2=	;1-	2-2=	;2-2=	;1-	;1-	;1=	;1-	0;
BW 282	W98190	;2-2=	;	;2=	;1-2=	0;	;1-	;1-	;1+	0;
BW 283	98S2086-93-6	2-2=	;2=	;2-2=c	;2=	0;	;1-	;	;1-	0;
BW 284	98S2086-124-4	;2=	;2-2=	;2=	;2-2=	0;	;1-	;1-	;1-	0;
BW 285	98S2086-124-7	;1-2=c	;1-2=c	;2=	;1-2-c	0	;1-	;1	;2+	0;
BW 286	UGG98-2321	;2=c	;/2-2=	;1-2=c	;1-2=	0;	0;	12+	;1	0;
BW 287	UGG89-2366	;2-2=	;1-1=	1-2=c	;1-2-2=	0;	;1=	;	;1-	0;
BW 288	RL4918	;	0;	0;	;1-	;1-	;1-	;1-	;1+	0;
BW 289	RL4920	;	;	;	;1-	;1-	;1-	;1-	0;	0
BW 290	RL4921	;	;	;	3+	0;	1+-	1-1	;2	;
BW 291	RL4927	;2-2=	;11-	22-	2-2=	0	0;	;1-	;1-	0
BW 292	RL4932	3+	3+	23	;22-	13-	0;	0;	0;	0;
BW 293	RL4933	;	;	;	3+	;1=	1	4(4) 3(;1-)	12	;
BW 294	RL4954(white)	3+	23	33+	:2-2=	1	13	12+	1	1+

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Table XIII

Previous Disease Data 1998-1999

CBW Coop 2000

1999

Entry	Station No.	Stem Rust	Leaf Rust	Root Rot	Loose Smut	Common Bunt	FHB	Tan Spot	S.nodo. MKW reduction	S. nodo. Score [b]	S.triti. MKW reduction	S. triti. Score [b]
BW 2	Neepawa	5 RMR	60 MS	57	0 R	29 MS	10 MR	5.0	21.5	9.8	-	2.0
BW 92	Roblin	tr R	10 MR	44	0 R a	39 S+	62 S	5.0	6.5	9.8	-	2.0
BW 173	AC Majestic	tr R	40 MR	68	3 R	8 MR	13 MR	5.0	13.1	9.3	-	2.0
BW 205	McKenzie	tr R	tr R	53	0 R a	2 R	18 MR	5.0	10.2	9.5	-	2.0
BW 661	AC Barrie	5 R	40 MRMS	83	0 R a	25 MS	13 MR	5.0	7.7	9.5	-	1.0
BW 243	SWP950-252	5 RMR	5 R	73	29 MR	12 I	13 MR	5.0	13.6	8.5	-	2.0
BW 256	UGG96-2428	3 R	10 MR	59	44 MS	2 R	3 R	5.0	6.1	9.3	-	1.0
BW 259	RL4841	1 R	5 R	59	17 MR a	31 S	50 S	5.0	8.1	9.8	-	3.0
BW 263	RL4861(white)	15 MRMS	10 RMR	67	45 MS	34 S	25 I	5.0	13.3	10.0	-	2.0
BW 264	RL4871(white)	5 MRMS	5 R	67	24 MR	27 MS	22 I	5.0	16.5	9.3	-	2.0
BW 267	UGG97-2627	5 MR	5/20 R/MRMS	75	8 R	1 R	7 R	5.0	18.4	10.3	-	2.0
BW 270	RL4887	tr R	3 R	76	0 R	26 MS	10 R	5.0	7.9	10.0	-	2.0
BW 271	RL4892	tr R	20 RMR	64	50 MS a	17 I	43 S	5.0	9.2	9.5	-	2.0
BW 274	RL4901	tr R	tr R	73	0 R	26 MS	9 R	5.0	4.4	9.0	-	2.0
BW 275	RL4868(white)	3 RMR	30 MRMS	61	12 R	46 S+	2 R	5.0	1.4	9.8	-	2.0

1998

Entry	Station No.	Stem Rust	Leaf Rust	Root Rot	Loose Smut	Common Bunt	FHB	Tan Spot	S.nodo. MKW reduction	S. nodo. Score [b]	S.triti. MKW reduction	S. triti. Score [b]
BW 2	Neepawa	3 R	50 MR-S	11	0 R	23 I	40 MS	9.7	-1.4	10.0	-6.38	10.3
BW 92	Roblin	1 R	5 M	20	18 MR	39 S	70 S	10.3	0.3	10.0	-5.54	10.3
BW 173	AC Majestic	1 R	30 MRMS	15	43 MS	8 R	34 MS	10.0	-4.9	10.0	-10.53	10.0
BW 205	McKenzie	5 R	tr R	9	33 MR	3 R	39 MS	10.0	-1.3	9.7	-5.97	9.3
BW 661	AC Barrie	5 R	30 MRMS	21	3 R	16 IR	29 I	10.0	0.2	9.7	-2.53	10.3
BW 256	UGG96-2428	15 R	tr/60 R/MS	12	50 MS	15 IR	47 S	9.3	2.4	9.7	5.13	9.7
BW 259	RL4841	3 R	10 MR	7	17 MR a	24 I	57 S	9.7	5.8	10.0	-3.55	10.0
BW 263	RL4861(white)	30 MRMS	tr R	29	17 MR	35 S	34 MS	10.0	10.3	10.3	1.07	10.0
BW 264	RL4871(white)	20 MR	tr R	21	13 R a	8 R	26 I	9.7	17.5	10.3	9.16	10.0

a = assessment made on less than 10 plants

b = McFadden's Scale <5 = R; 6 = MR; 7 = I; 8-9 = MS; 10-11 = S

2003 0103 50

Table XIV

Average Yield Data ('00 kg/ha)

CBW Coop 2000

Entry	Station No.	Glen	Port	Mord	Elgi	ZONE 1 Mean	InHd	Regi	Kern	Kelv	Melf	ZONE 2 Mean	Overall Mean
Three Year Means (1998-2000)													
	N=	3	3	3	3	14	3	3	3	3	3	15	29
BW 2	Neepawa	34.5	39.9	29.2	33.2	34.3	41.9	37.7	39.6	37.2	28.7	37.0	35.7
BW 92	Roblin	34.4	44.7	30.6	29.9	35.4	41.1	34.8	36.4	37.1	29.9	35.8	35.7
BW 173	AC Majestic	37.4	47.9	29.8	39.4	38.2	46.0	41.8	42.9	34.5	32.2	39.5	38.9
BW 205	McKenzie	44.5	53.1	41.8	42.7	45.6	49.8	44.7	45.6	43.0	35.8	43.7	44.7
BW 661	AC Barrie	39.5	46.2	32.9	37.2	39.0	44.6	41.6	42.7	39.0	30.6	39.7	39.4
BW 256	UGG96-2428	40.5	48.9	35.7	39.8	41.2	41.8	39.5	38.2	33.6	31.3	36.9	39.0
BW 259	RL4841	42.1	55.0	37.4	39.1	43.4	44.9	40.5	42.9	41.6	33.3	40.7	42.0
BW 263	RL4861(white)	36.7	44.7	27.6	33.4	35.6	41.3	35.6	37.7	36.0	28.3	35.8	35.7
BW 264	RL4871(white)	43.0	52.6	34.2	39.4	42.4	45.1	40.8	41.3	37.9	31.0	39.2	40.7
Two Year Means (1999-2000)													
	N=	2	2	2	2	9	2	2	2	2	2	10	19
BW 2	Neepawa	34.0	38.1	37.1	33.7	35.1	40.4	37.3	43.6	39.2	26.9	37.5	36.3
BW 92	Roblin	34.5	42.9	37.4	34.3	37.4	41.2	34.7	38.5	39.4	27.7	36.3	36.8
BW 173	AC Majestic	37.7	47.1	38.7	39.3	39.0	44.4	41.3	46.1	34.3	32.3	39.7	39.3
BW 205	McKenzie	46.1	50.8	51.0	45.6	47.8	49.1	46.1	50.1	45.3	35.4	45.2	46.4
BW 661	AC Barrie	40.7	46.0	42.8	37.2	41.0	43.0	41.9	46.7	40.6	31.5	40.7	40.8
BW 243	SWP950-252	42.2	47.5	44.4	42.2	42.6	39.7	39.7	49.0	40.1	29.8	39.7	41.1
BW 256	UGG96-2428	41.7	48.1	45.3	39.8	42.7	40.4	37.9	40.7	32.0	30.3	36.3	39.4
BW 259	RL4841	41.4	53.8	46.9	43.5	45.6	42.8	39.5	46.6	42.3	31.4	40.5	42.9
BW 263	RL4861(white)	37.1	44.6	36.6	32.6	36.7	40.9	34.3	41.9	36.8	25.9	36.0	36.3
BW 264	RL4871(white)	41.5	51.3	43.3	41.6	43.7	43.8	40.1	44.7	38.8	28.6	39.2	41.3
BW 267	UGG97-2627	46.8	52.3	50.5	46.5	48.4	47.8	43.7	49.7	42.7	34.5	43.7	45.9
BW 270	RL4887	42.2	53.6	44.5	41.2	45.2	46.3	40.3	42.7	37.1	31.2	39.5	42.2
BW 271	RL4892	40.6	52.8	43.4	39.8	43.3	41.6	36.4	46.4	40.4	30.2	39.0	41.1
BW 274	RL4901	43.6	46.5	48.7	43.9	45.3	45.3	44.7	49.4	38.8	33.2	42.3	43.7
BW 275	RL4868(white)	38.6	43.0	38.1	38.4	38.0	41.0	39.1	44.7	36.8	27.4	37.8	37.8

Note: Zone and overall means also include Brandon (Zone 1, 1998 & 1999)

2003003500
2003003500

Snowbird (BW 264)

Crop Kind: Hard White Spring Wheat
Scientific Name: Triticum aestivum L.
Breeders: D.G. Humphries, T.F. Townley-Smith, E.M. Czarnecki.
Agriculture and Agri-Food Canada, Cereal Research Center, Winnipeg MB

Performance and Adaptation:

Area of Adaptation: Wheat growing area of Western Canada
Strengths: White seed and flour color and good yield level
Weakness: Small kernel size

Description: Snowbird is a white seeded, hollow stemmed wheat which has quality similar to the current CWRS class of wheat

In two years of testing in the Central Bread Wheat Coop trials, Snowbird yielded 14.6% more than Neepawa, 15.6% more than Roblin, 7% more than AC Majestic, 5.6% more than AC Barrie and 8.5% less than McKenzie. It was 4 cm shorter than Neepawa, but slightly taller than the other check varieties. Snowbird had slightly better lodging resistance scores than Neepawa and McKenzie. Snowbird is later maturing than check varieties

Snowbird is resistant to the prevalent races of leaf rust, moderately resistant to stem rust, loose smut and common root rot and similar to Roblin in resistance to tan spot, Septoria tritici and Septoria nodorum. It appears to be similar to Neepawa in reaction to fusarium head blight.

AC Domain

AC Snowbird

AC Barrie

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

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)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Cereal Research Centre - Agriculture and Agri-Food Canada ~~Quality Assured Seeds Inc.~~ MAH 12-18-2009	BW 264	Snowbird
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)*
418B McDonald St. Regina, Saskatchewan Canada S4N 6E1	(306) 791-0500	(306) 791-0555
	7. PVPO NUMBER 200300350	

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 (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** ☐ YES ☑ NO

Canada

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**

Canada

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**

Canada

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

Breeder: Agriculture and Agri-Food Canada, Cereal Reseach Centre, Winnipeg, Manitoba Canada

The owner of the variety is: Cereal Research Centre – Agriculture and Agri-Food Canada. The distributor of the variety is: Quality Assured Seeds, Inc.

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.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provide and employer.