200600278

No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Grant H. Torrey, Jr. for CHS, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Concept'

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 third day of May, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

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

Form Approved - OMB No. 0581-0055

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

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

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

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

1. NAME OF OWNER
Grant H. Torrey, Jr. for CHS, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
89S*88D

3. VARIETY NAME
Concept

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
2087 Road "O" SE
Moses Lake, WA. 98837

5. TELEPHONE *(include area code)*
509-765-3898

6. FAX *(include area code)*
509-764-7223

FOR OFFICIAL USE ONLY

PVPO NUMBER
200600278

FILING DATE
August 25, 2006

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

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Grant H. Torrey, Jr.
2087 Road "O" SE
Moses Lake, WA. 98837

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 4382.00
DATE 8/25/2006

CERTIFICATION FEE:
$ 768.00
DATE 4/20/2007

11. TELEPHONE (Include area code)
~~509-349-8895~~
509-349-8893

12. FAX (Include area code)
~~509-349-0917~~
509-349-0917

13. E-MAIL
grant.torrey@columbiaseed.com

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

16. FAMILY NAME *(Botanical)*
Gramineae

15. GENUS AND SPECIES NAME OF CROP
Triticum Aestivum

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. ☒ Exhibit F. Declaration Regarding Deposit
g. ☐ Voucher Sample *(3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☒ Filing and Examination Fee ($4,382), 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? ☑ FOUNDATION ☑ REGISTERED ☑ 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.
☑ FOUNDATION ☑ REGISTERED ☑ 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	
NAME *(Please print or type)* Grant H. Torrey, Jr		NAME *(Please print or type)*	
CAPACITY OR TITLE Breeder	DATE 8/18/06	CAPACITY OR TITLE	DATE

(See reverse for instructions and information collection burden statement)

200600278

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

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

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

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

ITEM

19a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

20. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

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

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

USA August 28, 2005

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

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

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

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

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Item 16a.

"Concept" (formally tested as 89S*88D) is a semi-dwarf, white chaffed, common Soft White Winter wheat that was selected from a conventional back-cross the F1 cross of Basin (89) by Stephens (S) (male) to the F1 cross of Cashup (88) by Daws (D) (female) made in 1987.

The individual seeds were then space planted separately to produce the F/1 generation. These heads were then space planted into rows to produce the segregating F/2 generation. This F/2 generation was subjected to a severe winter event (68 degrees to minus 40 degrees Fahrenheit February 1, 1989) and selection of surviving single plants plus the absence of Stripe (Puccina striiformis) rust from these rows were then shelved until 1995.

Seeds from these single plants were space planted to produce the F/3 generation. Selection of single plants from these segregating single rows was based on height (30" to 36"), absence of Stripe (Puccina striiformis) rust and maturity. This process continued until uniformity was somewhat retained ca 2000.

Plants were then selected from the F/7 generation and were bulked and designated Experimental # 89S*88D. Uniform plants were then selected for purification and head-rowed to produce Breeders seed.

The Breeders seed produced showed a variant that was similar to 89S*88D, but was 6 to 10 inches taller occurring at a frequency of up to .10% (10 per 10,000 plants) so I again selected uniform heads from uniform plants and hired the Foundation Seed Service, a department of the Washington State Crop Improvement Association to head-row to produce Breeders seed. Uniformity was established as far as physical appearance, but produced some rows that showed Stripe (Puccina striiformis) rust. These rows were destroyed and the remainders were harvested as Breeders seed of 89S*88D.

Seed of this production of 89S*88D was entered into the Washington State Uniform Variety trials for testing and planted by the Foundation Seed Service. The resulting Breeder to Foundation 89S*88D proved uniform and stable since 2005.

Al Burgoon of USDA, Horticulturist Testing Section cleared the name "Concept".

Item 16b.

"Concept" (formally tested as 89S*88D) is a semi-dwarf, white chaffed, common Soft White Winter wheat that was selected from the F1 cross of Basin (89) by Stephens (S) to the F1 cross of Cashup (88) by Daws (D) in 1987. The variety "Concept" most closely resembles the variety "Madsen".

Glumes are white with the shoulder and beak apiculate in shape, medium in length and width. When mature, the heads are hard to distinguish between Concept and Madsen as the strap shape and awn length are very similar.

Concept seed most closely resembles that of Madsen. Concept kernels differ in that they have a more elliptical germ and heavier brush whereas Madsen has as extremely round germ and lighter brush. Concept seed count is 10,607 per lb and has a 1,000 kernel weight of 42.8 grams versus Madsen at 11,436 seeds per lb and a 1,000 kernel weight of 39.7 grams. This is based on 2004-2005 WSU Winter Variety Trial Seed Weights. Concept consistently has lower protein than that of Madsen in the grain and in flour produced.

Concept kernel shape is oval with angular cheeks, symmetrical in shape and is white with soft texture. Germ is ovate and brush is midsized. Brush length is midsized, not collared and terminates on the cheeks with definition. Crease depth is shallow with crease being wide, nearly as wide as the kernel.

Concept has excellent winter hardiness, emergence, standibility, test weight with mellow straw. Concept is substantially more winter-hardy than that of Madsen (Project # 5344, page 4). Concept will yield very well in 18" to irrigated production areas of the PNW and has excellent resistance to all foliar diseases prevalent in the PNW, thus far. Seed field yields in 2005 vary between 132 to 151 bushels per acre.

Concept is two inches (5.08 cm) excluding awns, shorter than the variety Madsen and has stronger straw strength under higher yield production areas. Concept peduncle length is 7.62 cm, leaf width is 1.59 mm, 1st node 8.19 cm, 2nd node 9.58 cm, 3rd node 17.42 cm and the flag leaf length is 28.15 cm. Compared to Madsen's peduncle length is 10.54 cm, leaf width 1.58 mm, 1st node 7.4 cm, 2nd node 11.1 cm, the 3rd node 18.01 cm and the flag leaf length is 29.56 cm.

Concept is similar to Madsen in their disease resistance to Cephalosporium Stripe (Cephalosporium gramineum) and Stripe Rust (*Puccinia striiformis*). Concept is susceptible to Strawbreaker footrot (*Pseudocercosporella herpotrichoides*) where as Madsen is resistant. This is based on observations in the Washington State Uniform Variety trials where natural infection occurs.

Based on observations in nursery trials and commercial production throughout Eastern Washington, Concept heading date is 3 days (160 Julian vs. 163) and maturity (12% moisture) 5 days earlier than Madsen.

Concept is a medium maturing, slightly hard threshing, very winter-hardy Soft White Winter wheat best adapted to the higher rainfall areas of the Pacific Northwest. Concept has proven itself to enhance the quality of the P.N.W. soft white wheat export market.

Washington Wheat Commission Wheat Research Annual Progress Reports and Final Reports

Project #: 5344
Progress Report Year: 2006

Title: EVALUATION OF COLD TOLERANCE IN WHEAT

Researchers: K. Garland Campbell, L.M. Little, L. Reddy, C. Hoagland,
Assisted by: J. Dubcovsky, D.Z. Skinner, D. Dreesman
Assisting Cooperators: R.E. Allan, J. Burns, S.S. Jones, K.K. Kidwell, T. Murray, C.J. Peterson, R. Zemetra, P. M. Hayes,.

Accomplishments and Results: (listed by objective)

Objectives 1-3: Conduct artificial freeze tests after 6 weeks of hardening at 36° F.
1. Evaluate Washington wheat variety trials (Soft Wheat and Hard Wheat Trials)
2. Evaluate cold tolerance of advanced breeding lines
3. Evaluate cold tolerance of new breeding lines in regional nurseries.

Our testing program ran smoothly throughout 2006 using the changes that we implemented in 2005. We began testing the Washington State Winter Wheat Variety Trials in Dec. 2005. Because temperature variations occur from one run to another, Stephens and Eltan were included in every run as a susceptible and resistant check, respectively. Each complete run evaluates 34 entries plus Stephens and Eltan. Each complete run requires 11 weeks to complete. We completed 10 runs between Dec 2006 and Sept. 2006. This was the maximum that we could test in our current facilities (growth room and growth chamber) at the Wheat Plant Growth Center. As of Dec 1, we have planted and are vernalizing the first two sets of the 2007 Washington Winter Wheat Variety Trials. The first freeze test for the 2007 trials will be conducted on Dec 21.

Data from 2006 are located in tables 1-6 at the end of this report. Each table includes the AUDPC (area under the death progress curve) calculated based on the number of plants that die at each of the five test temperatures from -10 to -20°C. The AUDPC values were calculated on a relative basis where 0=complete survival and 100=complete death of all plants tested for a given line over all temperatures. The data from 2005 and 2006 are combined in this table and entries are groups according to the 2006 nursery that they were in. Thus, if an entry was in both the Western Regional nursery in 2005 and the Washington State Variety trials in 2006, it will be in grouped with the Washington State Variety trials in Tables 1-6. Current variety names and numbers were used whenever possible.

Because we conduct two replications of each test and several of the entries were tested in both years, we were able to calculate confidence intervals for the mean AUDPC values. If lines differ by more than the confidence interval they are have a

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significantly different response to the freezing test. In general, the most tolerant winter wheats have AUDPC values of 25 and below in our tests this year (25% of the all plants died over all temperatures). Most of the PNW winter wheats have AUDPC values between 30 and 40. Spring wheats or very sensitive winter wheats have AUDPC values above 55. Some lines have larger confidence intervals associated with their means than others because they have not been evaluated as often. In order to identify new sources of winter resistance, we have evaluated germplasm and breeding lines from the Great Plains. Some of those lines are included in Table 6. Wheat grown in the Great Plains has very good winter hardiness compared to PNW wheat and is a good source of winter hardiness for the PNW.

Objectives 4 and 5: Evaluate unhardened wheat and evaluate interactions between cold hardiness and disease infection: These experiments were not conducted in 2006.

Objective 6: Identify genes controlling cold hardiness in winter wheat.

We are using molecular markers (SSR) to identify quantitative trait loci (QTLs) for cold tolerance and vernalization requirement, and to identify markers that can be used for marker assisted selection for winter hardiness. Two recombinant inbred (RIL) populations, Norstar/Centurk78 and Karl/Z0031, are being used to map QTLs for cold tolerance. Parents of population 1, Norstar and Centurk78, were screened with 1510 SSR markers and 184 were polymorphic and fit the expected segregation ratio of 1:1. Parents of population 2, Karl and Z0031 were screened with 631 SSR markers. 111 were polymorphic and fit the expected segregation ration of 3:1. A total of five QTLs, which designate areas on wheat chromosomes that are associated with better cold hardiness, were identified in the two populations. The strength of the QTL is calculated using a LOD score and R2 value. For both statistics, higher numbers indicate that the QTL has a bigger effect on cold hardiness.

Three QTLs designating areas in the wheat genome that influence cold hardiness were identified in the Norstar/Centurk78 RILs, one on chromosome group5A flanked by the SSR markers barc117 and gwm205 (LOD=2.04, R^2=10.68%), one on chromosome group6B flanked by the SSR markers gwm518 and barc67 (LOD=1.43, R^2= 7.53%), and one on chromosome group 5D flanked by the SSR markers gdm138 and Barc248 (LOD= 2.53, R^2= 14.04%). In the Z0031 x Karl population there were two QTLs. The QTL on 4B was between SSR markers barc193 and barc218 (Fig 6) had a LOD score of 1.99, R^2= 13.75% and the second QTL was on chromosome group 5A, comprising SSR markers barc117, barc100, barc360 and barc197 (LOD =1.35, R^2= 9.81% for barc117). The QTL on group 5A was detected in both populations.

Because the QTL on chromosome 5A is roughly in a similar location as the a gene called CBF3 that was first identified in the model plant Arabidopsis and then identified in the diploid wheat *Triticium monococcum* and in barley, we decided to map CBF3 in wheat to see if it could be in the area of the QTL. The gene, CBF3 has been shown improve cold tolerance in barley, *T. monoccoum,* and Arabidopsis. We have identified one clone from Dr. X. Chen's *T. aestivum* hexaploid BAC library (which contains fragments of the whole wheat genome) that has similarity to the *T. monococum*

CBF3 gene. We are analyzing our positive clone with the plan to map its location and identify a gene in wheat that controls cold hardiness.

Objective 7: Identify genes controlling cold hardiness in spring wheat.

This work give us come clues that may lead to the development of winter hardy facultative wheat that doesn't require a vernalization period. This wheat can be planted either in the fall or the spring depending on soil moisture. From the work outlined above, it seems that the *Vrn-D1a* allele has the most potential to use to create a winter hardy spring wheat. Choice of winter and spring parent is also critical.

In wheat, variation at the vernalization (*Vrn-1)* loci, located on each of the three genomes, A, B and D, is responsible for vernalization response or the difference between spring and winter growth habit. A dominant *Vrn-1a* allele on any of the three wheat genomes results in spring habit and the presence of recessive *Vrn-1b* alleles on all three genomes results in winter habit. Two sets of near-isogenic lines (NILs) that differed only for the Vrn1 genes were developed by Dr. R.E. Allan and evaluated for DNA polymorphisms at their *Vrn-A1, B1* and *D1* loci and for cold hardiness. Two winter wheat cultivars, 'Daws' and 'Wanser', were used as recurrent parents and 'Triple Dirk' NILs were used as donor parents for orthologous *Vrn-1* alleles. The NILs were analyzed using molecular markers specific for each allele. Only 26 of 32 'Daws' NILs and 23 of 32 'Wanser' NILs had a plant growth habit that corresponded to the marker genotype for the markers used. Freezing tests were conducted in growth chambers programmed to cool to -21.5°C. Relative area under the death progress curve (AUDPC) with a maximum value of 100 was used as a measure of death due to freezing. The average relative AUDPC of the spring habit 'Daws' *Vrn- A1a* NILs was 86; significantly greater than the corresponding winter habit 'Daws' *Vrn-A1b* NILs (43). In contrast, all the 'Daws' *Vrn-A1bVrn-B1aVrn-D1b* and *Vrn-A1bVrn-B1bVrn-D1a* NILs (spring habit) had relative AUDPC values equal to those of their 'Daws' sister genotypes with *Vrn-A1bVrn-B1bVrn-D1b* NILs (winter habit). The average AUDPC of spring and winter habit 'Wanser' NILs differed at all three *Vrn-A1, Vrn-B1* and *Vrn-D1* locus comparisons. We conclude that 'Daws' and 'Wanser' have different background genetic interactions with the *Vrn-1* loci influencing cold hardiness.

Publications:

- Reddy, L., Allan, R.E., Garland Campbell, K.A., 2006. Evaluation of cold hardiness in two sets of near-isogenic lines of wheat (*Triticum aestivum)* with polymorphic vernalization alleles. Plant Breeding 125, 448—456.

Abstracts, Presentations and Reports:

- Gaffney, K., 2006. Campbell: Improving cold tolerance in wheat. Wheat Life 49:34-35.
- Campbell., K., Little, L., Reddy, L., Weir, E., 2005. Progress Report. Project 5344: Evaluation Of Cold Tolerance In Wheat. In: Research Review, Washington Wheat Commission and Washington Assoc. of Wheat Growers, Pullman WA., February, 2006. approx 60 participants

TABLE 1. COLD HARDINESS RATINGS FOR ENTRIES IN WSU CEREAL TESTING SOFT WINTER WHEAT NURSERY 2005-2006 Lower values are more cold tolerant (less death due to freezing)

VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean		VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
ALBION	33	16	49	ID99-419	35	23	47
ARS00127	33	16	49	ID99-435	35	23	47
ARS00235	37	27	46	LAMBERT	40	30	49
ARS00258	37	30	43	LEWJAIN	27	18	37
ARS960411	48	31	64	MADSEN	41	36	47
ARS97173	28	11	45	MASAMI	32	22	42
ARS99123	40	34	47	MJ-4	45	35	55
ARSC96059-1	50	41	60	MJ-9	27	10	44
ARSC96059-2	40	28	52	MJ-94	35	23	47
BRUEHL	43	33	52	MOHLER	39	29	48
BRUNDAGE96	37	32	43	ORCF101	44	34	53
BU6W00-523	38	26	50	ORCF102	43	35	52
BU6W99-456	40	28	52	ORH010920	51	45	57
BZ6WMO2-1020	36	24	48	ORSS1757	42	30	54
BZ6WMO2-1154	43	31	55	RELY	42	32	52
CARA	35	25	44	RJAMES	32	22	41
CASHUP	32	22	41	ROD	45	35	55
CHUKAR	35	30	41	SIMON	39	29	49
CODA	36	26	46	STEPHENS	44	40	48
CONCEPT	7	-9	24	TUBBS	38	28	47
DUNE	34	17	50	TUBBS06	40	28	52
EDWIN	26	16	36	WA7934	34	24	44
ELTAN	31	27	36	WA7935	31	21	41
F1182M1-10	46	29	63	WA7970	41	31	51
FINCH	49	39	58	WA7971	28	18	38
GEORGE	32	23	42	WA7972	7	-10	24
HILL81	35	26	45	WA7973	36	27	46
HILLER	33	23	43	WA7974	25	8	42
HUBBARD	36	26	46	WA7999	48	36	60
ID0587	40	30	49	WA8000	37	24	49
ID0620	10	-6	27	WB528	33	23	43
ID9222407A	36	24	48				

Varieties that differ by more or less than the confidence limit are significantly different from each other.

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TABLE 2. COLD HARDINESS RATINGS FOR ENTRIES IN WSU CEREAL TESTING HARD WINTER WHEAT NURSERY 2005-2006 Lower values are more cold tolerant (less death due to freezing)			
VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
ACS5104	50	38	62
BAUERMEISTER	33	23	43
BOUNDARY	23	17	29
BUCHANNAN	27	18	37
DW	32	20	44
EDDY	29	17	41
FINLEY	39	33	45
HATTON	19	9	29
IDO621	25	15	35
MDM	30	18	42
ORN00B507	50	37	62
ORN00B533	36	24	48
ORN980995	43	31	55
PALADIN	32	19	44
SHELTAN	29	17	41
W96359W	22	10	34
W98-344	29	19	39
WA7975	28	18	38
WA7976	25	15	35
WA7977	28	15	40
WA8001	25	13	37
WA8002	18	6	31
WA8003	26	14	38
WA8004	40	28	52
WANSER	17	7	26
WESTON	22	12	32

Varieties that differ by more or less than the confidence limit are significantly different from each other.

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TABLE 3. COLD HARDINESS RATINGS FOR ENTRIES IN WESTERN REGIONAL SOFT WHITE WINTER WHEAT NURSERY 2005-2006 Lower values are more cold tolerant (less death due to freezing)

VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean		VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
ARS00154	50	41	58	IDCF99-419	31	20	43
ARS960491	39	31	48	IDCF99-435	41	29	53
ARS960749-2	41	33	50	IDO620	28	21	35
ARS970059-1	39	27	51	KW0015	52	44	61
ARS970059-2	44	32	56	KW3017	40	28	52
ARS970278-2	43	31	55	KW3021	38	26	50
ARS970281	35	23	47	KW9016	41	29	53
ARS99165	44	37	51	KW9043	21	13	30
ARSC960003	38	26	50	KWP003	33	21	44
ARSC960097	47	35	59	MTCL0489	39	27	51
ID93-12506AD	42	34	51	OR2010239	38	31	45
ID93-19804A	28	20	37	OR2010241	42	35	49
ID93-40702A	36	28	44	OR9801757	55	47	62
ID93-41502A	38	29	46	OR9901619	38	31	45
ID93-64901A	45	38	52	OR9901887	46	38	55
ID94-10902A	30	23	37	ORH010083	37	26	49
ID94-23607AD	47	38	55	ORH010085	32	20	44
ID94-32505A	41	34	48	ORH010918	53	46	60
ID95-32807A	40	33	47	PB1-99-WW-9054	52	43	60
ID96-09103A	45	33	57	PB1-99-WW-9068	57	48	65
ID96-14407C	46	34	58	PB102-WW-2034	34	22	46
ID96-16702A	39	27	51	PB102-WW-2057	46	34	58

Varieties that differ by more or less than the confidence limit are significantly different from each other.

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TABLE 4. COLD HARDINESS RATINGS FOR ENTRIES IN WESTERN REGIONAL HARD WINTER WHEAT NURSERY 2005-2006
Lower values are more cold tolerant (less death due to freezing)

VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
DH940361	32	14	49
DH940427	37	20	55
DH940454	44	27	62
IDO575	29	17	41
IDO604	30	18	42
IDO639	17	-1	34
IDO641	26	16	36
IDO656	34	16	51
IDO657	37	20	55
IDO658	37	19	54
IDO659	43	25	60
IDO660	37	19	55
KHARKOF	21	4	39
KW2006	39	21	56
KWK001	41	24	59
OR2040075H	46	29	64
OR2052046H	62	44	79
OR2052055H	47	30	65
OR2052082H	48	31	66
TX97F4-33-1B	38	20	55
UC1419	57	40	75

Varieties that differ by more or less than the confidence limit are significantly different from each other.

TABLE 5. COLD HARDINESS RATINGS FOR ADVANCED ARS WHEAT BREEDING, AND SPRING WHEAT 2005-2006
Lower values are more cold tolerant (less death due to freezing)

VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
X960263C	28	11	46
X970005-1	31	19	44
X960041C	31	14	49
X970008-3	31	19	44
X970229	32	19	44
X970054-2	32	20	44
X970235	33	20	45
X970057-4	33	21	45
X970167-1	34	22	46
X970057-2	35	23	47
X970163-4	35	23	48
X970026-1	36	24	48
X970008-2	37	24	49
X970012-3C	37	20	55
X970027-2	37	25	50
X970027-1	38	25	50
X970170-2	38	26	50
X960011C	39	26	51
X970005-2	39	27	51
95P5109	40	23	57
X970075-3	40	28	53
X970012-5C	42	24	59
X960522C	42	24	59
X960277L	44	27	62
X970038C	63	45	80
X970024-4	66	48	83
ALPOWA	48	31	66
LOUISE	65	48	83
WA7964	70	52	87

Varieties that differ by more or less than the confidence limit are significantly different from each other. Spring wheat lines are Alpowa, Louise and WA7964.

TABLE 6. COLD HARDINESS RATINGS FOR GREAT PLAINS NORTHERN AND SOUTHERN REGIONAL ENTRIES, Lower values are more cold tolerant (less death due to freezing)			
VARIETY NAME	MEAN Relative Area Under the Death Progress Curve	95% Confidence Limits on the Mean	
TX99U8618	10	-7	27
TX97V5300	12	-5	28
TX96D1073	12	-5	29
SD92107-5	14	-2	31
EXPEDITION	19	10	29
CO980630	20	3	36
HARDING	20	10	29
NE86606	24	15	32
CRIMSON	24	14	34
SD97250	25	9	42
NE93462	26	17	34
TX98D2316	28	11	44
TX99SO155	32	20	44
TX98V9628	33	21	45

Varieties that differ by more or less than the confidence limit are significantly different from each other.

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2006 WSU EXTENSION SOFT WHITE WINTER WHEAT NURSERY AT REARDAN, WA.

Variety Name	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2006 YIELD (BU/A)	2006 TEST WT (LBS/BU)	2006 PROTEIN (%)	2006 LODGING (%)	2006 PLANT HT	2006 HEAD DATE
WA007934		111.4	115.4	122.5	60.2	11.1	0.0	40.0	165.3
GEORGE		114.1	114.9	121.0	59.8	11.4	5.0	39.3	166.0
WA007973			120.2	119.8	59.7	11.0	0.0	37.5	162.6
WA007971			110.6	118.6	58.1	11.1	0.0	36.8	165.3
BRUNDAGE 96	107.2	105.2	112.7	117.9	59.3	10.7	0.0	37.0	161.5
CONCEPT		106.5	112.3	117.6	60.9	10.9	0.0	36.8	163.8
ELTAN	112.4	111.7	115.9	117.3	60.0	11.6	23.8	38.3	166.0
CHUKAR	115.2	108.8	113.7	116.8	59.0	10.9	0.0	38.8	164.1
CODA	110.5	107.3	111.5	116.5	61.7	11.1	5.0	42.0	164.1
WA007970			116.0	115.9	60.9	11.8	0.0	38.3	165.6
MJ-4	110.9	110.3	112.7	114.9	57.9	12.2	0.0	36.8	165.6
MJ-9	111.3	110.2	110.2	114.8	59.2	11.6	0.0	37.3	164.5
HILL 81	109.5	106.9	111.6	114.6	60.2	11.1	0.0	41.0	163.8
WA007935		104.6	106.9	113.0	59.6	11.2	0.0	39.5	166.0
ROD	113.2	108.5	110.3	112.8	58.4	11.8	0.0	37.3	164.5
LAMBERT	109.9	106.4	111.4	112.7	59.3	11.3	0.0	40.8	160.0
ARS00258				111.1	60.7	11.3	0.0	38.5	163.8
ARSC96059-2				109.1	61.3	12.5	2.5	42.8	163.4
MASAMI	110.5	108.5	107.9	108.6	58.8	10.4	0.0	37.8	166.0
HUBBARD	109.9	109.8	112.0	108.6	60.3	10.4	0.0	43.3	163.0
ARS00235		106.3	108.9	108.2	61.0	11.7	0.0	43.3	164.1
ORCF-102			105.0	107.0	59.4	12.6	0.0	40.0	163.4
RELY	105.5	96.0	99.4	106.7	59.4	10.6	0.0	40.5	163.8
EDWIN	101.5	98.0	94.3	106.6	61.8	12.4	18.8	43.5	162.3
FINCH	111.4	105.5	110.1	105.7	60.9	11.6	0.0	38.8	166.0
CASHUP	105.5	99.6	105.5	104.9	60.3	10.4	0.0	35.3	163.0
RJAMES		109.1	108.6	104.8	57.8	10.7	0.0	33.8	163.4
LEWJAIN	101.9	98.5	101.5	104.6	60.6	11.3	0.0	35.3	165.6
ARSC96059-1			111.7	104.5	61.6	12.0	0.0	42.8	163.4
TUBBS	108.7	102.5	99.0	103.3	57.8	11.3	0.0	40.3	162.3
ID990435				102.7	58.4	11.9	0.0	42.5	161.1
BU6W00-523				102.5	60.4	11.7	0.0	36.8	160.8
9222407A				102.1	59.6	11.4	0.0	40.5	164.1
WA008000				101.4	59.7	10.8	0.0	38.0	166.0
HILLER	106.4	100.2	102.1	101.2	57.4	10.7	0.0	38.0	162.6
ID990419				101.1	60.1	11.9	0.0	37.9	165.3
MADSEN	103.3	101.1	102.5	100.4	59.3	11.7	0.0	38.8	164.1
BRUEHL	108.0	102.7	103.8	100.1	58.0	11.2	0.0	39.3	166.0
ARS97135-9		101.5	107.6	96.5	58.4	11.3	0.0	35.0	164.1
MADSEN/ROD				96.5	57.7	11.6	0.0	37.8	164.5
TUBBS 06				94.8	57.5	11.8	0.0	39.0	162.6
ARS99123				93.8	59.9	10.8	0.0	35.8	163.0
BZ6WM02-1020				93.1	58.8	12.8	0.0	35.8	164.5
ORSS-1757			104.5	92.4	57.6	11.2	0.0	38.3	160.8
WB 528		86.5	82.9	92.3	59.4	11.4	0.0	36.0	156.3
BU6W99-456				91.2	59.9	12.7	0.0	34.8	154.8
IDAHO 587		92.1	92.6	87.2	58.3	11.9	0.0	34.5	160.0
MOHLER	101.4	93.0	92.2	87.2	58.1	11.9	0.0	39.0	161.1
SIMON	97.7	93.5	94.6	86.7	58.1	11.5	0.0	37.8	162.6
ORH010920				82.8	56.5	12.3	0.0	32.0	155.9
BZ6WM02-1154				81.8	58.9	13.3	0.0	36.0	158.9
STEPHENS	95.7	89.7	85.6	81.2	57.4	12.6	0.0	35.0	160.0
ORCF-101		89.5	87.0	80.1	57.4	12.5	0.0	36.5	160.8
WA007999				71.6	57.1	12.6	0.0	30.3	161.5
C.V. %	8.2	9.7	9.1	9.2	1.1	7.9	--	--	--
LSD '@ .10'	4.5	6.7	7.8	11.1	0.7	1.1	--	--	--
Average	107.3	102.9	105.8	103.3	59.3	11.6	1.0	38.1	163.0
Highest	115.2	114.1	120.2	122.5	61.8	13.3	23.8	43.5	166.0
Lowest	95.7	86.5	82.9	71.6	56.5	10.4	0.0	30.3	154.8

Notes

2005 VARIETY TESTING
WASHINGTON STATE UNIVERSITY
REARDAN WINTER WHEAT NURSERY

VARIETY NAME	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2005 YIELD (BU/A)	2005 TEST WT. (LBS/BU)	2005 PROTEIN (%)
CHUKAR	113.2 (1)	113.5 (1)	104.8 (13)	110.6 (16)	59.6	8.6
FINCH	112.6 (2)	109.8 (7)	105.4 (11)	114.4 (10)	61.5	9.0
ROD	112.3 (3)	110.7 (4)	106.4 (9)	107.8 (25)	59.2	8.8
ELTAN	111.6 (4)	111.1 (3)	108.9 (5)	114.6 (9)	60.1	8.7
HUBBARD	110.9 (5)	109.7 (8)	110.4 (4)	115.5 (8)	59.8	9.2
ALBION	110.9 (6)	112.3 (2)	112.8 (1)	111.8 (14)	59.6	8.9
BRUEHL	110.8 (7)	106.9 (14)	104.0 (14)	107.5 (27)	58.5	8.7
TUBBS	110.3 (8)	107.9 (12)	102.1 (19)	94.7 (43)	58.3	8.9
MJ-4	110.3 (9)	109.0 (10)	108.0 (7)	110.6 (15)	58.8	9.2
LAMBERT	108.9 (10)	105.6 (15)	103.2 (16)	110.2 (17)	59.8	9.3
MJ-9	108.7 (11)	109.8 (6)	107.9 (8)	105.6 (33)	59.6	9.0
HILLER	107.9 (12)	104.2 (18)	99.6 (25)	103.0 (36)	57.9	8.8
HILL 81	107.3 (13)	105.4 (16)	103.0 (17)	108.5 (23)	60.8	9.5
CODA	106.6 (14)	107.8 (13)	102.7 (18)	106.4 (30)	61.9	9.3
BRUNDAGE 96	105.5 (15)	101.1 (21)	98.9 (26)	107.5 (26)	59.9	9.2
MOHLER	105.1 (16)	100.6 (23)	95.9 (30)	97.3 (42)	59.6	9.2
RELY	104.9 (17)	100.6 (22)	90.7 (36)	92.2 (45)	59.0	8.6
CASHUP	104.8 (18)	102.9 (20)	96.9 (28)	106.0 (31)	60.3	8.9
MADSEN	103.4 (19)	103.2 (19)	101.5 (21)	104.6 (34)	60.1	9.6
LEWJAIN	102.7 (20)	99.0 (25)	95.5 (31)	98.4 (40)	60.1	8.9
STEPHENS	100.2 (21)	98.4 (27)	94.0 (34)	89.9 (46)	59.3	9.9
EDWIN	99.2 (22)	98.4 (28)	93.6 (35)	82.1 (47)	61.6	9.4
MASAMI	—	110.3 (5)	108.4 (6)	107.2 (28)	59.0	8.9
WA7934	—	109.4 (9)	105.8 (10)	108.2 (24)	60.1	8.6
ARS00235	—	108.7 (11)	105.3 (12)	109.7 (19)	61.4	8.9
WA7935	—	105.2 (17)	100.3 (24)	100.8 (39)	60.3	8.8
DUNE	—	100.1 (24)	98.4 (27)	105.9 (32)	60.8	8.9
IDAHO 587	—	98.6 (26)	94.6 (32)	98.1 (41)	59.8	9.7
SIMON	—	97.6 (29)	96.8 (29)	102.4 (38)	59.6	10.0
ORCF-101	—	96.1 (30)	94.2 (33)	93.8 (44)	59.0	9.6
WB 528	—	87.8 (31)	83.6 (37)	73.6 (48)	61.4	10.2
RJAMES	—	—	111.3 (2)	112.3 (12)	58.9	9.2
GEORGE	—	—	110.6 (3)	108.9 (21)	59.3	8.5
ARS97135-9	—	—	103.9 (15)	118.6 (5)	59.5	9.1
ARS97173-16	—	—	101.7 (20)	112.2 (13)	60.1	8.8
F1182 M1-10	—	—	101.5 (22)	109.9 (18)	58.4	9.4
CONCEPT	—	—	101.0 (23)	106.9 (29)	60.4	9.1
WA7973	—	—	—	120.7 (1)	60.5	9.0
ID620	—	—	—	119.0 (2)	60.2	8.7
ARS96059-1	—	—	—	118.9 (3)	62.2	9.1
WA7974	—	—	—	118.6 (4)	59.0	8.5
ORSS-1757	—	—	—	116.5 (6)	59.3	9.0
WA7970	—	—	—	116.1 (7)	60.9	9.3
WA7972	—	—	—	113.6 (11)	58.1	8.7

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ARS00127	—	—	—	109.3 (20)	61.0	8.6
ARS960411-2	—	—	—	108.6 (22)	60.8	9.0
ORCF-102	—	—	—	103.0 (35)	60.1	9.4
WA7971	—	—	—	102.7 (37)	58.6	8.9
Mean	107.6	104.6	101.7	106.6	59.9	9.1
CV%	7.9	9.1	10.1	8.9	0.6	4.3
LSD @ .10	4.4	6.4	8.5	11.1	0.4	0.5

REARDAN SOFT WHITE WINTER WHEAT – 2005 WSU VARIETY TESTING DATA

1. 2005 Soft Winter Wheat data from the WSU Variety Testing nursery at the Reardan, WA location (*approx. 6 miles west of Reardan, WA, H. Johnson farm*) averaged 106.6 bu/ac. The 2005 Soft White Winter wheat average yields very similar to 3-year average yields (108.7 bu/ac) at this location.

2. STRIPE RUST infections were present in this nursery, however, high-temperature, adult plant resistance reactions prevented spread of stripe rust in most varieties. Rely, soft white club, had noticeably high levels of stripe rust on a 29 June 2005 evaluation and was also a variety with one of the lowest yields.

3. HEADING DATES averaged slightly earlier (2-3 days) than in 2004.

4. Yields for over 60% of the varieties were closely grouped with limited statistical significant difference between them. It is interesting to note that five of the top ten highest yielding varieties (WA7973, ID620, Eltan, WA7972 and Rjames) have Eltan in their pedigree. Possibly the spring growing season (dry in Mar/Apr; wet in May) favored variety-types such as Eltan that is slower to take off in the spring and later in maturity -- they may have been able to idle along during the drier periods and take better advantage of the growing conditions. In addition, this was also observed in evaluations of early spring regrowth. In general, varieties that showed the highest levels of vigorous, early spring regrowth (WB528, OR9801757, Lewjain, Stephens and Mohler) exhibited some of the lower yield values. This was not always the case; however, there was a strong trend observed at the Reardan location.

5. Historically, it is hard to beat Eltan at this location. Varietal YIELD RANKING comparisons should lean heavily to using the 3-rear and 5-year historical data information.

2006 WSU EXTENSION SOFT WHITE WINTER WHEAT NURSERY AT PULLMAN, WA.

Variety Name	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2006 YIELD (BU/A)	TEST WT (LBS/BU)	PROTEIN (%)	LODGING (%)	PLANT HT	HEAD DATE
WA007934		151.8	149.3	171.2	59.8	9.7	0.0	37.0	162.0
HUBBARD	144.5	152.0	152.1	168.1	60.7	10.3	0.0	41.8	159.0
ID990419				167.4	59.3	9.5	0.0	36.0	160.5
WA007973			159.9	164.6	59.1	10.9	0.0	36.0	159.8
MJ-9	151.9	160.2	162.1	163.2	59.0	10.0	0.0	32.8	159.0
9222407A				160.4	59.6	10.4	0.0	38.0	160.5
TUBBS 06				159.7	58.9	10.1	0.0	35.8	159.4
TUBBS	151.9	155.8	151.1	159.5	58.9	10.0	0.0	35.3	159.4
ARS00235		144.1	142.8	158.7	60.8	10.9	5.0	41.0	160.9
ORCF-102			155.7	157.8	59.8	10.6	0.0	35.5	159.0
MOHLER	144.0	148.5	145.4	157.8	59.6	10.2	2.5	35.0	157.9
CODA	139.0	145.6	140.3	156.1	61.5	11.6	11.3	37.3	160.5
WA008000				155.0	59.8	11.1	0.0	37.8	160.9
ARSC96059-2				154.6	61.6	11.5	13.8	40.0	160.9
WA007970			147.2	154.5	60.0	11.1	0.0	37.0	161.6
BRUEHL	142.5	148.5	151.9	153.9	56.9	11.1	17.5	37.8	161.3
LAMBERT	143.1	153.4	154.8	153.9	59.2	10.3	0.0	35.8	156.8
WA007935		141.7	141.1	153.5	58.6	10.8	36.3	36.5	162.0
WA007971			143.2	152.9	58.0	10.5	0.0	33.8	160.9
FINCH	146.2	152.9	156.6	152.5	60.7	10.2	2.5	37.3	161.6
ORSS-1757			145.5	152.4	58.7	10.6	0.0	34.5	157.1
GEORGE		142.4	136.0	152.4	58.7	10.4	23.8	38.8	162.0
RJAMES		145.2	142.7	151.4	57.3	9.8	0.0	29.8	159.0
ARS97135-9		151.8	159.5	149.9	57.2	11.7	0.0	34.8	160.1
CHUKAR	145.1	152.4	152.7	149.5	57.9	10.8	7.5	37.0	160.9
ORCF-101		144.5	143.3	148.9	59.5	11.2	0.0	32.5	157.5
MADSEN/ROD				148.6	58.9	10.6	0.0	33.3	159.8
BZ6WM02-1020				148.3	59.9	10.9	20.0	34.8	160.1
IDAHO 587		149.7	147.0	147.7	58.6	11.0	6.3	30.3	155.3
ARS99123				147.4	59.0	11.2	0.0	32.5	157.1
RELY	131.9	132.9	129.0	147.2	57.9	11.6	30.0	38.3	159.8
MJ-4	144.3	151.1	152.9	147.0	58.4	10.7	0.0	34.5	160.9
ROD	150.2	157.7	159.0	146.5	57.9	10.8	10.0	34.0	159.4
HILL 81	144.8	153.3	154.7	146.4	59.8	11.0	20.0	37.5	160.5
MASAMI	140.4	145.6	143.5	146.1	57.9	10.7	0.0	36.3	161.6
BU6W99-456				146.1	61.1	11.5	0.0	31.5	156.0
SIMON	142.5	147.0	149.1	145.9	58.5	10.9	0.0	34.8	159.0
MADSEN	142.2	150.0	153.1	145.5	58.7	11.6	0.0	35.8	159.8
BRUNDAGE 96	139.6	144.8	148.9	144.2	58.0	10.7	0.0	33.5	158.3
STEPHENS	142.8	154.5	151.8	143.9	58.6	10.7	3.8	31.5	155.6
BU6W00-523				143.8	60.3	10.8	0.0	33.0	156.4
ARS00258				143.6	59.5	11.8	3.8	37.3	159.4
ARSC96059-1			138.6	143.3	61.4	12.1	36.3	38.8	160.5
ID990435				142.6	57.6	11.1	0.0	36.8	157.1
WA007999				140.0	57.1	11.4	0.0	27.8	157.5
ORH010920				138.8	57.8	11.4	0.0	28.8	154.5
EDWIN	123.9	122.9	109.0	138.1	60.9	11.9	25.0	41.5	159.4
CONCEPT		145.1	148.2	137.2	60.4	10.4	0.0	32.8	159.0
CASHUP	137.6	144.2	143.9	136.6	60.0	10.6	0.0	33.0	158.3
BZ6WM02-1154				135.2	59.5	12.4	0.0	31.8	155.6
HILLER	140.1	142.6	140.6	134.5	55.7	11.6	0.0	35.5	159.0
WB 528		144.5	142.1	134.4	59.9	11.2	0.0	32.5	155.3
ELTAN	137.0	140.9	127.9	126.4	58.8	10.5	76.3	36.5	162.0
LEWJAIN	125.1	123.4	114.5	122.1	58.2	10.7	35.0	34.5	161.6
C.V. %	7.2	7.9	9.2	7.3	1.0	5.6	--	--	--
LSD '@ .10'	5.4	7.8	11.2	12.8	0.7	0.7	--	--	--
Average	141.3	146.7	145.8	149.0	59.1	10.9	7.2	35.3	159.3
Highest	151.9	160.2	162.1	171.2	61.6	12.4	76.3	41.8	162.0
Lowest	123.9	122.9	109.0	122.1	55.7	9.5	0.0	27.8	154.5

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PULLMAN SOFT WINTER WHEAT – 2006 WSU VARIETY TESTING DATA

1. 2006 Soft White Winter Wheat **YIELD DATA** from the WSU Variety Testing nursery at the Pullman location averaged 149.0 bu/ac that was only 1.5% higher than the 3-year average at this location (146.7 bu/ac). *NOTE: The Pullman nursery was located 6 miles southwest of Pullman, WA on Sand Rd (N. Druffel & Sons farm) The Hard Winter and Soft White Winter nurseries were co-located.*
2. This nursery was **seeded** at the same time as the hard nursery (above) on 30 September 2005 on re-crop ground following dry peas into fairly dry soil. Soil moisture was about 5-6-inches below the surface. It rained 1.33 inches in during the 5-days following seeding that resulted in good emergence and a very even and uniform stand.
3. This nursery was not impacted by the mid-February 2006 cold snap and a March 2006 field evaluation showed strong early spring regrowth in nearly all varieties.
4. **Yield differences** among the varieties had a range of 122.1 bu/ac to 171.2 bu/ac; however, many of varieties/experimental lines had yields that were grouped very closely together and statistically equal. For those of you who have taken the time to read these narratives, you will note that Tubbs and Tubbs 06 finally had the same yield!! Variety rankings seemed to tracked 3-year and 5-year ranking trends; however, there are very little yield differences among a high percentage of the varieties in the trial. There might be a slight trend that shows later maturing (heading date) varieties had a yield edge than earlier maturing varieties this year at this location. Quite a few of the varieties/experimental lines with lower yields also have some of the earlier heading date (maturity) ratings. Varieties with earlier maturity could have been more heavily impacted by the dry/heat stress during the mid-April to mid-May 2006 period that restricted early growth and development and subsequently diminished yield potentials.
5. Average **Test Weight** values were 59.1 lb/bu and **percent grain protein** averaged 10.9%.

Notes

2005 VARIETY TESTING
WASHINGTON STATE UNIVERSITY
PULLMAN WINTER WHEAT NURSERY

VARIETY NAME	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2005 YIELD (BU/A)	2005 TEST WT. (LBS/BU)	2005 PROTEIN (%)
ROD	151.4 (1)	154.8 (1)	163.3 (1)	171.4 (1)	59.6	10.9
TUBBS	150.7 (2)	152.6 (2)	153.9 (5)	142.8 (22)	56.7	11.5
MJ-9	149.8 (3)	150.9 (3)	158.7 (3)	161.0 (4)	59.0	11.0
MJ-4	145.1 (4)	147.6 (6)	153.2 (8)	158.9 (9)	57.7	11.6
FINCH	143.6 (5)	149.1 (5)	153.1 (9)	160.6 (6)	60.5	11.4
MOHLER	143.1 (6)	142.1 (17)	143.9 (23)	133.2 (34)	58.9	12.1
HILL 81	142.8 (7)	147.6 (7)	156.8 (4)	163.0 (3)	59.9	11.9
STEPHENS	142.8 (8)	150.8 (4)	159.9 (2)	159.7 (7)	59.8	12.0
CHUKAR	142.6 (9)	146.8 (9)	153.9 (6)	155.9 (10)	60.3	11.3
MADSEN	141.8 (10)	144.2 (12)	152.2 (11)	160.7 (5)	59.8	12.1
HILLER	141.5 (11)	144.9 (11)	146.7 (19)	146.6 (20)	57.5	11.3
LAMBERT	141.0 (12)	146.9 (8)	153.2 (7)	155.8 (11)	59.7	11.7
ALBION	140.9 (13)	142.6 (15)	147.8 (17)	136.7 (29)	57.4	11.1
ELTAN	140.1 (14)	143.3 (14)	148.1 (15)	129.3 (37)	58.7	10.9
BRUEHL	139.9 (15)	141.1 (19)	145.9 (20)	149.9 (17)	57.2	11.6
HUBBARD	139.5 (16)	140.1 (22)	143.9 (24)	136.0 (30)	59.3	10.9
CASHUP	139.0 (17)	140.7 (21)	148.0 (16)	151.3 (16)	60.8	11.6
BRUNDAGE 96	138.1 (18)	141.5 (18)	145.1 (22)	153.6 (13)	58.9	12.3
CODA	135.5 (19)	135.9 (25)	140.4 (28)	124.5 (42)	61.3	12.4
RELY	129.0 (20)	128.6 (29)	125.8 (35)	110.9 (45)	58.7	12.1
LEWJAIN	128.8 (21)	124.5 (30)	124.0 (36)	106.8 (46)	57.8	11.7
EDWIN	122.2 (22)	118.6 (31)	115.3 (37)	79.9 (48)	61.0	12.3
IDAHO 587	—	145.4 (10)	150.7 (12)	146.3 (21)	58.2	12.4
SIMON	—	143.5 (13)	147.6 (18)	152.2 (15)	59.4	11.4
WB 528	—	142.6 (16)	149.5 (13)	149.7 (18)	60.8	12.3
MASAMI	—	140.7 (20)	145.3 (21)	141.0 (23)	58.2	11.1
WA7934	—	139.5 (23)	142.1 (27)	127.5 (40)	58.2	11.3
ORCF-101	—	138.2 (24)	142.3 (25)	137.6 (28)	58.9	11.8
ARS00235	—	135.3 (26)	136.8 (31)	126.8 (41)	60.3	12.7
WA7935	—	134.3 (27)	135.8 (32)	128.7 (38)	58.5	11.6
DUNE	—	132.4 (28)	127.1 (34)	104.3 (47)	56.3	12.2
ARS97135-9	—	—	152.7 (10)	169.1 (2)	60.1	12.0
CONCEPT	—	—	149.1 (14)	159.1 (8)	60.2	11.6
RJAMES	—	—	142.2 (26)	134.1 (31)	57.1	11.0
F1182 M1-10	—	—	139.5 (29)	138.1 (27)	56.2	11.6
GEORGE	—	—	137.4 (30)	119.7 (43)	58.5	11.2
ARS97173-16	—	—	131.1 (33)	128.2 (39)	58.1	11.6
WA7973	—	—	—	155.2 (12)	58.6	11.4
ORCF-102	—	—	—	153.6 (14)	60.0	11.7
ARS00127	—	—	—	147.5 (19)	61.2	12.3
WA7970	—	—	—	139.9 (24)	59.0	11.9
WA7974	—	—	—	139.7 (25)	57.0	10.7
ORSS-1757	—	—	—	138.5 (26)	57.9	11.2

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2006 WSU EXTENSION SOFT WHITE WINTER WHEAT NURSERY AT MAYVIEW, WA.

Variety Name	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2006 YIELD (BU/A)	TEST WT (LBS/BU)	PROTEIN (%)	LODGING (%)	PLANT HT	HEAD DATE
ROD	116.8	120.0	109.8	98.2	56.9	11.8	0	32.3	162.5
WA007973			107.6	97.6	58.7	11.6	0	33.5	160.6
MJ-4	109.8	111.2	101.2	95.5	56.4	11.8	0	33.5	163.6
WA007971			102.0	95.1	56.1	11.4	0	31.0	163.3
WB 528		120.4	109.1	94.9	61.0	12.0	0	31.0	154.3
TUBBS	111.3	120.8	108.2	94.6	56.7	12.0	0	34.3	160.3
MADSEN/ROD				94.4	58.3	12.1	0	33.0	162.5
BU6W00-523				93.7	60.0	11.4	0	33.0	158.8
ORCF-102			106.5	93.6	60.0	11.9	0	34.3	161.4
HILL 81	111.2	117.1	108.2	92.6	59.7	11.6	0	36.5	161.8
BZ6WM02-1020				91.1	57.4	12.1	0	33.3	162.5
RJAMES		118.6	107.0	90.8	56.6	11.0	0	32.0	161.4
CONCEPT		111.4	102.4	90.8	58.2	11.3	0	29.8	161.8
MASAMI	111.0	114.2	104.4	90.4	57.1	11.1	0	33.5	164.0
BU6W99-456				90.2	61.3	12.8	0	30.5	152.8
MJ-9	110.4	114.5	103.8	89.6	56.1	11.5	0	32.0	162.5
TUBBS 06				89.0	57.2	11.9	0	35.5	160.6
ORCF-101		113.7	103.3	88.9	58.7	12.1	0	32.8	158.8
ID990419				88.6	58.8	11.4	0	33.0	163.3
MADSEN	104.2	107.3	100.8	88.4	58.9	12.1	0	33.5	162.1
CASHUP	106.4	110.9	100.3	88.4	58.7	11.0	0	30.3	161.0
WA007970			100.4	88.0	59.7	11.5	0	33.5	163.6
SIMON	105.6	109.1	100.6	86.8	58.7	11.9	0	32.8	160.6
CODA	105.3	109.2	99.0	86.6	59.7	12.1	0	35.0	162.1
WA008000				85.1	59.4	11.4	0	33.3	164.0
ARS99123				84.6	59.0	12.0	0	29.0	161.0
FINCH	108.7	112.0	101.2	84.4	59.3	11.8	0	34.3	164.0
ARSC96059-2				83.5	59.2	12.0	0	37.5	161.4
LEWJAIN	96.6	100.2	84.6	83.2	58.6	11.7	0	31.3	163.6
ORH010920				82.8	60.0	11.9	0	28.3	153.9
STEPHENS	105.4	108.4	96.1	82.3	57.6	12.0	0	31.0	158.0
BRUEHL	108.8	115.0	103.2	82.1	56.0	11.9	0	34.3	164.0
MOHLER	108.5	111.7	101.6	81.0	58.8	11.7	0	34.5	159.1
WA007935		100.3	85.8	80.2	59.2	11.5	0	34.5	164.0
9222407A				79.5	59.5	11.8	0	35.8	162.1
ORSS-1757			99.8	78.8	59.6	11.1	0	33.0	158.8
LAMBERT	100.0	101.7	90.6	78.5	57.6	11.3	0	33.8	158.0
IDAHO 587		104.9	94.8	77.3	58.3	12.0	0	30.3	158.0
ARS00235		106.7	94.5	75.2	58.3	11.9	0	35.3	162.1
ID990435				74.2	57.2	12.0	0	36.0	159.1
HILLER	102.9	105.0	93.3	74.1	54.7	11.8	0	31.8	160.6
BZ6WM02-1154				73.4	61.1	12.6	0	30.3	156.9
ELTAN	100.3	101.6	83.9	73.2	58.5	11.8	0	35.0	164.0
WA007934		101.2	85.4	73.0	58.2	11.7	0	34.8	163.3
ARSC96059-1			93.2	71.6	59.8	12.6	0	36.8	161.4
ARS00258				70.4	58.5	12.0	0	31.3	161.8
RELY	95.3	97.0	83.3	70.2	57.9	12.0	0	33.3	161.8
CHUKAR	102.9	103.5	93.2	70.2	55.9	11.8	0	32.8	162.1
HUBBARD	98.9	100.1	85.4	66.8	59.6	11.7	0	38.3	161.0
WA007999				57.8	55.9	12.0	0	26.0	159.5
BRUNDAGE 96	94.0	96.0	81.8	56.8	56.8	12.3	0	31.3	159.5
GEORGE		99.2	81.5	56.6	57.7	12.2	0	36.0	164.0
ARS97135-9		98.9	83.5	56.1	55.7	12.1	0	31.5	162.1
EDWIN	80.1	75.7	63.7	48.9	58.0	13.1	0	35.8	160.3
C.V. %	7.8	6.3	6.6	8.0	1.1	5.1	--	--	--
LSD '@ .10'	4.2	4.4	5.1	7.6	0.8	0.7	--	--	--
Average	104.1	107.2	96.3	81.6	58.3	11.8	0	33.1	161.0
Highest	116.8	120.8	109.8	98.2	61.3	13.1	0	38.3	164.0
Lowest	80.1	75.7	63.7	48.9	54.7	11.0	0	26.0	152.8

Notes

2005 VARIETY TESTING
WASHINGTON STATE UNIVERSITY
MAYVIEW WINTER WHEAT NURSERY

VARIETY NAME	5 YEAR AVERAGE (BU/A)	3 YEAR AVERAGE (BU/A)	2 YEAR AVERAGE (BU/A)	2005 YIELD (BU/A)	2005 TEST WT. (LBS/BU)	2005 PROTEIN (%)
TUBBS	—	126.6 (1)	133.8 (1)	121.8 (6)	59.3	10.5
ROD	—	126.4 (2)	131.0 (5)	121.4 (7)	60.4	10.5
WB 528	—	122.6 (3)	133.1 (2)	123.3 (3)	61.8	11.3
HILL 81	—	121.6 (4)	129.4 (6)	123.7 (2)	61.2	11.5
BRUEHL	—	121.3 (5)	131.5 (4)	124.4 (1)	58.1	10.8
MJ-9	—	121.2 (6)	126.9 (8)	118.0 (12)	59.0	11.1
MOHLER	—	120.3 (7)	127.0 (7)	122.2 (5)	60.7	11.1
FINCH	—	120.1 (8)	125.7 (11)	118.0 (11)	61.9	10.7
MASAMI	—	120.0 (9)	126.0 (10)	118.4 (10)	59.7	10.8
ALBION	—	118.9 (10)	124.1 (12)	110.9 (27)	59.5	10.9
STEPHENS	—	115.8 (11)	121.5 (16)	109.9 (29)	59.9	11.5
CASHUP	—	115.7 (12)	122.1 (14)	112.3 (23)	61.3	11.0
CODA	—	115.0 (13)	120.4 (19)	111.3 (26)	62.5	10.6
MJ-4	—	114.9 (14)	119.1 (24)	106.9 (34)	57.7	10.8
CHUKAR	—	114.4 (15)	120.1 (23)	116.2 (15)	60.2	10.8
ORCF-101	—	114.4 (16)	126.2 (9)	117.7 (13)	60.2	11.5
ARS00235	—	113.7 (17)	122.5 (13)	113.8 (19)	61.7	10.8
SIMON	—	113.4 (18)	120.2 (21)	114.3 (17)	60.4	11.4
IDAHO 587	—	113.2 (19)	118.7 (25)	112.2 (24)	60.5	11.4
HILLER	—	111.9 (20)	120.5 (18)	112.4 (22)	58.1	10.0
HUBBARD	—	111.1 (21)	116.8 (27)	103.9 (38)	60.1	10.1
MADSEN	—	110.5 (22)	116.8 (28)	113.2 (20)	60.6	11.4
ELTAN	—	110.2 (23)	115.8 (29)	94.6 (44)	60.6	10.2
BRUNDAGE 96	—	108.4 (24)	115.6 (30)	106.8 (35)	59.8	11.2
WA7934	—	108.2 (25)	115.4 (31)	97.9 (42)	60.1	10.6
LAMBERT	—	107.9 (26)	113.2 (32)	102.7 (40)	59.8	11.3
WA7935	—	105.7 (27)	110.3 (33)	91.4 (45)	60.2	11.0
LEWJAIN	—	103.2 (28)	108.7 (35)	86.1 (46)	60.8	10.2
RELY	—	103.0 (29)	110.3 (34)	96.4 (43)	61.1	10.8
DUNE	—	100.6 (30)	100.2 (36)	78.5 (48)	58.7	11.0
EDWIN	—	86.0 (31)	89.1 (37)	78.6 (47)	62.8	11.8
RJAMES	—	—	132.5 (3)	123.2 (4)	59.0	10.1
CONCEPT	—	—	121.7 (15)	114.0 (18)	61.5	10.7
GEORGE	—	—	120.5 (17)	106.5 (36)	60.0	10.5
ARS97173-16	—	—	120.4 (20)	108.0 (32)	60.1	10.6
ARS97135-9	—	—	120.2 (22)	110.8 (28)	59.9	11.2
F1182 M1-10	—	—	117.6 (26)	107.6 (33)	58.6	11.1
ORSS-1757	—	—	—	120.7 (8)	60.0	10.7
ORCF-102	—	—	—	119.4 (9)	61.0	11.1
WA7973	—	—	—	117.5 (14)	61.0	10.6
ARS96059-1	—	—	—	114.8 (16)	62.2	11.4
WA7970	—	—	—	112.7 (21)	61.5	11.1
ARS00127	—	—	—	112.0 (25)	61.4	10.7
ARS960411-2	—	—	—	109.4 (30)	61.7	11.3

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TABLE 41_06YD.

2006 WSU SOFT WHITE WINTER WHEAT TRIAL SUMMARY

VARIETY NAME (SWH Club in italics)	YIELD (BU/A)																		
	ALMIRA	ANATONE	BICKLETON	COLTON	CONNELL	CRESTON	DAYTON	DUSTY	FAIRFIELD	FARMINGTON	HARRINGTON	LAMONT	MAYVIEW	MOSES LAKE (irrigated)	PULLMAN	REARDAN	RITZVILLE	ST. JOHN	AVERAGE
Soft White Winter																			
WA007973	157	96	64	124	82	119	131	92	125	146	79	127	98	159	165	120	73	151	117.0
TUBBS	153	87	62	129	80	114	140	83	123	147	79	124	95	159	160	103	68	162	114.7
ORCF-102	141	102	60	130	71	117	150	82	119	144	77	123	94	152	158	107	69	146	113.4
MJ-9	143	96	56	121	76	121	137	70	107	145	78	129	90	136	163	115	67	151	111.2
TUBBS 06	151	85	63	121	69	117	142	81	132	140	70	118	89	148	160	95	59	155	110.8
CODA	138	97	52	121	75	119	137	85	116	131	75	123	87	143	156	117	78	140	110.5
ROD	152	94	56	108	72	115	138	83	118	141	71	130	98	149	147	113	68	133	110.3
BU6W00-523	131	94	61	122	71	115	140	75	125	138	70	114	94	149	144	103	63	145	108.6
MADSEN/ROD	142	98	56	114	72	114	139	80	121	128	72	125	94	147	149	97	65	142	108.6
CHUKAR	137	76	58	106	77	118	137	77	116	139	71	125	70	147	150	117	74	157	108.4
HUBBARD	144	91	65	119	65	114	118	78	118	142	69	123	67	150	168	109	62	145	108.2
WA007971	149	96	57	115	71	115	122	75	111	142	65	122	95	143	153	119	57	138	108.0
MASAMI	150	84	58	113	75	106	121	78	126	108	74	139	90	140	146	109	78	146	107.8
GEORGE	147	95	57	108	74	121	116	81	131	121	76	129	57	128	152	121	74	147	107.5
WA007935	146	100	65	113	66	116	120	73	124	124	69	124	80	143	154	113	66	138	107.4
WA007934	152	88	60	103	64	111	117	76	116	128	64	124	73	158	171	123	62	135	106.9
RJAMES	156	96	57	108	58	110	125	79	122	132	69	131	91	138	151	105	64	133	106.9
MOHLER	137	92	50	115	71	111	135	80	124	124	76	125	81	147	158	87	65	147	106.9
ARSC96059-2	133	85	59	106	75	120	139	80	116	127	69	112	84	153	155	109	55	147	106.9
BRUEHL	146	84	62	105	66	110	128	83	119	133	69	124	82	149	154	100	66	143	106.8
LAMBERT	141	89	56	121	66	118	130	75	115	140	70	116	79	148	154	113	52	137	106.6
WB 528	134	96	51	119	62	119	147	80	115	139	69	96	95	164	134	92	57	147	106.5
HILL 81	140	89	60	111	69	110	134	79	114	139	74	112	93	133	146	115	57	139	106.2
FINCH	137	87	52	105	69	117	135	76	111	133	72	133	84	135	153	106	67	142	106.2
ARS00235	136	78	53	103	72	115	123	78	123	134	73	116	75	149	159	108	67	144	105.8
MADSEN	133	91	50	118	72	100	130	73	121	133	66	122	88	151	146	100	67	143	105.7
BRUNDAGE 96	137	81	53	114	69	114	132	80	130	117	73	126	57	159	144	118	58	142	105.7
ID990419	146	95	61	110	72	104	117	65	121	138	64	116	89	146	167	101	62	130	105.7
RELY	141	84	52	120	68	105	133	86	116	129	77	114	70	145	147	107	67	136	105.3
SIMON	134	97	59	110	70	111	138	78	118	134	69	109	87	151	146	87	54	142	105.2
ARS00258	146	83	54	119	67	104	137	81	108	135	76	123	70	131	144	111	70	133	105.1
CONCEPT	129	90	57	114	64	102	135	73	105	147	70	116	91	138	137	118	62	144	105.0
BZ6WM02-1020	128	93	60	116	68	107	134	70	111	147	73	105	91	149	148	93	56	139	104.9
9222407A	139	96	59	105	63	102	129	68	118	134	62	124	80	159	160	102	51	133	104.7
HILLER	139	81	52	105	72	105	139	78	120	126	67	117	74	153	135	101	72	147	104.6
WA008000	142	87	49	109	75	112	116	76	119	127	67	120	85	142	155	101	64	133	104.4
MJ-4	137	87	53	91	71	112	127	71	108	128	66	126	96	135	147	115	64	141	104.0
ELTAN	151	91	64	115	69	116	115	79	127	119	63	124	73	136	126	117	67	117	103.9
ID990435	130	90	58	128	70	101	119	74	121	139	62	116	74	144	143	103	59	139	103.8
WA007970	130	87	58	98	74	111	123	74	115	124	64	117	88	144	155	116	60	128	103.6
ARSC96059-1	134	79	53	116	74	113	133	81	109	122	67	112	72	151	143	105	56	144	103.5
ARS97135-9	136	65	43	106	69	115	130	72	124	124	67	114	56	153	150	97	71	155	102.6
STEPHENS	134	83	56	111	63	97	140	74	121	135	63	118	82	135	144	81	58	138	101.7
BU6W99-456	122	86	55	116	53	112	141	76	115	132	63	96	90	145	146	91	50	138	101.4
CASHUP	133	85	51	113	60	109	124	71	110	137	63	108	88	128	137	105	63	140	101.3
ARS99123	141	70	57	116	46	100	131	71	116	132	65	107	85	146	147	94	57	133	100.8
ORCF-101	118	90	50	118	67	102	131	81	118	131	69	98	89	121	149	80	60	136	100.4
ORSS-1757	137	88	49	102	61	104	133	79	118	125	54	111	79	137	152	92	53	131	100.3
LEWJAIN	142	82	52	106	72	101	119	67	119	104	67	115	83	137	122	105	65	129	99.3
IDAHO 587	133	81	49	105	64	91	126	76	109	127	67	116	77	123	148	87	52	133	98.1
EDWIN	128	74	52	96	68	91	106	74	112	122	63	112	49	137	138	107	65	128	95.6
ORH010920	98	88	54	94	56	84	138	73	116	130	57	71	83	132	139	83	38	134	92.7
BZ6WM02-1154	111	81	49	109	57	94	109	68	114	128	61	82	73	130	135	82	47	125	92.0
WA007999	90	72	40	90	52	91	119	61	114	115	56	77	58	136	140	72	52	107	85.6
STATISTICS																			
C.V.	6.8	9.2	14.7	9.0	7.3	9.2	7.2	6.3	7.9	5.9	7.9	8.0	8.0	9.1	7.3	9.2	12.1	6.3	8.3
LSD	10.9	9.4	9.5	11.7	5.8	11.8	11.0	5.7	10.9	9.1	6.3	10.8	7.6	15.3	12.8	11.1	8.8	10.3	2.4
Average	137.2	87.6	55.4	111.6	68.0	109.0	129.6	76.4	117.8	131.6	68.5	116.2	81.6	143.7	149.0	103.3	62.1	139.4	105
Highest	156.6	102.0	65.4	130.3	81.7	121.3	150.4	91.8	132.3	147.4	78.9	139.1	98.2	164.4	171.2	122.5	78.0	162.2	117
Lowest	89.9	65.3	40.3	90.2	46.4	83.8	106.0	60.8	104.7	104.3	54.2	70.7	48.9	120.5	122.1	71.6	37.7	107.3	85.6

TABLE 41_06TW.

2006 WSU SOFT WHITE WINTER WHEAT TRIAL SUMMARY

VARIETY NAME (SWH Club in italics)	TEST WEIGHT (LBS/BU)																		
	ALMIRA	ANATONE	BICKLETON	COLTON	CONNELL	CRESTON	DAYTON	DUSTY	FAIRFIELD	FARMINGTON	HARRINGTON	LAMONT	MAYVIEW	MOSES LAKE (irrigated)	PULLMAN	REARDAN	RITZVILLE	ST. JOHN	AVERAGE
Soft White Winter																			
BU6W99-456	62.6	60.4	60.5	62.6	63.1	60.9	62.4	61.7	61.9	61.4	61.6	62.5	61.3	62.0	61.1	59.9	61.6	62.7	61.7
ARSC96059-1	62.8	60.4	58.6	62.5	62.3	61.2	61.8	60.4	61.2	60.3	61.0	61.6	59.8	60.9	61.4	61.6	60.7	62.5	61.2
CODA	62.2	61.3	59.6	62.0	62.4	61.2	61.6	60.9	60.9	60.3	61.4	60.4	59.7	57.7	61.5	61.7	62.1	62.3	61.1
WB 528	61.9	60.3	59.2	61.7	62.6	60.6	61.3	61.3	61.3	60.6	61.7	60.8	61.0	60.8	59.9	59.4	61.5	61.7	61.0
BZ6WM02-1154	62.0	60.1	59.6	61.9	61.2	60.6	62.2	60.4	61.1	62.1	60.3	61.5	61.1	61.3	59.5	58.9	60.6	62.8	61.0
BU6W00-523	61.7	60.5	59.3	62.1	62.3	60.4	60.8	61.3	60.3	61.0	60.7	60.4	60.0	61.0	60.3	60.4	62.0	61.8	60.9
ARSC96059-2	62.0	59.3	58.2	61.4	62.3	60.4	60.9	60.4	60.3	61.1	61.1	61.0	59.2	61.2	61.6	61.3	61.1	62.0	60.8
EDWIN	62.5	59.8	59.1	60.2	62.2	60.6	62.2	60.8	60.1	60.7	60.0	61.4	58.0	58.4	60.9	61.8	62.6	62.6	60.8
HUBBARD	61.2	59.8	59.4	61.3	61.8	60.0	59.9	60.0	60.0	60.7	60.6	59.4	59.6	59.6	60.7	60.3	61.5	60.9	60.4
ARS99123	61.1	59.4	58.3	60.5	61.5	59.4	61.4	60.3	60.3	60.3	60.6	61.3	59.0	59.5	59.0	59.9	60.9	61.4	60.2
FINCH	61.3	59.1	58.7	59.5	61.1	60.2	61.0	60.6	60.1	60.1	61.4	60.7	59.3	55.7	60.7	60.9	61.8	61.8	60.2
CONCEPT	60.5	59.7	59.2	60.1	62.5	59.0	60.0	60.7	59.6	60.4	60.4	60.1	58.2	59.0	60.4	60.9	62.1	61.0	60.2
ARS00235	61.6	59.8	56.6	60.8	61.0	60.2	60.8	59.6	60.2	60.7	60.4	60.8	58.3	58.1	60.8	61.0	60.8	61.9	60.2
CASHUP	60.9	59.5	58.7	60.3	62.4	59.5	60.0	60.3	59.7	60.5	60.5	60.1	58.7	58.7	60.0	60.3	62.0	61.2	60.2
ORCF-102	60.6	59.0	57.5	61.0	61.5	59.8	60.6	60.2	60.0	60.8	60.1	60.2	60.0	59.2	59.8	59.4	60.8	61.3	60.1
9222407A	61.0	59.2	58.0	60.2	61.3	59.7	60.7	60.7	59.4	60.2	60.8	59.9	59.5	59.6	59.6	59.6	60.3	60.9	60.0
ARS00258	61.1	59.6	59.5	60.9	62.1	59.5	59.8	59.7	60.1	60.4	60.6	59.3	58.5	55.5	59.5	60.7	62.0	60.7	60.0
WA007970	60.9	58.8	57.1	59.3	61.0	60.1	61.0	60.2	59.7	59.0	60.3	60.1	59.7	58.4	60.0	60.9	60.4	61.5	59.9
HILL 81	60.9	59.0	56.5	60.5	61.5	59.7	60.4	60.3	60.0	59.5	60.8	59.4	59.7	58.0	59.8	60.2	61.1	60.9	59.9
BZ6WM02-1020	60.4	58.4	57.5	60.0	61.5	59.4	60.2	60.8	59.7	60.5	59.8	60.3	57.4	59.1	59.9	58.8	61.0	60.9	59.8
MOHLER	60.9	58.0	55.6	59.9	61.5	59.3	60.1	59.9	60.1	59.1	60.2	60.4	58.8	60.0	59.6	58.1	60.8	61.2	59.6
WA008000	60.7	58.3	57.3	59.4	60.8	59.6	60.3	59.5	59.3	59.1	60.1	59.8	59.4	57.9	59.8	59.7	61.1	61.2	59.6
ID990419	60.6	58.8	56.2	59.6	60.8	59.5	60.0	60.2	59.1	60.0	60.3	59.8	58.8	58.6	59.3	60.1	60.7	60.4	59.6
LAMBERT	60.3	58.7	57.1	60.3	61.2	59.5	59.3	59.6	59.4	59.3	59.9	59.8	57.6	59.3	59.2	59.3	60.3	60.5	59.5
LEWJAIN	60.9	58.7	57.8	59.6	61.7	59.3	60.5	58.7	59.5	56.9	61.3	59.6	58.6	55.9	58.2	60.6	62.0	60.5	59.5
RELY	60.9	58.4	57.8	60.0	61.5	59.0	60.1	59.2	59.4	58.4	60.2	59.2	57.9	57.6	57.9	59.4	61.4	60.8	59.4
ELTAN	60.2	58.6	57.9	60.2	60.8	59.4	59.5	59.8	58.8	57.9	60.5	59.7	58.5	56.3	58.8	60.0	60.9	60.3	59.3
MADSEN	60.5	58.2	56.6	59.7	61.0	58.7	60.0	59.7	59.7	58.3	59.8	59.1	58.9	57.2	58.7	59.3	60.6	60.9	59.3
ORCF-101	60.8	58.5	55.3	60.6	60.9	59.1	59.3	59.0	60.0	60.1	60.2	59.6	58.7	56.8	59.5	57.4	60.5	60.5	59.3
SIMON	60.2	58.5	56.8	59.5	60.7	59.0	59.8	59.4	59.6	59.4	60.2	58.7	58.7	59.6	58.5	58.1	59.2	60.8	59.3
STEPHENS	60.6	57.2	56.7	61.1	60.5	58.9	59.3	59.2	60.3	59.3	59.2	60.3	57.6	58.7	58.6	57.4	60.3	59.9	59.2
WA007973	60.1	58.9	57.1	58.8	60.6	58.5	59.9	58.9	59.0	58.6	60.2	58.4	58.7	58.1	59.1	59.7	60.0	60.1	59.2
WA007935	60.0	58.0	56.6	59.2	60.5	59.0	59.1	60.0	59.3	58.0	59.5	60.5	59.2	56.2	58.6	59.6	60.4	60.8	59.1
ORSS-1757	60.2	57.9	56.9	59.2	61.2	59.0	59.5	59.6	59.4	58.0	59.7	59.5	59.6	58.9	58.7	57.6	59.5	60.1	59.1
WA007934	60.2	58.2	56.7	58.8	60.5	58.6	59.2	59.5	58.7	58.1	60.0	59.9	58.2	57.1	59.8	60.2	59.7	60.5	59.1
IDAHO 587	60.9	58.0	57.2	59.9	60.9	58.7	58.2	58.5	60.0	58.3	59.2	60.4	58.3	56.1	58.6	58.3	59.9	60.0	59.0
ORH010920	60.2	58.4	57.1	58.3	61.0	57.6	59.5	59.9	59.7	59.2	59.7	58.9	60.0	58.3	57.8	56.5	58.9	60.3	59.0
ID990435	59.6	58.5	56.7	60.1	60.4	58.3	59.7	58.8	58.7	59.0	59.3	59.3	57.2	58.7	57.6	58.4	60.0	60.2	58.9
MADSEN/ROD	60.1	58.3	55.3	59.6	60.6	58.5	59.3	59.2	59.2	59.1	59.3	59.2	58.3	57.5	58.9	57.7	60.0	59.9	58.9
TUBBS	60.3	57.2	55.3	59.0	61.0	58.7	59.5	59.2	59.3	57.6	59.7	59.5	56.7	57.9	58.9	57.8	60.3	60.6	58.8
TUBBS 06	60.0	57.2	54.6	58.5	60.6	58.7	59.8	59.3	59.1	57.5	59.3	59.2	57.2	57.2	58.9	57.5	59.9	60.6	58.6
BRUNDAGE 96	59.8	56.8	54.7	58.7	60.8	58.6	59.3	58.8	59.3	55.9	59.3	59.5	56.8	58.6	58.0	59.3	59.6	60.6	58.6
GEORGE	59.5	57.6	55.0	57.5	60.0	58.9	58.9	59.2	58.3	56.9	59.2	59.5	57.7	53.9	58.7	59.8	60.2	60.0	58.4
MASAMI	59.4	57.4	56.3	57.5	60.8	57.6	58.2	58.8	58.4	55.6	58.9	58.8	57.1	54.6	57.9	58.8	60.5	59.7	58.1
ROD	59.8	58.0	54.8	57.1	59.6	57.9	58.7	58.1	58.4	58.1	58.8	58.8	56.9	56.1	57.9	58.4	59.7	59.0	58.1
MJ-9	59.6	57.7	55.1	57.3	60.1	58.1	57.3	58.7	58.3	58.1	57.3	58.2	56.1	56.6	59.0	59.2	59.8	59.4	58.1
CHUKAR	59.5	57.9	55.4	57.8	59.2	57.7	58.5	57.9	57.2	58.2	58.2	57.9	55.9	55.2	57.9	59.0	59.9	60.0	58.0
RJAMES	59.1	56.5	54.6	56.7	59.7	57.3	58.3	59.0	57.7	56.7	59.3	58.9	56.6	54.5	57.3	57.8	59.4	58.6	57.7
ARS97135-9	59.4	57.2	53.9	57.6	59.3	57.6	58.1	57.7	57.9	57.3	58.4	57.3	55.7	54.2	57.2	58.4	60.1	59.8	57.6
MJ-4	59.3	56.8	53.7	55.2	58.6	58.1	58.3	58.2	58.1	56.5	57.2	57.7	56.4	54.0	58.4	57.9	58.7	59.1	57.3
BRUEHL	58.3	56.1	54.0	56.8	60.3	57.7	57.0	57.9	57.3	56.9	59.0	57.7	56.0	53.9	56.9	58.0	59.6	57.9	57.3
WA007971	58.5	57.0	53.4	56.2	58.0	56.8	57.4	56.9	57.0	57.9	56.2	57.7	56.1	54.6	58.0	58.1	57.8	58.7	57.0
HILLER	58.5	56.4	53.9	57.4	59.8	56.9	57.3	57.1	57.5	56.3	58.3	57.4	54.7	53.8	55.7	57.4	59.5	58.2	57.0
WA007999	58.6	55.8	52.3	56.7	57.9	57.9	58.2	56.7	58.3	56.8	56.5	57.0	55.9	54.7	57.1	57.1	56.4	59.6	56.9
STATISTICS																			
C.V.	0.8	0.8	2.7	1.5	0.6	0.9	0.8	1.1	0.6	1.8	0.7	0.7	1.1	2.2	1.0	1.1	0.9	0.6	1.2
LSD	0.6	0.5	1.8	1.1	0.4	0.6	0.5	0.7	0.4	1.2	0.5	0.5	0.8	1.5	0.7	0.7	0.7	0.5	0.2
Average	60.5	58.5	56.8	59.5	60.9	59.1	59.8	59.5	59.4	58.9	59.8	59.6	58.3	57.6	59.1	59.3	60.5	60.6	59.3
Highest	62.8	61.3	60.5	62.6	63.1	61.2	62.4	61.7	61.9	62.1	61.7	62.5	61.3	62.0	61.6	61.8	62.6	62.8	61.6
Lowest	58.3	55.8	52.3	55.2	57.9	56.8	57.0	56.7	57.0	55.6	56.2	57.0	54.7	53.8	55.7	56.5	56.4	57.9	56.8

TABLE 41_06PR.

2006 WSU SOFT WHTIE WINTER WHEAT TRIAL SUMMARY

VARIETY NAME (SWH Club in italics)	PROTEIN (%)																		
	ALMIRA	ANATONE	BICKLETON	COLTON	CONNELL	CRESTON	DAYTON	DUSTY	FAIRFIELD	FARMINGTON	HARRINGTON	LAMONT	MAYVIEW	MOSES LAKE (*irrigated*)	PULLMAN	REARDAN	RITZVILLE	ST. JOHN	AVERAGE
Soft White Winter																			
BU6W99-456	10.9	11.6	13.2	11.8	13.0	11.9	10.4	11.8	9.9	12.9	12.8	9.3	12.8	12.6	11.5	12.7	13.9	11.3	11.9
BZ6WM02-1154	11.2	11.6	13.2	11.4	12.9	11.3	10.5	11.1	10.0	12.5	12.8	9.7	12.6	12.7	12.4	13.3	13.6	11.4	11.9
ARSC96059-1	10.9	10.9	12.6	11.5	12.2	11.5	10.7	11.9	9.5	13.2	12.1	8.6	12.6	12.6	12.1	12.0	12.8	10.8	11.6
ORCF-101	10.8	11.2	12.7	11.1	11.6	11.3	11.4	11.2	9.6	12.4	11.6	9.7	12.1	12.7	11.2	12.5	12.7	11.3	11.5
ORH010920	11.4	11.0	12.5	11.7	12.7	12.2	10.6	11.0	9.8	11.9	11.9	9.2	11.9	12.0	11.4	12.3	12.2	10.9	11.5
WA007999	10.6	11.1	12.5	11.2	12.2	11.7	11.1	11.6	9.2	12.3	12.1	8.9	12.0	12.4	11.4	12.6	12.5	11.1	11.5
ARSC96059-2	10.2	11.0	12.2	12.4	12.0	10.2	10.8	11.5	9.2	13.2	12.4	8.2	12.0	12.6	11.5	12.5	12.7	10.6	11.4
EDWIN	10.2	11.4	12.4	12.1	11.1	10.1	10.8	11.1	9.9	12.4	11.3	8.0	13.1	12.2	11.9	12.4	12.4	11.4	11.3
ARS00235	10.3	10.1	13.3	11.1	12.0	10.4	10.8	11.9	9.2	12.6	12.5	8.0	11.9	12.5	10.9	11.7	13.8	10.9	11.3
WA007970	10.3	10.7	12.7	11.9	11.6	10.8	11.1	11.4	9.2	12.5	12.0	8.7	11.5	12.4	11.1	11.8	12.7	11.1	11.3
MADSEN	10.4	10.8	12.7	11.5	11.5	10.9	10.7	11.3	9.5	12.4	11.6	8.1	12.1	12.5	11.6	11.7	13.1	10.7	11.3
IDAHO 587	10.3	11.0	12.3	11.2	12.1	11.3	10.8	11.3	9.7	11.9	11.7	9.4	12.0	12.4	11.0	11.9	12.1	10.6	11.3
ARS99123	9.6	11.1	12.4	11.1	13.3	9.9	10.3	11.8	9.5	12.0	12.4	9.0	12.0	12.4	11.2	10.8	12.9	10.9	11.3
STEPHENS	10.1	11.4	13.0	11.1	11.4	11.3	10.6	11.0	9.6	11.5	11.4	9.1	12.0	12.0	10.7	12.6	12.0	10.8	11.2
BRUEHL	10.1	10.7	13.3	11.9	12.3	10.6	10.7	11.5	9.1	11.9	11.6	7.9	11.9	12.4	11.1	11.2	12.3	10.8	11.2
BZ6WM02-1020	9.9	10.5	12.1	11.1	11.7	10.6	11.2	11.3	9.2	11.7	11.7	8.7	12.1	11.8	10.9	12.8	12.4	11.0	11.2
HILL 81	9.9	10.9	12.9	11.4	11.7	10.4	11.2	11.2	9.1	12.1	11.9	8.2	11.6	12.6	11.0	11.1	12.8	10.7	11.2
WA007935	9.4	10.5	12.4	11.3	12.3	10.3	11.5	11.6	9.0	11.9	12.1	9.0	11.5	12.6	10.8	11.2	12.7	10.5	11.1
WB 528	10.1	10.6	12.1	10.7	12.1	11.2	10.2	10.9	9.8	12.5	12.4	8.5	12.0	12.2	11.2	11.4	12.4	9.9	11.1
LEWJAIN	10.0	11.0	12.7	11.5	11.7	10.3	10.9	11.8	8.9	12.3	11.4	8.5	11.7	12.5	10.7	11.3	12.4	10.6	11.1
WA008000	10.4	10.5	12.5	11.2	11.4	11.0	11.1	11.0	9.3	12.4	12.0	8.6	11.4	12.2	11.1	10.8	12.4	10.8	11.1
CODA	10.3	10.5	11.6	11.4	11.7	10.2	10.4	10.8	9.5	13.4	11.7	7.7	12.1	12.3	11.6	11.1	13.0	10.6	11.1
ARS00258	10.0	10.5	12.4	11.3	11.8	10.5	10.4	10.8	9.5	12.2	11.1	7.6	12.0	12.4	11.8	11.3	13.0	11.1	11.1
ARS97135-9	9.1	11.1	13.4	11.7	11.0	10.7	10.6	11.1	9.8	12.1	11.6	7.2	12.1	12.6	11.7	11.3	11.9	10.7	11.1
BU6W00-523	9.7	10.6	12.6	11.0	12.2	10.5	11.1	11.6	9.3	11.8	11.7	8.0	11.4	12.0	10.8	11.7	13.0	10.7	11.1
MJ-4	9.8	10.3	12.7	11.8	11.9	9.9	10.5	11.3	8.7	12.4	12.2	7.7	11.8	12.7	10.7	12.2	11.5	11.4	11.1
ORCF-102	10.2	10.6	12.5	11.2	11.3	10.2	11.3	11.0	9.2	11.5	11.5	9.3	11.9	12.0	10.6	12.6	11.8	10.7	11.1
9222407A	10.0	9.7	12.5	10.8	12.6	10.7	11.1	11.7	8.9	11.5	12.0	8.3	11.8	11.8	10.4	11.4	13.2	10.6	11.1
MADSEN/ROD	9.8	10.3	12.5	11.0	11.7	10.7	11.0	10.9	9.0	11.6	11.8	8.6	12.1	12.2	10.6	11.6	12.5	11.0	11.1
GEORGE	9.4	10.5	12.8	11.6	12.3	9.4	11.4	11.0	8.7	12.1	12.0	8.1	12.2	12.8	10.4	11.4	12.1	10.2	11.0
ID990435	9.0	10.4	12.3	11.1	11.9	10.5	10.4	11.4	9.0	12.0	11.5	8.9	12.0	12.4	11.1	11.9	11.9	10.5	11.0
ELTAN	9.5	10.6	12.2	11.0	12.2	10.2	10.9	11.4	8.4	12.1	11.8	8.0	11.8	12.6	10.5	11.6	12.6	10.6	11.0
WA007934	9.9	10.3	12.2	11.4	11.8	10.3	11.5	11.7	8.4	11.9	11.6	8.9	11.7	12.4	9.7	11.1	12.6	10.0	11.0
BRUNDAGE 96	8.9	11.1	12.8	11.1	11.1	10.7	11.3	11.1	9.2	12.5	11.0	8.1	12.3	12.2	10.7	10.7	12.1	10.3	11.0
SIMON	9.7	10.4	12.2	11.0	11.7	9.9	10.2	11.0	9.2	11.9	11.2	8.3	11.9	12.1	10.9	11.5	12.5	10.4	10.9
HUBBARD	9.7	10.6	12.1	10.8	12.3	10.3	10.8	11.1	9.2	11.5	11.5	8.0	11.7	12.0	10.3	10.4	13.3	10.1	10.9
RELY	10.0	10.9	12.3	10.8	11.8	9.9	10.4	10.6	8.7	12.1	11.1	7.5	12.0	12.1	11.6	10.6	12.4	10.7	10.9
MOHLER	10.0	10.6	12.9	10.4	11.9	10.8	10.0	10.8	9.3	11.6	11.2	8.1	11.7	11.9	10.2	11.9	12.2	9.5	10.8
TUBBS 06	9.3	10.5	13.0	10.8	11.2	10.4	10.6	11.2	9.1	11.8	10.8	7.9	11.9	12.1	10.1	11.8	12.2	10.0	10.8
HILLER	10.1	11.0	12.6	10.6	10.5	10.6	10.5	10.4	9.4	11.8	11.2	7.9	11.8	11.9	11.6	10.7	11.4	10.4	10.8
LAMBERT	9.9	11.0	12.1	11.1	11.0	10.5	10.1	10.9	9.1	11.7	10.6	8.4	11.3	12.2	10.3	11.3	12.4	10.5	10.8
ROD	9.8	10.1	12.4	11.3	11.1	10.1	10.3	10.6	8.7	11.6	11.1	8.1	11.8	12.4	10.8	11.8	12.1	10.2	10.8
FINCH	9.2	11.0	12.4	11.2	11.8	9.9	10.2	11.4	8.2	11.5	11.0	8.2	11.8	12.5	10.2	11.6	11.5	10.5	10.8
WA007973	10.0	10.3	11.9	11.1	10.7	10.3	10.7	10.5	9.2	12.1	11.2	8.1	11.6	12.2	10.9	11.0	12.0	10.3	10.8
CASHUP	9.7	10.6	11.9	10.1	12.2	10.3	10.4	10.1	9.0	11.7	11.8	8.0	11.0	11.9	10.6	10.4	13.0	10.9	10.8
CONCEPT	9.1	11.2	11.7	9.8	12.3	9.8	10.4	10.7	8.7	11.8	11.8	8.3	11.3	11.9	10.4	10.9	12.3	10.5	10.7
MJ-9	9.9	10.1	12.2	10.6	11.1	10.4	10.2	11.0	8.6	12.0	11.6	7.3	11.5	11.9	10.0	11.6	12.5	10.0	10.7
ORSS-1757	9.3	10.6	12.3	10.8	11.6	10.3	10.1	10.3	9.0	11.4	11.9	7.7	11.1	11.5	10.6	11.2	11.8	10.5	10.7
CHUKAR	9.5	10.5	13.2	11.5	10.6	9.7	9.9	10.5	8.6	11.7	11.3	7.1	11.8	12.6	10.8	10.9	11.2	10.2	10.6
WA007971	9.4	10.0	12.6	10.5	11.0	9.9	10.8	10.7	8.4	11.3	11.5	8.2	11.4	12.3	10.5	11.1	11.6	10.2	10.6
ID990419	8.9	10.1	12.3	10.3	11.3	10.5	11.1	11.3	8.4	11.1	11.6	7.9	11.4	11.7	9.5	11.9	12.0	10.0	10.6
TUBBS	10.0	10.2	12.5	10.8	11.4	9.5	10.1	10.5	8.6	11.7	10.9	7.9	12.0	11.8	10.0	11.3	11.9	10.1	10.6
MASAMI	9.2	10.5	11.8	10.7	11.1	9.7	10.9	10.5	9.2	12.2	11.3	7.6	11.1	12.4	10.7	10.4	12.0	9.3	10.6
RJAMES	9.4	10.0	12.0	10.8	12.7	9.5	9.8	10.9	8.4	11.3	11.4	7.8	11.0	11.8	9.8	10.7	11.0	9.9	10.5
STATISTICS																			
C.V.	9.1	4.6	5.9	6.3	4.5	7.5	6.5	4.4	5.2	4.1	5.3	8.9	5.1	1.9	5.6	7.9	6.5	5.9	5.9
LSD	1.1	0.6	0.9	0.8	0.6	0.9	0.8	0.6	0.6	0.6	0.7	0.9	0.7	0.3	0.7	1.1	0.9	0.7	0.1
Average	9.9	10.7	12.5	11.1	11.8	10.5	10.7	11.1	9.1	12.0	11.7	8.3	11.8	12.3	10.9	11.6	12.4	10.6	11.0
Highest	11.4	11.6	13.4	12.4	13.3	12.2	11.5	11.9	10.0	13.4	12.8	9.7	13.1	12.8	12.4	13.3	13.9	11.4	11.9
Lowest	8.9	9.7	11.6	9.8	10.5	9.4	9.8	10.1	8.2	11.1	10.6	7.1	11.0	11.5	9.5	10.4	11.0	9.3	10.4

TABLE WA41YD.

2005 WSU SOFT WHITE WINTER WHEAT VARIETY TRIAL SUMMARY

YIELD (BU/A)

VARIETY NAME	LIND DRY	RITZVILLE	LAMONT	ST. ANDREWS	ST. JOHN	DUSTY	ANATONE	WALLA WALLA	ALMIRA	REARDAN	CRESTON	MAYVIEW	DAYTON	FARMINGTON	MOSES LAKE	FAIRFIELD	PULLMAN	COLTON	VARIETY MEAN YIELD (BU/A)
Soft White Common																			
ALBION	48.0	62.0	88.7	100.4	111.2	94.8	101.8	96.8	92.2	111.8	102.6	110.9	100.7	128.7	147.8	150.2	136.7	168.1	108.5
BRUNDAGE 96	51.5	64.9	94.0	76.6	90.8	95.9	109.0	115.5	102.0	107.5	112.6	106.8	121.9	136.6	132.4	138.7	153.6	139.2	108.3
CASHUP	41.6	60.5	88.3	83.3	97.0	83.2	101.6	88.3	108.6	106.0	107.1	112.3	123.8	133.4	156.1	148.6	151.3	155.0	108.1
CONCEPT	46.7	55.9	61.0	79.5	102.4	88.7	99.1	91.9	115.9	106.9	109.5	114.0	127.9	132.9	134.0	147.8	159.1	145.2	107.6
DUNE	53.1	59.7	106.8	96.0	93.5	101.0	107.9	114.6	103.6	105.9	114.9	78.5	111.5	139.1	169.5	125.2	104.3	140.9	107.0
ELTAN	47.2	58.9	49.2	87.9	70.5	95.4	91.1	91.7	98.3	114.8	94.7	94.6	111.0	101.9	75.6	129.0	129.3	160.9	94.4
FINCH	45.7	68.9	107.4	100.4	111.3	97.2	102.9	113.7	112.0	114.4	114.6	118.0	118.4	129.2	118.3	135.9	160.6	161.9	112.8
GEORGE	48.3	61.1	61.1	95.0	60.0	103.8	93.4	94.8	94.5	108.9	111.3	106.5	88.4	114.8	92.1	131.1	119.7	154.9	96.6
HILL 81	51.7	57.9	67.7	84.1	110.4	90.9	90.7	97.6	101.1	108.5	95.3	123.7	134.0	148.9	146.9	148.7	163.0	157.9	109.9
HUBBARD	44.5	59.2	65.2	78.5	101.6	89.9	95.7	95.1	101.7	115.5	85.9	103.9	117.4	122.3	158.7	139.6	136.0	162.6	104.1
ID620	46.8	60.4	48.6	85.8	58.3	98.7	95.1	76.0	109.7	119.0	90.5	105.3	101.7	108.2	114.6	126.0	132.7	153.4	98.2
IDAHO 587	44.4	51.4	86.1	85.9	112.5	90.1	102.6	97.3	110.0	98.1	98.6	112.2	123.7	120.2	141.3	151.3	146.3	164.2	107.6
LAMBERT	43.8	54.7	91.4	78.2	102.6	90.5	104.8	107.8	112.3	110.2	102.4	102.7	124.2	136.9	170.3	149.4	155.8	153.5	110.6
LEWJAIN	43.6	59.0	81.1	83.2	62.3	93.0	95.1	93.4	96.7	98.4	106.5	86.1	90.9	96.6	87.1	113.9	106.8	134.0	90.4
MADSEN	51.3	59.8	94.1	79.8	112.1	89.1	102.9	107.4	94.3	104.6	108.0	113.2	127.4	130.0	158.3	129.6	160.7	149.3	109.6
MASAMI	45.6	70.2	105.0	91.2	96.2	104.3	110.5	115.2	115.0	107.2	122.6	118.4	116.7	105.8	127.3	128.0	141.0	155.1	109.7
MJ-4	52.7	58.3	110.0	101.5	98.3	98.0	102.5	119.2	97.4	110.6	125.2	106.9	113.4	131.7	148.3	143.5	158.9	148.5	112.5
MJ-9	51.2	61.5	103.3	95.4	121.2	97.1	104.8	120.0	98.7	105.6	114.0	118.0	115.0	131.7	136.8	141.4	161.0	161.1	113.2
MOHLER	55.7	63.2	76.7	87.3	76.8	90.4	108.9	118.1	115.5	97.3	112.5	122.2	117.4	121.0	139.1	150.4	133.2	166.4	108.5
ORCF-101	45.5	65.4	92.2	79.0	123.9	96.1	105.2	110.3	108.8	93.8	106.5	117.7	109.4	143.4	158.0	151.4	137.6	160.5	111.4
ORCF-102	52.0	67.5	88.5	76.3	101.3	93.9	103.8	119.3	105.6	103.0	104.5	119.4	138.6	139.8	164.3	161.9	153.6	171.1	114.7
ORSS-1757	43.9	69.5	78.0	78.8	92.2	96.8	107.8	103.4	110.3	118.5	107.7	120.7	127.3	133.8	144.8	146.7	138.5	165.0	110.1
RJAMES	50.5	60.6	70.2	104.9	81.6	104.9	111.3	101.2	106.3	112.3	113.2	123.2	125.7	107.3	140.6	151.0	134.1	162.1	109.0
ROD	48.6	62.6	65.5	93.5	89.4	94.2	106.0	110.8	117.6	107.8	105.7	121.4	130.5	132.2	130.4	142.8	171.4	172.6	111.3
SIMON	46.2	56.2	101.9	89.8	116.5	86.6	100.5	111.3	101.4	102.4	118.8	114.3	124.7	141.3	170.8	134.5	152.2	143.7	111.8
STEPHENS	45.4	51.6	89.1	85.8	119.0	92.9	95.9	112.6	106.8	89.9	95.9	109.9	128.0	114.7	152.0	139.7	159.7	157.6	108.2
TUBBS	54.7	72.9	96.7	95.0	104.9	104.2	115.1	121.5	117.8	94.7	119.7	121.8	124.8	144.3	138.3	155.9	142.8	168.0	116.3
WA7934	47.1	64.3	70.1	84.1	67.2	97.6	94.1	103.0	104.8	108.2	118.3	97.9	105.0	106.3	108.3	131.9	127.5	161.3	99.8
WA7935	46.8	55.2	82.1	84.9	83.3	98.2	89.9	92.3	94.9	100.8	113.0	91.4	102.6	106.2	91.9	122.5	128.7	152.8	96.5
WA7970	51.9	54.9	77.9	84.4	85.5	97.5	82.7	107.9	92.3	116.1	113.0	112.7	116.7	127.6	135.3	126.3	139.9	148.2	103.9
WA7971	54.1	58.6	56.5	85.5	80.4	92.1	96.8	113.5	107.5	102.7	119.0	108.9	117.2	134.4	135.0	119.0	133.6	155.3	103.9
WA7972	51.1	59.8	71.4	92.4	85.4	99.4	103.5	100.3	98.0	113.6	81.3	101.0	110.8	114.0	122.2	122.7	117.5	145.5	99.4
WA7973	53.4	73.6	61.2	91.2	79.6	101.4	108.6	96.7	121.7	120.7	114.7	117.5	115.6	138.0	136.4	147.1	155.2	170.2	111.3
WA7974	52.0	60.4	62.1	89.0	68.7	98.3	107.1	106.6	110.6	118.6	118.8	103.7	124.1	139.1	140.2	129.2	139.7	155.9	106.9
WB 528	42.1	49.6	61.9	87.5	80.0	84.0	109.3	108.8	111.0	73.6	97.4	123.3	142.2	147.5	149.8	132.1	149.7	140.0	105.0
Soft White Club																			
ARS00127	51.1	52.3	80.7	93.5	88.0	96.4	91.4	101.2	98.0	109.3	114.0	112.0	122.6	119.3	126.7	131.4	147.5	141.2	104.3
ARS00235	46.1	59.4	87.9	81.9	84.8	98.9	94.6	109.3	107.7	109.7	105.3	113.8	111.3	120.6	115.9	141.0	126.8	152.4	103.7
ARS96059	45.4	70.2	87.4	82.3	107.2	99.3	101.1	118.8	117.8	118.9	115.8	114.8	115.7	122.8	120.5	144.6	133.9	154.7	109.5
ARS96411	49.6	54.1	78.5	78.8	91.6	92.4	90.1	100.4	98.4	108.6	103.0	109.4	110.9	133.2	131.3	130.3	129.7	140.5	101.7
ARS97135	52.3	54.5	101.5	95.3	122.6	94.0	94.2	111.6	107.4	118.6	117.7	110.8	129.4	138.3	133.7	138.5	169.1	154.7	113.6
ARS97173	46.5	53.3	100.8	84.7	79.5	99.2	97.7	118.7	107.8	112.2	114.5	108.0	96.3	120.8	126.4	131.5	128.2	147.8	104.1
BRUEHL	49.5	62.7	59.8	99.0	76.2	102.9	111.5	96.6	108.8	107.5	103.2	124.4	110.3	137.3	126.0	140.5	149.9	159.1	107.0
CHUKAR	49.3	57.3	88.5	98.5	113.9	98.1	94.7	119.8	114.3	110.6	121.0	116.2	125.9	133.3	141.1	135.9	155.9	168.5	113.5
CODA	47.9	61.6	76.5	78.0	87.1	98.7	98.9	99.3	100.0	106.4	93.0	111.3	114.5	122.7	109.8	133.7	124.5	144.8	100.5
EDWIN	46.5	56.4	56.1	81.2	50.6	89.3	94.8	61.4	81.0	82.1	78.5	78.6	82.0	94.3	80.0	100.7	79.9	114.8	78.2
F1182 M1-10	48.5	55.1	59.6	90.2	51.5	95.1	97.8	92.3	106.8	109.9	103.3	107.6	106.7	138.1	126.8	160.6	138.1	174.1	103.5
HILLER	46.2	56.4	73.1	86.9	69.4	99.1	109.7	99.0	101.3	103.0	105.8	112.4	106.7	121.3	140.3	129.2	146.6	146.6	103.0
RELY	46.3	53.5	79.2	79.2	77.6	100.2	100.8	89.7	108.9	92.2	90.4	96.4	96.3	124.8	121.9	121.8	110.9	148.0	98.6
MEAN	48.4	59.9	80.4	87.5	90.6	95.7	100.7	104.0	105.2	106.6	107.1	109.9	115.8	126.4	132.8	137.1	140.3	154.4	105.7
CV%	8.3	11.7	13.2	13.8	18.7	5.9	8.9	8.3	8.8	8.9	8.6	5.3	6.9	7.5	14.1	8.2	11.2	4.8	10.0
LSD	4.7	8.2	12.4	14.2	19.9	6.6	10.5	10.1	10.9	11.1	10.8	6.8	9.3	11.1	21.9	13.2	18.4	8.6	2.9

2006 0273

TABLE WA41TW.

2005 WSU SOFT WHITE WINTER WHEAT VARIETY TRIAL SUMMARY

TEST WEIGHT (LBS/BU)

VARIETY NAME	LIND DRY	RITZVILLE	LAMONT	ST. ANDREWS	ST. JOHN	DUSTY	ANATONE	WALLA WALLA	ALMIRA	REARDAN	CRESTON	MAYVIEW	DAYTON	FARMINGTON	MOSES LAKE	FAIRFIELD	PULLMAN	COLTON	VARIETY MEAN
Soft White Common																			
ALBION	56.8	59.3	58.4	60.5	58.4	58.7	59.8	58.1	58.8	59.6	59.7	59.5	52.4	55.2	57.5	60.8	57.4	60.3	58.4
BRUNDAGE 96	58.4	59.2	56.7	60.3	59.2	58.6	59.6	58.7	60.3	59.9	59.7	59.8	55.3	57.1	58.6	60.3	58.9	60.0	58.9
CASHUP	57.8	60.4	59.6	61.0	61.2	59.6	59.6	59.7	61.8	60.3	59.8	61.3	56.9	58.3	60.2	60.7	60.8	61.4	60.0
CONCEPT	58.5	60.4	59.6	60.5	61.0	59.4	59.9	58.8	61.2	60.4	59.7	61.5	57.0	58.1	59.5	60.4	60.2	60.7	59.9
DUNE	59.1	61.2	58.6	61.8	59.1	59.9	61.2	58.9	61.5	60.8	61.4	58.7	54.9	56.8	59.9	60.5	58.3	61.3	59.6
ELTAN	58.1	59.9	55.7	60.0	59.7	59.2	59.9	57.5	60.2	60.1	59.4	60.6	54.9	55.3	58.0	60.7	58.7	61.2	58.9
FINCH	59.4	60.8	60.9	62.2	61.4	60.8	61.6	60.2	63.0	61.5	61.5	61.9	58.0	57.7	61.0	61.2	60.5	61.4	60.8
GEORGE	57.3	58.8	56.8	59.6	60.0	58.9	59.1	56.7	59.5	59.3	59.4	60.0	54.7	56.6	58.8	60.1	58.5	60.4	58.6
HILL 81	59.0	60.5	57.8	61.0	61.4	59.9	59.2	58.9	62.1	60.8	59.3	61.2	56.6	58.1	61.0	61.5	59.9	61.8	60.1
HUBBARD	58.3	60.5	57.2	61.5	60.6	59.9	60.1	58.8	61.6	59.8	59.7	60.1	56.6	57.9	61.4	61.2	59.3	62.2	59.8
ID620	58.4	59.8	54.3	60.5	59.5	59.1	59.0	57.6	60.7	60.2	58.7	59.6	54.5	55.6	59.2	60.8	58.5	61.3	58.7
IDAHO 587	57.4	60.0	57.4	61.2	60.6	59.5	60.2	58.4	60.9	59.8	60.1	60.5	55.5	56.7	59.1	61.4	58.2	61.3	59.4
LAMBERT	57.9	59.6	57.7	60.8	59.8	59.3	59.4	58.5	61.0	59.8	59.8	59.8	55.8	57.2	60.9	60.4	59.7	61.1	59.4
LEWJAIN	59.1	61.2	59.2	61.7	59.1	60.1	60.7	58.3	61.0	60.1	60.4	60.8	55.2	55.1	58.3	59.6	57.8	61.2	59.4
MADSEN	58.6	60.2	58.3	61.0	60.4	60.0	59.8	59.4	61.0	60.1	60.4	60.6	57.2	57.0	60.0	60.0	59.8	60.6	59.7
MASAMI	57.7	59.6	57.3	59.8	59.3	58.6	59.0	58.6	59.8	59.0	59.7	59.7	55.3	54.2	58.8	59.2	58.2	59.3	58.4
MJ-4	57.2	59.1	58.3	59.9	58.6	58.2	58.6	56.3	58.0	58.8	59.2	57.7	52.3	54.4	56.4	59.7	57.7	58.9	57.9
MJ-9	56.3	59.2	58.9	60.5	58.9	58.0	59.0	58.0	58.4	59.6	59.3	59.0	52.1	55.4	59.8	59.5	59.0	60.0	58.4
MOHLER	57.6	60.2	57.3	61.0	60.2	59.6	60.4	58.6	61.9	59.6	60.4	60.7	55.9	57.0	60.5	61.0	58.9	61.5	59.6
ORCF-101	57.9	60.5	58.2	60.8	60.4	59.3	60.5	59.1	60.9	59.0	60.4	60.2	55.4	58.3	60.0	61.4	58.9	61.3	59.6
ORCF-102	58.7	60.5	59.1	60.6	60.0	60.2	59.8	60.0	61.7	60.1	60.3	61.0	57.9	58.0	59.6	61.4	60.0	61.6	60.0
ORSS-1757	58.6	60.6	55.8	60.1	59.0	59.4	59.4	57.4	61.0	59.3	59.1	60.0	56.2	56.7	58.7	60.1	57.9	60.7	58.9
RJAMES	57.4	58.9	54.0	59.8	58.2	58.1	58.4	57.4	59.0	58.9	58.7	59.0	53.1	52.8	57.6	58.4	57.1	59.6	57.6
ROD	57.9	59.4	56.9	60.5	59.2	59.0	59.5	58.0	59.8	59.2	59.1	60.4	55.3	55.9	59.0	59.6	59.6	60.2	58.8
SIMON	59.3	59.9	58.8	60.7	60.5	59.9	58.9	59.0	61.1	59.6	60.1	60.4	56.1	57.8	60.8	60.8	59.4	60.1	59.6
STEPHENS	57.1	60.1	57.9	61.0	60.4	59.5	59.8	59.0	60.7	59.3	60.1	59.9	55.4	57.0	59.9	61.5	59.8	61.2	59.4
TUBBS	57.5	59.3	57.7	60.4	59.5	59.2	60.3	58.3	60.4	58.3	59.5	59.3	54.3	55.6	57.9	54.6	56.7	60.8	58.3
WA7934	58.0	59.9	57.3	60.2	59.4	58.9	59.3	58.2	60.4	60.1	59.9	60.1	54.8	55.2	58.0	60.7	58.2	61.1	58.9
WA7935	57.9	59.3	58.3	60.8	59.9	59.5	59.2	59.2	60.8	60.3	60.1	60.2	55.6	55.7	57.3	60.0	58.5	60.5	59.1
WA7970	58.4	59.7	57.7	61.5	60.8	60.4	60.3	60.4	61.6	60.9	61.1	61.5	56.9	57.6	59.6	61.5	59.0	61.2	60.0
WA7971	56.5	57.7	56.8	58.8	58.0	59.1	57.5	57.0	58.4	58.6	58.5	58.8	50.8	53.8	56.2	58.8	56.9	59.0	57.3
WA7972	57.0	58.3	54.8	59.2	58.4	57.3	58.3	56.8	58.5	58.1	57.4	58.5	54.7	55.6	57.2	58.8	57.0	59.3	57.5
WA7973	58.8	60.2	55.5	60.3	60.5	60.5	59.3	57.3	61.0	60.5	60.0	61.0	54.4	57.3	59.5	60.6	58.6	61.1	59.3
WA7974	57.2	59.0	55.1	59.4	58.7	58.9	58.0	57.4	59.1	59.0	58.6	59.1	52.2	54.8	58.2	59.8	57.0	59.2	57.8
WB 528	59.1	61.7	58.8	62.1	61.5	60.7	61.2	59.3	62.6	61.4	61.7	61.8	59.5	59.5	61.3	62.0	60.8	62.5	61.0
Soft White Club																			
ARS00127	59.2	60.1	58.6	61.5	61.2	59.6	60.6	59.4	61.7	61.0	60.8	61.4	58.3	58.7	60.7	61.2	61.2	61.9	60.4
ARS00235	58.5	60.3	60.6	61.1	60.7	60.2	61.2	60.5	61.9	61.4	61.4	61.7	55.0	58.2	59.6	61.4	60.3	62.3	60.4
ARS96059	59.0	61.7	60.1	62.6	62.5	60.4	61.7	60.5	62.8	62.2	62.1	62.2	57.7	59.2	61.5	62.8	61.4	63.0	61.3
ARS96411	59.6	61.4	58.9	61.9	60.5	60.1	60.8	58.6	62.8	60.8	61.3	61.7	57.8	60.3	61.4	61.9	61.0	62.6	60.8
ARS97135	56.9	57.8	58.1	58.6	60.5	58.0	58.5	57.9	59.7	59.5	58.6	59.9	55.7	58.1	60.2	59.7	60.1	60.2	58.8
ARS97173	58.4	59.9	58.2	61.2	59.8	59.4	59.7	57.8	61.1	60.1	59.6	60.1	54.2	56.3	59.4	60.5	58.1	60.6	59.1
BRUEHL	57.8	58.5	55.0	58.1	57.5	57.7	57.8	55.4	58.0	58.5	57.6	58.1	53.3	54.6	56.8	58.2	57.2	58.1	57.1
CHUKAR	57.7	58.0	58.2	59.5	60.5	58.0	58.9	58.2	59.6	59.6	59.0	60.2	56.2	57.7	59.5	60.1	60.3	60.7	59.0
CODA	58.5	61.3	60.7	61.8	61.6	60.9	61.7	60.1	62.8	61.9	61.3	62.5	57.9	59.5	60.7	61.4	61.3	62.6	61.0
EDWIN	58.5	60.8	60.0	61.8	61.7	61.3	62.3	59.4	62.3	61.6	61.5	62.8	59.0	59.1	62.3	61.6	61.0	62.8	61.1
F1182 M1-10	57.5	57.1	55.9	58.4	57.0	57.6	57.9	55.7	59.0	58.4	58.2	58.6	53.6	55.7	56.2	58.8	56.2	58.5	57.2
HILLER	58.7	57.6	55.8	58.5	57.7	57.1	58.0	56.2	58.9	57.9	57.8	58.1	53.7	56.4	57.3	58.2	57.5	58.8	57.5
RELY	56.3	58.9	57.4	60.0	59.9	59.0	60.8	57.6	61.0	59.0	59.8	61.1	55.4	58.7	60.0	60.4	58.7	61.9	59.3
MEAN	58.1	59.8	57.7	60.6	59.9	59.3	59.7	58.4	60.7	59.9	59.8	60.3	55.5	56.8	59.3	60.3	58.9	60.8	59.2
CV%	0.9	0.7	1.6	1.0	1.4	0.5	0.7	1.4	1.1	0.6	0.7	0.7	1.6	1.4	1.6	2.7	1.6	0.7	1.3
LSD	0.6	0.5	1.1	0.7	1.0	0.3	0.5	0.9	0.8	0.4	0.5	0.5	1.0	1.0	1.1	1.9	1.1	0.5	0.2

2006027

TABLE WA41PR.

2005 WSU SOFT WHITE WINTER WHEAT VARIETY TRIAL SUMMARY

PROTEIN (%)

VARIETY NAME	LIND DRY	RITZVILLE	LAMONT	ST. ANDREWS	ST. JOHN	DUSTY	ANATONE	WALLA WALLA	ALMIRA	REARDAN	CRESTON	MAYVIEW	DAYTON	FARMINGTON	MOSES LAKE	FAIRFIELD	PULLMAN	COLTON	VARIETY MEAN
Soft White Common																			
ALBION	13.3	10.7	8.0	10.0	10.3	8.4	7.2	8.2	11.2	8.9	7.5	10.9	13.7	11.2	11.2	10.1	11.1	11.7	10.2
BRUNDAGE 96	12.6	10.1	8.7	8.4	11.3	8.7	7.6	8.5	11.3	9.2	7.8	11.2	14.3	12.5	11.7	10.2	12.3	12.2	10.5
CASHUP	13.4	9.6	8.7	8.7	10.5	8.2	7.0	8.4	10.2	8.9	7.4	11.0	13.6	11.8	11.7	9.5	11.6	11.8	10.1
CONCEPT	12.6	10.0	8.5	8.2	10.6	8.4	7.6	8.9	10.6	9.1	7.5	10.7	13.5	11.8	11.8	9.3	11.6	12.0	10.2
DUNE	12.4	10.9	8.4	9.1	10.7	8.8	7.2	8.5	10.9	8.9	7.9	11.0	14.5	12.4	11.3	9.9	12.2	11.6	10.4
ELTAN	12.8	10.7	8.6	8.4	10.0	8.6	7.9	8.2	10.4	8.7	7.1	10.2	13.2	12.5	11.5	9.9	10.9	11.9	10.1
FINCH	12.8	9.4	8.3	8.4	10.2	8.1	7.9	8.2	9.9	9.0	7.4	10.7	13.4	12.2	11.9	10.1	11.4	11.7	10.1
GEORGE	12.9	10.0	8.3	8.5	10.7	8.5	7.5	8.6	11.4	8.5	7.9	10.5	13.6	11.9	11.7	10.2	11.2	12.1	10.2
HILL 81	13.3	10.1	8.5	8.8	10.8	8.5	7.1	8.4	11.1	9.5	7.8	11.5	13.9	12.3	12.0	10.2	11.9	12.2	10.5
HUBBARD	13.2	9.8	9.1	9.1	9.8	8.7	7.5	8.4	10.2	9.2	8.0	10.1	13.9	12.0	11.5	10.0	10.9	11.6	10.2
ID620	13.0	9.7	8.8	8.7	10.3	8.7	7.0	8.5	9.6	8.7	7.9	10.5	13.3	12.3	11.2	9.9	11.3	11.6	10.1
IDAHO 587	13.5	10.9	9.3	9.9	10.9	8.9	7.7	9.3	11.4	9.7	8.5	11.4	14.3	12.5	11.9	10.6	12.4	12.0	10.9
LAMBERT	12.6	10.5	8.9	9.1	10.6	8.7	7.4	8.2	11.0	9.3	7.9	11.3	14.4	12.1	11.5	9.9	11.7	11.8	10.4
LEWJAIN	14.2	9.6	8.2	8.1	10.6	8.6	7.0	8.5	10.4	8.9	7.9	10.2	12.9	12.8	12.4	10.1	11.7	11.8	10.2
MADSEN	13.4	11.4	9.3	9.3	11.3	8.9	7.5	8.6	11.5	9.6	8.4	11.4	14.7	12.8	11.9	11.0	12.1	12.8	10.9
MASAMI	12.6	9.6	8.5	8.4	10.5	8.5	6.8	8.4	10.6	8.9	7.4	10.8	13.7	12.2	11.5	10.0	11.1	11.5	10.1
MJ-4	12.9	10.6	8.2	8.2	9.9	8.5	7.1	8.6	11.9	9.2	8.0	10.8	14.3	12.8	11.9	9.9	11.6	12.4	10.4
MJ-9	12.7	10.1	8.3	9.1	10.4	8.2	7.3	8.1	10.5	9.0	7.1	11.1	14.0	12.1	11.3	9.8	11.0	11.8	10.1
MOHLER	13.1	10.0	8.5	9.0	11.0	8.0	7.3	8.2	9.7	9.2	8.0	11.1	14.9	12.4	11.6	10.1	12.1	12.4	10.4
ORCF-101	12.5	10.2	8.2	8.8	10.7	8.3	7.7	8.9	11.7	9.6	8.5	11.5	14.3	12.4	11.6	10.8	11.8	12.4	10.6
ORCF-102	13.0	9.9	8.5	8.9	10.8	8.7	7.5	8.5	10.5	9.4	8.0	11.1	13.6	12.0	11.9	10.1	11.7	12.1	10.4
ORSS-1757	12.6	9.7	8.3	8.8	10.3	8.0	7.3	7.9	10.5	9.0	7.8	10.7	13.3	11.5	11.0	9.7	11.2	11.7	10.0
RJAMES	12.4	9.5	8.8	8.6	10.2	8.3	6.8	8.1	10.8	9.2	7.3	10.1	12.4	11.9	11.1	9.4	11.0	11.3	9.8
ROD	12.5	9.9	8.3	8.3	9.9	8.0	7.0	7.9	10.6	8.8	7.4	10.5	13.8	11.8	11.5	9.7	10.9	11.8	9.9
SIMON	13.1	11.1	8.6	9.5	10.8	9.0	7.3	8.6	10.9	10.0	8.7	11.4	14.4	12.3	11.3	10.7	11.4	12.1	10.6
STEPHENS	13.2	10.9	8.1	9.8	11.2	8.8	7.7	8.8	11.4	9.9	8.7	11.5	14.5	12.2	11.7	10.3	12.0	12.2	10.7
TUBBS	13.1	9.5	7.8	9.3	9.9	8.3	7.7	8.5	10.2	8.9	7.5	10.5	13.7	12.0	11.8	9.6	11.5	11.6	10.1
WA7934	13.3	9.9	7.8	7.9	10.3	8.1	7.0	8.3	10.4	8.6	7.5	10.6	13.3	12.0	11.3	9.7	11.3	11.7	10.0
WA7935	13.3	9.9	8.7	8.8	10.2	8.7	7.3	8.5	10.1	8.8	7.4	11.0	13.5	12.5	11.6	9.5	11.6	12.0	10.2
WA7970	13.7	10.2	9.0	9.5	11.5	9.4	7.5	8.9	11.1	9.3	8.8	11.1	14.0	12.6	11.9	11.0	11.9	12.4	10.8
WA7971	12.3	9.9	8.5	8.3	10.5	8.7	7.2	8.1	9.9	8.9	7.8	10.3	14.1	12.0	11.8	9.8	11.3	11.5	10.1
WA7972	12.5	9.8	8.7	8.7	10.4	8.6	7.6	8.6	10.3	8.7	7.5	10.4	12.9	11.3	11.4	9.8	11.6	11.4	10.0
WA7973	12.6	9.8	9.2	8.3	10.4	8.8	7.3	8.7	10.4	9.0	8.2	10.6	13.9	11.8	11.5	9.9	11.4	11.5	10.2
WA7974	12.1	9.4	8.6	8.0	10.3	8.1	7.0	7.8	9.8	8.5	7.8	10.5	13.6	11.7	11.5	9.4	10.7	11.3	9.8
WB 528	12.9	11.1	9.3	9.4	11.7	8.3	7.3	8.4	11.3	10.2	8.3	11.3	13.9	12.3	11.9	10.7	12.3	12.7	10.7
Soft White Club																			
ARS00127	13.3	10.4	8.9	9.5	10.6	8.0	8.1	8.4	10.6	8.6	7.9	10.7	14.5	12.8	12.7	10.5	12.3	12.3	10.6
ARS00235	13.7	10.6	8.9	8.2	11.1	8.5	7.6	8.5	10.6	8.9	7.8	10.8	15.0	12.9	12.8	10.4	12.7	12.0	10.6
ARS96059	13.0	10.3	8.5	9.4	10.8	8.0	7.4	8.6	10.8	9.1	7.7	11.4	14.8	13.0	12.9	10.8	12.3	12.5	10.6
ARS96411	13.6	10.2	8.8	9.7	11.5	8.0	7.6	8.2	11.0	9.0	8.9	11.3	14.9	12.9	12.7	11.2	11.9	12.6	10.8
ARS97135	12.9	10.3	8.0	8.2	10.3	7.9	7.2	7.9	10.4	9.1	7.5	11.2	14.1	12.2	12.3	9.9	12.0	12.2	10.2
ARS97173	12.5	10.7	8.0	8.8	10.3	7.8	7.0	8.1	10.7	8.8	7.6	10.6	14.1	11.9	11.8	10.0	11.6	12.1	10.1
BRUEHL	13.6	10.8	9.5	8.7	10.5	8.6	7.5	8.6	11.1	8.7	7.7	10.8	13.7	12.4	12.0	10.1	11.6	12.2	10.5
CHUKAR	12.9	9.9	7.5	8.5	9.6	7.8	6.8	7.5	10.7	8.6	7.3	10.8	13.8	11.7	12.5	9.8	11.3	12.0	10.0
CODA	13.3	9.6	8.7	9.2	10.8	8.3	7.2	8.6	10.7	9.3	7.8	10.6	14.9	13.3	13.3	10.5	12.4	13.0	10.8
EDWIN	14.2	9.9	9.2	9.0	10.5	8.8	8.3	9.5	10.5	9.4	8.5	11.8	14.7	13.4	13.1	11.3	12.3	13.2	11.0
F1182 M1-10	12.8	10.9	8.7	8.9	11.5	8.6	7.6	8.6	10.7	9.4	8.4	11.1	13.8	12.3	12.5	10.3	11.6	11.8	10.5
HILLER	12.6	9.8	8.4	8.5	10.2	7.9	7.3	8.1	10.0	8.8	8.1	10.0	13.5	12.1	11.9	9.8	11.3	11.6	10.0
RELY	13.5	9.4	9.4	8.2	10.3	7.9	7.8	8.2	10.8	8.6	7.9	10.8	13.7	12.4	12.1	9.7	12.1	12.1	10.3
MEAN	13.0	10.2	8.6	8.8	10.6	8.4	7.4	8.4	10.7	9.1	7.9	10.9	13.9	12.3	11.9	10.1	11.7	12.0	10.3
CV%	4.7	5.3	7.8	8.9	6.0	4.6	7.7	4.5	8.6	4.3	6.7	4.7	2.9	3.4	3.7	5.3	4.3	2.6	5.3
LSD	0.7	0.6	0.8	0.9	0.7	0.5	0.7	0.4	1.1	0.5	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.4	0.2

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2004 WSU WINTER WHEAT VARIETY TRIAL SUMMARY

YIELD (BU/A)

VARIETY NAME	LIND	ST. ANDREWS	RITZVILLE	HARRINGTON	CRESTON	FAIRFIELD	ALMIRA	DAYTON	ANATONE	REARDAN	DUSTY	COLTON	MOSES LAKE	LAMONT	FARMINGTON	MAYVIEW	PULLMAN	ST. JOHN	WALLA WALLA	VARIETY MEAN YIELD (BU/A)	VARIETY MEAN TEST WEIGHT (LBS/BU)	VARIETY MEAN PROTEIN (%)
Soft White Common																						
89S-88D	44.7	55.8	52.6	45.0	91.1	85.8	81.9	87.2	104.5	95.1	111.2	113.5	113.5	122.4	129.5	129.5	139.0	145.8	152.5	100.0	59.6	10.4
96GEO68	45.3	43.9	57.9	62.2	86.4	82.9	93.1	83.4	92.3	107.2	95.3	107.2	116.2	114.2	114.7	112.4	149.8	131.7	155.6	97.5	56.7	10.6
ALBION	50.7	54.8	59.9	69.3	102.4	85.5	101.2	101.7	95.9	113.7	117.6	104.6	130.1	120.4	122.6	137.3	158.6	159.8	161.7	107.8	58.6	10.4
ARS96277	40.8	59.9	52.8	64.7	93.0	92.1	96.5	91.8	99.3	104.3	89.3	117.0	111.2	119.6	129.7	133.3	150.2	153.1	159.8	103.1	60.5	10.5
BRUNDAGE 96	49.8	52.7	54.4	58.6	90.8	93.5	93.5	103.5	90.8	90.3	116.5	99.1	109.0	117.5	118.1	124.4	136.6	149.9	157.0	100.3	57.9	10.5
CASHUP	47.5	54.5	59.3	52.4	91.1	94.4	87.6	86.5	109.8	87.8	107.3	107.7	125.3	121.0	141.0	131.9	144.7	155.7	160.4	103.5	59.7	10.2
CLEARFIRST	29.7	46.5	43.0	53.3	74.2	80.1	69.7	73.3	83.9	90.2	83.7	92.8	96.2	88.5	125.5	103.4	125.5	125.2	130.3	85.0	58.9	11.7
DUNE	51.2	54.8	52.5	61.3	82.0	92.8	94.2	102.0	72.0	91.0	114.7	115.2	118.3	112.3	118.4	121.9	149.9	151.0	158.7	100.7	59.8	10.6
ELTAN	51.9	68.7	59.2	63.6	88.1	93.1	121.2	103.9	115.9	103.2	100.4	116.8	130.0	140.2	143.4	136.9	166.9	151.0	170.7	111.9	59.2	10.1
FINCH	43.7	50.3	69.0	59.2	94.6	83.0	96.4	98.7	104.2	96.4	105.4	111.0	123.1	118.4	129.8	133.5	145.7	162.9	153.6	104.1	60.0	10.3
GMGQ1	53.5	65.8	64.5	68.9	92.0	87.9	113.8	102.1	119.6	112.4	115.9	93.9	124.2	130.1	125.4	134.6	155.2	148.8	158.1	108.8	58.5	10.2
GMGQ2	44.6	63.5	60.4	61.3	65.4	86.7	102.4	111.6	99.8	110.3	123.6	115.4	127.8	132.8	131.0	141.8	150.2	161.1	169.4	108.4	57.2	10.0
HILL 81	49.3	49.4	61.5	59.4	90.6	91.0	97.3	97.2	99.7	97.5	117.1	108.1	106.7	123.1	139.4	135.0	150.6	164.6	158.3	105.0	59.7	10.6
HUBBARD	46.7	56.4	59.7	60.2	99.9	86.7	107.1	93.1	96.1	105.3	108.5	122.0	103.3	126.2	125.1	129.7	151.7	169.2	171.5	106.2	60.0	10.5
IDAHO 587	49.3	36.3	50.6	61.4	84.5	95.9	93.4	88.0	91.6	91.1	109.0	103.4	114.1	112.2	142.0	125.2	155.1	147.6	148.8	100.0	59.2	10.8
LAMBERT	44.7	49.4	56.2	51.8	76.3	92.9	98.4	86.2	63.8	96.2	92.8	121.0	112.3	110.7	132.0	123.8	150.7	142.1	164.9	98.2	59.0	10.5
LEWJAIN	48.0	59.5	65.4	58.0	85.2	87.2	105.4	95.5	95.6	92.5	82.2	110.4	117.0	124.2	120.9	131.2	141.2	144.3	152.5	100.9	59.4	10.4
MADSEN	46.6	57.8	60.2	63.8	88.5	96.5	90.4	93.9	93.6	96.4	105.9	103.5	124.3	108.1	129.7	120.4	143.7	147.3	154.1	101.4	58.9	10.9
MASAMI	46.9	59.3	66.5	67.1	95.3	89.9	101.3	100.1	127.8	109.6	116.1	105.3	112.8	127.5	130.5	133.7	149.7	157.5	161.9	108.4	58.4	10.2
MJ-4	38.5	53.1	62.6	56.8	82.1	76.9	94.2	102.4	83.9	105.4	95.5	107.7	119.0	115.0	120.6	131.4	147.5	156.3	157.0	100.3	57.5	10.8
MJ-9	23.0	53.7	57.0	66.7	89.7	98.1	96.1	97.4	115.2	110.2	127.5	103.5	135.5	120.4	123.1	135.8	156.4	154.5	171.8	107.1	57.8	10.4
MOHLER	50.3	56.6	57.1	59.7	81.0	92.2	101.3	98.0	95.7	94.6	129.3	113.4	121.1	117.5	131.4	131.8	154.7	161.5	164.3	105.9	59.4	10.5
OR990553	24.3	0.0	50.2	52.6	70.7	90.5	71.4	90.6	103.5	84.4	107.4	97.5	122.8	116.6	135.1	121.3	141.9	145.6	144.1	93.2	55.5	11.3
ORCF-101	48.2	0.0	63.0	51.9	81.7	95.8	64.1	103.9	94.7	94.6	117.4	105.5	116.2	117.8	135.8	134.6	147.0	150.8	168.5	99.6	56.0	10.7
ROD	49.9	65.7	66.7	66.6	98.7	98.2	102.2	107.2	112.0	105.0	130.5	128.6	125.5	129.8	140.1	140.5	155.2	162.8	174.2	113.7	58.2	10.1
SIMON	46.9	42.1	50.1	50.2	67.7	86.4	89.2	87.6	62.5	91.2	100.0	104.2	105.9	104.2	122.0	126.1	143.0	142.9	155.0	94.1	58.8	10.9
STEPHENS	45.7	42.3	58.0	57.7	90.0	87.3	84.2	94.6	89.7	98.0	102.4	119.2	111.0	121.6	135.1	133.2	160.0	153.2	161.0	102.3	59.1	10.8
TUBBS	53.0	61.1	61.3	66.5	106.3	91.7	119.4	109.6	103.3	109.5	144.5	114.2	149.8	133.0	131.9	145.9	165.1	167.3	173.9	116.2	58.3	10.3
WA7933	45.6	58.2	57.9	68.1	90.5	93.8	96.0	87.5	114.4	97.5	114.1	100.6	120.9	114.3	132.1	117.0	143.6	144.6	137.7	101.8	60.0	11.2
WA7934	47.4	63.5	59.8	63.1	85.8	84.2	115.9	102.4	118.1	103.4	96.8	119.2	121.2	127.6	138.8	132.8	156.8	152.9	163.5	108.1	59.1	10.2
WA7935	44.7	65.5	54.3	60.6	76.5	93.6	111.3	98.0	109.2	99.8	105.2	113.2	103.0	119.2	123.6	129.3	142.9	142.5	163.3	103.0	59.3	10.5
WA7965	49.7	62.3	63.9	68.6	104.1	93.8	91.3	98.8	108.0	101.8	99.4	107.1	121.9	113.9	125.9	123.2	131.8	140.2	142.1	102.5	59.7	10.7
WB 528	47.8	51.5	59.9	49.4	79.9	102.6	96.8	84.3	99.3	93.6	126.9	115.7	144.2	125.9	141.2	142.9	149.3	155.3	176.1	107.5	60.9	10.9
Soft White Club																						
ARS00173	53.7	38.4	59.9	61.8	91.1	91.8	79.2	94.4	78.4	98.5	82.2	112.3	98.8	115.4	128.6	126.4	129.2	138.4	157.3	96.6	58.8	10.3
ARS00226	41.6	42.4	55.2	48.2	83.9	92.4	75.2	96.6	74.2	100.0	67.5	125.2	114.0	124.4	126.3	138.3	142.5	150.3	147.8	97.2	59.7	10.7
ARS00235	54.3	55.9	57.1	65.6	89.7	88.9	94.1	91.7	83.4	101.0	110.7	111.6	115.3	123.7	132.6	131.2	146.7	140.8	161.9	102.8	60.2	10.6
ARS97135	37.5	53.4	65.2	61.7	86.4	84.4	84.1	103.9	100.4	89.3	102.6	109.7	103.5	123.4	121.0	129.7	136.3	167.6	166.2	101.4	57.6	10.5
ARS97173	47.5	60.9	52.6	59.2	74.9	86.7	84.4	93.3	92.3	91.2	124.0	116.8	112.7	116.1	127.2	132.7	134.0	144.9	154.8	100.3	59.0	10.6
BRUEHL	50.8	71.2	64.2	60.7	98.1	86.7	106.2	101.0	96.0	100.5	100.2	105.7	131.6	122.8	130.5	138.5	141.8	156.7	153.9	106.3	57.4	10.6
CHUKAR	38.6	59.6	73.7	71.2	95.5	86.4	107.6	105.5	121.1	98.9	110.9	114.0	143.0	133.9	143.3	123.9	151.8	162.9	169.0	111.1	58.2	9.9
CODA	48.1	51.8	61.0	60.5	105.4	105.2	86.3	96.5	99.0	99.0	95.2	120.2	117.4	124.6	130.0	129.6	156.3	144.4	159.0	104.7	60.9	10.5
EDWIN	50.7	75.2	63.1	61.9	100.4	83.3	107.0	91.7	118.8	105.2	81.2	106.1	112.0	116.9	104.5	99.7	150.7	118.7	153.5	100.0	60.1	10.6
F1182 M1-10	48.4	55.6	64.9	57.6	96.5	101.0	92.4	88.5	79.0	93.0	82.4	114.8	107.1	111.9	139.4	127.6	140.9	140.9	160.3	100.1	58.0	10.6
HILLER	27.4	61.7	63.5	59.9	96.8	87.8	89.1	96.3	99.8	96.3	91.2	120.4	109.5	109.5	126.8	128.5	146.7	149.4	160.8	101.1	57.0	10.1
MEL	31.8	54.6	52.8	55.0	90.9	85.4	82.8	75.7	80.2	93.2	83.2	110.3	100.7	108.1	128.4	114.3	143.7	122.8	145.2	92.6	61.2	11.1
RELY	46.2	60.3	61.5	62.0	94.9	97.8	99.3	94.0	96.5	89.2	123.7	118.1	104.4	131.2	130.1	124.2	140.7	155.2	166.9	105.1	59.5	10.2
Hard White Common																						
WA7936	46.6	67.0	58.0	64.7	87.2	85.1	112.5	91.2	109.8	104.9	116.8	95.1	133.0	135.7	119.2	133.9	152.3	152.0	158.3	106.5	60.2	10.1
MEAN	45.2	53.7	59.2	60.2	88.7	90.3	95.3	95.6	97.8	98.8	106.0	110.6	117.8	120.1	129.2	129.0	147.3	149.9	158.8	102.8	58.9	10.5
CV%	17.6	17.6	8.4	10.5	7.5	11.5	9.3	8.3	7.9	11.0	19.3	8.9	12.5	3.7	8.3	5.6	4.3	10.5	5.6	9.9	2.1	6.4
LSD	9.3	11.1	5.8	7.4	7.8	11.9	10.4	9.3	9.1	12.8	24.0	11.5	17.2	5.2	12.5	8.4	7.4	16.4	10.3	2.7	0.3	0.2

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2004 WSU WINTER WHEAT VARIETY TRIAL SUMMARY

TEST WEIGHT (LBS/BU)

VARIETY NAME	LIND	ST. ANDREWS	RITZVILLE	HARRINGTON	CRESTON	FAIRFIELD	ALMIRA	DAYTON	ANATONE	REARDAN	DUSTY	COLTON	MOSES LAKE	LAMONT	FARMINGTON	MAYVIEW	PULLMAN	ST. JOHN	WALLA WALLA	VARIETY MEAN
Soft White Common																				
89S-88D	60.8	57.7	61.5	59.8	58.9	57.8	59.2	59.3	59.0	59.2	60.7	60.5	60.7	60.3	54.5	60.3	59.9	60.5	61.2	59.6
96GEO68	58.8	53.4	59.8	58.2	55.9	55.9	55.1	56.9	55.6	56.4	57.5	58.2	58.5	58.0	50.5	56.8	56.5	55.9	58.4	56.7
ALBION	60.1	56.5	61.1	59.6	58.5	57.2	58.4	58.7	57.5	58.3	60.1	59.2	60.5	59.5	52.3	59.3	58.4	58.5	59.1	58.6
ARS96277	61.4	58.8	61.8	61.6	60.0	59.3	60.3	61.0	59.1	60.0	61.4	60.7	60.2	61.3	57.6	60.6	59.9	62.0	62.0	60.5
BRUNDAGE 96	60.0	55.5	60.0	59.4	57.6	57.1	57.7	58.6	55.2	56.7	59.6	57.8	58.6	59.2	53.5	58.8	56.8	58.8	59.8	57.9
CASHUP	60.9	57.9	61.8	59.9	59.2	58.5	59.4	59.7	59.4	59.0	60.5	60.4	60.4	60.5	55.9	60.2	60.0	60.5	60.7	59.7
CLEARFIRST	59.1	57.1	61.2	60.1	58.5	58.4	59.3	58.9	57.3	58.6	60.0	59.4	59.7	59.2	54.7	59.3	57.2	59.5	60.6	58.9
DUNE	61.7	58.1	62.1	60.9	59.0	59.2	59.9	60.3	56.4	59.4	61.3	61.1	60.6	60.9	54.0	60.2	59.3	60.1	61.2	59.8
ELTAN	60.9	57.7	61.9	59.4	59.8	59.3	58.9	59.3	56.5	59.0	59.6	59.4	60.5	60.4	54.3	59.2	58.8	59.3	59.6	59.2
FINCH	61.5	58.6	62.0	60.1	60.2	59.1	59.9	60.2	57.3	60.2	61.3	60.2	61.3	61.1	55.8	61.1	59.2	60.6	60.3	60.0
GMGQ1	60.3	57.0	60.3	59.6	58.9	58.5	58.5	58.3	55.9	57.8	60.0	59.4	60.0	59.6	52.8	59.3	58.3	58.8	58.9	58.5
GMGQ2	59.2	56.3	60.6	58.8	57.3	56.3	57.1	57.9	53.6	56.8	58.9	56.9	59.2	58.1	50.6	57.4	55.5	57.6	57.8	57.2
HILL 81	61.4	57.8	59.7	60.2	59.1	59.2	59.2	59.6	58.4	59.4	61.1	59.7	60.6	60.5	57.0	60.1	58.9	60.6	60.9	59.7
HUBBARD	61.8	58.6	62.0	61.7	59.2	59.3	59.2	60.3	58.3	59.3	61.3	59.9	60.9	61.4	55.3	60.1	59.3	60.6	61.2	60.0
IDAHO 587	60.6	56.9	61.7	59.8	58.4	58.8	58.9	59.4	57.8	58.5	60.6	59.3	59.5	59.9	54.9	59.9	58.9	59.4	61.4	59.2
LAMBERT	60.5	57.2	61.8	60.4	58.0	58.3	58.6	58.4	54.9	58.1	59.6	60.2	60.2	60.6	54.7	59.5	59.3	59.0	61.2	59.0
LEWJAIN	61.9	58.2	62.2	61.0	60.6	58.6	60.2	60.2	57.0	59.4	60.4	59.0	61.6	60.7	52.1	59.6	58.1	58.9	59.4	59.4
MADSEN	60.2	57.3	61.2	60.0	58.6	58.1	59.2	59.1	56.5	58.5	60.7	58.8	60.5	59.6	53.4	59.2	57.3	59.7	60.3	58.9
MASAMI	59.9	57.1	60.8	59.1	58.4	57.6	58.5	58.3	57.7	57.9	59.2	58.2	59.0	59.2	53.8	58.8	57.2	59.2	59.2	58.4
MJ-4	57.7	55.7	59.0	57.8	58.2	57.4	56.8	58.2	53.7	58.8	58.2	58.5	59.8	57.8	53.1	58.1	56.9	58.6	58.2	57.5
MJ-9	56.8	55.7	59.7	57.6	57.9	57.1	57.3	57.5	56.5	58.4	59.6	59.1	60.0	57.6	53.2	58.2	57.5	58.7	59.0	57.8
MOHLER	61.1	57.2	61.6	60.8	58.8	56.5	59.8	60.0	56.7	58.4	61.1	60.4	60.6	60.3	54.7	59.8	59.2	60.3	61.6	59.4
OR990553	57.6	0.0	60.0	58.3	57.6	58.0	57.2	58.1	57.7	58.2	59.8	60.0	60.3	58.9	57.0	58.5	58.2	59.7	59.6	55.5
ORCF-101	60.7	0.0	61.7	59.4	58.3	58.1	56.3	59.5	57.0	58.2	61.0	59.1	59.7	59.7	56.0	59.6	58.5	59.5	60.5	56.0
ROD	60.4	56.3	59.9	58.5	58.5	57.1	58.4	58.5	54.8	57.8	59.1	59.2	60.4	58.2	52.9	59.3	58.0	58.7	58.7	58.2
SIMON	60.0	56.6	60.8	59.9	58.5	58.7	59.1	59.1	54.6	59.1	59.9	59.7	60.1	59.1	53.9	59.0	58.4	59.4	60.4	58.8
STEPHENS	60.3	57.2	61.3	60.0	58.4	58.2	59.0	59.5	57.7	58.1	59.9	59.5	58.9	59.8	55.3	59.7	59.2	59.2	60.6	59.1
TUBBS	60.1	56.5	60.8	58.7	58.2	56.2	58.2	58.1	55.4	57.5	60.3	58.8	61.0	59.6	53.2	58.9	57.7	59.4	59.9	58.3
WA7933	60.9	58.4	62.2	61.1	59.1	59.1	59.7	59.3	59.2	59.4	61.8	60.5	61.0	61.0	56.3	59.9	59.2	60.4	61.2	60.0
WA7934	60.2	57.2	61.6	59.6	59.4	57.8	59.0	59.4	57.5	58.9	59.8	59.1	60.5	59.9	55.5	59.4	58.8	59.2	59.4	59.1
WA7935	60.6	58.4	61.7	60.6	59.2	58.8	59.4	59.7	57.3	58.8	60.8	60.1	60.5	60.6	53.2	59.8	58.6	59.2	60.0	59.3
WA7965	60.5	58.0	61.9	60.8	59.0	59.1	59.2	60.1	58.7	59.6	61.2	60.2	61.3	60.7	55.3	60.3	57.9	60.4	60.3	59.7
WB 528	62.1	58.7	63.2	61.9	59.9	60.1	60.7	60.8	59.2	60.0	62.1	61.6	61.5	62.2	57.5	61.1	60.3	61.8	62.2	60.9
Soft White Club																				
ARS00173	60.5	57.1	60.3	59.2	58.2	58.1	57.8	59.5	56.6	58.8	59.9	58.8	59.1	60.1	55.9	59.1	57.7	59.2	60.3	58.8
ARS00226	60.7	57.1	60.7	58.8	59.9	58.6	59.1	59.8	57.5	60.4	59.6	60.9	60.3	60.3	57.6	60.9	59.8	60.7	60.8	59.7
ARS00235	61.1	59.1	61.2	61.1	59.6	59.7	57.7	59.6	59.6	60.1	61.6	60.9	61.0	61.0	57.4	60.6	60.3	60.3	61.4	60.2
ARS97135	59.1	56.0	60.0	53.6	57.5	56.8	57.2	57.9	56.1	57.8	58.9	58.2	58.9	58.7	53.2	58.4	56.8	59.0	59.7	57.6
ARS97173	60.8	57.6	61.8	60.8	58.3	58.2	58.9	59.2	57.3	58.4	61.1	59.3	58.7	60.0	53.5	58.7	58.3	59.3	60.4	59.0
BRUEHL	59.7	56.6	59.2	57.7	57.8	56.4	57.8	58.0	55.2	57.6	58.1	57.4	59.6	57.8	52.6	56.9	56.1	57.7	57.9	57.4
CHUKAR	59.0	56.1	59.5	58.4	56.4	57.2	57.1	57.8	57.2	58.4	59.0	58.9	60.0	58.7	55.9	58.8	58.3	59.1	59.7	58.2
CODA	61.7	58.5	62.5	61.0	60.4	60.6	60.1	60.5	60.6	61.1	61.7	61.9	61.5	61.8	57.8	61.2	61.3	61.3	62.0	60.9
EDWIN	61.5	58.9	61.5	60.3	58.8	59.1	58.6	59.5	60.3	59.2	60.9	61.0	60.4	61.6	55.0	60.9	61.2	60.5	62.1	60.1
F1182 M1-10	59.5	57.4	59.5	58.9	58.3	58.0	57.8	58.0	56.2	58.2	58.3	58.0	58.8	58.3	54.7	57.8	57.0	58.0	58.6	58.0
HILLER	44.3	56.8	59.9	57.3	58.4	56.9	57.8	57.9	56.5	57.8	57.0	57.8	58.2	57.8	55.8	57.6	57.7	58.0	59.0	57.0
MEL	61.4	60.3	62.9	61.7	60.3	61.0	60.7	60.7	61.0	60.8	62.0	62.5	61.3	62.1	57.9	61.9	61.1	61.5	62.3	61.2
RELY	60.4	58.2	61.2	59.6	58.9	59.1	59.2	59.4	58.0	59.2	60.7	59.8	59.5	60.2	56.7	59.8	58.8	60.1	61.1	59.5
Hard White Common																				
WA7936	61.4	58.9	62.1	60.9	60.4	59.4	60.1	60.2	57.9	60.5	61.3	60.3	62.9	61.3	53.6	60.8	59.8	60.5	61.3	60.2
MEAN	60.0	55.0	61.1	59.7	58.7	58.3	58.7	59.2	57.3	58.8	60.2	59.6	60.2	59.9	54.7	59.5	58.5	59.6	60.3	58.9
CV%	7.3	1.3	1.1	2.4	1.0	1.6	1.4	0.5	1.5	0.9	1.1	1.2	1.3	0.5	2.2	0.6	0.9	0.9	0.6	2.1
LSD	5.1	0.9	0.8	1.7	0.7	1.1	1.0	0.3	1.0	0.6	0.8	0.8	0.9	0.4	1.4	0.4	0.6	0.6	0.4	0.3

2009 0278

2004 WSU WINTER WHEAT VARIETY TRIAL SUMMARY

PROTEIN (%)

VARIETY NAME	LIND	ST. ANDREWS	RITZVILLE	HARRINGTON	CRESTON	FAIRFIELD	ALMIRA	DAYTON	ANATONE	REARDAN	DUSTY	COLTON	MOSES LAKE	LAMONT	FARMINGTON	MAYVIEW	PULLMAN	ST. JOHN	WALLA WALLA	VARIETY MEAN
Soft White Common																				
89S-88D	11.4	8.9	10.8	9.3	10.0	10.6	11.0	11.2	11.7	9.5	9.4	8.7	9.8	10.7	11.4	10.0	10.5	11.1	11.5	10.4
96GEO68	12.1	9.6	10.9	10.6	9.9	10.9	10.6	10.7	11.9	9.6	10.0	9.1	9.6	10.6	11.8	10.0	10.7	10.7	11.3	10.6
ALBION	11.2	9.3	11.1	9.9	9.3	10.8	10.2	10.7	12.0	10.6	9.4	9.1	10.1	10.4	11.8	9.7	10.1	10.6	11.2	10.4
ARS98277	11.4	9.5	10.9	9.8	10.1	10.5	10.5	11.2	11.7	9.9	9.6	9.3	8.5	11.2	11.6	10.4	10.4	10.9	11.6	10.5
BRUNDAGE 96	11.0	9.4	11.0	10.1	10.4	10.9	10.5	10.9	12.5	9.3	9.4	9.4	8.9	10.6	12.0	10.0	10.8	10.6	11.4	10.5
CASHUP	11.0	9.0	10.8	8.6	10.0	10.0	10.3	11.2	11.6	9.1	9.0	8.8	9.3	10.2	11.2	9.8	10.5	10.8	11.5	10.2
CLEARFIRST	13.8	10.8	12.9	10.7	11.7	11.4	12.6	12.0	12.4	10.5	11.1	9.9	9.9	12.3	12.0	11.0	11.7	12.0	12.5	11.7
DUNE	11.3	8.7	11.8	10.3	10.9	11.5	10.4	10.9	12.7	9.2	9.8	9.1	8.9	11.2	12.2	10.0	10.8	10.0	11.5	10.6
ELTAN	11.1	8.8	10.5	9.5	10.6	9.6	8.9	10.1	12.4	8.8	9.5	9.0	8.3	9.5	11.7	9.3	10.5	10.2	11.5	10.1
FINCH	11.8	9.0	10.0	9.4	9.3	11.1	10.1	11.0	12.4	8.6	9.2	9.7	9.3	10.2	11.8	10.1	10.5	11.2	11.8	10.3
GMGQ1	10.9	8.5	10.2	9.4	9.7	10.5	9.6	10.6	12.4	9.6	9.0	8.7	9.5	9.8	12.1	10.0	10.4	10.9	11.6	10.2
GMGQ2	11.5	8.4	10.4	9.6	10.8	10.2	9.5	10.0	11.9	9.0	9.0	8.8	9.0	10.1	11.6	9.4	10.6	9.7	11.0	10.0
HILL 81	11.7	8.5	10.4	10.4	10.4	10.4	10.4	11.2	12.4	9.9	10.0	9.1	9.4	10.5	11.7	10.9	10.8	11.3	11.6	10.6
HUBBARD	11.9	9.6	10.9	11.2	9.9	10.6	9.8	11.2	12.1	9.3	9.9	8.5	9.8	10.5	11.7	10.1	10.3	11.0	11.5	10.5
IDAHO 587	11.3	9.6	11.7	12.2	11.0	10.7	10.9	11.1	12.1	10.1	9.8	9.5	9.2	11.6	11.8	10.2	10.7	10.7	11.1	10.8
LAMBERT	10.8	9.0	10.8	10.5	10.9	10.5	10.7	11.3	12.6	9.6	9.8	9.1	8.7	10.8	11.8	10.2	10.6	9.8	11.4	10.5
LEWJAIN	11.5	8.6	10.8	9.4	10.7	10.3	9.8	10.7	12.4	9.1	9.3	9.6	9.4	10.7	11.8	10.0	10.8	11.3	11.6	10.4
MADSEN	12.3	9.6	10.7	10.8	10.1	10.5	11.3	11.4	12.4	9.5	10.6	9.6	9.7	11.2	12.2	10.3	11.0	11.1	12.1	10.9
MASAMI	11.8	9.1	10.9	9.3	10.0	10.6	9.9	10.5	11.8	9.0	9.5	9.3	8.3	10.2	11.5	9.9	10.5	10.7	11.4	10.2
MJ-4	12.7	9.3	10.9	9.9	10.5	11.0	11.1	11.3	12.8	10.2	9.9	9.1	9.4	10.9	12.3	10.4	11.0	11.2	11.8	10.8
MJ-9	12.8	9.1	11.0	9.0	10.3	9.9	10.4	11.3	11.9	9.4	10.2	8.4	9.1	10.4	12.2	9.7	10.5	10.8	11.3	10.4
MOHLER	11.4	9.8	10.7	9.7	10.7	10.8	10.2	11.3	12.3	9.9	9.5	9.1	8.9	11.1	11.6	10.2	10.4	10.8	11.7	10.5
OR990553	14.3	0.0	12.7	12.4	12.6	11.4	12.3	12.6	12.8	11.4	11.2	9.8	10.2	12.2	12.3	10.8	11.7	11.7	12.3	11.3
ORCF-101	12.0	0.0	10.6	11.8	10.9	10.8	11.6	11.5	12.7	10.6	10.9	10.0	9.9	11.7	12.0	10.8	11.2	11.7	11.9	10.7
ROD	11.1	9.0	9.4	9.1	9.4	10.0	9.8	10.4	12.3	8.8	9.8	9.0	9.0	10.4	11.4	9.7	10.1	10.8	11.5	10.1
SIMON	12.1	9.4	11.5	10.0	11.3	10.4	11.2	11.2	12.5	10.7	10.0	9.1	9.3	11.5	12.0	10.4	11.1	11.4	11.8	10.9
STEPHENS	11.3	9.3	11.2	11.3	10.7	11.0	10.7	11.1	12.1	10.1	9.7	9.7	9.1	11.2	11.7	10.1	10.8	11.6	11.5	10.8
TUBBS	11.1	8.5	10.4	10.1	9.8	10.7	10.0	10.7	12.3	9.5	9.3	8.8	9.7	10.1	11.7	9.8	10.4	10.4	11.4	10.3
WA7933	12.6	9.9	11.9	10.8	10.7	10.6	11.5	12.2	12.4	10.1	10.7	9.4	10.0	11.5	12.2	11.1	11.3	11.7	12.5	11.2
WA7934	11.2	8.5	11.0	10.2	9.8	10.5	8.8	10.2	11.8	9.9	9.4	9.6	9.3	10.2	11.3	9.4	10.7	10.7	11.9	10.2
WA7935	11.5	8.9	10.8	10.0	10.6	10.6	9.8	10.6	12.1	9.8	10.2	9.3	9.1	10.7	11.9	10.3	10.8	10.4	11.6	10.5
WA7965	11.4	10.1	10.9	10.1	9.7	10.9	11.1	10.7	12.5	9.6	9.1	9.3	10.6	11.0	12.3	10.2	10.8	11.3	12.3	10.7
WB 528	11.0	9.3	11.0	10.0	10.8	11.3	11.7	11.9	12.4	10.2	10.0	9.9	9.8	11.1	11.9	10.4	10.3	11.5	11.8	10.9
Soft White Club																				
ARS00173	11.2	9.5	10.2	10.3	9.3	9.8	10.7	10.5	12.0	9.5	9.9	8.8	9.0	10.6	11.5	10.3	11.0	9.0	11.7	10.3
ARS00226	11.8	9.3	10.7	10.8	10.1	10.9	10.8	11.2	13.1	9.7	11.1	9.3	9.8	10.7	11.8	10.0	10.6	10.4	12.0	10.7
ARS00235	11.4	8.8	10.3	11.2	9.5	10.1	10.7	11.3	12.6	10.5	10.9	9.0	9.3	10.6	11.5	10.3	10.6	10.4	12.1	10.6
ARS97135	12.5	9.1	9.9	9.9	9.7	10.3	10.3	10.4	12.6	9.6	9.0	9.2	9.7	10.0	12.2	10.8	11.1	10.3	11.9	10.5
ARS97173	12.3	8.6	11.2	10.4	10.7	10.2	11.2	10.9	12.4	10.2	10.3	8.6	9.6	10.9	11.5	10.6	11.0	10.0	11.5	10.6
BRUEHL	11.0	9.3	10.0	9.2	9.9	10.8	10.4	10.7	12.4	9.4	9.7	9.5	10.2	10.8	12.4	11.2	11.5	10.2	12.1	10.6
CHUKAR	12.1	8.1	9.0	9.1	8.6	10.1	9.9	9.9	12.2	8.8	8.7	8.5	10.4	9.2	11.5	9.8	10.5	10.2	11.8	9.9
CODA	11.7	9.6	10.3	8.5	9.7	10.4	10.6	11.1	12.5	9.8	9.6	9.0	9.4	10.3	12.2	10.0	10.5	11.1	12.0	10.5
EDWIN	10.9	9.3	10.3	9.5	9.4	10.9	10.8	10.9	12.9	9.7	9.3	9.4	9.0	10.8	12.8	11.2	10.6	11.3	12.4	10.6
F1182 M1-10	11.1	9.6	10.0	10.2	9.9	10.3	10.1	11.1	12.5	10.2	9.8	9.4	10.1	11.0	11.7	10.4	11.3	10.1	12.0	10.6
HILLER	8.6	9.4	10.2	8.4	10.1	10.1	10.0	10.0	12.0	9.6	9.4	9.2	9.8	10.6	11.2	10.0	10.4	10.4	11.4	10.1
MEL	13.2	9.9	11.5	10.6	10.2	10.2	12.5	11.7	12.3	10.7	10.7	9.7	9.5	11.7	12.3	10.8	10.9	11.3	12.2	11.1
RELY	10.9	9.6	10.0	8.7	9.5	9.8	10.2	10.7	12.6	9.4	10.0	9.0	9.1	10.4	11.4	10.2	10.2	10.6	11.5	10.2
Hard White Common																				
WA7936	10.5	8.2	10.4	7.8	10.3	9.3	8.9	11.1	12.8	9.8	9.1	8.5	10.5	8.7	12.7	9.6	10.8	10.3	11.8	10.1
MEAN	11.6	8.8	10.8	10.0	10.2	10.6	10.5	11.0	12.3	9.7	9.8	9.2	9.5	10.7	11.9	10.2	10.7	10.8	11.7	10.5
CV%	9.6	9.2	5.8	10.1	6.4	6.3	6.3	3.1	3.5	7.5	8.6	6.3	8.5	4.2	3.6	5.2	3.2	8.2	1.6	6.4
LSD	1.3	1.0	0.7	1.2	0.8	0.8	0.8	0.4	0.5	0.9	1.0	0.7	0.9	0.5	0.5	0.6	0.4	1.0	0.2	0.2

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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
GRANT H. TORREY JR FOR CHS INC	895*880	CONCEPT
ADDRESS *(Street and No. or RD No., City, State, Zip Code and Country)* 2087 ROAD "O" SE MOSES LAKE WA 98837		FOR OFFICIAL USE ONLY PVPO NUMBER 200600278

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:

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

3. COLEOPTILE ANTHOCYANIN:

[1] 1 = Absent 2 = Present

4. JUVENILE PLANT GROWTH:

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

7. EAR EMERGENCE:

[1][6][0] Number of Days (Average)
[0][3] Number of Days Earlier Than * MADSEN
Same As * _____
[0][3] Number of Days Later Than * STEPHENS

**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)

[ ][8][4] cm (Average)

[ ][ ] cm Taller Than _____ *

Same As STEPHENS *

[ ][3] cm Shorter Than MADSEN *

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

[3] Number of Nodes

E. PEDUNCLE

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

[ ][3] 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

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

D. AWNEDNESS

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

12. GLUMES: (At Maturity)

A. COLOR

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

B. SHOULDER

[6]
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

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

E. BEAK WIDTH

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

F. GLUME LENGTH

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

G. WIDTH

[2]
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

[2] 1 = Rounded
2 = Angular

C. BRUSH

[2] 1 = Short
2 = Medium
3 = Long

[1] 1 = Not Collared
2 = Collared

D. CREASE

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

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

E. COLOR

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

F. TEXTURE

[2] 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

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

I. GERM SIZE

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

14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

(0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

[0] Stem Rust (*Puccinia graminis* f. sp. *tritici*)
[2] Stripe Rust (*Puccinia striiformis*)
[0] Tan Spot (*Pyrenophora tritici-repentis*)
[0] Halo Spot (*Selenophoma donacis*)
[0] *Septoria nodorum* (Glume Blotch)
[0] *Septoria avenae* (Speckled Leaf Disease)
[0] *Septoria tritici* (Speckled Leaf Blotch)
[0] Scab (*Fusarium* spp.)
[1] "Black Point" (Kernel Smudge)
[0] Barley Yellow Dwarf Virus (BYDV)
[0] Soilborne Mosaic Virus (SBMV)
[0] Wheat Yellow (Spindle Streak) Mosaic Virus
[0] Wheat Streak Mosaic Virus (WSMV)
[3] Other (Specify) CEPHALOSPORIUM GRAMINEUM
[1] Other (Specify) PSEUDOCERCOSPORELLA HERPOTRICHOIDES
[ ] Other (Specify) _____

[2] Leaf Rust (*Puccinia recondita* f. sp. *tritici*)
[0] Loose Smut (*Ustilago tritici*)
[0] Flag Smut (*Urocystis agropyri*)
[0] Common Bunt (*Tilletia tritici* or T. *laevis*)
[1] Dwarf Bunt (*Tilletia controversa*)
[0] Karnal Bunt (*Tilletia indica*)
[4] Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)
[1] "Snow Molds"
[0] Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)
[0] Rhizoctonia Root Rot (*Rhizoctonia solani*)
[0] Black Chaff (*Xanthomonas campestris* pv. *translucens*).
[0] Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)
[ ] 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)

[1] Hessian Fly (*Mayetiola destructor*)
[0] Stem Sawfly (*Cephus* spp.)
[0] Cereal Leaf Beetle (*Oulema melanopa*)

[ ] Other (Specify) _____
[ ] Other (Specify) _____
[ ] 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)

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- [0] Russian Aphid (*Diuraphis noxia*)
- [0] Greenbug (*Schizaphis graminum*)
- [0] Aphids
- [ ] Other (Specify) _____
- [ ] Other (Specify) _____
- [ ] Other (Specify) _____

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

Description of Abbreviations

Class	Hardness, color and season planted (market class, subclass)
TWT	Test weight lbs/bu, after cleaning but before scouring)
SKHRD	Single kernel hardness
SKWT	Single kernel weight
SKSIZE	Single kernel size
WPRO	Wheat protein (percentage by weight, corrected to 12% moisture basis)
FYELD	Flour yield (percentage flour by weight of total products)
BFYELD	Break flour yield (percentage flour from break rolls by weight of total products)
FASH	Flour ash (percentage by weight, corrected to 14% moisture basis)
MSCOR	Milling score
FPRO	Flour protein (percentage by weight, corrected to 14% moisture basis)
FSV	Farinograph stability time (minutes)
MABS	Mixograph absorption (percentage by weight, corrected to 14% moisture basis)
MTYPE	Mixograph type
CODI	Cookie diameter (cm)

SAMPLE#	VARIETY	CLASS	TWT	SKHRD	SKWT	SKSIZE	WPROT	FYELD	BFYELD	FASH
*0001	MADSEN	SWW	61.4	41.9 ±16.3	38.9 ±10.6	2.51 ±0.53	12.0	69.9	54.3	0.52
0002	ALBION	SWW	59.9	37.5 ±14.0	35.3 ± 9.6	2.27 ±0.50	11.6	65.8 -2	50.6	0.48 +
0003	BRUNDAGE96	SWW	60.6	24.4 ±20.1	39.5 ±12.2	2.37 ±0.58	11.6	68.9	52.9	0.48 +
0004	CASHUP	SWW	62.0	33.2 ±17.5	37.1 ± 9.8	2.32 ±0.51	11.3	66.5 -2	51.1	0.47 +2
0005	CLEARFIRST	SWW	62.0	46.2 ±15.9	36.1 ± 9.1	2.43 ±0.49	13.3	69.0	53.8	0.52
0006	CONCEPT	SWW	61.3	32.0 ±17.4	38.9 ±10.0	2.43 ±0.55	11.0	66.4 -2	51.0	0.46 +2
0007	GT123	SWW	61.5	33.4 ±14.1	45.9 ± 9.4	2.78 ±0.52	11.7	69.1	53.0	0.50
0008	ID587CF	SWW	60.7	30.6 ±14.4	48.6 ±12.3	2.91 ±0.64	11.9	68.8	50.7	0.52
0009	MOHLER	SWW	62.5	31.2 ±15.5	44.5 ±11.9	2.70 ±0.60	12.0	69.1	53.1	0.50
0010	ORCF101	SWW	62.0	34.3 ±15.7	44.5 ±11.5	2.76 ±0.65	11.7	67.7 -2	49.7	0.46 +2
0011	P106	SWW	62.8	42.8 ±16.0	41.7 ±10.8	2.52 ±0.62	12.2	65.7 -2	46.5	0.48 +
0012	P114	SWW	63.9 +	36.7 ±11.7	39.9 ±10.6	2.49 ±0.54	12.9	65.1 -2	46.8	0.44 +2
0013	STEPHENS	SWW	62.1	31.7 ±15.0	46.9 ±10.9	2.83 ±0.62	11.9	68.0 -	49.1	0.47 +2
0014	TUBSS	SWW	61.9	40.6 ±14.2	46.1 ±11.3	2.73 ±0.57	11.7	68.2 -	50.5	0.51
0015	WB470	SWW	64.8 +2	32.2 ±13.9	42.9 ±10.1	2.54 ±0.56	11.5	68.3 -	51.1	0.47 +2
0016	WB528	SWW	63.2 +	33.1 ±15.7	42.9 ±11.5	2.54 ±0.59	12.0	65.6 -2	48.2	0.47 +2
SM	SWW		61.4				12.0	69.9	54.3	0.52
NM	SWW		62.0				11.9	67.6	50.8	0.48
NSD	SWW		1.24				0.56	1.54	2.33	0.024

SAMPLE#	VARIETY	MSCOR	FPROT	FSV	MABS	MTYPE	CODI
*0001	MADSEN	77.0	10.0	15.7	57.8	2M	8.84
0002	ALBION	74.3 -	9.9	17.5	57.0	1M	9.11 +
0003	BRUNDAGE96	78.3	10.0	16.4	58.0	2M	9.41 +2
0004	CASHUP	75.9	9.6	19.0	56.9	2M	9.34 +
0005	CLEARFIRST	75.9	11.1	16.4	58.5	1M	8.93
0006	CONCEPT	76.4	9.3	20.8	56.6	2M	9.30 +
0007	GT123	77.3	10.6	16.6	57.9	2M	9.16 +
0008	ID587CF	75.6	10.4	16.9	57.9	2M	9.02
0009	MOHLER	77.3	10.4	17.9	58.1	1M	9.16 +
0010	ORCF101	78.0	10.2	18.4	57.6	1M	9.06
0011	P106	74.2 -	11.0	17.3	58.6	1M	8.84
0012	P114	76.0	11.2	17.6	58.4	2M	8.96
0013	STEPHENS	77.8	10.2	17.6	57.1	2M	9.13 +
0014	TUBSS	75.5	9.8	16.6	57.3	1M	8.98
0015	WB470	78.2	10.4	18.2	57.9	5M	9.01
0016	WB528	74.7 -	10.0	17.8	57.4	4M	9.07
SM	SWW	77.0	10.0	15.7	57.8		8.84
NM	SWW	76.4	10.3	17.5	57.7		9.08
NSD	SWW	1.36	0.53	1.22	0.59		0.166

* = standard mean nursery flour protein = 10.3 mill used = Quad (SM = standard mean NM = nursery mean NSD = nursery standard deviation)

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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
Grant H. Torrey, Jr. for CHS Inc.	89S*88D	Concept
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)*
2087 Road "O" SE Moses Lake, WA. 98837	(509) 765-3898	(509) 764-7223
	7. PVPO NUMBER 200600278	

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

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

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
☑ YES ☐ NO **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
☐ YES ☐ NO **If no, give name of country**

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

Grant H. Torrey, Jr. was employed by CHS Inc. dba Connell Grain Growers.

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.

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

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	TEMPORARY OR EXPERIMENTAL DESIGNATION
GRANT H. TORREY JR FOR CHS, INC	2087 ROAD O SE MOSES LAKE WA 98837	895*88D VARIETY NAME: CONCEPT
NAME OF OWNER REPRESENTATIVE (S)	**ADDRESS** *(Street and No. or RD No., City, State, and Zip Code and Country)*	FOR OFFICIAL USE ONLY PVPO NUMBER: 200600278

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

Signature: [signature]

Date: 8/18/2006