No. 7900080

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Nebraska and SEA, USDA

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

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

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen 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, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,] TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*[Waived]

COMMON WHEAT

'Centurk 78'

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 *this* 31st *day of* July *in the year of our Lord one thousand nine hundred and* eighty.

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470 (1-76)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
PLANT VARIETY PROTECTION OFFICE
NATIONAL AGRICULTURAL LIBRARY
BELTSVILLE, MARYLAND 20705

FORM APPROVED
OMB NO. 40-R371

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1a. TEMPORARY DESIGNATION OF VARIETY NE69291	1b. VARIETY NAME Centurk 78	FOR OFFICIAL USE ONLY PV NUMBER 7900080
2. KIND NAME Hard Red Winter Wheat	3. GENUS AND SPECIES NAME Triticum aestivum L.	FILING DATE 5-21-79 / TIME 3:30 A.M. P.M. FEE RECEIVED $ 250.00 / DATE 5-21-79
4. FAMILY NAME (BOTANICAL) Gramineae	5. DATE OF DETERMINATION July 1969	$ 250.00 / 5-21-79 $ 250.00 / 6/16/80
6. NAME OF APPLICANT(S) Board of Regents, University of Nebraska and Science and Education Administration, U.S. Department of Agriculture	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*) Lincoln, NE 68508 Washington, DC 20250	8. TELEPHONE AREA CODE AND NUMBER (402) 472-7211 (202) 447-3656
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*) Corporation & U.S. Government Agency	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Nebraska and Washington, DC	11. DATE OF INCORPORATION (Day, Month, Year) February 15, 1869

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all paper

Dr. Howard W. Ottoson, Acting Dean and Director
Agricultural Experiment Station
University of Nebraska-Lincoln
Lincoln, NE 68583

Mr. T. W. Edminster, Deputy Director
Agricultural Research, Science and Education Administration
340-A Administration Building
USDA
Washington, DC 20250

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

[X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

[X] 13B. Exhibit B, Novelty Statement.

[X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*

[X] 13D. Exhibit D, Additional Description of the Variety.

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [X] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal? [X] YES [ ] N

16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issuance a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

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

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

FOR THE BOARD OF REGENTS

April 16, 1979
(DATE)

Robert L. Lovitt
(SIGNATURE OF APPLICANT)

Robert L. Lovitt, Acting Vice Chancellor, Bus.& Fin

June 4, 1978
(DATE)

T. B. Kinney
(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, National Agricultural Library, Beltsville, Maryland 20705. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give (1), the genealogy, including public and commerical varieties, lines, or clones used, and the breeding method. (2), the details of subsequent stages of selection and multiplication. (3), the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4), evidence of stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties; (1) identify these varieties and state all differences objectively; (2) Attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe; such as; plant habit, plant color, disease resistance, etc.

14A 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 his affirmative decision after the variety has either been sold and so labeled or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)

EXHIBIT A

Origin and Breeding History of Centurk 78

Pedigree: Same as Centurk: Kenya 58/2/Newthatch/3/(Hope/2*Turkey)/4/ Cheyenne/5/Parker.

Date of Origin: July 1967. Five heads selected from NE66425, later named Centurk.

Place: University of Nebraska North Platte Station, North Platte, NE.

Breeding System: Mass selection.

The breeding history of Centurk 78 is summarized in Table 1. The decision to release NE69291 (C.I. 17724) under the name CENTURK 78 was made by the Nebraska Agricultural Experiment Station on January 25, 1978*. Public release of information on Centurk 78 as a variety occurred on June 15, 1978*. The North Central Region, Agricultural Research, Science and Education Administration, U.S. Department of Agriculture and the New Mexico Agricultural Experiment Station joined the Nebraska Agricultural Experiment Station in the release of Centurk 78.

Breeder's seed of NE69291 was seeded in the fall of 1977 for the production of foundation seed in 1978. Ten bushels of breeder seed was supplied to the Kansas, New Mexico and South Dakota Agricultural Experiment Stations. In 1978, 475 bushels of foundation seed were produced and released to Nebraska growers for the production of registered seed.

* Release statements attached.

Table 1. Breeding history of Centurk 78 hard red winter wheat.

Year	Nursery	Disposition
1967	Five heads selected from NE66425 which was later named Centurk. North Platte, NE.	Grown in greenhouse, Lincoln, NE, 1967-68.
1968	Greenhouse, Lincoln, NE.	Seed of 5-head progeny composited and advanced to an observation planting at Lincoln.
1969	Observation nursery, plot 291, Lincoln, NE.	Plot 291 recognized as having merit and assigned Nebr. Sel. No. 69291. Advanced to Nebraska Intrastate Nursery (NIN) for yield testing statewide.
1970-1975	Nebraska Intrastate Nursery.	Continued in NIN. Entered in additional tests. Advanced to regional and outstate tests for 1976.
1976	NIN, Outstate Tests, Northern and Southern Regional Performance Nurseries.	Continued in same tests.
1977	Continued in same nurseries.	Continued in NIN and Outstate Tests. Large scale collaborative milling and baking tests. Breeder seed to Foundation Seed Division.
1978	NIN, Outstate Tests, large scale milling and baking tests. Production of Foundation Seed.	Assigned C.I. No. 17724. Named Centurk 78. Foundation Seed released to growers for production of registered seed.

EXHIBIT B

Data Indicative of Novelty of Centurk 78

Centurk 78 is most similar to Centurk and resembles it in most characteristics. Centurk 78 differs from Centurk in the following respects:

1. It has a somewhat lower level of resistance to soil-borne mosaic virus (Table 2).

2. Beak length appears to be somewhat shorter in Centurk 78 than in Centurk (Table 3). Kernel characteristics for Centurk and Centurk 78 are similar (Table 4).

3. It consistently has a somewhat longer dough mixing time. (Quality data for the 1970, 1971, 1972, 1973 and 1975 Nebraska Intrastate Nurseries and typical mixograms from Mead, Clay Center and North Platte attached (Tables 5 & 6, and Figure 1)).

4. In 2-dimensional polyacrylamide gel electrophoresis (PAGE) Centurk shows one gliadin protein "spot" not present in Centurk 78. Statement and photograph attached (Figure 2).

EXHIBIT B (additional data)

Table 2. Field reaction to soil-borne mosaic virus for selected entries, 1977.

Variety	Urbana, IL		Manhattan, KS	Newton, KS
	Incidence	Response	Response	Response
Pawnee	100	S	MS	MS
Concho (Res. check)	100	MR	R	R
Bison (Susc. check)	70	S (rosetting)	S	MS
Bennett	100	MS	MR	MR
Centurk	100	MR	MS	MR
Centurk 78	100	MR	S	MS

EXHIBIT B (additional data)

Table 3. Comparative morphological data for winter wheat varieties at Mead, NE, 1978.

Trait	Scout 66	Homestead	Bennett	Centurk	Centurk 78
Height:cm	103.5	95.9	96.3	100.2	97.9
Internode length:cm	22.8	21.2	20.6	21.9	20.1
Leaf length:cm	25.4	25.6	22.7	23.7	23.5
Leaf width:mm	11.1	11.7	11.6	12.5	12.6
Spike length:cm	8.1	7.2	6.6	6.6	7.5
Spike width:mm	9.3	9.2	9.4	9.0	9.7
Awn length:cm	6.9	6.0	5.9	6.1	5.8
Glume length:mm	9.6	6.5	9.5	9.1	9.1
Glume width:mm	3.3	3.3	3.6	3.4	3.5
Beak length:mm	3.1	4.2	2.8	4.2	3.2

EXHIBIT B (additional data)

Table 4. Comparative average kernel data for winter wheat varieties grown at six 1/ locations in Nebraska.

Trait	Scout 66	Homestead	Bennett	Centurk	Centurk 78
Kernel width (mm)	2.7	2.7	2.8	2.5	2.5
Kernel length (mm)	6.3	6.3	6.2	5.8	5.8
Kernel weight (1000 kernels, g)	31.4	29.3	30.1	25.3	24.7

1/ Kernel weight average for 11 locations in Nebraska in 1978 except for Homestead. Homestead average is a percentage of the Bennett value at comparable locations.

EXHIBIT B

Table 5. Quality data for the 1970, 1971, 1972, 1973 and 1975 Nebraska Intrastate Nurseries showing comparative data for Centurk and Centurk 78.

1970 INTRASTATE NURSERY

Lab. No.	Variety Sel. No.	Entry No.	Flour Yield	Milling Type	Protein* Wheat	Protein* Flour	Ash* Flour	m % $KBrO_3$	% Abs.	Mix Time Bake	Mix Time Mixo	Tol.	Vol.	Grain	Texture	External
-1480	Lancer	113	72.8	G	10.60	10.80	.440	1.0	65	3 1/2	3	3	970	G-3/	VG	VG-
1481	Guide	107	72.2	G	12.50	11.75	.390	.75	63	5	3 2/3	3+	940	VG	VG	G+
1482	Scout 66	108	71.7	G	11.10	11.00	.390	.75	65	3 1/3	3 1/3	2+	950	G3/	VG	G-
1483	Scoutland	109	70.8	G	13.95	12.30	.390	.50	63.5	5 1/4	3 2/3	3+	920	VG	VG	G
1484	Gage	111	68.6	G	13.40	11.40	.400	.75	63	3	2 1/2	1	950	G	VG-	G-
1485	Trader	103	70.5	G	11.70	11.45	.406	.75	64	4 2/3	3 2/3	3	935	VG	VG	G-
1486	Trapper	105	70.7	G	10.80	11.05	.412	.50	65	4 2/3	4 1/3	3	940	VG	VG	G+
1487	Warrior	102	70.3	G	13.35	11.75	.394	.75	60	4	2 2/3	3	935	VG	G+5/	F
1488	Cheyenne	115	71.5	G	10.60	11.65	.400	.75	65	5 1/4	4 1/3	3+	925	G	VG	P
1489	Omaha	101	69.7	G	13.10	12.45	.374	.50	67	3 1/4	2 1/2	0	1010	VG-	VG	G-2/
1490	Ottawa	110	66.1	G	15.70	11.65	.414	1.0	65	3	2	2	1025	G+3/	VG	G-2/
1491	Gage Sel	112	68.4	F	13.60	11.50	.414	.75	66	3 1/3	2 1/3	0	955	G2/3/	VG-	G+
1492	66403	116	72.0	F	10.00	10.05	.436	1.0	65	4 1/3	4	2	935	F2/	G6/	F+
-1493	66425 *	118	69.0	F	12.55	11.25	.428	1.0	65	5 3/4	4 2/3	3+	1025	VG	VG	VG
1494	66553	125	67.3	VP	15.45	11.90	.430	.75	65	3 3/4	3 2/3	2+	940	VG-	VG	G-
1495	68427	130	70.0	G	10.95	11.00	.424	1.0	62	4 3/4	3 2/3	3+	990	G+2/	VG-	G
1496	68432	132	71.3	VG	11.20	11.55	.360	.75	67	4	3 1/3	2	1025	F+3/	VG	G+
1497	68433	133	72.9	G	11.70	11.80	.344	.75	65	3 1/2	2 2/3	2	1005	G3/	G	G
1498	68435	134	70.9	G	10.25	10.80	.376	.75	64	6 1/2	5 2/3	3	1010	G3/	G	VG-
1499	68437	135	72.2	G	12.55	12.30	.380	.75	65	4 2/3	4 2/3	2+	1015	VG-	G	VG-
1500	68440	136	69.1	G	12.30	11.75	.380	.75	65	4 1/2	3 2/3	3-	990	VG-	G4/	G
1501	68446	137	69.2	G	11.70	11.25	.352	.50	63	5	4	3-	975	G+	G+4/	G-
1502	68455	138	72.2	G	12.40	11.35	.414	.75	65	4 1/2	3 1/3	2+	935	G	G	F+
1503	68463	139	69.8	G	13.85	11.55	.364	.50	64	4	3 1/2	2+	900	G-	G-	F-
1504	68465	140	72.7	G	10.25	10.75	.386	.75	65	4 1/2	3 2/3	3+	950	G-3/	G+	VG
1505	68488	142	71.9	G	12.75	11.50	.392	1.0	64	4 1/2	3 2/3	3+	990	G	G	G

1970 INTRASTATE NURSERY (Cont.)

Lab. No.	Variety Sel. No.	Entry No.	Flour Yield	Milling Type	Protein* Wheat	Protein* Flour	Ash* Flour	% $KBrO_3$	% Abs.	Mix Time Bake	Mix Time Mixo	Tol.	Vol.	Grain	Texture	External
70-1506	68493	143	70.5	G	11.75	11.05	.374	1.0	64	4	3 1/3	3+	935	G-	G	G-
1507	68508	146	68.8	VG	12.40	11.75	.406	.75	65	3 3/4	3	3	1000	G+	G+	G
1508	68510	148	70.1	G	13.80	12.10	.374	1.0	64	4	3 1/2	3+	985	G+	VG	G
1509	68513	149	66.1	G	15.00	12.75	.416	.75	68	3	3	1+	865	F	F	F
1510	68521	150	71.2	VG	12.70	12.30	.392	1.0	65	4	3 1/3	3-	970	G-3/	VG	G-
1511	68570	151	70.1	VG	12.95	12.75	.374	.75	65	4 1/4	3 1/2	3+	1010	G+3/	VG-	G+
1512	68573	153	68.8	VG	12.50	12.65	.400	.75	65	4	3 1/3	2+	975	VG-	VG	G-
1513	68719	158	72.8	VG	12.15	11.65	.454	1.0	64	4 1/3	4 1/2	3-	965	G+	VG	G-
1514	68723	159	72.0	VG	12.15	11.65	.390	.75	65	4 1/3	3 1/2	3-	1005	G+	VG	G+
1516	69291 **	120	68.2	G	12.40	10.90	.416	.50	63	6 1/3	5 2/3	4	925	VG-	VG-	G-
1517	69293	119	68.0	G	12.40	11.20	.396	1.0	65	5 1/3	4 2/3	4-	900	G+	G+6/	G+

*14% M.B., 15.2% Temper. Udy protein.

2/ Over-oxidized.
3/ Open.
4/ Soft.
5/ Dry.
6/ Hard.

* Centurk
** Centurk Selection, now Centurk 78

EXHIBIT B

7900080

FIGURE 2.

USE OF 2-DIMENSIONAL POLYACRYLAMIDE GEL ELECTROPHORESIS (PAGE) TO DIFFERENTIATE BETWEEN CENTURK AND CENTURK 78

Twelve seeds of each variety were ground and the gliadin proteins were extracted with 1 1/2M dimethylformamide (DMF). The proteins were subjected to first direction PAGE in duplicate using aluminum lactate buffer at pH 3. One run of each sample was stained in order to check separation and the duplicate strip then placed along side a second gel made and run 90° from the first run with a TRIS-Glycine-1 1/2M DMF buffer at pH 9. Following staining it was observed as shown in accompanying photographs that Centurk has one "spot" which is missing from Centurk 78. This work was carried out by Dale Mecham of the USDA Western Regional Research Center, Berkeley, CA, who is a well known researcher in this field.

Figure 2.

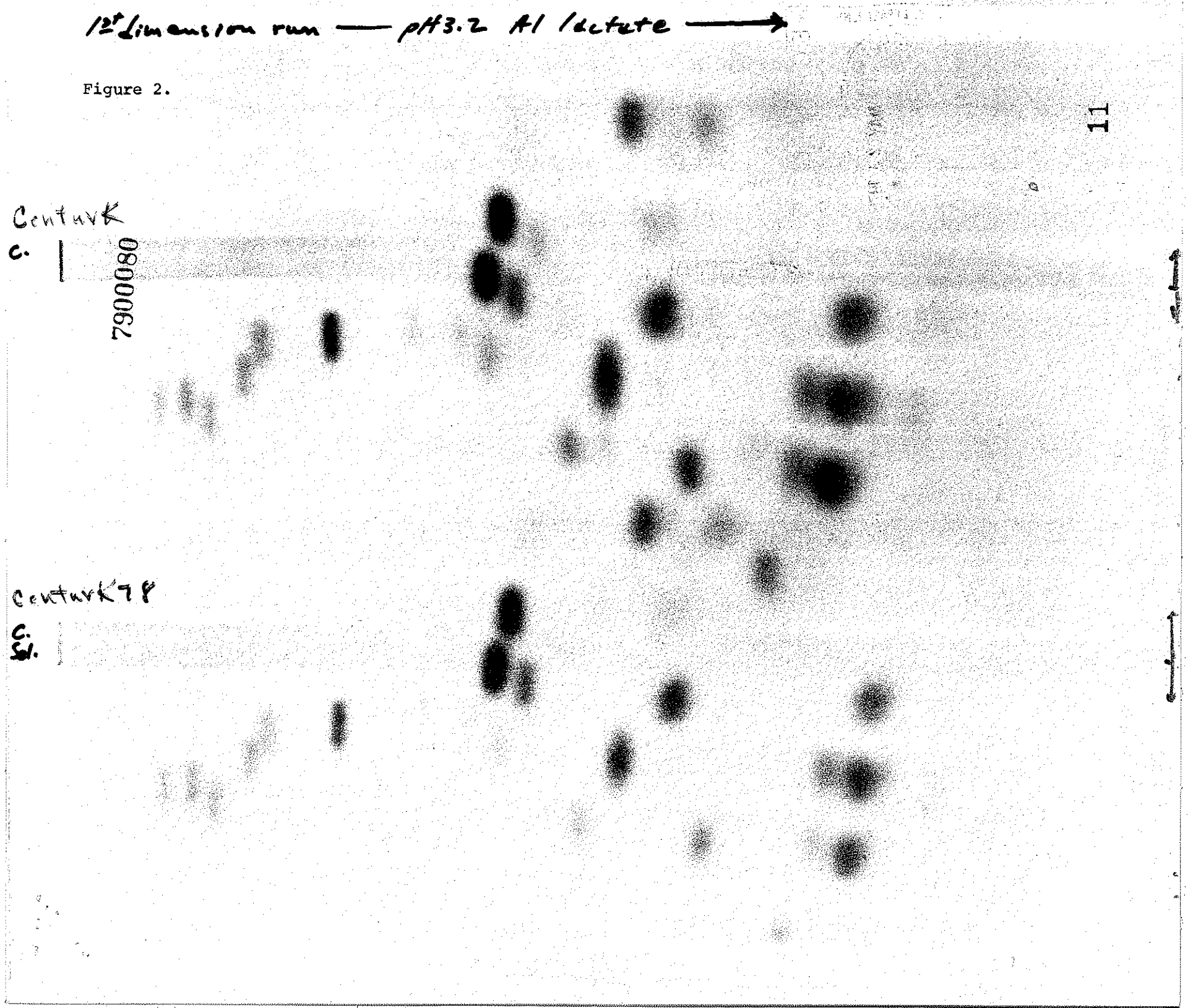
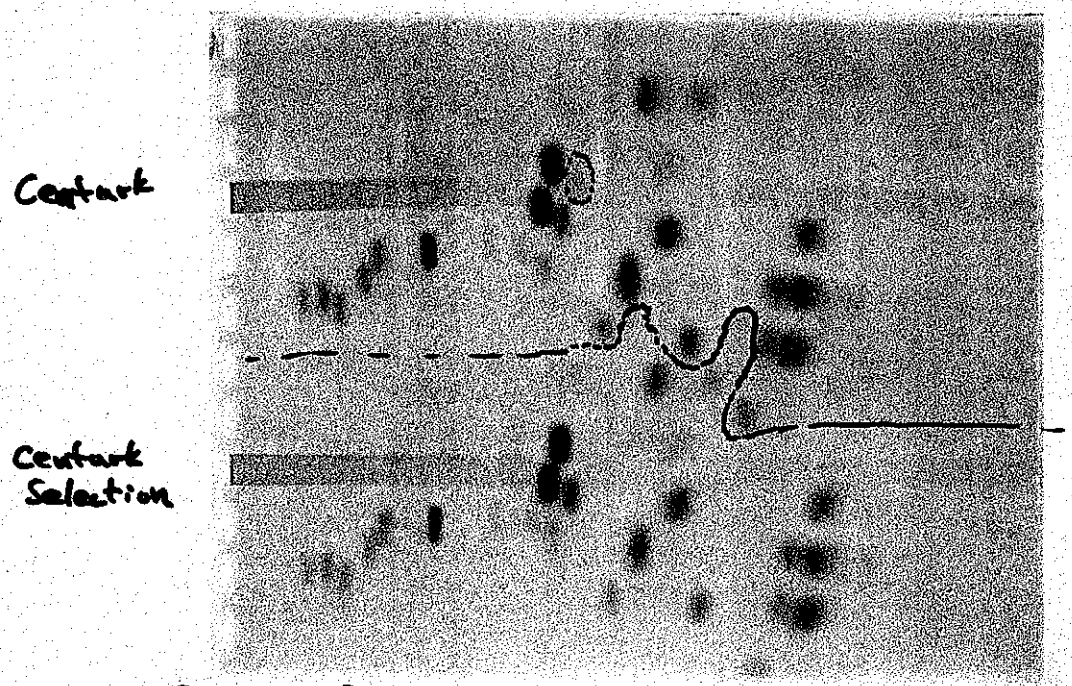

12th dimension run — pH 3.2 Al lactate
Century
C.
7900080
Century 78
C.
Sol.

Figure 2.



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7900080

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-5 (2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C (Wheat)

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

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): Board of Regents, University of Nebraska, Science & Education Administration, U.S. Dept. of Agric.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Lincoln, NE 68508
Washington, DC 20250

FOR OFFICIAL USE ONLY
PVPO NUMBER: 7900080
VARIETY NAME OR TEMPORARY DESIGNATION: Centurk 78

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

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

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

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
Meaningless in winter wheat
[ ][ ][ ] FIRST FLOWERING
[ ][ ][ ] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[ ][ ] NO. OF DAYS *EARLIER* THAN .....
[0][2] NO. OF DAYS *LATER* THAN .....
[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS
[2] Same maturity as Centurk

5. PLANT HEIGHT (*From soil level to top of head*):
[ ][9][8] CM. HIGH Mead 1978
[ ][ ] CM. TALLER THAN .....
[ ][6] CM. SHORTER THAN .....
[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS
[2]

6. PLANT COLOR AT BOOTING (*See reverse*):
[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN
B 12/22/79

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

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

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

10. LEAF:
[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1][3] MM. LEAF WIDTH (*First leaf below flag leaf*)
[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[2][4] CM. LEAF LENGTH (*First leaf below flag leaf*):

7900080

11. HEAD:

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

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

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

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

[0 8] CM. LENGTH (actual average = 7.5)

[1 0] MM. WIDTH (actual average = 9.7)

12. GLUMES AT MATURITY:

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

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

/1/ 1 = glabrous 2 = pubescent

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

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

13. COLEOPTILE COLOR:

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

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

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

16. SEED:

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

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

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

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

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

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

[0 6] MM. LENGTH (actual 5.8)

[0 3] MM. WIDTH (actual 2.5)

[2 5] GM. PER 100 SEEDS

17. SEED CREASE: Similar to Centurk

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

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

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

[2] STEM RUST (Races) _____

[1] LEAF RUST (Races) _____

[0] STRIPE RUST (Races) _____

[ ] LOOSE SMUT

[2] POWDERY MILDEW (same biotypes)

[0] BUNT

[ ] OTHER (Specify) _____

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

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES:

[1] GP [0] A [0] B [0] C

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

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

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

INSTRUCTIONS

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

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

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

1973 NEBRASKA INTRASTATE NURSERY

Lab. No.	Variety or Sel.	Entry No.	% Flour Yield	Mill Type	% Protein Wheat	% Protein Flour	% Ash Flour	% mg $KBrO_3$	% Abs.	Mix Time Bake	Mix Time Mixograph Time	Mix Time Mixograph Tol.	Volume	Grain	Texture	External
73-5886	Trapper	4	72.0	Good	13.60	12.40	.442	0.25	63	4 1/3	3 1/3	2+	925	E	E	VG
5887	Scout 66	5	72.2	"	13.55	12.50	.384	0.40	63	3 1/4	3 2/3	2	895	G+	VG	G
5888	Scoutland	6	72.0	"	14.00	13.25	.392	0.75	63	4 1/2	4	3-	955	G+	VG	VG+
5889	Lancer	9	73.2	"	13.40	12.05	.414	0.75	62	3 1/4	2 2/3	2+	865	G+	G-	VG
5890	Centurk	11	71.0	"	13.30	11.75	.396	0.50	63	4 1/3	4 1/3	3	920	VG-	VG-	G+
5891	Centurk Sel.*	12	70.5	"	12.90	11.55	.380	0.50	61	5	5 1/3	4-	855	G+	G+	F+
5892	HiPlains	13	72.4	"	13.50	12.15	.390	1.0	62	3 3/4	3 1/3	3-	910	VG	VG	VG
5893	Buckskin	14	71.0	"	13.20	12.10	.386	1.0	60	4 3/4	4 2/3	4-	910	VG	VG	G+
5894	Homestead	15	72.2	"	13.95	12.90	.444	0.50	62	3 1/2	3	3-	885	VG	VG	VG-
5895	Sentinel	16	71.1	"	13.80	13.00	.394	0.75	63	3 2/3	3	3+	885	VG	VG	G+
5896	NE68463	17	72.4	"	13.80	12.55	.412	0	62	3 2/3	3 1/3	2	850	G+	G+ 5/	F+
5897	NE68465	18	73.3	"	13.55	12.45	.427	0.75	62	3 3/4	3 1/3	2+	900	VG+	VG+	VG
5898	NE68521	19	72.2	"	14.70	13.50	.396	0.50	63	3 1/2	3	2+	885	G	VG-	G-
5899	NE69441	21	74.0	"	13.70	12.70	.366	1.5	63	4	3 1/3	2	905	VG-	VG+	VG+
5900	NE69442	22	74.0	"	13.30	12.70	.366	1.25	63	4 1/2	3 2/3	2	875	F	F	G--
5901	Burgas 2	27	68.0	"	15.10	14.30	.404	0.5	62.5	1 1/4	1	0	775	P	P	P
5902	68F 6635	28	69.4	"	14.45	13.05	.410	0.25	63	3 3/4	3 1/3	2	880	G	G- 4/	F+
5903	NE701129	29	69.0	"	14.15	13.40	.454	0.25	63	2 1/2	2	1-	910	G-	VG-	VG
5904	NE701132	30	70.0	"	14.55	13.75	.448	0.75	62	3	2 1/3	2	1020	G-	VG	VG
5905	NE701134	31	70.5	"	14.10	13.65	.474	1.0	61	2 1/2	2	2	920	G+	VG-	G
5906	NE701136	32	69.3	"	13.85	13.20	.516	0.75	61	2 1/3	2	2	910	G+	G+	G-
5907	NE701137	33	69.2	"	14.40	13.65	.528	1.0	61	2 3/4	2 1/3	2	895	G+	G+	G
5908	NE70577	36	73.2	"	12.95	12.35	.392	0.75	62	3 2/3	3	2	870	G	G	G-
5909	NE70711	38	72.0	"	12.75	12.20	.380	0.50	63	5	5	2	960	VG	VG	VG
5910	NE70712	39	71.8	"	13.25	12.55	.392	0.25	63	4 1/4	3 2/3	1+	930	VG	VG-	G
5911	NE701152	44	70.2	"	14.35	13.25	.408	1.0	63	3	2 2/3	1	870	VG	G+	F
5912	Funk B	48	71.0	"	13.70	12.65	.428	0.25	63	3 1/3	3	1+	845	G	G	F

All analytical data 14% M.B.

5/ Dry
4/ Soft

* Centurk 78

7900080

Table 7. Seedling reaction of the 1977 Southern Regional Performance Nursery to isolates of *Puccinia graminis* f. sp. *tritici*.[1/]

		Isolates										
		72-4-1A	74-21-1409A	72-00-53A	71-21-584B	72-18-630B	75-14-504C	72-44-703C	72-00-1370C	59-14-19	75-45-1662A	
		Race										
		15-B2		11-32-113				151		56	?	
Entry no.	C.I. or Sel. No.	TNMH	TNMK	RTQQ	RHRS	RSHS	RPQQ	QSHS	QFBS	MBCT	DKCS	Speculative SR genes
1	1442	S	S	S	S	S	S	S	S	S	S	
2	13996 (Scout 66)	;1cN	S	;1cN	S	S	;	S	S	S	S	17
3	17277	;	2	;	2	2	;	2	2	2BN	2-	17, 24
4	C0725061	;	S	;	;1	S	;	S	;	;1c	;1c	11, 17
5	C0533147	;	;	S	S	S	;	S	;	;	0	5, 6
6	C0534727	;	S	;	S	S	;	S	S	S	0	5, 17
7	C0535926	;	;	2	S	S	;	S	;	;	0	5, 6, +
8	KS73112	S	S	S	S	S	S	S	S	S	2⁻c	+
9	KS73167	S	S	S	2=	2	S	S	S	2⁻	2⁻c	+
10	KS73253	S	S	2	2=	2	S	2	2	2	2⁻c	+
11	KS73261	S	S	2	2=	2	S	2	S	2	S	+
12	15075 (Centurk)	;	;	;	23c	32	;	32	;	;	;	5, 6, 8, 9a, 17
13	NE69291 (Centurk 78)	;	;	;	23c	23	;	23	;	;	;	6, 17, 9a
14	NE73491	;1cN	S,;	;	S	23	;	23	S,;	;	;	Seg 6, 17, 9a
15	NE73641	;1cN	S	;1cN	23	23	;	23	2c	S	23,;	17, 9a
16	NE73644 (Bennett)	;	;	;1cN	23c	23	;	23	;	;	;	6, 17, 9a
17	NE73649	;	;	;	23c	23	;	23	;,2c	;,S	;	6, 17, 9a
18	OK711248-1	2	2	;	2⁻	2	;1c	2⁻	;1c	2⁻c	2=	24, T
19	OK711248-176	2	2	2=	2⁻	2	;1c	2⁻	12⁻c	2⁻c	2=	24, T
20	OK722721	2	2	2	2⁻	2	2	2⁻	2	2⁻c	2=	24, T
21	OK711092A	2	2	2⁻	2⁻	2	;1c	2⁻	2=	2⁻	2=	24
22	TX69A569-1	S	S	S	S	S	S	S	S	S	S	-
23	TX73A2694	;	;	;	S	S	;	S	;	;	;	6, 17
24	TX71A937	;	S,;	;	S	S	;	S	;	;,S	;	Seg 6, 17
25	TX71A946	;	;,S	;1cN	S	S	;	S	;,S	;,S	;1⁻c	Seg 6, 17
26	TX71A30	S	S	-	2	S	;,S	23	S	S	23,S	
27	TX71A106-5	;	S	;	23c	S	;	23	2	S	23	17, +
28	TX71A58-3	;	;	;	S	S	;	S	;	;	;	6, 17
29	TX71A407-6	;	;	;	S	S	;	23	;	;	;	6, 17
30	TX71A562-6	;	;	;	S	S	;	23	;	;	;	6, 17
31	TX71A687-5	;	;	;	S	S	;	S	;	S	0	5
32	NE73640	1cN	S,;	;	S	S	;	S	;,2c	S,;	;	Seg 6, 17, +
33	NK75V465	;	S	;,S	S,;1	23	;,S	S	S	;,S	23,;	Seg 17, +
34	NK75V520	S	S	S	S	S	S	S	S	1c	;1c	9d
35	IL71-5838	S	S	2	23	S	S	2	2	S	23	+
36	IL72-2489	S	S	2	2	2	S	2⁻	2⁻	S	2=	
37	NAPB 1307-76	;	S	;	;1c	2	;	2	2	S,1c	;1c	11, 17, +
38	NAPB 1286-76	;	;	;	S	S	;	S	;	;	;	6, 17
39	NAPB 1291-76	;	;	;	S	S	;	S	;	;	;	6, 17
40	NAPB 1289-76	;	;	;	S	S	;	S	;	;	0	5, 6, 17

[1/] Data submitted by D. V. McVey, Cereal Rust Lab., St. Paul, Minnesota.

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Table 8. Summary of agronomic and yield data for the 40 lines grown in the 1977 Southern Regional Performance Nursery.

Pedigree	C. I. or Sel. No.	Entry No.	Days to head from 1/1	Plant height cm	Lodging 0-9	Shattering 0-9	Winter survival 0-9	Coleoptile length mm	Leaf rust sev. %	Leaf rust resp.	Stem rust sev. %
Number of trials			20	22	8	2	1	1	2	2	1
SdySib/Tmp,TX62A4615-7//Ctk	TX71A562-6	30	134	78	1	1	8	72	1	R	0
Short Wheat/Scout	TX69A569-1	22	132	77	0	1	8	85	5	S	1
NAPB 1307-76	---	37	131	79	1	1	8	76	2	MS	0
II21183/CO652643//Lancer/ KS62136	CO725061	4	132	79	1	1	7	71	26	S	0
TAM W-101/Centurk	TX71A58-3	28	136	78	0	1	8	73	15	S	0
Sdy Sib/Tcs, TX62A2642//Ctk	TX71A937	24	131	76	0	1	6	85	6	S	0
Centurk	15075	12	135	88	2	1	9	104	15	S	0
Sage	17277	3	134	90	3	1	8	111	9	S	0
Centurk Selection	NE69291 (Centurk	13	135	87	2	1	8	104	17	S	1
CIMMYT/Scout	KS73112 78)	8	133	80	1	1	7	82	9	S	0
Tascosa/T_1//Parker	OK722721	20	134	83	1	1	7	96	5	S	0
NAPB 1289-76	---	40	136	91	1	1	9	104	24	S	0
TAM W-101/Centurk	TX71A106-5	27	132	72	0	1	7	69	39	S	1
CIMMYT/Scout	KS73261	11	131	76	1	1	6	90	11	S	1
Centurk/Sturdy	NK75V465	33	134	77	1	1	8	80	0	M	0
CIMMYT/Scout	KS73167	9	132	79	0	1	6	86	12	S	0
62A2782-8/Centurk	TX73A2694	23	134	81	0	Tr	7	79	1	M	3
Buckskin Sib/Homestead	NE73640	32	133	83	1	1	8	99	12	S	0
Palo Duro/Centurk	TX71A407-6	29	132	73	2	1	7	79	13	S	0
NAPB 1291-76	---	39	135	97	1	Tr	6	104	2	MS	0
Triumph 64/T_1//Sturdy	OK711092A	21	133	80	1	Tr	8	81	0	R	0
Sdy Sib/Tcs, TX62A2642//Ctk	TX71A946	25	131	75	0	1	6	87	7	S	0
Gage/TX65A1682	IL72-2489	36	134	74	0	1	8	65	16	S	3
CIMMYT/Scout	KS73253	10	131	77	0	1	5	86	9	S	0
CO695552/Centurk	CO534727	6	132	83	1	1	8	95	7	S	1
TAM W-101/Centurk	TX71A30	26	129	81	1	1	7	95	16	S	0
NAPB 1286-76	---	38	133	89	1	1	8	79	9	S	0
Buckskin Sib/Homestead	NE73491	14	132	87	1	1	8	103	12	S	0
Buckskin Sib/Homestead	NE73649	17	134	83	1	1	9	100	14	S	0
CO695427/Centurk	CO535926	7	134	93	2	1	8	85	9	S	0
Parker/TX65A1682	IL71-5838	35	130	81	1	1	8	98	11	S	0
Buckskin Sib/Homestead	NE73641	15	134	82	1	1	8	112	18	S	0
CO695708/CO673410	CO533147	5	135	91	2	1	9	94	18	S	0
Buckskin Sib/Homestead	NE73644 (Bennett)	16	134	82	1	1	8	107	16	S	0
Tascosa/T_1//Sturdy	OK711248-176	19	136	81	0	Tr	8	87	2	M	0
Scout 66	13996	2	133	93	3	1	8	112	16	S	0
Tascosa/T_1//Sturdy	OK711248-1	18	136	80	1	Tr	7	89	3	M	0
Sdy Sib/Kaw,TX65A1503//Ctk.	TX71A687-5	31	136	70	0	1	8	74	0	M	0
Sturdy/Bison	NK75V520	34	131	71	0	1	7	96	2	M	3
Kharkof	1442	1	141	104	4	1	9	105	9	S	5

EXHIBIT D (additional data)

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Table 8 Concluded.

C. I. or Sel. No.	Entry no.	Septoria tritici sev. %	Septoria tritici resp.	Septoria nodorum sev. %	BYDV 0-9	Mildew sev. %	Mildew resp.	Phyto[1/] 0-9	Protein %	Pearled off %	Average grain weight mg	Volume weight kg/hl	Yield kg/ha
No. of trials		1	1	1	1	1	1	1	5	1	1	25	26
TX71A562-6	30	42	VS	19	1.0	20	MS	Tr	11.93	31	29.4	72.9	3892
TX69A569-1	22	33	M	10	3.0	50	VS	2.0	12.75	34	30.1	75.4	3701
---	37	33	VS	12	Tr	60	VS	1.0	12.86	29	27.5	77.8	3696
C0725061	4	32	S	7	1.5	15	S	2.5	12.37	28	27.2	77.5	3690
TX71A58-3	28	27	S	18	2.0	35	S	1.0	12.52	29	28.6	75.0	3555
TX71A937	24	45	VS	13	2.0	60	VS	2.0	13.17	34	27.6	75.0	3549
15075 (Centurk)	12	27	MS	12	Tr	10	MS	0.5	12.68	29	27.8	76.3	3544
17277	3	30	M	7	2.0	30	S	3.0	13.80	36	34.6	76.7	3540
NE69291(Centurk	13	30	S	14	0.5	15	MR	Tr	12.16	26	27.0	76.8	3527
KS73112 78)	8	35	S	12	4.0	30	S	4.0	12.81	29	30.3	75.9	3522
OK722721	20	28	M	11	2.0	60	VS	3.0	12.66	32	29.5	77.1	3519
---	40	25	MS	12	1.5	5	R	1.0	12.93	25	26.7	76.7	3518
TX71A106-5	27	33	M	11	1.5	55	VS	Tr	12.72	28	32.2	75.3	3518
KS73261	11	32	S	10	2.5	30	S	3.5	13.49	30	30.1	77.3	3492
NK75V465	33	37	MS	19	1.5	30	S	1.0	12.53	28	26.8	75.3	3487
KS73167	9	33	VS	12	1.5	40	VS	3.0	12.99	29	29.1	77.1	3467
TX73A2694	23	35	M	18	3.0	20	MS	1.0	13.15	33	28.6	76.9	3461
NE73640	32	22	M	12	2.0	15	MS	1.5	13.32	33	32.5	76.4	3459
TX71A407-6	29	50	VS	25	1.5	30	S	Tr	12.28	31	24.3	72.8	3448
---	39	20	MS	18	1.0	10	R	Tr	12.70	34	31.8	75.6	3447
OK711092A	21	38	MS	16	2.5	70	VS	1.0	13.68	28	28.7	75.4	3434
TX71A946	25	33	VS	11	2.0	60	VS	2.0	13.10	29	27.9	74.8	3423
IL72-2489	36	35	VS	28	2.0	55	VS	1.0	12.93	31	27.7	74.5	3409
KS73253	10	35	S	9	2.5	30	S	3.0	13.39	31	30.6	76.1	3400
C0534727	6	38	VS	17	2.0	10	MS	0.5	13.32	34	31.5	75.1	3394
TX71A30	26	27	M	9	Tr	55	VS	Tr	13.25	36	31.6	76.5	3390
---	38	32	MS	13	3.0	10	R	1.5	13.31	27	25.9	75.9	3376
NE73491	14	18	MS	11	4.5	10	MR	3.5	14.07	32	31.8	75.4	3368
NE73649	17	18	VS	17	2.0	30	S	1.0	13.71	31	33.0	76.7	3368
C0535926	7	35	MS	10	2.0	25	S	2.0	13.69	31	29.4	75.7	3363
IL71-5838	35	40	S	14	1.5	45	S	Tr	13.13	31	29.2	78.2	3353
NE73641	15	20	MS	13	3.0	10	MS	1.0	13.91	32	31.4	75.7	3331
C0533147	5	38	VS	12	1.5	15	VS	1.0	13.35	32	27.5	77.6	3318
NE73644 (Bennett)	16	20	S	7	3.5	10	MR	2.5	13.57	33	33.8	75.7	3302
OK711248-176	19	22	M	12	1.0	35	S	Tr	13.64	25	30.8	77.2	3285
13996 (Scout 66)	2	23	MS	9	2.5	15	MS	3.0	13.55	34	33.8	76.6	3272
OK711248-1	18	32	M	18	1.0	45	VS	Tr	13.47	31	34.3	76.5	3258
TX71A687-5	31	47	VS	33	Tr	20	MS	1.0	13.03	28	26.2	74.4	3207
NK75V520	34	43	VS	23	Tr	55	VS	Tr	14.49	31	29.9	75.4	3114
1442	1	22	M	6	2.5	20	S	2.0	13.99	32	27.5	74.6	3596

[1/] Phytotoxicity = plants sprayed with Diazanon causing differential leaf burn.

EXHIBIT D (additional data)

7900080

EXHIBIT D (additional data)

Table 7. Chemical, Milling, and Baking Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Nebraska, & Idaho in 1977. 1/

Variety	C.I. or Sel. No.	Wheat 2/ Wt. Per Bu.	Wheat 2/ Ash	Wheat 2/ Protein	Wheat 2/ Flour Yield	Flour 2/ Ash	Flour 2/ Protein	Bread-baking Data 2/ Absorption	Mixing Time 3/	Crumb Grain	Loaf Volume As Rec'd	Loaf Volume Corrected To 12.5% P
		lbs.	%	%	%	%	%	%	min.		cc.	cc.
Kharof	1442	59.7	1.63	15.0	74.7	.40	13.6	63.3	3⅜	S	1030	954
Scout 66	13996	61.0	1.57	13.9	76.8	.40	12.9	60.9	3¼	S	995	967
Centurk	15075	60.7	1.55	13.6	75.4	.40	12.4	63.2	5⅜	S	968	975
Sage	17277	60.8	1.58	14.0	76.1	.39	12.8	62.6	3⅞	S	973	952
Newton(KS73112)	17715	60.1	1.63	13.4	74.3 4/	.40	12.3	62.4	3⅞	S	995	1010
Payne (OK711092A)	17717	59.7	1.68	14.3	76.1 4/	.41	13.1	60.1	3⅛	S	990	949
II21183/C0652643/2/ Ler/KS62136	C0725061	62.0	1.58	13.0	74.2	.40	11.9	60.7	4	S	933	976
C0695708/C0673410	C0533147	61.6	1.55	13.9	76.4	.42	12.7	63.0	5	S	985	971 6/
C0695552/Centurk	C0534727	60.0	1.59	14.0	76.8	.39	13.0	61.4	5⅛	S	996	961 6/
C0695427/Centurk	C0535926	60.2	1.59	14.2	75.4	.39	13.2	62.2	5⅛	S	1053	1002 6/
CIMMYT/Scout	KS73167	61.4	1.54	13.5	74.6 4/	.39	12.4	61.5	4	S	1025	1032 7/
" "	KS73253	60.8	1.55	13.8	74.6 4/	.38	12.7	62.0	3⅝	S	1037	1022 7/
" "	KS73261	61.3	1.57	14.0	75.3 4/	.38	12.9	62.4	4⅛	S	1080	1048 7/
Centurk Sel.(Centurk 78)	CI17724	60.8	1.50	13.4	75.2 4/	.40	12.2	62.7	6 Q	S	958	979
Buckskin/Homestead	NE73491	60.2	1.58	14.6	76.8	.39	13.3	62.3	4¼	S	1010	955 6/
" "	NE73640	60.9	1.56	14.1	76.8	.33	13.0	62.5	4¼	S	1016	980 6/
" "	NE73641	60.5	1.59	14.5	76.4	.36	13.2	61.6	4¼	S	975	929
" " (Bennett)	CI17723	60.6	1.63	14.2	76.8	.37	13.1	63.0	4¼	S	1008	966 6/

7900080

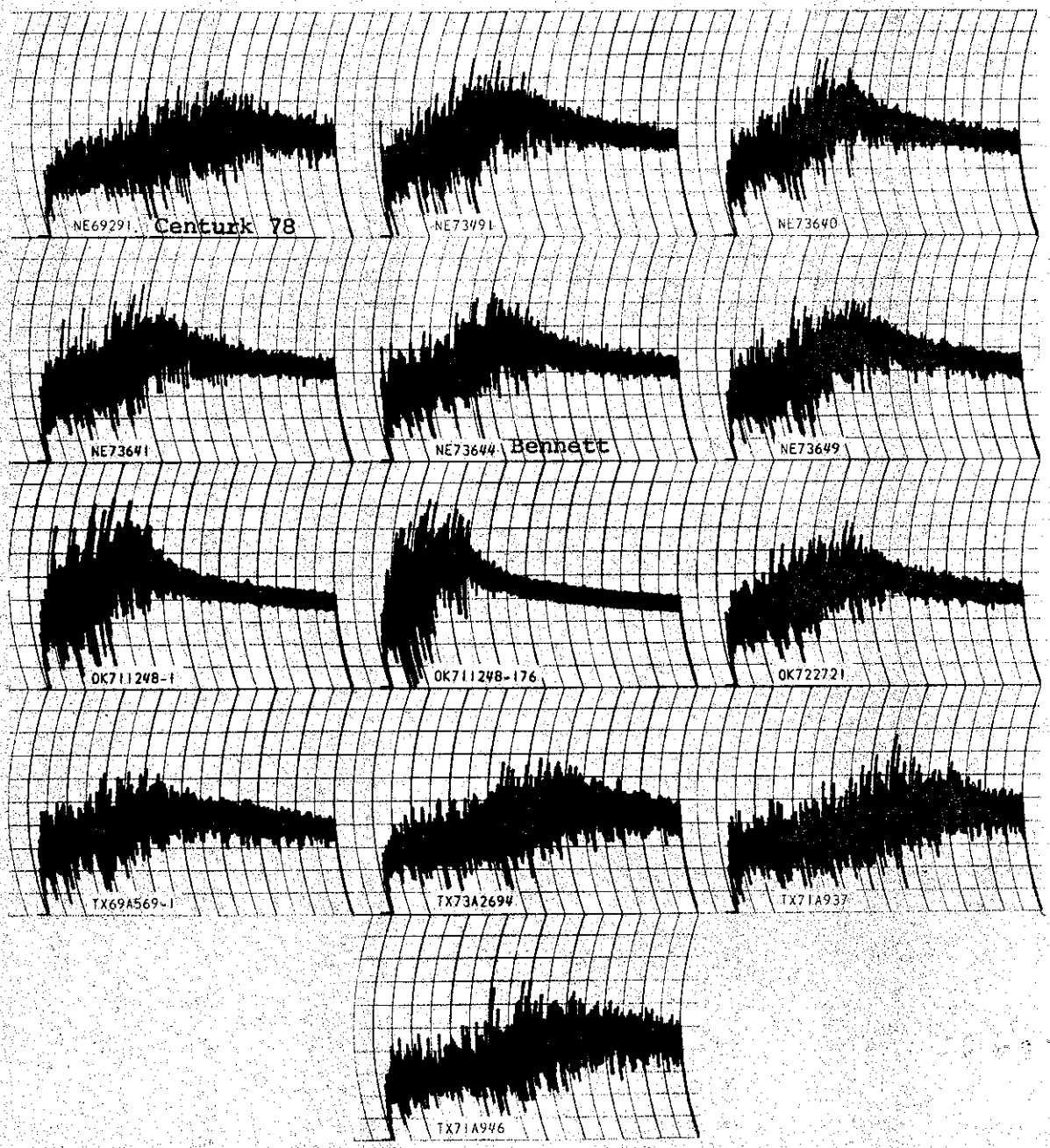

Fig. 5 Mixograms (10-g.) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Nebraska, and Idaho in 1977. Mixing time is the time (min.) to the peak. Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-minute intervals.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
Livestock, Poultry, Grain & Seed Division
National Agricultural Library
Beltsville, Maryland 20705

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 7900080
Variety and Kind - **'Centurk 78' hard red winter wheat**

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on each Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived.

It has been agreed that the certificate should be issued in the name(s) of:

Nebraska Agricultural Experiment Station

11/1/79
(Date)

(Signature)

Dean and Director
Nebraska Agricultural Experiment Station

USDA

United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

January 21, 1998

Marian R. Minnifield
Secretary
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Boulevard
Beltsville, Maryland 20705-2351

Subj: Expired PVPO's; disposition of

1. The following expired PVPO's have been transferred to the NPGS. Our records have been changed accordingly.

Serial Number		PVP Number	EXPIRED
107423	01	7900099	01/02/1997
107424	01	7800077	01/02/1997
107425	01	7900062	01/02/1997
107428	01	7900095	01/02/1997
107429	01	7700092	01/02/1997
108309	01	7900116	01/29/1997
108310	01	7900117	01/29/1997
108311	01	7900087	01/29/1997
108312	01	7800080	01/29/1997
108313	01	7800020	01/29/1997
109381	01	7900113	03/27/1997
109382	01	7900030	03/27/1997
109383	01	7900102	03/27/1997
109384	01	7900063	03/11/1997
109386	01	7300068	03/11/1997
109387	01	7900120	02/26/1997
109388	01	7700028	02/26/1997
109389	01	7700112	02/26/1997
109390	01	7900040	03/11/1997
109791	01	7800071	02/26/1997
110210	01	8000058	05/15/1997
110211	01	7800103	05/01/1997
110212	02	8000001	05/01/1997
110213	01	7800001	05/01/1997

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110214	02	7200105	04/24/0197
110215	01	8000022	04/24/1997
110216	01	7900060	05/01/1997
110217	01	7900084	05/01/1997
110218	01	8000071	05/15/1997
110219	01	7900101	05/01/1997
110220	01	8000043	05/15/1997
110221	01	8000015	05/15/1997
110222	01	7900111	05/15/1997
110223	01	7900110	05/15/1997
110227	01	7900106	05/15/1997
110228	01	7900071	04/24/1997
110229	01	7900100	05/01/1997
110230	01	7900075	05/01/1997
110231	01	7900108	04/24/1997
110236	01	8000053	05/29/1997
110239	01	7900098	05/29/1997
110240	01	7900006	05/29/1997
110263	01	7900042	06/05/1997
110264	01	8000048	06/05/1997
110265	01	8000063	06/05/1997
110266	01	8000012	06/05/1997
110267	01	8000049	06/05/1997
110268	01	7800092	06/05/1997
112329	01	8000045	06/19/1997
112330	01	7900088	07/10/1997
112331	01	8000044	07/10/1997
112332	01	7800079	06/19/1997
112333	01	7900074	06/26/1997
112334	01	8000061	06/19/1997
112335	01	7700016	07/10/1997
112336	01	7700017	07/10/1997
112337	01	7900105	06/26/1997
112338	01	7900089	06/19/1997
112339	01	7900072	06/19/1997
112342	01	7900090	06/26/1997
112343	01	7900064	07/10/1997
112344	01	8000072	06/19/1997
112345	01	8000009	07/31/1997
112346	01	7800099	07/31/1997
112347	01	8000040	07/31/1997
112348	01	8000039	07/31/1997
112349	01	8000041	07/31/1997
112350	01	7900080	07/31/1997
112351	01	8000006	07/31/1997

112352	01	8000027	07/31/1997
112353	01	8000024	07/31/1997
112354	01	8000076	07/31/1997
112355	01	8000025	07/31/1997
112356	01	8000062	07/31/1997
112357	01	8000102	07/31/1997
112360	01	8000023	07/31/1997
112361	01	7900078	07/31/1997
112362	01	8000093	07/31/1997
112363	01	8000020	07/31/1997
112364	01	7800019	07/31/1997
112365	01	7900079	07/31/1997
113482	01	8000118	09/11/1997
113483	01	8000114	09/11/1997
113484	01	8000119	09/11/1997
113485	01	8000113	09/11/1997
113486	01	8000086	09/11/1997
113487	01	7900070	09/11/1997
113488	01	8000033	09/11/1997
113489	01	8000034	09/11/1997
113490	01	7900022	09/11/1997
113491	01	8000090	09/11/1997
113492	01	8000105	09/11/1997
113493	01	7900056	09/11/1997
113494	01	7900057	09/11/1997
113495	01	8000096	09/11/1997
113498	01	8000099	09/11/1997
113499	02	7900082	09/11/1997
113500	01	7500083	09/11/1997
113501	01	8000013	09/11/1997
113502	01	7900083	09/11/1997
113503	01	7300090	09/11/1997
114293	01	8000130	10/16/1997
114597	01	7900104	10/16/1997
114598	01	8000077	10/16/1997
114599	01	8000111	10/16/1997
114600	01	8000011	10/16/1997
114601	01	8000134	10/16/1997
169608	01	8100103	07/15/1997

Sincerely,

Eugene D. Keys
Computer Assistant
Data Management

USDA

United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

January 21, 1998

Marian R. Minnifield
Secretary
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Boulevard
Beltsville, Maryland 20705-2351

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110220	01	8000043	05/15/1997
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113493	01	7900056	09/11/1997
113494	01	7900057	09/11/1997
113495	01	8000096	09/11/1997
113498	01	8000099	09/11/1997
113499	02	7900082	09/11/1997
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113501	01	8000013	09/11/1997
113502	01	7900083	09/11/1997
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114598	01	8000077	10/16/1997
114599	01	8000111	10/16/1997
114600	01	8000011	10/16/1997
114601	01	8000134	10/16/1997
169608	01	8100103	07/15/1997

Sincerely,

Eugene D. Keys
Computer Assistant
Data Management

THE UNIVERSITY OF NEBRASKA—LINCOLN
INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
LINCOLN, NEBRASKA 68583

Institute of Agriculture
and Natural Resources

Reply to:
Department of Agronomy
Keim Hall
East Campus
(402) 472-2811

October 31, 1979

Mr. Larry W. Dosier
Plant Variety Protection Office
Grain & Seed Division, AMS, USDA
National Agricultural Library Bldg.
Beltsville, MD 20705

Dear Mr. Dosier:

SUBJECT: Wheat Application No. 7900080, 'Centurk 78'

I hope the following information will answer questions raised in your June 22 letter.

1. The Board of Regents of the University of Nebraska incorporation date is February 15, 1869.

2. Exhibit A.

   Item 2. The stages of selection and multiplication are covered in Table 1.

   Item 3. The only rogueing was for height and the height differences observed could have been due to the physical environment and not to genetic differences. In any case, the frequency of plants rogued was extremely low, certainly far less than one in 10,000.

   Item 4. Evidence of stability. In all of our seedling stem rust tests with Dr. McVey at the USDA Cooperative Rust Laboratory, St. Paul, MN, we have seen no evidence of instability nor have we observed any in the field. The variety is stable as far as I have any evidence.

3. Exhibit B.

   The statistical data (Table 3) for the beak length comparison between Centurk and Centurk 78 are as follows:

Centurk	Centurk 78
Beak length 4.2 mm	3.2 mm
$s_{\bar{x}} = 0.325$	$s_{\bar{x}} = 0.15$

Mean difference 1 mm
St. error of dif. = .36
"t" value = 2.78 (sig. at 0.01 level)

Thus the difference in beak length could be considered a real difference. All of our measurement data are taken at a point about two-thirds of the

distance between base and tip of the spike.

4. Exhibit C.

Item 1. Plant color. Unless we use a color chart it is difficult to place variety foliage into neat categories of green or blue-green. There are all gradations here and the fertility level and moisture level of the soil are factors also. I would merely say they are similar in any one year.

Interestingly, fields of both Centurk and Centurk 78 will take on a golden color as maturity approaches but the plants still retain green coloring. This is quite distinctive for both varieties.

Item 2. Glume length. The data in Table 3 show both Centurk and Centurk 78 with a glume length approaching that of Scout 66 which we would consider as having a long glume. Year to year differences, however, are possible due to the environmental effect.

Item 3. Shoulder shape. "Oblong" for Centurk? It probably is supposed to be "oblique". The difference between "rounded to square" and"oblique" is not much--probably the same.

Item 4. Powdery mildew. We do not test for reaction to powdery mildew but rely on observations of other plant breeders. Thus the designation of resistant or susceptible will depend on the form of inoculm present, level of infection, location in nursery, etc. Both Centurk and Centurk 78 tend to have low levels of infection but actual resistance or susceptibility is difficult to establish from these observations.

Item 5. Seed shape. Unfortunately, seed shape does not fall into very neat categories. We try to describe it as best as we can in meaningful terms. If we say "ovate to elliptical", then we see a lot of grains with more of an ovate shape tendency and if we reverse the phrase we see the opposite. Kernel shape is highly influenced by position on the spike, glume pressure, yield level, etc.

Finally, the terms "typical" and "atypical" are nebulous for many of the traits used to describe varieties. So much depends on the environment in which the varieties are grown.

4. I am enclosing the completed waiver form.

Sincerely yours,

John W. Schmidt

John W. Schmidt
Professor

Enclosure

cc: Dr. H. W. Ottoson
Dr. T. W. Edminster