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

Exhibit C

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

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
ADDRESS (Street and No. or RD No., City, State, Zip Code and Country)		FOR OFFICIAL USE ONLY
		PVPO NUMBER

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., 0 9 9 or 0 9) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____. Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND: _____

- 1 = Common
- 2 = Durum
- 3 = Club
- 4 = Other (Specify) _____

2. VERNALIZATION: _____

- 1 = Spring
- 2 = Winter
- 3 = Other (Specify) _____

1a. COMMON WHEAT MARKET CLASSES:

- ____ HRW (Hard Red Winter)
- ____ HRS (Hard Red Spring)
- ____ HW (Hard White)
- ____ SRW (Soft Red Winter)
- ____ SW (Soft White)

3. COLEOPTILE ANTHOCYANIN: _____

- 1 = Absent
- 2 = Present

4. JUVENILE PLANT GROWTH: _____

- 1 = Prostrate
- 2 = Semi-Erect
- 3 = Erect

5. PLANT COLOR: (boot stage) _____

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

6. FLAG LEAF: (boot stage)

- ____ 1 = Erect
- ____ 1 = Not Twisted
- ____ 1 = Wax Absent
- 2 = Reurved
- 2 = Twisted
- 2 = Wax Present

7. EAR EMERGENCE:

- ____ Number of Days (Average)
- ____ Number of Days Earlier Than * _____
- Same As * _____
- ____ Number of Days Later Than * _____

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

8. ANTHOR COLOR: _____ 1 = Yellow 2 = Purple

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

_____ cm (Average)

_____ cm Taller Than _____ *

Same As _____ *

_____ cm Shorter Than _____ *

10. STEM:

A. ANTHOCYANIN _____ 1 = Absent 2 = Present

D. INTERNODE _____ 1 = Hollow 2 = Semi-Solid 3 = Solid

_____ Number of Nodes

B. WAXY BLOOM _____ 1 = Absent 2 = Present

E. PEDUNCLE _____ 1 = Erect 2 = Recurved 3 = Semi-Erect

_____ cm Length

C. HAIRINESS (last internode of rachis) _____ 1 = Absent 2 = Present

F. AURICLE

_____ Anthocyanin: 1 = Absent 2 = Present

_____ Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

A. DENSITY _____

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

C. CURVATURE _____

1 = Erect
2 = Inclined
3 = Recurved

B. SHAPE _____

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

D. AWNEDNESS _____

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

12. GLUMES: (At Maturity)

A. COLOR _____

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

E. BEAK WIDTH _____

1 = Narrow
2 = Medium
3 = Wide

B. SHOULDER _____

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

F. GLUME LENGTH _____

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

C. SHOULDER WIDTH _____

1 = Narrow
2 = Medium
3 = Wide

G. WIDTH _____

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

D. BEAK _____

1 = Obtuse
2 = Acute
3 = Acuminate

H. PUBESCENCE _____

1 = Not Present
2 = Present

13. SEED:

A. SHAPE _____ 1 = Ovate 2 = Oval 3 = Elliptical

E. COLOR _____ 1 = White 2 = Amber 3 = Red
4 = Other (Specify) _____

B. CHEEK _____ 1 = Rounded 2 = Angular

F. TEXTURE _____ 1 = Hard 2 = Soft 3 = Other (Specify) _____

C. BRUSH

_____ 1 = Short _____ 1 = Not Collared
2 = Medium 2 = Collared
3 = Long

G. PHENOL REACTION (See Instructions) _____

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

D. CREASE

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

H. SEED WEIGHT

_____g/1000 Seed (whole number only)

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

I. GERM SIZE _____

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)

_____ Stem Rust (*Puccinia graminis* f. sp. *tritici*) Race: _____

_____ Leaf Rust (*Puccinia recondita* f. sp. *tritici*) Race: _____

_____ Stripe Rust (*Puccinia striiformis*) Race: _____

_____ Loose Smut (*Ustilago tritici*) Race: _____

_____ Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*) Race: _____

_____ Common Bunt (*Tilletia tritici* or *T. laevis*) Race: _____

_____ Dwarf Bunt (*Tilletia controversa*) Race: _____

_____ Karnal Bunt (*Tilletia indica*) Race: _____

_____ Flag Smut (*Urocystis agropyri*) Race: _____

_____ Tan Spot (*Pyrenophora tritici-repentis*) Race: _____

_____ Halo Spot (*Selenophoma donacis*) Race: _____

_____ Septoria spp. Race: _____

_____ *Septoria nodorum* (Glume Blotch) Race: _____

_____ *Septoria avenae* (Speckled Leaf Disease) Race: _____

_____ *Septoria tritici* (Speckled Leaf Blotch) Race: _____

_____ Scab (*Fusarium* spp.) Race: _____

_____ "Snow Molds" Race: _____

_____ Kernel Smudge ("Black Point") Race: _____

_____ Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.) Race: _____

_____ Barley Yellow Dwarf Virus (BYDV) Race: _____

_____ Rhizoctonia Root Rot (*Rhizoctonia solani*) Race: _____

_____ Soilborne Mosaic Virus (SBMV) Race: _____

_____ Black Chaff (*Xanthomonas campestris* pv. *translucens*). Race: _____

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

- _____ Wheat Yellow (Spindle Streak) Mosaic Virus Race: _____
- _____ Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*) Race: _____
- _____ Wheat Streak Mosaic Virus (WSMV) Race: _____
- _____ Other (Specify) _____ Race: _____
- _____ Other (Specify) _____ Race: _____
- _____ Other (Specify) _____ Race: _____
- _____ Other (Specify) _____ Race: _____

15. **HOMOZYGOUS FOR SPECIFIC DISEASE RESISTANCE GENE**

- _____ Stem rust _____
- _____ Leaf rust _____
- _____ Other _____

16. **INSECT: PLEASE SPECIFY BIOTYPE (Where Needed) (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)**

- _____ Stem Sawfly (*Cephus* spp.) (Specify) _____
- _____ Cereal Leaf Beetle (*Oulema melanopa*) (Specify) _____
- _____ Russian Aphid 1 (*Diuraphis noxia*) _____
- _____ Russian Aphid 2 (*Diuraphis noxia*) _____
- _____ Greenbug (*Schizaphis graminum*) (General) _____
- _____ Greenbug (*Schizaphis graminum*) Biotype A _____
- _____ Greenbug (*Schizaphis graminum*) Biotype B _____
- _____ Greenbug (*Schizaphis graminum*) Biotype C _____
- _____ Greenbug (*Schizaphis graminum*) Biotype E _____
- _____ Greenbug (*Schizaphis graminum*) Other (Specify) _____
- _____ Aphids (Specify) _____
- _____ Other (Specify) _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype A _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype B _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype C _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype D _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype E _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype F _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype G _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype GP _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype H _____

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

- _____ Hessian Fly (*Mayetiola destructor*) Biotype I _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype J _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype L _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype M _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype N _____
- _____ Hessian Fly (*Mayetiola destructor*) Biotype O _____
- _____ Hessian Fly (*Mayetiola destructor*) (Specify) _____

17. **HIGH MOLECULAR WEIGHT GLUTENIN SUBUNIT PROFILE** (Check those that apply):

- | Glu-A1 | Glu-B1 | Glu-D1 |
|------------|-------------|------------|
| _____ 1 | _____ 6+8 | _____ 2+11 |
| _____ 2* | _____ 7+8 | _____ 2+12 |
| _____ null | _____ 7+9 | _____ 3+12 |
| _____ 1* | _____ 13+16 | _____ 5+10 |
| | _____ 13+19 | _____ null |
| | _____ 17+18 | |

18. **TRANSLOCATIONS** (1=Present 2=Absent 3=Heterogeneous 4= Not Tested):

- _____ 1BL/1RS _____ 1A/1R _____ 2NS/2AS _____ 4DL/4AgS

19. **IMIDAZOLINONE HERBICIDE TOLERANCE** (1=Present 2=Absent 3=Not Tested):

- _____ Als-1 _____ Als-2 _____ Als-3

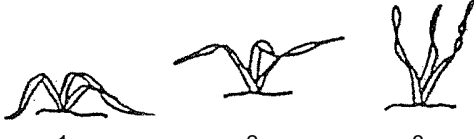



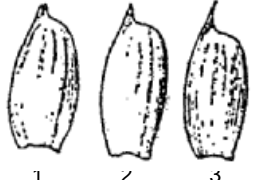
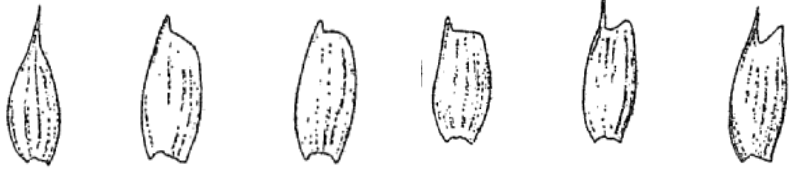


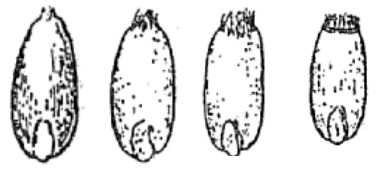




20. **END USE QUALITY:**

- Grain Protein _____
- Flour Protein _____
- SDS _____
- Farniograph _____
- Other _____

21. **ADDITIONAL INFORMATION ON ANY ITEM ABOVE OR GENERAL COMMENTS:**

WHEAT DESCRIPTOR ILLUSTRATIONS

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

<p>4. EARLY PLANT GROWTH HABIT:</p>  <p>1 Prostrate 2 Intermediate 3 Erect</p>	<p>10. (D.) STEM INTERNODE X-SECTION:</p>  <p>1 Hollow 2 Semi-solid 3 Solid</p>	<p>11. (B.) SPIKE SHAPE:</p>  <p>1 Tapering 2 Oblong 3 Clavate 4 Elliptical</p>	
<p>11. (D.) AWNEDNESS:</p>  <p>1 Awnless 2 Apically Awnleted 3 Awnleted 4 Awned</p>	<p>12. (D.) BEAK SHAPE:</p>  <p>1 Obtuse 2 Acute 3 Acuminate</p>	<p>12. (C.) SHOULDER SHAPE:</p>  <p>1 Wanting 2 Oblique 3 Rounded 4 Square 5 Elevated 6 Apiculate</p>	
<p>13. (A.) SEED SHAPE:</p>  <p>1 Ovate 2 Oval 3 Elliptical</p>	<p>13. (B.) CHEEK SHAPE:</p>  <p>1 Rounded 2 Angular</p>	<p>13. (C.) BRUSH SIZE</p>  <p>1 Small 2 Midsized 3 Large 4 Collared</p>	<p>13. (C.) BRUSH HAIR LENGTH:</p>  <p>1 Short 2 Medium 3 Long</p>
<p>13. (I.) GERM (EMBRYO) SIZE:</p>  <p>1 Small 2 Midsized 3 Large</p>	<p>13. (D.) SEED CREASE WIDTH:</p>  <p>1 Narrow 2 Mid-wide 3 Wide</p>	<p>13. (D.) SEED CREASE DEPTH:</p>  <p>1 Shallow 2 Mid-Deep 3 Deep</p>	

References:

(a) L.W. Briggles 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.