

No.

202100363

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Limagrain Cereal Seeds, LLC and University of Idaho

Whereas, THERE HAS BEEN PRESENTED TO THE

Administrator of the Agricultural Marketing Service

An application requesting a certificate of protection for an alleged novel variety of sexually reproduced, asexually 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 germplasm material 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 there from, to the extent provided by the PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)



WHEAT

'VI Shock'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty seventh day of May, in the year two thousand twenty two.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Administrator
Agricultural Marketing Service

202100363

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE <i>(Instructions and information collection burden statement on reverse)</i>		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 Limagrain Cereal Seeds, LLC, and Univ. of Idaho		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME UIL 15-72223	3. VARIETY NAME VI Shock
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 2040 SE Frontage Road Fort Collins, CO 80525		5. TELEPHONE (Include area code) (970) 498-2200	FOR OFFICIAL USE ONLY
		6. FAX (include area code) (970) 498-2207	PVPO NUMBER 202100363
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Limited Liability Company; Land-grant University		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware	9. DATE OF INCORPORATION 12/21/2009
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Mike Flowers Dr. C. James Peterson Limagrain Cereal Seeds 2040 SE Frontage Road Fort Collins, CO 80525		11. TELEPHONE (Include area code) (970) 498-2202; (208) 885-4550	FILING AND EXAMINATION FEES: \$ 5,150 6/16/2021
		12. FAX (Include area code) (970) 498-2207	CERTIFICATION FEE: \$ Check# 11364
13. E-MAIL			
14. CROP KIND (Common Name) Common wheat		15. GENUS AND SPECIES NAME OF CROP Triticum aestivum	16. FAMILY NAME (Botanical) Gramineae
17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23) <input type="checkbox"/> UNDECIDED
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), make checks payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) other methods of payment explained in the instructions		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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.)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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.)	
25. The owners declare that a viable sample of basic seed will be furnished directly to an acceptable depository in support of the variety within three months of filing. Seed will be replenished upon request in accordance with such regulations as may be applicable. For a tuber propagated variety or vegetative propagated parent of the variety, a tissue culture or vegetative sample will be deposited in a public repository within three months of the date of the certificate fee request letter. These will be maintained for the duration of the certificate. The undersigned owner(s) is (are) the owner(s) 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.		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
SIGNATURE OF OWNER 		SIGNATURE OF OWNER 	
NAME (Please print or type) Dr. C. James Peterson		NAME (Please print or type) Karen A Stevenson	
CAPACITY OR TITLE Vice President of Research		DATE 3/30/21	CAPACITY OR TITLE Sr. Licenses Assoc
			DATE 5/4/2021

MAH
9/24/2021

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.)*

The variety was first sold in September 2020 in the United States.

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).)*

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE		FOR OFFICIAL USE ONLY
EXHIBIT A – ORIGIN AND BREEDING HISTORY <small>** Use additional pages as needed.</small>		PVPO NUMBER
1. Name of Owner Limagrain Cereal Seeds, LLC, and Univ. of Idaho	2. Temporary Designation or Experimental Name UIL 15-72223	3. Variety Name VI Shock
<p>4. Describe the genealogy (back to and including public and commercial varieties, lines, or clones used) and the breeding method(s). **</p> <p>The soft white winter wheat (SWW) line VI Shock is from the cross 01-10704A/99-06202A. The pedigree of 01-10704A is 92-13003A/Brundage 96. The pedigree of 99-06202A is Brundage 96/10085-5. The pedigree of Bitterroot is DH-31/4/Lewjain/3/RDL/SU 92//KAL/BB.</p> <p>The cross from which VI Shock originated was made in 2013. The seeds from the F1 generation was sent to the Limagrain Double Haploid Facility in Chappes, France in 2013. Double haploid progeny were returned to LCS in 2014.</p>		
5. Give the details of subsequent stages of selection and multiplication. **		
Year	Detail of Stage	Selection Criteria
2013	Initial cross	None
2014	Dihaploid headrow grown in Walla Walla, WA	None
2015	Replicated trial at 2 locations	Grain yield, agronomic type, disease resistance
2016	Replicated trial at 12 locations	Grain yield, agronomic type, disease resistance
2017	Replicated trial at 12 locations	Grain yield, agronomic type, disease resistance
2018	Replicated trial at 12 locations	Grain yield, agronomic type, disease resistance
2019	Replicated trial at 12 locations	Grain yield, agronomic type, disease resistance
2020	Pre-breeder seed production in Walla Walla, WA Replicated trial at 34 locations Foundation seed production near Parma, ID	Grain yield, yield stability, disease resistance, milling and baking quality
6. Is the variety uniform? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<p>How did you test for uniformity?</p> <p>Uniformity was evaluated during Pre-breeder and Foundation seed production. Pre-Breeder seed was first produced in Walla Walla, WA in plots which produced enough seed to plant a 1 acre headrowed Foundation seed increase in Parma, ID in the fall of 2019 which resulted in 150 bushels of Foundation seed. The variety was lightly rogued for off types in each production cycle.</p>		
7. Is the variety stable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<p>How did you test for stability? Over how many generations?</p> <p>Stability was evaluated over 2 years including Pre-breeder and Foundation seed production. All generations were stable for phenotypic characteristics and expression of variants.</p>		
8. Are genetic variants observed or expected during reproduction and multiplication? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<p>If yes, state how these variants may be identified, their type and frequency.</p> <p>VI Shock may contain up to 1 per 1000 taller plants, up to 2 spike lengths above the main canopy, up 1 per 10,000 awnless plants; seed may contain up to 0.75% red grain.</p>		

U.S. DEPARTMENT OF AGRICULTURE
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 SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE
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EXHIBIT B – STATEMENT OF DISTINCTNESS
**** Use additional tables to present clear differences for additional comparison varieties.**
Use additional pages to present supporting evidence.

1. Name of Owner Limagrain Cereal Seeds, LLC, and Univ. of Idaho	2. Temporary Designation or Experimental Name UIL 15-72223	3. Variety Name VI Shock
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Based on overall morphology, VI Shock is most similar to LCS Artdeco and UI Magic. VI Shock most clearly differs from LCS Artdeco and UI Magic in the following traits Name the specific trait. Then list the value of that trait for each variety in the comparison. Submit appropriate supporting evidence (see the [Guidelines for Presenting Evidence in Support of Variety Distinctness in the instructions](#)):

	<i>Eg. Leaf Pubescence</i> <i>Eg. Leaf Color</i> <i>Eg. Plant Height</i>	<i>heavy pubescence</i> <i>Dark Green (SGY 3/4)</i> <i>200 cm +/- 10 cm (N=25)</i>	<i>glabrous</i> <i>Light Green (2.5GY 8/10)</i> <i>250 cm +/- 15 cm (N=25)</i>	<i>photograph attached</i> <i>Munsell Color Chart</i> <i>statistics attached</i>
	1. Qualitative traits:	2. Color traits:	3. Quantitative traits:	4. Other traits:
Application Variety	VI Shock Flag leaf - twisted Head density - middense Head curvature - erect			
Comparison Variety 1	LCS Artdeco Flag leaf - not twisted Head density - middense Head curvature - inclined			
Comparison Variety 2	UI Magic Flag leaf - not twisted Head density - dense Head curvature - erect			
Comparison Variety 3				

**** Use additional tables to present clear differences for additional comparison varieties. Use additional pages to present supporting evidence.**

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 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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202100363

**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) Limagrain Cereal Seeds, LLC, and Univ. of Idaho	TEMPORARY OR EXPERIMENTAL DESIGNATION UIL15-72223	VARIETY NAME VI Shock
ADDRESS (Street and No. or RD No., City, State, Zip Code and Country) Limagrain Cereal Seeds University of Idaho 2040 SE Frontage Road 875 Perimeter Drive, MS3003 Fort Collins, CO 80525 Moscow, ID 83844		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: Royal Horticultural Society. 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) _____

1a. COMMON WHEAT MARKET CLASSES:

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

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) 3

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

6. FLAG LEAF: (boot stage)

- 1 1 = Erect 2 = Recurved
- 2 1 = Not Twisted 2 = Twisted
- 2 1 = Wax Absent 2 = Wax Present

7. EAR EMERGENCE:

- 152 Number of Days (Average)
- _____ Number of Days Earlier Than * _____
- Same As * _____
- 2 Number of Days Later Than * LCS Artdeco

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

8. ANTER COLOR: 1 1 = Yellow 2 = Purple

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

94 cm (Average)

11 cm Taller Than LCS Artdeco *

Same As _____ *

_____ cm Shorter Than _____ *

10. STEM:

A. ANTHOCYANIN 1 1 = Absent 2 = Present

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

4 Number of Nodes

B. WAXY BLOOM 2 1 = Absent 2 = Present

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

16 cm Length

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

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

C. CURVATURE 1

1 = Erect
2 = Inclined
3 = Recurved

B. SHAPE 2

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

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) _____

E. BEAK WIDTH 1

1 = Narrow
2 = Medium
3 = Wide

B. SHOULDER 2

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

F. GLUME LENGTH 3

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

C. SHOULDER WIDTH 2

1 = Narrow
2 = Medium
3 = Wide

G. WIDTH 2

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

D. BEAK 3

1 = Obtuse
2 = Acute
3 = Acuminate

H. PUBESCENCE 1

1 = Not Present
2 = Present

13. SEED:

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

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

B. CHEEK 1 1 = Rounded 2 = Angular

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

C. BRUSH

2 1 = Short
2 = Medium
3 = Long

1 1 = Not Collared
2 = Collared

G. PHENOL REACTION (See Instructions) _____

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

D. CREASE

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

H. SEED WEIGHT

37 g/1000 Seed (whole number only)

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

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*) Race: _____
- 0 Leaf Rust (*Puccinia recondita* f. sp. *tritici*) Race: _____
- 0 Stripe Rust (*Puccinia striiformis*) Race: _____
- 0 Loose Smut (*Ustilago tritici*) Race: _____
- 0 Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*) Race: _____
- 0 Common Bunt (*Tilletia tritici* or *T. laevis*) Race: _____
- 0 Dwarf Bunt (*Tilletia controversa*) Race: _____
- 0 Karnal Bunt (*Tilletia indica*) Race: _____
- 0 Flag Smut (*Urocystis agropyri*) Race: _____
- 0 Tan Spot (*Pyrenophora tritici-repentis*) Race: _____
- 0 Halo Spot (*Selenophoma donacis*) Race: _____
- 0 Septoria spp. Race: _____
- 0 *Septoria nodorum* (Glume Blotch) Race: _____
- 0 *Septoria avenae* (Speckled Leaf Disease) Race: _____
- 0 *Septoria tritici* (Speckled Leaf Blotch) Race: _____
- 0 Scab (*Fusarium* spp.) Race: _____
- 0 "Snow Molds" Race: _____
- 0 Kernel Smudge ("Black Point") Race: _____
- 0 Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.) Race: _____
- 0 Barley Yellow Dwarf Virus (BYDV) Race: _____
- 0 Rhizoctonia Root Rot (*Rhizoctonia solani*) Race: _____
- 0 Soilborne Mosaic Virus (SBMV) Race: _____
- 0 Black Chaff (*Xanthomonas campestris* pv. *translucens*) Race: _____

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

- 0 Wheat Yellow (Spindle Streak) Mosaic Virus Race: _____
- 0 Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*) Race: _____
- 0 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)

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

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

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

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

Glu-A1	Glu-B1	Glu-D1
<input type="checkbox"/> 1	<input type="checkbox"/> 6+8	<input type="checkbox"/> 2+11
<input checked="" type="checkbox"/> 2*	<input type="checkbox"/> 7+8	<input checked="" type="checkbox"/> 2+12
<input type="checkbox"/> null	<input checked="" type="checkbox"/> 7+9	<input type="checkbox"/> 3+12
<input type="checkbox"/> 1*	<input type="checkbox"/> 13+16	<input type="checkbox"/> 5+10
	<input type="checkbox"/> 13+19	<input type="checkbox"/> null
	<input type="checkbox"/> 17+18	

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

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

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

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

20. END USE QUALITY:

- Grain Protein _____
- Flour Protein 9.0
- SDS _____
- Farniograph _____
- Other Cookie Diam. 8.8 cm

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

Table 1. Yield of VI Shock (bu/ac) compared to check varieties LCS Artdeco, SY Ovation, UI Castle and UI Magic in University of Idaho Variety Trials during 2019 and 2020 at Aberdeen, ID and Kimberly, ID. Mean, %CV and LSD derived from entire data set.

Variety	Aberdeen, ID 2019	Kimberly, ID 2019	Aberdeen, ID 2020	Kimberly, ID 2020	Average
VI Shock	174	207	177	151	177
LCS Artdeco	178	184	150	152	166
SY Ovation	174	188	157	155	169
UI Castle	157	200	151	155	166
UI Magic	160	172	145	155	158
Mean	165	179	150	158	163
%CV	6	7	8	10	
LSD	13	16	16	23	

Table 2. Grain yield, test weight, protein and agronomic traits for VI Shock compared to currently grown soft white winter wheat varieties. Excerpt from a 40 entry trial grown at 9 locations in 2020.

2020 LCS IYT Yield Trial		Agronomic Traits				Grain Test Wt.	Grain Protein	Grain Yield	
Source	Genotype	Heading Date 3-site mean (DOY)	Plant Height 7-site mean (cm)	Lodging Walla Walla, WA (0-9)	Stripe Rust 4-site mean (0-9)	8-site mean (lb/bu)	3-site mean (%)	9-site mean (bu/ac)	9-site rank
LCS	VI Shock	152	94	0	0.9	61.0	10.9	116.0	12
LCS	VI Presto CL+	152	99	0	0.4	62.4	11.6	113.0	23
LCS	VI Voodoo CL+	153	84	0	3.3	60.6	10.4	110.0	28
LCS	LCS Artdeco	150	83	0	1.9	60.9	10.2	109.0	31
Syngenta	SY Ovation	153	94	0	1.8	61.6	11.0	113.0	21
UI	UI Magic	151	85	0	9.3	60.4	11.2	91.0	36
UI	UI Castle	158	97	1	2.4	61.5	11.7	109.0	32

Table 3. Mean milling analyses and glutenin composition of grain from 7-site years in Washington and Idaho.

	Flour analyses			Glutenin composition		
	Break Flour Yield %	Protein %	Cookie Diameter cm	GluA1_m1	GluB1_m1	GluD1_m1
VI Shock	79.0	9.0	8.8	2*	7 + 9	2 + 12
VI Presto CL+	78.0	11.0	8.7	Null	7 + 9	2 + 12
VI Voodoo CL+	79.0	10.0	8.9	2*	7 + 9	5 + 10
UI Magic	77.0	10.0	8.8	2*	7 + 9	2 + 12
LCS Artdeco	76.0	8.0	8.7	2*	7 + 9	5 + 10

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

FOR OFFICIAL USE ONLY

PVPO NUMBER

EXHIBIT E - STATEMENT OF THE BASIS OF OWNERSHIP

1. Name of Owner Limagrain Cereal Seeds, LLC, and Univ. of Idaho	2. Temporary Designation or Experimental Name UIL 15-72223	3. Variety Name VI Shock
4. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

5. Is the applicant a U.S. national or a U.S. based entity? If no, give name of country. YES NO

6. 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

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

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.

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