

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Virginia Tech Intellectual Properties, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

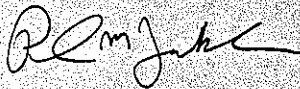
AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS 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 PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

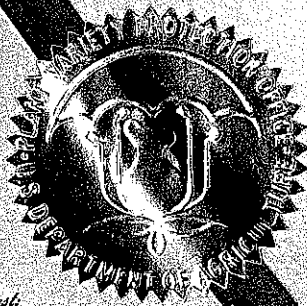
'38158'

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

Attest:



Commissioner
Plant Variety Protection Office
Agricultural Marketing Service



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

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

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 Virginia Tech Intellectual Properties, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME VA96W-158	3. VARIETY NAME 38158
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 1872 Pratt Drive Suite 1625 Blacksburg, VA 24060		5. TELEPHONE (include area code) 540-951-9378	FOR OFFICIAL USE ONLY PVPO NUMBER 200200261
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		6. FAX (include area code) 540-951-5292	
8. IF INCORPORATED, GIVE STATE OF INCORPORATION Virginia		9. DATE OF INCORPORATION June 20, 1985	FILING DATE 9/16/02

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Carl A. Griffey Crop and Soil Environmental Sciences Virginia Tech Blacksburg, VA 24061-0404		FILING AND EXAMINATION FEES: \$ 2705.00 DATE 9/16/02 CERTIFICATION FEE: \$ 320 DATE 9/20/02
11. TELEPHONE (include area code) 540-231-9789		

12. FAX (include area code) 540-231-3431	13. E-MAIL Cgriffey@vt.edu	14. CROP KIND (Common Name) Wheat, Common
15. GENUS AND SPECIES NAME OF CROP Triticum aestivum	16. FAMILY NAME (Botanical) Triticeae	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)		19. 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	
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety	<input type="checkbox"/> YES (If "yes", answer items 20 and 21 below)	b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness	<input checked="" type="checkbox"/> NO (If "no", go to item 22)
c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?		<input type="checkbox"/> YES <input type="checkbox"/> NO
d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional)	IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		
e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership	21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		<input type="checkbox"/> YES <input type="checkbox"/> NO
f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)	IF YES, SPECIFY THE		<input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED
g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)	(If additional explanation is necessary, please use the space indicated on the reverse.)		

22. 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.)	23. 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.)
24. The owners declare that a viable sample of basic seed of the variety will be 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) Michael J. Martin	NAME (Please print or type)

CAPACITY OR TITLE Executive Vice President	DATE 9/13/02	CAPACITY OR TITLE	DATE
--	------------------------	-------------------	------

18A. Exhibit A: Origin and Breeding History

Genealogy and Breeding Method. Wheat variety 38158, formerly designated VA96W-158, was derived from the cross 'FFR555W'/'Gore'. The cross was made in spring of 1990, and the F₁ generation was grown in the field as a single 4ft headrow in 1991 to produce F₂ seed.

The population was advanced from the F₂ to F₄ generation using a modified bulk breeding method.

Population Advancement and Selection of the Variety. Wheat spikes were selected from the population in each segregating generation (F₂-F₃) on the basis of absence of obvious disease, early maturity, short plant height and desirable head shape and size. Selected spikes were threshed in bulk, and the seed was planted in a 225ft² block in the fall of each year. Spikes selected from the F₄ bulk were threshed individually and planted in separate 4ft headrows. The wheat line VA96W-158 was derived in 1995 as a bulk of one of these F₅ headrows selected for early maturity and resistance to powdery mildew (*Blumeria graminis*). The line was tested as entry 158 in non-replicated observation tests in 1996 and was designated VA96W-158. This line was tested in replicated preliminary tests in 1997, advanced tests in 1998 and in the Virginia Variety Trials in 1999. It also was tested regionally in the Uniform Mason Dixon and Southern Preliminary wheat tests in 1999.

Multiplication and Purification. The initial Breeder seed of variety 38158 was developed via removal of visual variants from a 0.12 acre F₈ purification block. While variety 38158 has remained stable and uniform in composition through the last three generations of self pollination, the initial Breeder seed of variety 38158 contained up to 0.30% taller plants and 0.05% plants with purple stem color at ripening. In the fall of 1999, 290 F₁₀ headrows of variety 38158 were planted to develop a purer source of Breeder seed. These rows were evaluated for uniformity and trueness of type several times during the growing season. Of the 290 rows, 41 variant rows were removed, and the remaining rows were harvested in bulk to provide a new source of Breeder seed.

38158 Wheat

18B. Exhibit B: Novelty Statement

Wheat variety 38158 is uniquely different from all known cultivars, but is most similar to its parent FFR555W. Head emergence of variety 38158 is on average 7 days earlier than that of FFR555W. In field tests conducted from 1997 to 2000, variety 38158 headed 9, 5, 8 and 7 days earlier ($LSD_{0.05} = 1$ day) than FFR555W, respectively. Variety 38158 is resistant to powdery mildew, while FFR555W is susceptible. In 1997-2000 field tests, variety 38158 had mildew scores (0-9 scale, where 0=No infection to 9=Complete leaf infection) of 1, 2, 1 and 1, while FFR555W had significantly ($LSD_{0.05} = 1$) higher scores of 4, 4, 5 and 5. Based on seedling tests conducted by USDA-ARS Cereal Disease Lab, St. Paul, MN, variety 38158 has genes *Lr11*, 18 for resistance to leaf rust (*Puccinia triticina*), while FFR555W has gene *Lr10*. Variety 38158 is resistant to races LBBQ (virulence for genes *Lr1*, 10, 18), KDGL (*Lr2a*, 2c, 3, 10, 11, 24) and MCGL (*Lr1*, 3, 10, 11, 26), while FFR555W is susceptible. In contrast variety 38158 is susceptible to race TLGG (*Lr1*, 2a, 2c, 3, 9, 11, 18), while FFR555W is resistant. Variety 38158 is susceptible to stem rust (*Puccinia graminis*), while FFR555W is resistant. In seedling tests conducted from 1997-1999 by USDA-ARS, variety 38158 was susceptible to stem rust race TPMK, while FFR555W was resistant.

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK AND SEED DIVISION
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
 WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) <u>Virginia Tech Intellectual Properties, Inc.</u> ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 1872 Pratt Dr., Suite 1625 Blacksburg, VA 24060	FOR OFFICIAL USE ONLY PVPO NUMBER 200200261 VARIETY NAME OR TEMPORARY DESIGNATION 38158
---	---

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

1. KIND:

<input type="text" value="1"/>	1 = COMMON	2 = DURUM	3 = EMMER	4 = SPELT	5 = POLISH	6 = POULARD	7 = CLUB
--------------------------------	------------	-----------	-----------	-----------	------------	-------------	----------

2. TYPE:

<input type="text" value="2"/>	1 = SPRING	2 = WINTER	3 = OTHER (Specify) _____	<input type="text" value="1"/>	1 = SOFT	3 = OTHER (Specify) _____
					2 = HARD	

1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

<input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/>	FIRST FLOWERING	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/>	LAST FLOWERING
---	-----------------	---	----------------

4. MATURITY (50% Flowering):

<input type="text" value="0"/> <input type="text" value="2"/>	NO. OF DAYS EARLIER THAN	<input type="text" value="7"/>	1 = ARTHUR	2 = SCOUT	3 = CHRIS	7 = Pioneer2580
<input type="text" value="0"/> <input type="text" value="1"/>	NO. OF DAYS LATER THAN	<input type="text" value="8"/>	4 = LEMHI	5 = NUGAINES	6 = LEEDS	8 = FFR518W

5. PLANT HEIGHT (From soil level to top of head):

<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/>	CM. HIGH	<input type="text" value="7"/>	1 = ARTHUR	2 = SCOUT	3 = CHRIS	7 = Pioneer2580
<input type="text" value="0"/> <input type="text" value="3"/>	CM. TALLER THAN	<input type="text" value="8"/>	4 = LEMHI	5 = NUGAINES	6 = LEEDS	8 = Patton
<input type="text" value="0"/> <input type="text" value="4"/>	CM. SHORTER THAN					

6. PLANT COLOR AT BOOTING (See reverse): <input type="text" value="2"/> 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN	7. ANTHOR COLOR: <input type="text" value="1"/> 1 = YELLOW 2 = PURPLE
--	---

8. STEM:

<input type="text" value="1"/> Anthocyanin: 1 = ABSENT 2 = PRESENT	<input type="text" value="2"/> Waxy bloom: 1 = ABSENT 2 = PRESENT
<input type="text" value="2"/> Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT	<input type="text" value="1"/> Internodes: 1 = HOLLOW 2 = SOLID
<input type="text" value="0"/> <input type="text" value="4"/> NO. OF NODES (Originating from node above ground)	<input type="text" value="2"/> <input type="text" value="2"/> CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

<input type="text" value="1"/> Anthocyanin: 1 = ABSENT 2 = PRESENT	<input type="text" value="2"/> Hairiness: 1 = ABSENT 2 = PRESENT
---	---

10. LEAF:

<input type="text" value="2"/> Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify) _____	<input type="text" value="1"/> Flag leaf: 1 = NOT TWISTED 2 = TWISTED
<input type="text" value="1"/> Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT	<input type="text" value="2"/> Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
<input type="text" value="0"/> <input type="text" value="9"/> MM. LEAF WIDTH (First leaf below flag leaf)	<input type="text" value="2"/> <input type="text" value="0"/> CM. LEAF LENGTH (First leaf below flag leaf):

4

11. HEAD:

3 Density: 1 = LAX 2 = DENSE 3. Mid-dense 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

3 Awedness: 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): _____

1 1 CM. LENGTH 1 5 MM. WIDTH

12. GLUMES AT MATURITY:

3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.) 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

4 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE 2 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR: 1/2 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN: 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT: 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL 2 Check: 1 = ROUNDED 2 = ANGULAR

3 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG 2 Brush: 1 = NOT COLLARED 2 = COLLARED

2/4 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 7 MM. LENGTH 0 4 MM. WIDTH 3 5 GM. PER 1000 SEEDS

17. SEED CREASE:

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

2 Depth: 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)

1 STEM RUST (Race) TPMK 2 LEAF RUST Has genes (Race) Lr11,18 1 STRIPE RUST (Race) _____ 0 LOOSE SMUT

2 POWDERY MILDEW 0 BUNT OTHER (Specify) _____

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

0 SAWFLY 2 APHID (Bydv.) 0 GREEN BUG 1 CEREAL LEAF BEETLE

1 OTHER (Specify) Hessian Fly Biotype L HESSIAN FLY RACES: 1 GP 0 A 1 B 1 C 1 D 1 E 0 F 0 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

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

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. Briggie 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.)

38158 Wheat

18D. Exhibit D: Additional Description of Variety 38158.

Variety 38158 is an early heading, high yielding, medium stature, awnleted, soft red winter wheat with good milling and baking quality. Head emergence is two days earlier than Pioneer 2580 (Tables 1-3). Plant height of variety 38158 (38 inches) is one inch taller than Pioneer 2580 and FFR555W, and two inches shorter than Coker 9663. Straw strength of variety 38158 is moderately good. It is better than that of Coker 9835 or Coker 9663, but weaker than that of Pioneer 2580 and FFR555W. Grain yields of variety 38158 in Virginia have been similar or exceeded those of the best check cultivars and have averaged 81 bu/ac versus 79 bu/ac for Pioneer 2580. Average test weight of variety 38158 has been equal to or higher than that of Pioneer 2580 and FFR555W. Based on limited data (Tables 4, 6) variety 38158 has only moderate winter hardiness and is most similar to Coker 9663. Milling and baking quality (Tables 8, 9) of variety 38158 is better than that of Jackson but slightly lower than that of FFR555W, which has very good quality.

Variety 38158 is resistant to powdery mildew, and moderately resistant to barley yellow dwarf virus and wheat spindle streak mosaic virus (Tables 1-4, 6). It is moderately resistant to moderately susceptible to leaf rust and glume blotch. While variety 38158 exhibited a susceptible reaction to five Hessian fly biotypes in 1999 seedling tests, it was resistant to the natural biotype(s) prevalent in Plains, Georgia under epidemic conditions in 1999 (Table 6). This variety is susceptible to the predominant race of stem rust (TNMK).

Table 1. Summary of performance of VA96W-158 in the Virginia Tech Wheat Test, 1999 harvest.*

Brand/Variety	Yield (Bu/A)	Test Weight (Lb)	Date Headed (Mar 31+)	Lodg- ing** (0.2-10)	Powdery Leaf		Barley		
					Mildew Rust	Septoria Dwarf	Yellow Dwarf	Yellow Dwarf	
	(6)	(6)	(3)	(3)	(2)	(2)	(3)	(2)	(2)
PIONEER 2580	77	57.6	33	37	0.7	2	4	3	2
JACKSON	83	59.3	37	40	2.9	3	4	2	2
COKER 9835	78	57.5	35	35	3.0	2	7	2	2
FFR 555W	69	57.7	40	37	0.6	5	5	2	4
VA96-54-326	77	59.3	34	38	1.4	1	3	2	1
VA96W-247	80	58.2	38	35	1.8	1	1	3	3
VA96W-250	84	58.4	36	36	2.6	2	2	2	2
VA96W-158	84	58.3	32	38	1.9	1	4	4	3
VA96W-270	68	57.6	35	38	0.5	1	3	2	1
Average	75	58.1	36	38	1.3	2	3	3	2
LSD (0.05)	4	0.4	1	1	1.0	1	1	1	1

* The number in parentheses below column headings indicates the number of locations on which data are based. A plus or minus sign indicates a performance significantly above or below the test average, respectively.

** Belgian Lodging Scale = Area x Intensity x 0.2. Area = 1-10, where 1 is wheat unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is wheat standing upright and 5 is wheat lying totally flat.

* The 0-9 ratings indicate relative disease intensity where 0=none and 9=total plant infection.

Table 2. Summary of performance of VA96W-158 in the 1997-98 Virginia Advance Wheat Test.

Line	Yield (Bu/A) (2) ¹	Test Weight (lbs./Bu) (2)	Date Headed (Mar 31+) (2)	Height (in.) (2)	Lodging (0.2-10) ² (2)	Powdery Mildew (0-9) ³ (2)	Winter Kill (0-9) (1)
Pioneer 2580	77	53.3	27	37	1.9	1	0
Jackson	68	54.7	30	37	3.8	3	1
Coker 9835	57	52.3	30	34	2.9	3	1
FFR555W	70	53.5	31	38	0.9	4	0
VA96W-158	74	53.3	26	36	2.3	2	5
VA96W-270	74	56.7	27	37	0.6	0	0
LSD (0.05) ⁴	6	1.0	1	1	1.6	1	1
Test Average	69	53.5	29	37	2.3	2	1

¹ The number in parentheses indicates the number of locations upon which data are based. The test was conducted at Blacksburg, VA, and Warsaw, VA.

² Belgian lodging scale = area x intensity x 0.2. Area is rated on a scale from 1 (plot unaffected) to 10 (entire plot affected). Intensity is rated on a scale from 1 (plants standing upright) to 5 (plants lying totally flat).

³ All 0-9 ratings indicate relative disease severity: 0 = no disease present; 9 = total infestation of the plant by the disease.

⁴ Overall LSD values for all 45 entries in the test.

1180V
BFC:inst

Table 3. Summary of performance of VA96W-158 in the 1996-97 Virginia/North Carolina Preliminary Wheat Test.

Line	Yield (Bu/A) (4) ¹	Test Weight (lbs./Bu) (4)	Date Headed (Mar 31+) (3)	Height (in.) (2)	Powdery		WSSMV ³ (0-9) (1)	BYDV ⁴ (0-9) (2)	Leaf	
					Mildew (0-9) ² (4)	Rust (0-9) (5)			Septoria (0-9) (2)	
Pioneer 2580	84	59.1	45	36	1	5	3	3	2	2
Jackson	82	60.1	48	38	2	3	2	2	4	2
Coker 9835	77	58.2	48	33	2	2	3	3	2	3
FFR555W	75	58.6	50	36	4	2	3	3	4	3
VA96W-247	87	59.7	46	36	0	2	3	3	3	2
VA96W-250	96	60.1	43	35	0	2	1	1	4	2
VA96W-158	86	59.1	41	39	1	1	3	3	2	3
VA96W-270	78	59.8	43	38	0	0	2	2	4	3
LSD (0.05) ⁵	6	0.4	1	1	1	2	1	1	1	1
Test Average	77	59.0	46	36	1	2	3	3	3	3

¹ The number in parentheses indicates the number of locations upon which the data are based. The test was conducted at Blacksburg, Warsaw, and Painter, VA, and Kinston and Plymouth, NC.

² All 0-9 ratings indicate relative disease severity: 0 = no disease present; 9 = total infestation of the plant by the disease.

³ Wheat spindle streak mosaic virus.

⁴ Barley yellow dwarf virus.

⁵ Overall LSD values for all 96 entries in the test.

11006
BLS/ST/ST

Table 4. Summary of performance of VA96W-158 in the 1998-99 Uniform Mason-Dixon Wheat Test.

Line	Yield (Bu/A) (2) ¹	Test Weight (lbs./Bu) (2)	Date Headed (Mar 31+) (2)	Height (in.) (2)	Lodging (0.2-10) ² (2)	Powdery		Winter Kill (0-9) (1)	BYDV ⁴ (0-9) (2)	Leaf Rust (0-9) (1)	Septoria (0-9) (1)
						Mildew (0-9) ³ (2)	Mildew (0-9) ³ (2)				
Pioneer 2580	87	59.2	33	36	0.2	0	0	3	2	2	2
Coker 9663	82	60.8	33	40	5.0	1	1	3	1	0	2
Agripro Foster	78	59.8	37	37	0.2	2	2	2	3	3	3
Roane	89	62.3	38	35	3.0	0	0	0	2	1	1
VA96-54-326	89	61.0	32	38	5.0	0	0	6	1	2	2
VA96W-247	102	60.3	35	35	0.2	0	0	0	2	2	2
VA96W-158	94	59.8	30	37	0.2	0	0	4	2	3	2
VA96W-270	79	59.7	33	37	0.2	0	0	0	3	2	3
LSD (0.05) ⁵	7	0.7	1	1	0.6	0.7	1	1	1	1	1
Test Average ⁶	80	60.1	34	36	0.5	1	1	2	2	1	2

¹ The number in parentheses indicates the number of locations upon which data are based. This table reflects results only from the Blacksburg, VA, and Warsaw, VA, research sites. The test was also conducted in Maryland, Kentucky, and North Carolina.

² Belgian lodging scale = area x intensity x 0.2. Area is rated on a scale from 1 (plot unaffected) to 10 (entire plot affected). Intensity is rated on a scale from 5 (plants standing upright) to 5 (plants lying totally flat).

³ All 0-9 ratings indicate relative disease severity: 0 = no disease present; 9 = total infestation of the plant by the disease.

⁴ Barley yellow dwarf virus.

⁵ Overall LSD values for all 84 entries in the test.

⁶ Test average for Virginia locations only.

Table 5. Grain yields of VA96W-158 tested at seven locations in four states in the 1998-99 Uniform Mason-Dixon Wheat Test.

Line	Lexington, KY	Logan County, KY	Wye, MD	Yield (Bu/A)							Overall (7 locations)			
				Beltsville, MD	Plymouth, NC	Blacksburg, VA	Warsaw, VA	Beltsville, MD	Wye, MD	Logan County, KY		Lexington, KY		
Pioneer 2580	51	95	74	79	50	99	75	76						76
Coker 9663	50	97	68	72	62	97	66	72						72
Foster	45	102	67	70	43	91	65	69						69
Roane	59	77	73	73	50	103	75	72						72
VA96-54-326	49	92	80	74	58	95	82	76						76
VA96W-247	44	99	79	80	46	117	86	79						79
VA96W-158	51	102	87	73	51	103	85	79						79
VA96W-270	46	90	68	70	47	86	72	68						68
LSD (0.05) ¹	10	16	8	10	8	7	11	4						4
Test Avg.	48	86	68	69	49	90	70	69						69

¹ Overall LSD values for all 84 entries in the test.

NCU
10/10/00

Table 6. Summary of performance of VA96W-158 in the 1998-99 Southern Preliminary Wheat Test¹.

Line	Test		Head				Powdery				Hessian	
	Yield (Bu/A) (7) ²	Weight (lbs/Bu) (7)	March 31+	Height (in.) (5)	Lodging (0.2-10) ³ (5)	Mildew (0-9) ⁴ (4)	Leaf Rust (0-9) (4)	Septoria (0-9) (1)	BYDV ⁵ (0-9) (2)	Fly (R-VS) (1)	Winter Kill (0-9) (2)	
Pioneer 2643	64	58.3	9	28	0.2	1	4	2	1	S	2	
Coker 9663	70	58.0	4	36	2.8	3	1	2	1	S	2	
Coker 9835	65	56.3	5	31	1.5	3	4	2	2	R	4	
VA96W-250	59 ⁶	58.1 ⁶	12 ⁷	29	0.5 ⁷	1	5	No data	2	VS	0	
VA96W-158	68	57.2	8	34	0.8	2	4	2	1	R	2	
VA96W-270	81	58.9	6	34	0.3	1	3	3	1	R	0	
Test Average	61	57.4	8	33	1.8	2	2	3	2		2	

¹ Data are reported as means over all seven locations: Louisiana, Georgia, Florida, North Carolina, Virginia, South Carolina, and Arkansas.

² The number in parentheses indicates the number of locations upon which data are based.

³ Belgian lodging scale = area x intensity x 0.2. Area is rated on a scale from 1 (plot unaffected) to 10 (entire plot affected). Intensity is rated on a scale from 1 (plants standing upright) to 5 (plants lying totally flat).

⁴ All 0-9 ratings indicate relative disease severity: 0 = no disease present; 9 = total infestation of the plant by the disease.

⁵ Barley yellow dwarf virus.

⁶ Datum is based on only five locations.

⁷ Datum is based on only four locations.

10/20/01
DECEMBER

Table 7. Grain yields of VA96W-158 tested in seven states in the 1998-99 Southern Preliminary Wheat Test.

Line	Louisiana	Georgia	Florida	North			Virginia	South Carolina	Arkansas	Overall (7 locations)
				Carolina	Carolina	Carolina				
Yield (Bu/A)										
Pioneer 2643	66	50	44	69	85	57	77	64		
Coker 9663	73	66	56	65	66	78	88	70		
Coker 9835	59	94	56	45	79	55	66	65		
VA96W-250	No data ²	No data ²	11 ²	81	79	44	82	59		
VA96W-158	51	82	39	75	90	63	76	68		
VA96W-270	81	97	57	83	79	58	86	81		
LSD (0.05) ¹	13.9	NA	10.6	12.6	10.3	12	16.7	NA		
Test Avg.	60	68	41	63	68	58	71	61		

¹ Overall LSD values for all 65 entries in the test.

² VA96W-250 did not vernalize at these locations.

11/20/01
6/11/01

Table 8. Milling and baking quality of VA96W-158 wheat: 1998 crop

Entry	Milling quality score	Baking quality score	Micro T.W. Lb/Bu	Soft equiv.	Flour yield %	Flour prot. %	Micro AWRC %	Cookie diam. cm
Massey (standard)	100.0	A	59.5	59.5	72.5	9.1	56.3	17.7
FFR 555W	102.9	A	58.2*	57.6	73.6	8.7	54.8	18.1
Pion 2580	90.4	C	58.3*	59.0	70.2**	8.0	56.7	17.5
Jackson	90.5	C	60.0	59.5	69.9**	9.4	60.2**	17.1**
Coker 9835	92.9	C	57.9*	64.5	70.0**	8.3	61.1**	17.9
VA96W-158	98.2	B	58.0*	58.5	72.3	8.7	56.2	17.5
VA96W-270	95.8	B	61.5	53.4*	72.1	9.2	55.2	17.7

*Score is one standard deviation away from the standard cultivar's score.

**Score is two standard deviations away from the standard cultivar's score.

Table 9. Milling and baking quality of VA96W-158 wheat: 1997 crop

Entry	Milling quality score	Baking quality score	Micro T.W. Lb/Bu	Soft equiv.	Flour yield %	Flour prot. %	Micro AWRC %	Cookie diam. cm
Massey (standard)	100.0	A	62.3	52.2	70.3	8.5	57.3	17.6
FFR 555W	104.2	A	61.7	51.4	71.8	8.2	56.3	17.4
Pion 2580	86.9	D	61.6	48.5*	67.8**	7.5	61.3**	16.9**
Jackson	99.6	B	63.3	54.0	69.8	8.0	59.1*	17.1**
CK 9835	104.3	A	62.2	59.5	70.5	7.1	61**	18.1
VA96W-158	102.1	A	62.0	51.3	71.0	7.5	57.2	17.4
VA96W-247	93.9	C	62.9	50.2	69.1*	7.5	61.8**	17.3
VA96W-250	96.4	B	62.6	49.3*	69.9	6.9	61.1**	17.5
VA96W-270	95.0	C	63.0	47.1*	69.9	8.5	58.3	17.4

*Score is one standard deviation away from the standard cultivar's score.

**Score is two standard deviations away from the standard cultivar's score.

NO. 100.0

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

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 APPLICANT(S) Virginia Tech Intellectual Properties Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER VA96W-158	3. VARIETY NAME 38158
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 1872 Pratt Dr., Suite 1625 Blacksburg, VA 24060	5. TELEPHONE (include area code) 540-951-9374	6. FAX (include area code) 540-951-5292
	7. PVPO NUMBER 200200261	

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. YES NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? YES NO
If no, give name of country

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

a. If 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 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 (if needed, use reverse for extra space):

Original owner Virginia Polytechnic Institute and State University assigned its ownership to current owner Virginia Tech Intellectual Properties INC. (see attached)

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of 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 final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are 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 10 minutes 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 its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (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, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.