No. 9500250

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Idaho
Idaho Agricultural Experiment Station

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 [illegible]GHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR [illegible]RTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE [illegible]ES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED [illegible]LANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL B[illegible] VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GEN[illegible] SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Idaho 377s'

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-ninth day of January in the year of our Lord one thousand nine hundred and ninety-nine.

PLANT VARIETY PROTECTION OFFICE · U.S. DEPARTMENT OF AGRICULTURE

Attest:

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

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

FORM APPROVED - OMB NO. 0581-005

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

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

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

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) *(as it is to appear on the Certificate)*
University of Idaho
Idaho Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
ID0377s

3. VARIETY NAME
'Idaho 377s'
per letter of 8-25-95
MAH 8-31-95

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
College of Agriculture
Moscow, ID 83844-2337

5. TELEPHONE *(include area code)*
208-885-7173

6. FAX *(include area code)*
208-885-6654

FOR OFFICIAL USE ONLY

PVPO NUMBER: 9500250

FILING: DATE: July 3, 1995

FEES RECEIVED: FILING AND EXAMINATION FEE: $2450.00 DATE: July 3, 1995

CERTIFICATION FEE: $300.00 DATE: 9/25/98

7. GENUS AND SPECIES NAME
Triticum aestivum

8. FAMILY NAME *(Botanical)*
Trititicae

9. CROP KIND NAME *(Common name)*
Wheat

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)* *(Common name)*
State Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
--

12. DATE OF INCORPORATION
--

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Richard Heimsch
Idaho Agricultural Experiment Station
University of Idaho
Moscow, ID 83844-2337

14. TELEPHONE *(include area code)*
208-885-7173

15. FAX *(include area code)*
208-885-6654

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*
- a. ☒ Exhibit A. Origin and Breeding History of the Variety
- b. ☒ Exhibit B. Statement of Distinctness
- c. ☒ Exhibit C. Objective Description of the Variety
- d. ☒ Exhibit D. Additional Description of the Variety
- e. ☒ Exhibit E. Statement of the Basis of the Applicant's Ownership
- f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)*
- g. ☒ Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)?*
☒ YES *(If "yes," answer items 18 and 19 below)* ☐ NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
AAA per phone calls (ref. CGM) 29 May 1998
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES *(If "yes," give names of countries and dates)* ☒ NO

21. The applicant(s) 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 applicant(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 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

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

SIGNATURE OF APPLICANT *(Owner(s))*
Edward Souza

NAME *(Please print or type)*
Edward Souza

CAPACITY OR TITLE
Professor

DATE
6/12/95

SIGNATURE OF APPLICANT *(Owner(s))*
Richard C. Heimsch

NAME *(Please print or type)*
RICHARD C. HEIMSCH, INTERIM DIRECTOR
IDAHO AG. EXPERIMENT STATION

CAPACITY OR TITLE

DATE
6/27/95

SD-470 (04-95) *(Previous editions are to be destroyed)*

(See reverse for instructions and information collection burden statement)

Idaho 377s PVP Application

Exhibit A. Origin and Breeding History

Idaho 377s was derived from the 1981 cross A81644S, a cross of a CIMMYT spring wheat with the pedigree 'Gallo'/'Yecora' reselection/3/'Aurora'//'Kalyonsona'/'Bluebird' as the female parent with the Aberdeen, ID breeding line 59Ab10293-5 as the pollen parent. The line 59Ab10293-5 was a semi-dwarf, awnless, soft white spring wheat, similar to the cultivar 'Springfield', with the pedigree 'Norin 10/'Brevor'//'Baart'/'Onas'. The cross A81644S was bulked in the F_2 generation. In 1983, F_3 head selections were made at Aberdeen. In 1984, the head row A81644S-2 was harvested and entered into yield testing starting in 1985. In 1988, A81644S-2 was designated IDO377 and entered into the Tri-State Spring Wheat Nursery. Head selections of IDO377 were made in 1988 because the original line was heterogeneous for plant height and maturity. Head rows were selected for short plant stature and high grain SDS sedimentation values. In 1989, 22 of selections from head rows were evaluated in replicated trials. Six selections of IDO377 were phenotypically similar for short stature and early maturity. Equal seed quantities of the six selections were composited to form IDO377s which was entered into the Western Regional Spring Wheat Nursery for three years, 1991 to 1993. In 1992, 150 head selections from IDO377s were planted in the field at Tetonia ID, where the head rows were rogued for uniformity, trueness to type, and white seed color.

Idaho 377s has been observed for 5 generations in the field from 1991 to 1995. It has had a consistent uniform phenotype over the 5 generations for stripe rust resistance, average heading date, head type, glume type, plant coloration, chaff color, kernel hardness, kernel color, starch viscosity, tyrosinase activity, bread quality, and noodle quality. Idaho 377s has some height variation among plants within the cultivar, approximately 5% of plants are shorter than average and 5% taller than average with no more than 10% difference in height between the tallest and shortest plants. Idaho 377s also has two biotypes for the Glu 1B locus, an approximately equal mixture of the 17+18 allele and the 7+8 allele. The height and glutenin variation is consistent from generation to generation over the 5 years observed and is characteristic of Idaho 377s.

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Supplement to PVP Application No. 9500250, Exhibit A

Idaho 377s has some variation in height within the cultivar. The variation is normally distributed about the average height. In a sample of plants from the cultivar grown in irrigated plots at Aberdeen, ID and Hazelton, ID in 1998, the average height of the cultivar was 102 cm with a plot to plot standard error 5 cm. This average was based on three replications per location. Within each replication at the two location a random sample of 60 or more plants were measured for height. The standard deviation for the plants within a plot was 5.7 cm. Tests for kurtosis or skewness of plant height distributions were not significant. Therefore, the cultivar is considered to be true to type with plants having a normal distribution of heights when the standard deviation in height is 5 % or less of the average height.

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Idaho 377s PVP Application

Exhibit B. Novelty Statement

Idaho 377s is most similar to 'Fieldwin' soft white spring wheat. The two cultivars can be distinguish by grain hardness and high molecular weight glutenin banding patterns. Fieldwin has grain hardness values consistently below 40 units on the NIR hardness scale. In four years of testing Idaho 377s has not been observed to have a grain hardness value below 60 units. Fieldwin and Idaho 377s differ for high molecular glutenin alleles at the *Glu* 1D locus. Fieldwin has the 2+12 allele and Idaho 377s has the 5+10 allele.

FORM APPROVED: OMB NO. 0581-0055

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)
Univ. of Idaho, Idaho Agric. Exper. Stn.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
College of Agriculture
Moscow, ID 83844-2339

FOR OFFICIAL USE ONLY
PVPO NUMBER 9500250
VARIETY NAME OR TEMPORARY DESIGNATION 'Idaho 377s' per letter of 8-25-95 MAH 8-31-95

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

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[0][8][3] FIRST FLOWERING
[0][9][5] LAST FLOWERING

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

5. PLANT HEIGHT (*From soil level to top of head*):
[0][9][3] CM. HIGH
[2][5] CM. TALLER THAN 'Klasic' .....
[1][2] CM. SHORTER THAN .....
[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

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

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

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[0][4] NO. OF NODES (*Originating from node above ground*)
[1] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[3][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:
[22] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][0] MM. LEAF WIDTH (*First leaf below flag leaf*)
[3][2] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79), which may be used)

5

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

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

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

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

[~~6~~ 5] CM. LENGTH 07 per letter of August 25, 1995 MAH 8-31-95

[1 5] MM. WIDTH

12. GLUMES AT MATURITY:

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

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

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

[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:

[2] 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

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

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

[0 7] MM. LENGTH [0 3] MM. WIDTH [3 1] GM. PER 1000 SEEDS

17. SEED CREASE:

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

[1] 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)

[2] STEM RUST (Races) _____ [1] LEAF RUST (Races) _____ [2] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[0] POWDERY MILDEW [0] BUNT [0] OTHER (Specify) _____

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

[1] SAWFLY [1] APHID (Bydv.) [1] GREEN BUG [1] CEREAL LEAF BEETLE

[1] OTHER (Specify) Russian Wheat aphid

HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

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

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.)

Idaho 377s PVP Application

Exhibit C. Objective Description of Variety

Idaho 377s is most similar to 'Fieldwin' soft white spring wheat in plant appearance. Idaho 377s has a green coleoptile, erect juvenile growth habit, and green foliage, absent a waxy bloom. The heads of Idaho 377s are mid-dense, erect, and awned. Idaho 377s flowers approximately 1 day earlier than 'Penawawa' soft white spring wheat with the earliest components of Idaho 377s flowering 2 days earlier than Penawawa and the latest flowers at approximately the same time as Penawawa. Idaho 377s is 8 cm taller than Penawawa in irrigated trials, with a range in plant heights of 10 cm. difference between the tallest and shortest plants. At maturity, Idaho 377s has white chaff color. Glumes are acuminate, narrow, and medium in length. with elevated shoulders. Seed of Idaho 377s is hard white and elliptical in shape, with rounded cheeks, and a small germ. The seed crease is mid-wide and shallow. Idaho 377s is resistant to *Puccinia stiiformis* (West., common disease name: Stripe rust) races common to Idaho and Washington states. Idaho 377s is resistant to Pacific Northwest races of *Puccinia graminis* (Pers. f.s. *tritici* Eriks. & Henn., common disease name: Stem rust) and moderately susceptible to *Puccinia recondita* (Rob. ex Desm. f.s. *tritici*, common disease name: Leaf rust). Idaho 377s is susceptible to Hessian fly (*Mayetiola destructor*, Say) and Russian wheat aphid (*Diuraphis noxia*, Mordv.)

In replicated cooperative extension trials in south-central and southeastern Idaho, 1992 to 1994, Idaho 377s, Penawawa, and 'Klasic' had average yields of 90, 81, and 79 bu/ac, respectively. In Western Regional Nursery trials, 1991 to 1993, across the northwestern US, Idaho 377s, Penawawa, and Klasic had average yields of 97, 94, and 83 bu/ac, respectively. Idaho 377s is more prone to lodging than Penawawa; in irrigated production it is similar to Fieldwin for lodging resistance. Grain protein content of Idaho 377s is similar to Klasic, the current hard white spring standard for the Pacific Northwest. Bread quality of Idaho 377s is inferior to Klasic. Idaho 377s has a half minute to 1 minute shorter dough mixing time and a 7 to 10% smaller pup loaf volume than Klasic. In 1993 international

collaborative noodle quality evaluations, Idaho 377s was identified as superior to Klasic for alkali or fried noodle quality. The superior noodle quality is likely related to the high starch viscosity and low tyrosinase reaction of Idaho 377s. In three years of Western Regional Nursery testing, Idaho 377s had a higher starch viscosity than Klasic based on analysis by Rapid Visco-analyzer (241 units for Idaho 377s v. 222 units for Klasic). In two years of testing at Aberdeen, Idaho 377s had approximately 50% of the grain tyrosinase activity of Klasic.

Idaho 377s PVP Application

Exhibit D. Additional Description of Variety

D1 . . . . . Performance of hard spring wheats, SE Idaho, yield data

D2 . . . . . Performance of hard spring wheats, SE Idaho, agronomic data

D3 to D7 . . . . . Performance in UI cooperative extension trials

D8 . . . . . Performance in WSU cooperative extension trials

D9 . . . . . Performance in Western Regional Nursery, grain yield

D10 . . . . . Performance in Western Regional Nursery, disease ratings

D11 . . . . . Western Regional Nursery milling and baking quality

D12 . . . . . Milling and baking quality, SE Idaho, Aberdeen, ID and Twin Falls, ID

D13 . . . . . Milling and baking quality, SE Idaho, Tetonia, ID

Performance of hard spring wheats in southeastern Idaho yield trials, 1991 to 1994

	Aberdeen yield	Std error	Aberdeen twt	Twin Falls yield	Std error	Twin Falls twt	Tetonia dryland yield	Std error	Tetonia twt	Tetonia twt	1992 & 4 Tetonia irrigated yield	Std error	1992 & 4 Tetonia twt
	bu/ac	bu/ac	#/bu	bu/ac	bu/ac	#/bu	bu/ac	bu/ac	#/bu	#/bu	bu/ac	bu/ac	#/bu
IDO377S (HWS)	145.4	6.2	61.4	132.5	4.8	63.4	47.3	2.7	54.9		61.9	5.8	57.4
Klasic (HWS)	112.8	6.2	60.4	119.2	4.8	63.5	43.9	2.7	57.5		67.8	4.0	60.7
NK751	129.1	6.2	60.5				44.5	5.5	52.4		64.1	4.0	57.4
Penawawa (SWS)	140.2	6.2	60.0	140.6	5.6	61.9	47.3	2.7	54.2				
Centennial (SWS)	138.7	6.2	60.4	134.1	5.6	61.9	49.1	2.7	55.7				
Serra	122.1	6.2	59.5	122.4	4.8	62.4	47.2	2.7	55.8		68.9	4.0	58.4
WPB926	121.2	6.2	60.2	111.7	4.8	61.3	43.7	2.7	55.0		62.9	4.0	58.2
Amidon*	120.3	7.2	60.1				42.7	3.2	54.5				
IDO462	136.1	6.2	61.5	122.9	4.8	62.3	47.1	2.7	55.2		66.7	4.0	58.3
Average	129.5		60.4	122.8		62.0	45.9		55.0		65.3		58.4

* Entries not grown in 1991, means adjusted for missing data.

D1

Performance of hard spring wheats in southeastern Idaho yield trials, 1991 to 1994

	Aberdeen heading date	Tetonia heading date	Aberdeen height	Tetonia height	Twin Falls height	Straw strength	Lodging score	Aberdeen maturity score	Tetonia maturity score
	June	July	in	in	in	1 to 5*	1 to 9*	1 to 5**	1 to 5**
IDO377S (HWS)	22	13	37.8	29.4	36.4	2.7	1.5	3.1	2.6
Klasic (HWS)	16	10	26.3	21.3	26.7	3.1	1.2	1.1	1.0
NK751	20	14	32.7			3.3	1.7	1.3	
Penawawa (SWS)	23	16	35.0	26.4	34.6	2.7	1.2	3.2	2.7
Centennial (SWS)	21	13	35.1	27.0	33.8	3.0	1.2	2.4	2.4
Serra	20	13	33.5	26.2	33.9	3.3	1.2	2.1	2.1
WPB926	17	11	33.3	27.7	32.9	2.3	1.1	2.8	2.8
Amidon*	22	14	41.1	34.9		3.5	1.6	2.2	
IDO462	21	13	36.3	28.9	33.9	3.3	1.0	2.7	3.1
Average	20	13	34.6	27.7	33.2	3.0	1.3	2.3	2.4

Performance of Idaho 377s in UI District II Extension Trials, 1992-1994.
Data provided by B. Brown and L. Robertson

Entry	Market class	--- 1992 --- Parma Yield	Yield rank	Protein	--- 1992 --- Hammett Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	109	4	8	68	1	16
Klasic	HWS	93	5	8	43	5	16
Penawawa	SWS						
Alpowa	SWS	110	3	9			
WPB 926	HRS	86	6	9	54	4	18
Centennial	SWS	111	2	8	66	2	16
Idaho 392	SWS	113	1	8	64	3	14

Entry	Market class	--- 1993 --- Parma Yield	Yield rank	Protein	--- 1993 --- Melba Yield	Yield rank	Protein	--- 1993 --- Mountain Home Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%	bu/ac		%
Idaho 377s	HWS	89	3	12	155	2	11	104	4	14
Klasic	HWS	76	7	13	143	6	12	97	5	14
Penawawa	SWS	93	1	11	164	1	11	97	5	14
Alpowa	SWS	91	2	10	153	4	10	114	3	13
WPB 926	HRS	79	6	13	135	7	12	74	7	15
Centennial	SWS	88	4	11	154	3	11	125	1	12
Idaho 392	SWS	84	5	11	152	5	11	116	2	13

Entry	Market class	--- 1994 --- Parma Yield	Yield rank	Protein	--- 1994 --- Weiser Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	140	2	12	140	2	12
Klasic	HWS	134	4	12	131	5	12
Penawawa	SWS	141	[illegible]	11	132	4	11
Alpowa	SWS	138	3	11	142	1	11
WPB 926	HRS						
Centennial	SWS	131	5	11	136	3	11
Idaho 392	SWS	130	6	10	125	6	11

Performance of Idaho 377s in UI District III Extension Trials, 1992-1994
Data provided by B. Brown and L. Robertson

Entry	Market class	--- 1992 --- Kimberly Yield	Yield rank	Protein	--- 1992 --- Rupert Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	119	1	12	145	1	13
Klasic	HWS	100	6	12	98	7	13
Penawawa	SWS	101	5	13	141	3	10
Alpowa	SWS	112	3	11	141	2	11
WPB 926	HRS	97	7	16	102	6	14
Centennial	SWS	116	2	11	138	4	11
Idaho 392	SWS	104	4	11	135	5	10

Entry	Market class	--- 1993 --- Kimberly Yield	Yield rank	Protein	--- 1993 --- Rupert Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	123	3	9	119	5	12
Klasic	HWS	82	7	9	108	7	10
Penawawa	SWS	128	1	9	129	1	10
Alpowa	SWS	116	4	9	127	2	10
WPB 926	HRS	116	5	9	112	6	13
Centennial	SWS	116	6	10	121	4	11
Idaho 392	SWS	128	2	9	127	3	10

Entry	Market class	--- 1994 --- Kimberly Yield	Yield rank	Protein	--- 1994 --- Rupert Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	143	2	11	121	3	11
Klasic	HWS	122	6	10	112	6	11
Penawawa	SWS	131	5	11	113	5	13
Alpowa	SWS	150	1	11	125	2	12
WPB 926	HRS	108	7	13	104	7	14
Centennial	SWS	139	3	11	126	1	11
Idaho 392	SWS	134	4	11	117	4	12

Performance of Idaho 377s in UI District IV Extension Trials, 1992-1994
Data provided by B. Brown and L. Robertson

Entry	Market class	--- 1992 ---- Ririe Yield	Ririe Yield rank	Ririe Protein	--- 1992 ---- Aberdeen Yield	Aberdeen Yield rank	Aberdeen Protein
		bu/ac	rank	%	bu/ac	rank	%
Idaho 377s	HWS	69	1	11	71	3	17
Klasic	HWS	47	5	10	73	2	15
Penawawa	SWS	62	3	10	58	7	16
Alpowa	SWS	63	2	11	61	5	12
WPB 926	HRS	46	6	13	64	4	17
Centennial	SWS	43	7	12	77	1	13
Idaho 392	SWS	60	4	11	61	5	15

Entry	Market class	--- 1993 ---- Ririe Yield	Ririe Yield rank	Ririe Protein	--- 1993 ---- Aberdeen Yield	Aberdeen Yield rank	Aberdeen Protein
		bu/ac	rank	%	bu/ac	rank	%
Idaho 377s	HWS	134	1	10	128	1	13
Klasic	HWS	126	3	11	119	3	12
Penawawa	SWS	120	4	10	119	2	11
Alpowa	SWS	90	6	10	110	7	12
WPB 926	HRS	102	5	12	117	4	13
Centennial	SWS	127	2	10	114	6	12
Idaho 392	SWS				116	5	11

Entry	Market class	--- 1994 --- Rexburg Yield	Rexburg Yield rank	Rexburg Protein	--- 1994 --- Aberdeen Yield	Aberdeen Yield rank	Aberdeen Protein
		bu/ac	rank	%	bu/ac	rank	%
Idaho 377s	HWS	74	1	13	96	1	11
Klasic	HWS	68	3	14	79	3	11
Penawawa	SWS	54	7	15	72	6	13
Alpowa	SWS	74	2	13	78	4	13
WPB 926	HRS	66	4	14	80	2	12
Centennial	SWS	57	6	14	72	7	13
Idaho 392	SWS	60	5	14	74	5	12

Performance of Idaho 377s in UI District IV Extension Trials, 1992-1994
Data provided by B. Brown and L. Robertson

Entry	Market class	--- 1992 ---- Soda Springs Yield	Yield rank	Protein	--- 1992 --- Idaho Falls Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	77	2	13	31	1	16
Klasic	HWS	61	7	14	7	7	16
Penawawa	SWS	70	4	14	10	6	15
Alpowa	SWS	84	1	13	28	3	12
WPB 926	HRS	68	5	16	28	2	16
Centennial	SWS	67	6	13	20	5	14
Idaho 392	SWS	73	3	13	24	4	15

Entry	Market class	--- 1993 ---- St Anthony Yield	Yield rank	Protein	--- 1993 ---- Idaho Falls Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	52	1	8	54	1	11
Klasic	HWS	40	6	9	42	3	12
Penawawa	SWS	48	3	8	36	4	10
Alpowa	SWS	47	4	8	29	7	10
WPB 926	HRS	40	6	10	47	2	13
Centennial	SWS	49	2	8	32	5	8
Idaho 392	SWS	44	5	8	31	6	10

Entry	Market class	--- 1994 ---- Soda Springs Yield	Yield rank	Protein	--- 1994 ---- Idaho Falls Yield	Yield rank	Protein
		bu/ac		%	bu/ac		%
Idaho 377s	HWS	43	1	15	22	5	13
Klasic	HWS	38	2	15	15	7	15
Penawawa	SWS	37	3	14	24	4	11
Alpowa	SWS	36	4	14	24	3	9
WPB 926	HRS	32	5	18	15	6	14
Centennial	SWS	30	6	15	30	1	10
Idaho 392	SWS	28	7	14	29	2	10

Performance of Idaho 377s in UI Extension Trials, Summary1992-1994
Data provided by B. Brown and L. Robertson

District II

Entry	Market class	Average Yield	Yield Rank	Protein
		bu/ac	sum*	%
Idaho 377s	HWS	115	18	12.0
Klasic	HWS	102	37	12.4
Penawawa	SWS			
Alpowa	SWS			
WPB 926	HRS			
Centennial	SWS	116	20	11.3
Idaho 392	SWS	112	28	11.0

District III

Entry	Market class	Average Yield	Yield Rank	Protein
		bu/ac	sum	%
Idaho 377s	HWS	128	15	11.4
Klasic	HWS	104	39	11.0
Penawawa	SWS	124	20	10.7
Alpowa	SWS	129	14	10.6
WPB 926	HRS	106	38	13.2
Centennial	SWS	126	20	10.7
Idaho 392	SWS	124	22	10.5

District IV Dryland

Entry	Market class	Average Yield	Yield Rank	Protein
		bu/ac	sum	%
Idaho 377s	HWS	46	11	12.8
Klasic	HWS	34	32	13.7
Penawawa	SWS	37	24	11.8
Alpowa	SWS	41	22	11.1
WPB 926	HRS	38	26	14.3
Centennial	SWS	38	25	11.4
Idaho 392	SWS	38	27	11.6

District IV Irrigated

Entry	Market class	Average Yield	Yield Rank	Protein
		bu/ac	sum	%
Idaho 377s	HWS	95	8	12.3
Klasic	HWS	85	19	12.1
Penawawa	SWS	81	29	12.2
Alpowa	SWS	79	26	11.9
WPB 926	HRS	79	25	13.5
Centennial	SWS	82	29	12.2
Idaho 392	SWS			

* Lower rank sum preferred

Performance of Idaho 377s in Washington State Extension Trials, 1992 and 1993
Data provided by B. Miller and K. Konzak

Entry	Market class	1993 Bickleton Yield bu/ac	1993 Bickleton Yield rank	1993 Bickleton Protein %	1993 Dayton Yield bu/ac	1993 Dayton Yield rank	1993 Dayton Protein %	1992 & 93 Fairfield Yield bu/ac	1992 & 93 Fairfield Yield rank	1992 & 93 Fairfield Protein %	1993 Farmington Yield bu/ac	1993 Farmington Yield rank	1993 Farmington Protein %	1993 Lamont Yield bu/ac	1993 Lamont Yield rank	1993 Lamont Protein %	1993 Dusty Yield bu/ac	1993 Dusty Yield rank	1993 Dusty Protein %
Idaho 377s	HWS	53	7	11	76	9	12	56	3	11	79	7	11	54	4	16	49	2	10
Klasic	HWS	52	10	10	65	24	13	49	20	11	54	20	12	37	26	15	36	28	11
Penawawa	SWS	53	6	11	73	15	11	56	4	9	44	24	9	40	22	14	46	9	11
Alpowa	SWS	50	11	11	73	13	10	53	8	9	41	25	8	48	11	13	51	1	9
WPB 926	HRS	52	9	11	73	16	12	47	21	12	97	3	13	42	19	17	42	20	12
Centennial	SWS	56	1	10	75	11	10	55	6	10	67	11	10	55	2	14	49	3	10
Idaho 392	SWS	52	8	11	71	18	10	50	14	9	56	17	9	49	9	13	49	4	9

Entry	Market class	1992 & 93 Lind, Dryland Yield bu/ac	1992 & 93 Lind, Dryland Yield rank	1992 & 93 Lind, Dryland Protein %	1992 & 93 Mayview Yield bu/ac	1992 & 93 Mayview Yield rank	1992 & 93 Mayview Protein %	1992 & 93 Pullman Yield bu/ac	1992 & 93 Pullman Yield rank	1992 & 93 Pullman Protein %	1992 & 93 Reardon Yield bu/ac	1992 & 93 Reardon Yield rank	1992 & 93 Reardon Protein %	1992 & 93 R. Slope Yield bu/ac	1992 & 93 R. Slope Yield rank	1992 & 93 R. Slope Protein %	Average 1993 Yield bu/ac*	Average 1993 Rank sum*	Average 1993 Protein %
Idaho 377s	HWS	28	5	14	49	1		73	1	12	72	3	11	103	11	11	63	77	11.9
Klasic	HWS	24	19	15	34	21		62	15	13	58	22	12	90	21	11	52	344	12.4
Penawawa	SWS	29	3	12	47	2		61	19	11	68	10	9	113	3	10	59	158	10.5
Alpowa	SWS	29	1	12	39	16		61	17	10	73	2	10	108	6	9	58	161	10.1
WPB 926	HRS	24	23	16	38	17		66	5	13	62	19	13	87	22	13	56	281	13.2
Centennial	SWS	29	2	12	47	3		67	4	10	75	1	10	107	7	10	62	74	10.6
Idaho 392	SWS	27	13	12	42	11		66	6	10	68	9	10	96	17	10	57	196	10.3

* Average and sum of ranks weighted to reflect the different number of years at each location.

Pacific Northwest Grain Yield of IDO377S in Western Regional Nursery, 1991 to 1993.

Entry	Market class	---- 1993 ---- Yield	Yield rank*	---- 1992 ---- Yield	Yield rank	---- 1991 ---- Yield	Yield rank	Average yield	Sum of ranks
		bu/ac		bu/ac		bu/ac		bu/ac	
Idaho 377s	HWS	98	1	99	1	94	5	97	7
Klasic	HWS	83	31	82	37	82	37	83	105
Penawawa	SWS	96	3	98	3	88	15	94	21
Serra	HRS	87	23	92	13	89	28	89	64
McKay	HRS	85	27	86	30	88	40	86	97
Idaho 392	SWS	89	18	95	6	91	25	92	49

* Rank of each lines yield among all wheat entries into the Western Regional Nursery.

Pacific Northwest Disease Reactions of IDO377S in Western Regional Nursery, 1993.

	1993 Stripe Rust						1993 Leaf Rust					1993 Stem Rust	
Entry	Spillman Farm	Observatory Hill	Whitlow Farm	18-May Mt. Vernon	3-Jun Mt. Vernon	18-Jun Mt. Vernon	Spillman Farm	Observatory Hill	Lind Wa	28-Jun Walla Walla	16-Jul Walla Walla	30-Jul Lind Wa	12-Aug Lind Wa
	%/T	%/T	%/T	%/T	%/T	%/T	%	%	%	%	%	%	%
Idaho 377s	0/0	0/0	0/0	0/0	1/2	0/0	30	20	1	1	30	0	0
Klasic	2/2	0/0	1/5	1/8	1/2	5/5	-	30	20	2	5	0	0
Penawawa	2/2=5	0/0	1/2	2/2	0/0	20/2=5	10	20	0	0	5	5	2
Serra	0/0	0/0	1/2	0/0	1/2	0/0	60	40	30	5	10	0	0
McKay	5/2,8	2/8	1/2	2/2	1/2	1/2	10	10	2	0	10	0	0
Idaho 392	1/2	1/2	0/0	0/0	0/0	0/0	50	20	20	2	20	0	0

Western Regional Nursery Milling and Baking Data for IDO377S and Check Cultivars, 1991 to 1993

Year	Cultivar	Test weight	Grain hardness	Wheat protein	Flour yield	Break flour yield	Flour ash	Bake absor.	Mixing time	Loaf volume	Bread crumb	Starch viscosity	Color
		#/bu	0 to 100	%	%	%	%	%	min	ml		RVA units	
Average	IDO377S	62.7	66	11.8	66.8	11.6	0.4	66.3	4.2	838	5	241	
Average	Klasic	62.5	57	12.1	68.7	11.7	0.4	66.3	5.1	943	4	222	
Average	McKay	60.9	71	12.2	70.4	12.6	0.3	63.9	4.0	895	5		
Average	OR487255	62.8	64	11.8	69.9	12.3	0.4	66.3	4.0	870	5	223	
93	IDO377S	63.0	73	11.2	67.9	10.5	0.4	66.4	4.0	860	4	218	Satisfactory
93	Klasic	62.6	67	11.3	70.2	11.1	0.4	66.9	4.3	890	6	168	Questionable
93	McKay	61.2	81	11.5	72.0	12.1	0.4	65.3	3.6	810	8		
93	OR487255	63.0	81	11.0	70.6	10.9	0.4	67.5	4.0	865	5	173	Satisfactory
92	IDO377S	62.3	63	12.2	65.7	9.4	0.4	65.6	3.3	865	5	240	Satisfactory
92	Klasic	62.0	53	12.5	65.2	9.0	0.4	66.4	4.3	995	3	238	Questionable
92	McKay	60.4	60	11.9	67.9	9.5	0.3	63.3	4.2	935	3		
92	OR487255	62.1	50	12.2	68.3	10.5	0.4	66.2	3.3	895	5	239	Questionable
91	IDO377S	62.8	63	11.9	66.8	15.0	0.4	66.8	5.3	790	5	264	
91	Klasic	62.9	51	12.5	70.7	15.1	0.4	65.5	6.7	945	4	259	
91	McKay	61.0	72	13.1	71.2	16.1	0.3	63.1	4.1	940	3	91	
91	OR487255	63.2	62	12.2	70.9	15.4	0.4	65.1	4.6	850	6	256	

Milling and quality of hard spring wheat, irrigated trials, Twin Falls and Aberdeen, 1989 to 1993.

Higher scores preferred for all quality traits.

Cultivar	Flour protein	Flour yield	Mixograph peak	Mixograph height	Mixograph toler.	Mix time	Dough type	Bake absorp.	Loaf volume	texture score	crumb score
	%	%	min	cm	degrees	min	1 to 8	%	ml	1 to 5	1 to 5
IDO377S	10.4	66.6	3.1	5.5	72.6	2.6	5.7	59.2	789	2.4	2.1
IDO462	11.4	70.4	3.8	5.5	74.0	3.2	6.0	60.0	873	2.7	2.3
WPB926	12.0	68.1	3.0	6.3	67.8	2.6	6.2	61.0	923	2.7	2.2
Klasic	11.1	69.3	4.1	6.0	72.0	3.5	6.4	59.7	883	2.7	2.1
906R	12.1	67.4	3.0	6.4	68.4	2.7	6.4	61.3	949	2.8	2.6
Copper	11.2	69.6	2.7	6.1	70.0	2.4	6.3	61.0	885	2.9	2.6
McKay	10.5	69.3	3.4	5.7	68.6	3.1	5.7	60.0	791	2.6	2.3
Pondera	12.0	67.0	1.9	6.6	65.6	1.8	6.4	61.1	984	2.8	2.3
Serra	10.5	69.0	3.8	5.7	71.0	3.4	5.9	58.7	829	2.5	2.6
Spillman	10.9	68.0	2.2	6.2	56.3	1.9	5.7	61.0	848	2.8	2.4
Vandal	12.4	67.4	3.0	6.6	60.7	2.8	6.4	61.2	905	3.1	2.5
Average	11.3	68.4	3.1	6.1	67.9	2.7	6.1	60.4	878.1	2.7	2.4

Milling and quality of hard spring wheat, irrigated and dryland trials, Tetonia, 1989 to 1992.

Higher scores preferred for all quality traits.

Cultivar	Flour protein	Flour yield	------ Mixograph ----- peak	height	toler.	Mix time	Dough type	Bake absorp.	Loaf volume	texture score	crumb score
	%	%	min	cm	degrees	min	1 to 8	%	ml	1 to 5	1 to 5
IDO377S	12.6	64.9	2.8	5.8	69.4	2.7	6.4	60.3	926	2.9	2.6
IDO462	13.6	67.1	3.7	5.9	77.9	3.5	6.8	61.5	1032	2.9	2.0
WPB926	13.7	64.9	2.6	6.5	69.6	2.7	6.5	62.4	1011	3.0	2.3
Klasic	12.6	66.3	3.3	6.7	71.1	3.5	6.9	60.6	1000	3.4	1.9
WPB906R	13.9	64.4	2.7	6.2	65.2	2.4	6.5	62.4	989	3.1	2.1
Copper	13.0	66.4	2.5	6.5	67.3	2.4	6.1	62.3	904	2.9	2.7
IDO463	12.4	66.2	3.3	6.7	71.9	3.5	7.2	60.4	935	2.9	2.5
NK751	12.0	67.6	2.3	5.9	66.2	1.6	6.9	62.1	950	3.6	2.3
Pondera	13.9	66.1	2.4	6.4	66.5	2.4	6.6	62.8	1027	3.2	2.7
Serra	12.6	67.5	4.7	5.5	73.7	4.3	6.8	59.2	979	3.1	2.5
Spillman	12.6	65.7	1.8	6.8	55.0	1.8	5.6	61.8	906	2.9	2.3
Vandal	14.6	65.2	2.8	7.4	59.2	3.0	6.7	63.3	1005	3.1	2.0
Average	13.1	66.0	2.9	6.4	67.8	2.8	6.6	61.6	972.1	3.1	2.3

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Idaho 377s PVP Application

Exhibit E. Statement of the Basis of Applicant's Ownership

Idaho 377s was derived from a 1981 cross made under the direction Dr. D.W. Sunderman during the management of the Aberdeen wheat breeding program by the USDA-ARS in cooperation with the University of Idaho. In 1987 ownership of the breeding program and germplasm was transferred by the USDA-ARS to the sole ownership of the University of Idaho. Selection, development, and evaluation of Idaho 377s was completed by Dr. E. Souza of the University of Idaho. The University of Idaho has sole ownership of the variety Idaho 377s as specified in the University of Idaho Faculty -Staff Handbook (Sec. 3540, C).