No. 7300096

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Purdue University Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

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

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS IFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Oasis'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 26th *day of* February *in the year of our Lord one thousand nine hundred and* seventy-four

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(2-12-71)

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

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION Oasis	2. KIND NAME Wheat	FOR OFFICIAL USE ONLY PVPO NUMBER 73096
3. GENUS AND SPECIES NAME Triticum aestivum	4. FAMILY NAME *(Botanical)* Gramineae 5. DATE OF DETERMINATION March 29, 1973	FILING DATE 6-14-73 TIME 4:00 P.M. FEE RECEIVED $ 750.00 CHARGES —
6. NAME OF APPLICANT(S) Purdue University Agricultural Experiment Station	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* Agricultural Experiment Station Purdue University West Lafayette, Indiana 47907	8. TELEPHONE AREA CODE AND NUMBER 317-749-2461
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)* Division of Land Grant University	10. STATE OF INCORPORATION Established by Federal Law, Hatch Act, 1889	11. DATE OF INCORPORATION 1889

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:
Dr. H. H. Kramer, Director
Agricultural Experiment Station
Purdue University
Lafayette, Indiana 47907

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

[X] 12A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52, P.L. 91-577)*

[X] 12B. Exhibit B, Botanical Description of the Variety

[X] 12C. Exhibit C, Objective Description of the Variety

[X] 12D. Exhibit D, Data Indicative of Novelty

[X] 12E. Exhibit E, Statement of the Basis of Applicant's Ownership

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable. *(See Section 52, P.L. 91-577).*

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a), P.L. 91-577) (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

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

14C. If "Yes," to 14B, how many generations of production beyond breeder seed?
Three

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is 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 (P.L. 91-577).

19 Sept 1973
(DATE)

Herbert H. Kramer
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

12A. Exhibit A. Origin and Breeding history of Oasis CI15,929

Oasis was developed at the Purdue University Agricultural Experiment Station in cooperation with the Agricultural Research Service, United States Department of Agriculture.

The new variety is essentially an Arthur 71 type with added resistance to Septoria tritici from Bulgaria 88. This is the first utilization of this source of resistance in a commercial variety in the United States. The detailed parentage is: Atr 71/5/Atr*3/3/Ribox/2/Rly*2/Rly 67 (Purdue 6559 sel.) *2/4/Atr*2/3/Rly 67*2/2/Rly/Bulgaria 88 (P.I. 94407).

The new variety was bred by developing two backcross families in Arthur types. One family brought resistances from Bulgaria 88 and Transfer, the second brought in resistances to Hessian fly from Ribeiro (via Ribox) and resistance from Transfer. These two backcross families were intercrossed and the F_1 plants backcrossed to Arthur 71. Following the final backcross, plant selections were made in the F_1 and F_2 generations. Line selection occurred in the F_3, F_4 and F_5 generations. The final variety is a composite of 22 lines derived from 5 F_1 plants. Breeder's seed in 1972 was in the F_6 generation.

The new variety is similar to Arthur 71 in resistances to Hessian fly (H_5 gene), leaf rust (Transfer source), stem rust, powdery mildew, and loose smut. In addition, it possesses the single gene dominant resistance of Bulgaria 88 to Septoria tritici. Oasis has been tested in Indiana and in the regional Uniform Eastern Soft Wheat Nursery for two years, 1971-72, under the designation Purdue 6834 Composite. Data from performance trials indicate that Oasis is similar to Arthur 71 in yield potential, test weight and straw strength in the absence of Septoria tritici. Under epidemics of Septoria tritici the new variety should be superior to Arthur 71 and Abe.

Addendum to Exhibit A

PVPO 73096 Oasis Wheat

Oasis has bred uniform in general appearance and in resistance to diseases and Hessian fly. The inspection report of breeders seed of Oasis (6834 composite) by the Indiana Crop Improvement Association shows no off type plants in 10,000 counted (report attached).

Research by R. E. Finney (Purdue University M.S. Thesis "Genetic stability in wheat of leaf rust resistance derived from the genera Agropyron and Aegliops") indicates that the LR 9 resistance to leaf rust (as in Oasis) in Riley 67 had a gametic mutation rate from resistance to susceptibility of 0.78 per 1000 gametes. The resistance is also linked to the pollen killer factor such that segregating heterozygous types produce very few susceptible segregates. Our experience with Riley 67, Arthur 71 and Abe wheats also with the LR 9 resistance to leaf rust derived from Aegilops umbellulata via of Transfer indicates there will be no problem in maintaining breeders seed in spite of the 0.78 per 1000 gametic mutation rate from LR 9 to susceptibility.

12B. Exhibit B. Botanical Description of Oasis

Oasis is a common soft red winter wheat, Triticum aestivum L.

Oasis is similar to Arthur and Arthur 71 in winterhardiness.

Oasis has been similar to Arthur and Arthur 71 in flowering date at Lafayette, Indiana and in regional trials in 1971. From October 1 plantings at Lafayette it begins flowering in about 227 days and completes flowering in about 7 days. It is recognized that varieties respond differentially to seasonal variation in temperature and planting date.

Oasis is similar to Arthur and Arthur 71 in height, averaging 98 cm in regional trials for two years.

Oasis is green at booting similar to Arthur and somewhat darker than Arthur 71. Anther color is yellow.

Athocyanin is typically absent from the stem but may show a slight development when infected by Barley Yellow Dwarf virus. The internodes are hollow. A slight waxy bloom is commonly present on the stems. Lodging resistance is intermediate like Arthur 71. It is resistant to node-bending described in Agron. J. 49:518-519. 1957.

The auricles are hairy (commonly few) and generally lacking in anthocyanin.

Leaves are a medium green on young plants and at booting. About 90% of the flag leaves are flat and about 10% show slight twisting. A slight waxy bloom is typically present.

Spikes are intermediate to lax similar to Arthur and Arthur 71 and strap to tapering in shape. Spikes are similar to Arthur and Arthur 71 in size averaging 6.05 cm in a production field at Lafayette, Indiana in 1972. Spike face width averaged 11 cm and spike edge width averaged 9 cm. Spike lengths and widths vary somewhat with stand and production levels. Spikes are awnletted with longest awnlet per spike ranging from 1 to 5 cm and averaging about 3 cm as does Arthur 71. Spikes are yellow and generally nodding at the combine ripe stage.

The glumes of Oasis are similar to those of Arthur and Arthur 71. They are mid-long, mid-wide and yellow at maturity. Shoulders are rounded (to square) and mid-wide. Beaks are mid-wide, obtuse and 0.5 to 1.5 mm long.

The coleoptile color is a light purple. Color frequently occurs as a linear band covering only a part of the coleoptile as in Arthur 71.

Seedling anthocyanin has not occurred in our observations.

Kernel characters of Oasis are similar to Arthur 71.

Kernels are red in color and ovate in shape with rounded cheeks and a mid-deep crease. The brush is medium in size and mid-long. The embryo is large (to medium) in size. Kernels average about 6 mm long and about 3 mm wide and about 34 grams per 1000.

Oasis has been resitant to stem rust races 15B, 29, 38 and 56 in field nursery tests as has Arthur 71. The new variety has resistance to leaf rust derived from Transfer (LR9) as well as other resistances derived from Arthur 71. It has been resistant to leaf rust races 5, 15, 35, 76, 104, and UN9 in field nursery tests at Lafayette, Ind. A new race attacking the Transfer resistance was isolated at Purdue University from single pustule isolations of a fall infection.

Oasis possesses the single gene dominant resistance to Septoria tritici derived from Bulgaria 88. It has provided protection from Septoria tritici in the field at Lafayette, Indiana.

Oasis appears similar to Arthur 71 in excellent resistance to loose smut and to powdery mildew both derived from Arthur.

The new variety has been slightly superior to Arthur in soft wheat quality as summarized by W. T. Yamazaki of the Soft Wheat Quality Laboratory, Wooster, Ohio (attached).

Oasis has been similar to Arthur 71 in yield (Tables 1 and 2).

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

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

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Herbert H Kramer

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Purdue University Agricultural Experiment Station
Purdue University
Lafayette, Indiana 47907

FOR OFFICIAL USE ONLY

PVPO NUMBER 73096

VARIETY NAME OR TEMPORARY DESIGNATION
OASIS

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

1. KIND:

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

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____

[ ] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][2][7] FIRST FLOWERING [2][3][4] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[0][0] NO. OF DAYS *EARLIER* THAN ..... [1] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][0] NO. OF DAYS *LATER* THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

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

[0][9][8] CM. HIGH

[0][0] CM. TALLER THAN ..... [1] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][0] CM. SHORTER THAN ..... [1] 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] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES (*Originating from node above ground*)

[2][3] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][0] MM. LEAF WIDTH (*First leaf below flag leaf*)

[2][0] CM. LEAF LENGTH (*First leaf below flag leaf*):

12D. Exhibit D. Data indicative of Novelty

Oasis is novel in that the single dominant gene resistance to Septoria tritici from Bulgaria 88 has been added to the Arthur 71 type through backcrossing and intercrossing backcross derivatives utilizing Arthur and Arthur 71 in the backcrosses.

The resistance has been described from research at Purdue University:

Rillo, A. O. and R. M. Caldwell. 1966. Inheritance of resistance to Septoria tritici in Triticum aestivum subsp. vulgare "Bulgaria 88" (Abs). Phytopathology 56:897.

Resistance is expressed as a low amount of fruiting of the organism and with fewer leaves with leisons (Table 4).

Oasis is most like Arthur 71 in most characteristics.

Table 4. Reaction of varieties to *Septoria tritici* in the field at Lafayette, Indiana in 1972.

Variety	Disease severity,* %	Lesion size**	Density of Pycnidia in lesion†
Oasis	19	4	a
Arthur 71	38	4	d
Arthur	38	4	e
Monon	62	4	d
Knox 62	38	4	c

* Percent of lower leaves showing symptoms of disease
** Arbitrary scale: 1 = smallest to 4 = largest
†a = no pycnidia; c = moderately abundant pycnidia; d = dense pycnidia; e = very dense pycnidia

Exhibit E Addendum

Plant Variety Protection Number 73096, Wheat, 'Oasis'

I hereby state that Purdue University is the sole owner of 'Oasis' Wheat.

Signed H H Kramer
H. H. Kramer, Director
Purdue University
(Indiana) Agricultural
Experiment Station

'Oasis' 73-96

FORM GR-470-6 (REVERSE)

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

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

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

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

[0 6] CM. LENGTH

[1 1] MM. WIDTH

12. GLUMES AT MATURITY:

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

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

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

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

13. COLEOPTILE COLOR:

[3] 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

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

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

[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 6] MM. LENGTH [0 3] MM. WIDTH [0 3] 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) 13B, 29, 38, 56

[2] LEAF RUST (Races) 5, 15, 35, 76, 164, UN9

[0] STRIPE RUST (Races) _____

[2] LOOSE SMUT

[2] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Sextoria Tritici

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

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[1] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [2] GP [2] A [2] B [2] C [2] D [2] E [2] F [2] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Arthur 71	Seed size	Arthur 71
Leaf size	Arthur 71	Seed shape	Arthur 71
Leaf color	Arthur	Coleoptile elongation	Arthur 71
Leaf carriage	Arthur 71	Seedling pigmentation	Arthur 71

INSTRUCTIONS

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

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

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

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