No. 7600040

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Clarence Eklund

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. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

Congratulations Clarence. LB

WHEAT

'Eklund'

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* 11th *day of* August *in the year of our Lord one thousand nine hundred and* seventy-seven

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL 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 EKLUND	2. KIND NAME Hard Red Winter Wheat	FOR OFFICIAL USE ONLY PV NUMBER 7600040
3. GENUS AND SPECIES NAME Triticum aestivum ssp. vulgare	4. FAMILY NAME *(Botanical)* Gramineae	FILING DATE 2·9·76 / TIME 11:30 A.M.
	5. DATE OF DETERMINATION 6/1/70	FEE RECEIVED $250.00 $250.00 $250.00 / BALANCE DUE $ 2-24-76 $ 4-26-77 $ 6-13-77
6. NAME OF APPLICANT(S) Clarence Eklund	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* Route 2 Roseau, Minnesota 56751	8. TELEPHONE AREA CODE AND NUMBER (218) 425-7254
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

Charles Habstritt
Assistant Professor Agronomy
University of Minnesota, Crookston
Crookston, Minnesota 56716

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

[X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

[X] 13B. Exhibit B, Botanical Description of the Variety

[X] 13C. Exhibit C, Objective Description of the Variety

[X] 13D. Exhibit D, Data Indicative of Novelty

[X] 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

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). (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? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

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.

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.

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

Feb 6, 1976
(DATE)

Clarence Eklund
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

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EXHIBIT A

Origin and Breeding History of the Variety

1. Eklund winter wheat developed through natural selection in a field of Minter winter wheat.

2. Minter winter wheat was selected from a backcross of Hope and Minturki. Minter was released by the Minnesota Agricultural Experiment Station and ARS - USDA in 1949.

3. The taller, stronger strawed and awnless Eklund was first noticed in a Minter field in the fall of 1970. Seed was saved from the Minter field and planted in the fall of 1970. The first Eklund plants were selected, hand threshed, and seeded in the fall of 1971.

4. The genetic make up of the variety appears to be stable although the breeder fields appear to have about 0.2% bearded types.

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EXHIBIT B

Botanical Description of the Variety

Eklund is a tall type hard red winter wheat (2 - 4 inches taller than Minter) with winter hardiness and lodging resistance equal to Minter when grown in Roseau, County Minnesota.

Plant winter habit, maturity 2 days earlier than Minter, tall; stem white, strong; spike apically awnleted, fusiform to oblong, lax, erect; glumes glabrous, white, long, wide; shoulder oblique; beaks acute; awnlets white 5 to 30 mm. long.

Kernels of Eklund are hard, red, approximately 6 mm. long and 3 mm. wide, elliptical; cheeks rounded; brush, medium.

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): Mr. Clarence Eklund

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*): Box 130, Route 2, Roseau, MN 56751

FOR OFFICIAL USE ONLY
PVPO NUMBER: 7640
VARIETY NAME OR TEMPORARY DESIGNATION: Eklund

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

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[0 9 3] FIRST FLOWERING [0 9 7] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[0 2] NO. OF DAYS *EARLIER* THAN Minter..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
15 days earlier than Chris
[ ] NO. OF DAYS *LATER* THAN ..... [ ] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):
[1 1 0] CM. HIGH
[1 0] CM. TALLER THAN Minter..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[ ] CM. SHORTER THAN ..... [ ] 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
[1] 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 5] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[ ] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[0 8] MM. LEAF WIDTH (*First leaf below flag leaf*) 5 - 10
[4 0] CM. LEAF LENGTH (*First leaf below flag leaf*): 24 - 40

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FORM GR-470-6 (REVERSE) EKlund '76-40

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

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

[2] 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): _____

[1 2] CM. LENGTH

[0 8] MM. WIDTH 8 - 12

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.)

[1] 1 Glabrous 2 Pubescent

[2] 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] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] 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

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

86% Light Brown
14% Brown

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

[0 6] MM. LENGTH [0 3] MM. WIDTH [3 2] 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'

[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)

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

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

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

[0] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[0] OTHER (Specify) _____ 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	Minter	Seed size	Minter
Leaf size	Minter	Seed shape	Minter
Leaf color	Minter	Coleoptile elongation	Minter
Leaf carriage		Seedling pigmentation	Minter

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.

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EXHIBIT D

DATA INDICATIVE OF NOVELTY

Novelty is based on the unique combination of the following characters:

"Eklund" Hard Red Winter Wheat most closely resembles "Minter" Hard Red Winter Wheat except it is, (1) awnless (apically awnleted) where as Minter is awned, (2) Eklund is 1-4 inches taller than Minter, (3) Eklund shows better winter resistance than Minter.

EXHIBIT D - Data Indicative of Novelty

Data to indicate novelty, Table 9, was taken from the University of Minnesota Miscellaneous Report 24, 1977 edition. The novelty of Eklund centers around the fact that it is very tall, 1 - 7 inches taller than other winter wheat grown in Minnesota. Awnless (apically awnleted) where as the other winter wheats grown in Minnesota are awned. The most important agronomic characteristic is its excellent winter survival enabling Eklund to survive the severe winters of Minnesota.

Table 9. Characteristics of winter wheat varieties, 1974-76

VARIETY	SPIKE CHARACTER-ISTIC	HEADING (JUNE)	PLANT HEIGHT (INCHES)	WINTER SURVIVAL (PERCENT)	LODGING[1] (SCORE)	RUST REACTION[2] LEAF	RUST REACTION[2] STEM	TEST WEIGHT PER BUSHEL (POUNDS)	YIELD, BUSHELS/ACRE ST. PAUL 1976	YIELD, BUSHELS/ACRE ST. PAUL 1974-76	YIELD, BUSHELS/ACRE 4-LOCATION[3] AVERAGE
Gent	Awned	1	39	68	2.5	MR	R	61.5	33	43	42
Minter	Awned	5	44	87	4.0	MS	MS	61.2	30	30	38
Winoka	Awned	3	41	83	4.0	S	MR	61.3	38	35	38
Bronze	Awned	1	38	71	3.3	S	R	59.5	32	34	35
Centurk	Awned	1	38	63	2.5	S	MR	59.6	40	44	41
Froid	Awned	3	43	84	4.0	S	MR-S	60.0	31	30	37
Sundance	Awned	6	42	89	3.3	S	S	57.0	38	33	40
Warrior	Awned	3	40	58	3.3	S	S	60.0	-	32	-
Sentinel	Awned	2	38	92	3.3	S	MR	60.0	43	-	-
Lancota	Awned	2	38	77	3.0	S	MS-S	61.0	35	-	-
Eklund	Awnless	5	45	97	4.0	-	-	60.0	35	-	-
LSD 5%									5	4	3

[1] 1 = erect, 9 = flat. [2] Reaction to prevalent races: R = resistant, S = susceptible, MR = moderately resistant.

[3] 1975 and 1976 data from Waseca, Lamberton, Staples and Fosston

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CEREAL TECHNOLOGISTS

1435 Clay Street • No. Kansas City, Mo. 64116 • P. O. Box 7498

Doty Laboratories
INCORPORATED
TELEPHONE—GRand 1-8580
James W. Doty — Director

Report for Clarence Eklund
Roseau, Mn. 56751

Date December 22, 1976

Laboratory No. 7788

Sample: Eklund Winter Wheat

EXPERIMENTAL MILLING REPORT

WHEAT ANALYSIS

MOISTURE	11.10%
PROTEIN	11.90%
YIELD	71.6%

Milling Report: This wheat has very good milling properties.

Time SEDIMENTATION.....35

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CEREAL TECHNOLOGISTS

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Doty Laboratories
INCORPORATED
TELEPHONE—GRand 1-8580
James M. Doty—Director

Report for Clarence Eklund
Roseau, Mn. 56751

Date December 22, 1976

Laboratory No. # 7788

Sample Identification: Eklund Winter Wheat

Flour Analyses		Farinograph Results	
Protein	11.01 %	Mixing Peak	4 3/4 min.
Ash	0.421 %	Mixing Tolerance	5 1/2 min.
Moisture	14.10 %	Absorption	57.0 %
Malt to be added	oz.	M. T. I.	60
Amylograph Reading			

Flour analyses on 14% moisture basis

BAKING REPORT

Mixing Time	6 min.	Yeast	3.0 %
Absorption	60.0 %	Yeast Food	0.5 %
Fermentation Time	4 hours	Flour Color	94CY
Floor Time	30 min.	Crumb Color	94CY

PLANT RECOMMENDATIONS ON BREAD SCORE BASIS

Mixing Time	Short	min.
Absorption	Low	%
Fermentation Time	Normal	hours
Floor Time	Normal	min.
Yeast	Normal	%
Yeast Food	Normal	%

Buyer's Index 100

Remarks: This flour lacks sufficient mixing strength, and the protein is borderline for bakers use. A short dough mixing time produces strong doughs and a good load of bread. To be suitable for bakers use, this wheat should be blended with slightly higher protein wheats that have better mixing strength.

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CHEMIST

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BRABENDER CORPORATION, ROCHELLE PARK, N.J., U.S.A. FARINOGRAPH-PLASTOGRAPH

[redacted] Ecklund

Address

SAMPLE IDENTIFICATION #788, Eklund Winter Wht.

Mixing Peak 4 3/4 mins.

Mixing Tolerance 5 1/2 mins.

Absorption 57.0

MTI 60

Valorimeter 55

Date December 22, 1976

Laboratory No. [illegible]

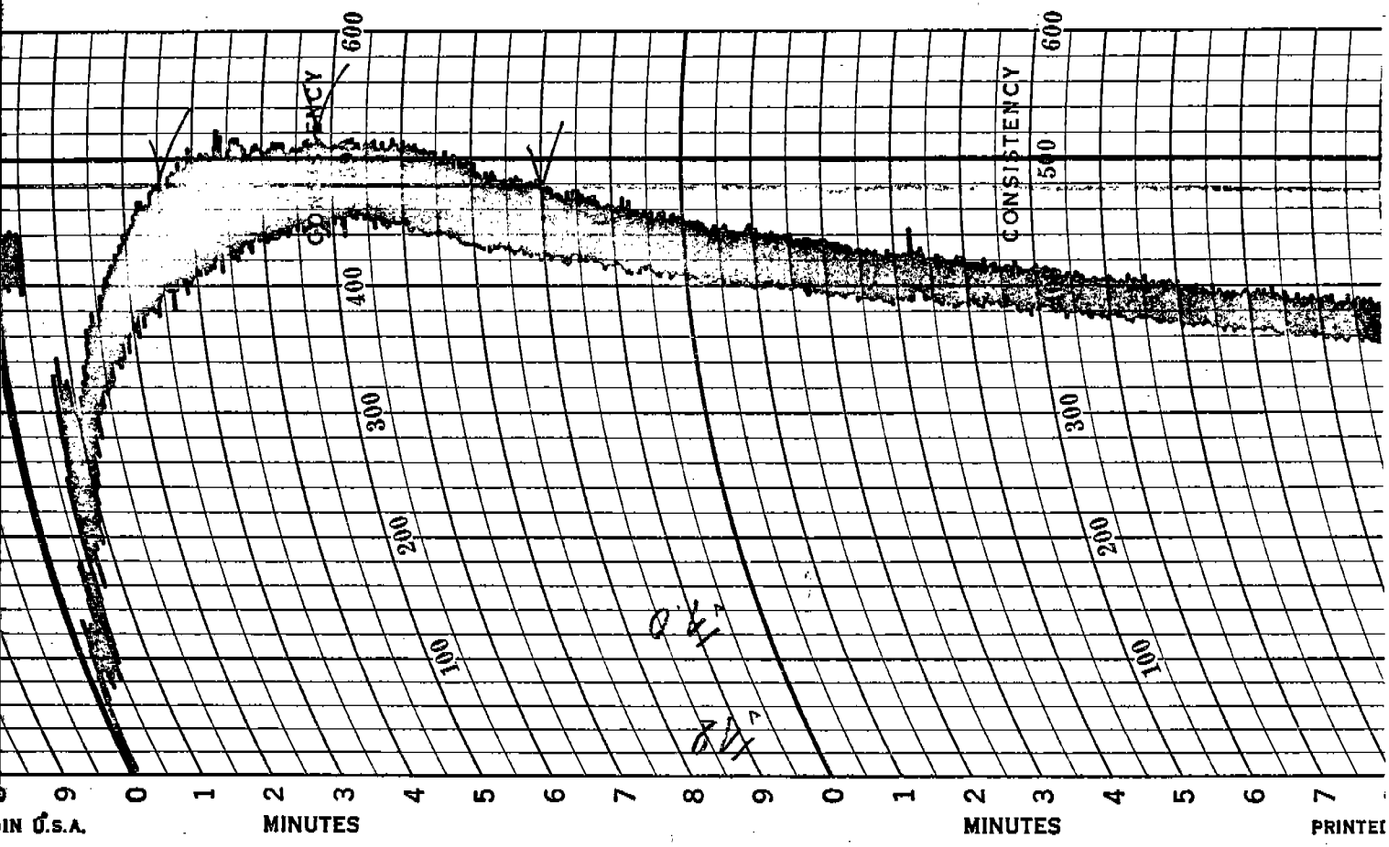

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EXHIBIT E

Statement of Applicants' Ownership

Clarence Eklund, Roseau, Minnesota, believes he is the sole owner of the Eklund variety of the hard red winter wheat for which he solicits a certificate of protection.

Clarence Eklund, made the selection out of Minter in the fall of 1971.