No. 7400046

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Illinois 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 [illegible] THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC [illegible] OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EX- [illegible] OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, [illegible] TING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT [illegible] HEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. [illegible] TED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS [illegible] CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPE[illegible] HE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RED CLOVER

'Redland'

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* tenth *day of* August *in the year of our Lord one thousand nine* [illegible]*dred and* seventy-eight

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

[illegible]*ry 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	2. KIND NAME	FOR OFFICIAL USE ONLY
REDLAND	Red Clover	PV NUMBER 7400046
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 1.2.74 / TIME 11:00 A.M.
Trifolium pratense	Leguminosae	FEE RECEIVED $ 250.00 / BALANCE DUE $ .00
	5. DATE OF DETERMINATION	$ 250.00 / $ .00
	October 1968	$ 250.00 / $ ~~.00~~

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
University of Illinois	Urbana, Illinois, 61801	(217) 333-0240

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Experiment Station	Illinois	1862

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

Dr. G. W. Salisbury, Director
Agricultural Experiment Station
College of Agriculture
Un. of Illinois at Urbana-Champaign
Urbana, Illinois 61801

For the University of Illinois-Urbana-Champaign by authority of the University of Illinois Board of Trustees, October 17, 1973.

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
- 1/25/78 [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.)* 02/1/78 [X] YES [X] 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.

1

(DATE)

Carl N. Hittle (Developer)
(SIGNATURE OF APPLICANT)

Dec 11 1973
(DATE)

G. W. Salisbury
Director of the Agricultural Experiment Station

FORM GR-470 (REVERSE)

RECEIVED JAN 2 PVPO

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, 6525 Belcrest Road, Hyattsville, Maryland 20782. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Insert the date the applicant determined that he had a new variety based on the definition in Section 41 (a) of the Act and decision is made to increase the seed.

13a First, give the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. Second, give the details of subsequent stages of selection and multiplication. Third, indicate the type and frequency of variants during reproduction and multiplication and state how these variants may be identified. Fourth, provide evidence on stability.

13b First, give any special characteristics of the seed and of the plant as it passes through the seedling stage, flowering stage and the fruiting stage. Second, describe the mature plant and compare it with a similar commercial variety grown under the same conditions, and indicate the differences.

13c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

13d Provide complete data indicative of novelty. Seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty may be submitted. Seeds submitted may be sterile.

13e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

EXHIBIT A

Origin and Breeding History of the Variety

1. Redland originated in Illinois. In a study to compare several methods of selection for improving the persistence of medium red clover, and at the same time maintain or improve other desirable agronomic characters, single-cross and open-pollinated progenies of long-lived field survivors, approximately 5 years old, were produced. The single crosses were produced in the greenhouse in the winter of 1955 and the open-pollinated seed was produced in the field in the summer of 1956. Parent plants of both single-cross and open-pollinated progenies were checked for self sterility and all were found to be self sterile. Since the percent survival, growth habit, vigor, virus resistance and flowering were similar for the two groups of progenies, selected survivors of the open-pollinated and single-cross progenies were bulked to produce the variety Redland.

   Approximately 50% of the long-lived survivors, used as parents of both single-cross and open-pollinated progeny, were from the variety Kenland and 50% were long-lived survivors from the following 9 red clover varieties; Emerson, Libel, Midland, Newton, Ottawa, Pennscott, Rahn, Van Atta and Van Fossen. Thus, Redland has a relatively broad gene base.

2. The main selection pressure, on the parents as well as single-cross and open-pollinated progenies, was for persistence (or resistance to crown and root rotting organisms), resistance to virus, vigor, and a high degree of resistance to southern anthracnose. Following the initial bulking of seed of single-cross and open-pollinated progenies, subsequent generations were produced under natural open-pollinated conditions, isolated to prevent any crossing with other genotypes.

   Yield tests were made at many locations in the North Central states. An example of the performance of this synthetic in comparison to Kenland, Lakeland and medium common red clover is indicated in the following yield data from Illinois. (Table 1).

(Exhibit A - continued)

Table 1
Dry Matter Yields, in Tons per Acre, of Several Red Clover Varieties Evaluated in Illinois.

Variety	Urbana 1966 T/A	DeKalb 1966 T/A	Urbana 1967 T/A	Urbana 1968 T/A	Urbana 1968 T/A	Urbana 1969 T/A	Mean T/A
Redland	5.42	3.72	4.19	3.69	4.80	3.35	4.20
Kenland	4.97	3.16	4.11	3.28	4.14	3.21	3.81
Lakeland	4.64	3.41	4.16	4.00	---	3.55	3.95
Common Red	4.89	---	4.16	3.42	---	3.47	3.98

3. There are no off-type variants produced and rouging is not required.

4. Since the long-lived parents of both single-cross and open-pollinated progenies were self sterile and intercrossed at random and since subsequent seed generations have been produced under strict isolation and open pollination, the synthetic was stable when produced and the stability has not changed in 8 generations. This is verified by the yields and percent survival of Redland as compared to other varieties in numerous tests: percent stand after 3 years; percent winter hardiness; resistance to powdery mildew; leafhopper resistance; and northern and southern anthracnose resistance. This selection is very stable.

The cultivar is maintained by breeders seed produced under cage isolation.

EXHIBIT B

Botanical Description of the Variety

Redland is a medium red clover variety and is similar in plant characteristics to Kenland, Rahn, Midland and other Corn Belt varieties. In Illinois trials, a much higher percentage of plants of Redland survive into the end of the second growing season following planting than other medium red clover varieties. Because of the greater persistence of Redland, the second and third cut yields of the variety are usually superior to second and third cut yields of other varieties. (Table 2).

When spaced plants of Redland are evaluated with those of Kenland, Redland plants have a slightly more upright growth habit in the fall, are more vigorous throughout the season and have less incidence of virus. (Table 3).

Table 2
Dry Matter Yields, in Tons per Acre and for Individual Cuts, of Several Red Clover Varieties Evaluated in Illinois

Urbana 1966

Variety	6/9 T/A	7/15 T/A	9/26 T/A	Total T/A
Redland	2.79	1.67	1.00	5.42
Kenland	2.59	1.52	.86	4.97
Lakeland	2.63	1.36	.65	4.64
Common Red	2.65	1.46	.78	4.89

DeKalb 1966

Variety	6/7 T/A	7/13 T/A	8/29 T/A	Total T/A
Redland	1.65	1.16	.91	3.72
Kenland	1.44	.96	.76	3.16
Lakeland	1.62	.99	.80	3.41

Urbana 1967

Variety	6/5 T/A	7/30 T/A	8/21 T/A	Total T/A
Redland	2.50	.98	.71	4.19
Kenland	2.36	1.00	.75	4.11
Lakeland	2.67	.94	.55	4.16
Common Red	2.44	1.06	.66	4.16

Urbana 1968

Variety	6/11 T/A	7/19 T/A	8/21 T/A	Total T/A
Redland	1.53	1.50	.66	3.69
Kenland	1.31	1.30	.67	3.28
Lakeland	2.01	1.41	.58	4.00
Common Red	1.39	1.33	.70	3.42

Urbana 1968

Variety	6/4 T/A	7/22 T/A	8/23 T/A	Total T/A
Redland	1.79	1.98	1.03	4.80
Kenland	1.56	1.67	.91	4.14

Table 2 (continued)

Variety	Urbana 1969 5/29 T/A	6/30 T/A	Total T/A
Redland	2.12	1.23	3.35
Kenland	1.94	1.27	3.21
Lakeland	2.38	1.17	3.55
Common Red	2.16	1.31	3.47

Table 3
Percent Survival and Fall Growth Habit of Spaced Plants of Redland and Kenland after 2 Seasons, and Mean Vigor, Virus, and Flowering Ratings Taken on July 28, 1958.

Variety	% Survival 5/20/57 to 10/ 8/58	Growth Habit 1/ 10/ 8/58	Vigor 2/ 7/28/58	Virus 3/ 7/28/58	Flowering 4/ 7/28/58
Redland	39	1.6	3.5	1.4	3.5
Kenland	22	1.3	4.8	1.8	3.2

1/ Rating: 1 = low growing rosette; 4 = no resette, upright growth.

2/ Rating: 1 = strong; 9 = weak.

3/ Rating: 0 = no damage; 1 = slight damage; 3 = severe damage.

4/ Rating: 0 = no flowering; 1 = slight flowering; 9 = profuse flowering.

FORM GR-470-42
(9-77)

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

OBJECTIVE DESCRIPTION OF VARIETY
RED CLOVER *(Trifolium Pratense)*

NAME OF APPLICANT(S): University of Illinois

ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code)*: Urbana, IL 61801

VARIETY NAME OR TEMPORARY DESIGNATION: REDLAND

FOR OFFICIAL USE ONLY

PVPO NUMBER: 7400046

Place the appropriate number that describes the varietal character of this variety in the boxes below. Fill unused columns with zeros (e.g. [0|9|9] when number is 99). In comparisons to standard varieties, the value [0|0] should only be used to indicate that the varieties are equal. The symbol indicates a decimal point. Characteristics described, including numerical measurements, should represent those which are TYPICAL for the variety. Measured data should be for SPACED PLANTS. Any recognized color fan, e.g. Royal Horticultural Colour Chart, may be used to determine plant colors; designate system used: _____. Give location of test area _____. Ranges of values are valuable and may be included with additional description elsewhere in the application.

NOTE: *For single plant data a minimum of 100 plants is suggested.*

1. TYPE:

[3] 1 = DOUBLE CUT (medium) 2 = SINGLE CUT (mammoth) 3 = OTHER *(Specify)* multi

2. PLOIDY:

[1] 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER *(Specify)* _____

3. PRODUCTIVE PERSISTENCE (Usual duration of planting):

[3] 1 = ANNUAL 2 = BIENNIAL 3 = SHORT LIVED PERENNIAL (3 - 4 Years)

4. ADAPTATION: (e.g., [0|2|3] = northcentral and southcentral)

[1|2|3] 1 = NORTHEAST 2 = NORTHCENTRAL 3 = SOUTHCENTRAL 4 = SOUTHEAST 5 = WEST 6 = OTHER *(Specify)* _____

STANDARD VARIETIES

1 = KENSTAR 2 = ARLINGTON 3 = PENNSCOTT 4 = TENSAS 5 = ALTASWEDE

5. MATURITY:

[0|5|0] % PLANTS FLOWERING IN SEEDLING YEAR

Beginning of spring growth:

[0|5] DAYS EARLIER THAN . . . . . [2] STANDARD VARIETY

[0|2] DAYS LATER THAN . . . . . [1] STANDARD VARIETY

Time of flowering (50% of plants in bloom): (from spring growth in non-seedling year)

[0|5] DAYS EARLIER THAN [2] STANDARD VARIETY

[0|0] DAYS LATER THAN [0] STANDARD VARIETY

6. PLANT HEIGHT (from soil level to top of flowering head at 50% flowering)

[4|5] CM. TALL [0|0] CM. SHORTER THAN [0] STANDARD VARIETY

[0|5] CM. TALLER THAN [2] STANDARD VARIETY

7. FLOWERING STEM (from first noncontracted internode, longer than .5 cm., to tip of flowering head):

0 5	NO. FLOWERING STEMS PER CROWN
0 0	NO. INTERNODES (unknown)
4 0	CM. LENGTH OF STEM

Hairiness: Give percentage of plants with each type of surface (Total = 100%)

0 4 ~~5~~ 2 (3/27/78)	% HAIRS PROJECTING UPWARD
0 5 ~~5~~ 2 (3/27/78)	% HAIRS PROJECTING DOWNWARD OR AT RIGHT ANGLES
0 0 6	% GLABROUS (FEWER THAN 5 HAIRS/1 CM. PATH ALONG CENTRAL INTERNODES)

Habit: Give percentage of plants with each type of habit. Stem habit should be determined by the angle of lowest stems to the horizontal (soil level) at 50% flowering.

~~0 0 0~~	% PROSTRATE *(0 - 30°)*	~~0 0 0~~ % SEMI-PROSTRATE *(30 - 45°)*	~~0 0 0~~ % SEMI-ERECT *(45 - 60°)*	~~1 0 0~~ % ERECT *(60 - 90°)* (5/25/78)

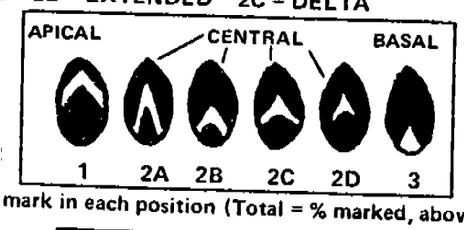
8. LEAF (Central leaflet at 3rd node below flowering head):

2 5	MM WIDTH	0 0	MM NARROWER THAN	0 STANDARD VARIETY
		0 0	MM WIDER THAN	0 STANDARD VARIETY
3 5	MM LENGTH	0 0	MM SHORTER THAN	0 STANDARD VARIETY
		0 0	MM LONGER THAN	0 STANDARD VARIETY

Color:

2 — 1 = LIGHT GREEN *(Altaswede)* | 2 = MEDIUM GREEN ( ) | 3 = DARK GREEN *(Hungaropoli)* | 4 = BLUE GREEN ( )

Leaf Marking (at 50% flowering): NOTE: Categories below allow for increasingly detailed description of the same data. Diagram illustrates terms: 1 = APICAL 2A = FULL 2B = EXTENDED 2C = DELTA 2D = INCOMPLETE 3 = BASAL



Presence of Mark: Of total plants, give percentage marked and unmarked (Total = 100%)

0 0 1 % ABSENT — 0 9 9 % MARKED

Position of Mark: Of total plants, give percentage with leaf mark in each position (Total = % marked, above)

0 0 0 % APICAL — 1 0 0 % CENTRAL — 0 0 0 % BASAL

Shape of Mark: Of total plants, give percentage with central leaf marks having each shape (Total = % central above)

0 0 2 % FULL — 0 9 0 % EXTENDED — 0 0 7 % DELTA — 0 0 1 % INCOMPLETE

9. FLOWER COLOR (Determine color on freshly opened florets): Give percentage of plants with each color (Total = 100%). Colors are referenced to the Munsell Color System.

0 0 0 % WHITE	0 0 3 % LIGHT PINK (5RP 8/4)
0 2 0 % MEDIUM PINK (5RP 7/6)	0 7 5 % DARK PINK (5RP 6/8)
0 0 2 % RED (5RP 5/10)	0 0 0 % OTHER *(Specify)* _____

10. SEED COLOR: Maximum color development in unstored, mature seed (at beginning of calyx browning). Give percentage of plants with each seed color (Total = 100%)

022	% YELLOW	040	% YELLOW WITH SOME PURPLE
008	% PURPLE	030	% PURPLE WITH SOME YELLOW
000	% OTHER *(Specify)* _____		*(attach explanation)*

11. DISEASE AND INSECT RESISTANCE (0 = not tested, 1 = susceptible, and 2 = resistant). If variety is claimed to be resistant or to show intermediate reaction, substantiating test scores should be attached clearly identifying disease, application variety, check varieties, date and location of test, and range and direction of test scores.

A. DISEASES:

2	CROWN ROT *(Sclerotina trifoliorum)*	2	ROOT ROT *(Fusarium spp.)*
2	NORTHERN ANTHRACNOSE *(Kabatiella caulivora)*	0	SUMMER BLACK STEM *(Cercospora zebrina)*
2	SOUTHERN ANTHRACNOSE *(Colletotrichum trifolii)*	0	BLACK STEM *(Phoma trifolii)*
0	TARGET SPOT *(Stemphylium sarcinaeformae)*	2	POWDERY MILDEW *(Erysiphe polygoni)*
0	PEPPER SPOT *(Leptosphaeralina trifolii)*	0	BLACK PATCH *(Rhizoctonia leguminicola)*
0	RED CLOVER VEIN MOSIAC VIRUS	2	BEAN YELLOW MOSIAC VIRUS
0	NEMATODE *(Specify)* _____	0	OTHER *(Specify)* _____

B. INSECTS:

0	CLOVER ROOT BORER *(Hylastinus obsurus)*	0	CLOVER ROOT CURCULIO *(Sitona hispidula)*
0	SWEETCLOVER WEEVIL *(Sitona cylindricollis)*	0	CLOVER SEED CHALCID *(Bruchophagus platyptera)*
0	LESSER CLOVER LEAF WEEVIL *(Hypera nigrirostris)*	2	POTATO LEAF HOPPER *(Empoasca fabae)*
0	YELLOW CLOVER APHID *(Therioaphis trifolii)*	0	MEADOW SPITTLE BUG *(Philaenus spumarius)*
0	CLOVER SEED MIDGE *(Dasineura leguminicola)*	0	PEA APHID *(Acrythosiphon pisum)*
2	CLOVER LEAFHOPPER *(Aceratagallia sanguinolenta)*	0	OTHER *(Specify)* _____

12. Indicate the variety most closely resembling the application variety for the following:

CHARACTER	VARIETY	CHARACTER	VARIETY
LEAFLET SHAPE	Kenland	SEED COLOR	Kenland
CUTTING RECOVERY	Kenstar	LATE SEASON GROWTH	Kenstar
WINTER HARDINESS	Arlington	PERSISTENCE	Kenstar

REFERENCES:

Hawkins, R. P. 1953. Investigations on local strains of herbage plants II. Types of red clover and their identification. J. Brit. Grassland Soc. 8, 213-218.

Williams, R. D. 1927. Red clover investigations, 1919 - 1926. Welsh Plant Breeding Station Bull., Ser. H. No. 7.

COMMENTS: (If additional space is necessary, use reverse side)

EXHIBIT D

Data Indicative of Novelty

Redland most closely resembles Kenland, except that it has greater persistence (longer lived), has a higher degree of virus resistance, and, in Illinois, is higher yielding.

Redland significantly outyields Kenland by 10% in Illinois, by 10-45% in Tennessee. Redland has equal winter hardiness to Kenland and is superior to Pennscott and Chesapeake, but inferior to Lakeland and Dollard. Redland has significantly higher degree of mildew resistance than Kenland, but less than Lakeland and Dollard. Redland is tolerant to leafhopper yellowing.

Redland has good southern anthracnose resistance but moderate resistance to northern anthracnose. Redland has more resistance to northern anthracnose than Kenland or Kenstar.

University of Illinois at Urbana-Champaign

College of Agriculture · Agricultural Experiment Station

OFFICE OF THE DIRECTOR
109 Mumford Hall
Urbana, Illinois 61801
(217) 333-0240

May 1, 1978

Dr. Larry W. Dosier, Examiner
Plant Variety Protection Office
USDA - Grain and Seed Division
National Agricultural Library Bldg.
Beltsville, Maryland 20705

RE: Application #740046 Red Clover 'Redland'

Dear Dr. Dosier:

In reference to your letter of March 14, 1978, we do not have a registration statement for 'Kenland' red clover, but we are enclosing one for 'Kenstar.' We have no more specific data that we can provide for 'Redland.' In our original data, table 3, we indicated that Redland has more erect plants at flowering than Kenland, 1.6 vs. 1.3, respectively (1 = rosette, 4 = upright growth). We do not have flowering date comparisons with Kenland, but in Illinois we have observed that Redland is about 2-3 days earlier than Kenstar; and I would believe that Redland would also be earlier in flowering than Kenland due to its genetic background.

Therefore we would suggest a change or addition in the novelty statement on Exhibit D by adding "Redland flowers more uniformly and earlier than Kenland, and at least five days earlier than Arlington. Redland differs in height from that of Kenland."

We greatly appreciate your assistance.

Sincerely,

G.W. Salisbury

G. W. Salisbury
Director

GWS:mw

cc: R. W. Howell
D. A. Miller

Table 6

Redland yield data in Columbia, Missouri
(University of Missouri data)

Dry matter yields for 12 red clover varieties during 1965 (first year harvest) and 1966 (second year of harvest) at Columbia, Missouri.

	Yields of Dry Matter - lbs/A Years		
Varieties	1965	1966	Average
Redland	4065	4855	4460
Kenland	3951	3600	3776
Chesapeake	4136	3054	3595
Pennscott	3949	3634	3792
Orbit	3799	3435	3617
Dollard	4005	3504	3754
Lakeland	4492	4029	4260
Lasalle	3995	4069	4032
Nolin	3371	1335	2353
Common	4404	3827	4116
Average	4049	3816	
Coef. of Variation	16%	11%	
ANOV			
Varieties	N.S.	**	
L.S.D. .05	N.S.	727 lbs/A	

Table 7

Redland yield data, Ames, Iowa
(University of Iowa data) 1/

Variety	May 1966 Stand in %	Forage yield (3 cuts) Tons dry weight/acre
Redland	60	4.36
Lakeland	31	2.90
Chesapeake	29	2.08
Kenland	25	2.21
Dollard	17	1.28
C.V. in %		13.3

1/ Dr. C. P. Wilsie notes : "Establishment in 1965 was not satisfactory because of excessive weed competition. However, the Illinois strains apparently showed more vigor and competing ability for they were outstandingly better in the spring of 1966. Because of erratic stands the yields are not very accurate. I really do not know how to evaluate this experiment but the Illinois strains looked v ery good.

Table 13

Redland persistence data, (percent of certified Kenland).

Variety	% relative survived 5/20/57 to 10/8/58		
	Field 1	Field 2	Average
Redland (single cross plants)	182	161	172
Redland (open-pollinated plants)	221	179	200
Kenland	100	100	100

Table 14

Winterhardiness of Redland Red Clover.1/

Variety	Stand % 4-27-72
Redland	64
Kenland	64
Kenstar	78
Pennscott	40
Chesapeake	28
Common	72
Lakeland	80
Dollard	78
Redman	72
Altaswede	72
LSD .05	24

1/ Data were obtained from a nursery seeded September 10, 1971 at Brookston, Indiana. All varieties had 100% stand in the fall. It is felt that this data is an accurate reflection of winterhardiness since the northern varieties survived better than the southern varieties. European varieties known to have low winterhardiness survived at the 30 to 40% level.

Table 15

Powdery Mildew data on Redland Red Clover at Hopkinsville, KY. 1/

Variety	7-11-72
Redland	4.0
Kenland	7.4
Kenstar	5.2
Pennscott	6.8
Chesapeake	6.4
Common	5.2
Lakeland	1.8
Dollard	2.4
Redman	2.6
Altaswede	3.0
LSD .05	1.6

1/ Rated 1-9 with 1= most resistant, 9= most susceptible.

Table 16

Leafhopper data on Redland REd Clover.

	Brookston, Indiana				
	Seeded 9-10-71		Seeded 5-5-72	Seeded 5-5-72	Avera
	7-21-72	7-28-73	6-21-73	6-25-73	
Variety					
Redland	2.4	3.8	2.2	4.4	3.2
Kenland	2.9	3.4	3.6	5.2	3.2
Kenstar	3.0	3.6	3.0	3.4	3.2
Pennscott	2.2	6.0	2.8	4.6	3.9
Chesapeake	2.8	3.4	3.2	3.0	3.1
Common	4.0	4.8	3.8	4.8	4.3
Lakeland	2.6	3.0	2.6	3.4	2.9
Dollard	2.4	4.0	3.4	4.4	3.5
Redman	1.6	3.6	2.2	3.0	2.6
Altaswede	4.4	1.9	4.0	6.8	4.3
LSD .05	2.5	1.4	2.0	1.7	

Ratings are 1-9 with 1= little yellowing and 9= severe yellowing and stunting. European experimentals had significantly more leafhopper damage, some averaging as high as 7.3 in these four ratings.

Table 17

Redland Red Clover data on Northern Anthracnose at Agronomy South farm, Urbana, Illinois seeded 4-18-67.

Variety	Anthracnose 1/ Rating
Redland	4.2
Kenland	4.7
Pennscott	3.7
Chesapeake	3.0
Common (Minn)	0.7
Common (Ohio)	4.7
Lakeland	0.5
Dollard	1.2
Altaswede	0.7
LSD .05	1.9

1/ Ratings are 0-9 with 0= None, 9= severe. Data collected June 11,1968.

Table 18

Leaf disease data on Redland Red Clover

	Brookston, Indiana 1/	Hopkinsville, Kentucky 2/	
Variety	June 20,1973	July 11,1972	Aug. 27,1972
Redland	6.6	1.8	2.0
Kenland	7.0	2.4	2.4
Kenstar	6.6	2.4	1.8
Pennscott	5.2	3.2	2.8
Chesapeake	5.6	3.6	1.8
Common	5.6	3.0	5.8
Lakeland	3.6	2.4	3.4
Dollard	3.8	3.2	5.6
Redman	3.8	2.2	2.6
Altaswede	7.8	4.8	7.8
LSD .05	3.8	1.3	2.0

1/ Brookston, Indiana nursery was seeded September 10,1971. The data are ratings of 1-9 with 1= least damage and 9= most. This disease was mostly a light northern anthracnose infection.

2/ Hopkinsville, Kentucky nursery was seeded September 14, 1971. Data are ratings of 1-9 with 1= least damage and 9= most damage. The disease was mostly southern Anthracnose.Lakeland performed better than would be expected.

Table 19

Redland Northern Anthracnose ratings,
University of Wisconsin data
(seeded May, 1965)

Variety	Rating 1/ 6-13-67
Redland	3.3
Kenland	5.0
Lakeland	1.5
Dollard	1.8
Orbit	4.0
La Salle	1.8

1/ 1 = No to slight infection; 9 = very severe infection.

EXHIBIT E

Statement of Applicant's Ownership

The University of Illinois believes it is the sole, original and first breeder of the Redland variety of medium red clover for which it solicits a certificate of protection.

CLOV.

PV No. 7400046
'Redland'

An excess seed sample of this variety was returned to the PVP Office by the National Seed Storage Laboratory. The excess seed was destroyed by PVPO personnel on JUL 15 1994.