

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Germinal Holdings Limited

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 *fifteen* 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, 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 (ACT NO. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COLONIAL BENTGRASS

'Duchess'

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 26th day of November in the year of our Lord one thousand nine hundred and eighty-two

Asst.
Kenneth H. E...

Acting
 Commissioner
 Plant Variety Protection Office
 Grain Division
 Agricultural Marketing Service

John R. Block
 Secretary of Agriculture



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1. NAME OF APPLICANT(S) GERMINAL HOLDINGS LIMITED		2. TEMPORARY DESIGNATION	3. VARIETY NAME DUCHESS
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) COMMERCIAL ROAD, BANBRIDGE, CO. DOWN, N. IRELAND.		5. PHONE (Include area code) BANBRIDGE 24585 OR 22521	FOR OFFICIAL USE ONLY PVPO NUMBER 8200081
6. GENUS AND SPECIES NAME AGROSTIS TENUIS	7. FAMILY NAME (Botanical) GRAMINEAE		FILING DATE 3/5/82 TIME 11:30 <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
8. KIND NAME BROWN TOP (COLONIAL) BENT	9. DATE OF DETERMINATION 4/10/79		FEES RECEIVED AMOUNT FOR FILING \$ 500.00 DATE 3/5/82 AMOUNT FOR CERTIFICATE \$ 250.00 DATE 10/13/82
10. IF THE APPLICANT NAMED IS NOT A "PERSON." GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) PRIVATE LIMITED COMPANY			12. DATE OF INCORPORATION 1963
11. IF INCORPORATED, GIVE STATE OF INCORPORATION PRIVATE LIMITED COMPANY REGISTERED IN THE U.K.			
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS MR. SAM K. McCAUSLAND			

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

- a. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
b. Exhibit B, Novelty Statement
c. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
d. Exhibit D, Additional Description of the Variety

15. 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) of the Plant Variety Protection Act.)
c. Yes (If "Yes," answer items 16 and 17 below) No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
 Yes No

17. IF "YES" TO ITEM 16. WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
a. Foundation Registered Certified

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES?
UNITED KINGDOM 21/9/79 Yes (If "Yes," give names of countries and dates) No

19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES?
 Yes (If "Yes," give names of countries and dates) No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) 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(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

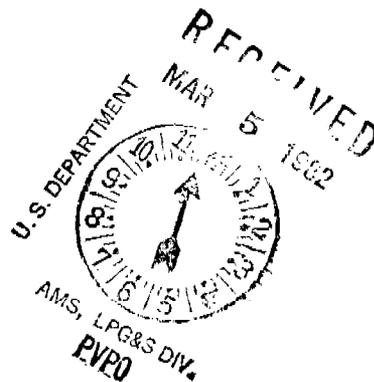
SIGNATURE OF APPLICANT S. K. M' Causland	DATE 25/2/82
SIGNATURE OF APPLICANT	DATE

INSTRUCTIONS

General: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Department of Agriculture, Agricultural Marketing Service, livestock, Meat, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (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

- 9 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 14a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 14b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same *crop*. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 15 If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*) the applicant may NOT reverse his affirmative decision after the ~~variety has either~~ been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "No," he may change his choice. (*See section 180.16 of the Regulations and Rules of Practice.*)
- 16 See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

EXHIBIT A: ORIGIN AND BREEDING HISTORY OF **THE** VARIETY

BREEDER: The Queen's University of Belfast, Northern Ireland

VARIETY NAME: Duchess

SPECIES: Agrostis tenuis

KIND NAME: Brown top bent (Colonial)

PARENTAGE: Selection from the variety **Bardot****BREEDING** METHOD: Hybridisation and polycrossing of selected segregates.

SELECTION AND MULTIPLICATION

A large number of seedlings were exposed to a carefully determined dose of Aminotriazole which gave mortality rates of 95 to 99%. Surviving plants were grown to maturity and allowed to cross pollinate in collective isolation (Lee and Wright, 1981). The progeny was subject to a further selection using a higher dose of Aminotriazole. This selection procedure was repeated for three generations until a satisfactory degree of tolerance had been achieved.

A further selection for uniformity was made prior to seed multiplication and establishment of turf trials.

EXHIBIT B: NOVELTY **STATEMENT**

The variety Duchess has been selected for resistance to the herbicide Aminotriazole. The level of resistance would permit complete control of grass weeds and rogues in lawn and seed fields of the variety by spraying with the herbicide.

A wide range of Agrostis tenuis varieties has been scanned for resistance to Aminotriazole and none have been found which show resistance to Aminotriazole at an application rate which would control indigenous weed grass species.

Ref: Lee and Wright (1981)

"Effective **selection** for Aminotriazole Tolerance in Festuca and Agrostis Turf Grasses".

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

Exhibit A: ORIGIN AND BREEDING HISTORY OF THE VARIETY
Breeder: The Queen's University of Belfast, Northern Ireland
Variety Name: Duchess
Species: Agrostis tenuis
Kind Name: Brown-top bent (Colonial)
Parentage: Selection from the variety **Bardot**
Breeding Method: Hybridisation and polycrossing of selected segregates

SELECTION AND MULTIPLICATION

The variety **Bardot** was chosen for this programme as preliminary experiments had shown that it had a higher tolerance to Aminotrizole than other Brown-top Bent varieties,-

A large number of seedlings was exposed to a carefully determined dose of Aminotriazole which gave mortality rates of 95 to 99%. Surviving plants were grown to maturity and allowed to cross pollinate in collective isolation. The progeny was subject to a further selection using a higher dose of Aminotriazole. This selection procedure was repeated for three generations until a satisfactory degree of tolerance had been achieved.

A final population of approximately 200 plants were used to produce seedlings for a field nursery plots. Aminotriazole was applied to the established plot in order to remove any non-resistant variants. A uniform response to the herbicide was obtained and only about 3% of individuals succumb to this treatment.

No noticeable variants were found in the final population and this may be attributed to the fact that Duchess was bred from the single variety **Bardot** and no out-crossing took place.

The morphological characteristics of Duchess have been observed to remain uniform and unchanged in successive sexually reproduced generations.

March 14, 1979

U.S. Department of Agriculture
Agricultural Marketing Service
Livestock, Poultry, Grain & Seed Division
Beltsville, Maryland 20705

OBJECTIVE DESCRIPTION OF VARIETY
BENTGRASS (Agrostis spp.)

Name of Applicant(s)	Variety Name or Temporary Designation
Address (Street and No. or R.F.D. No, City, & ZIP Code)	Duchess
	FOR OFFICIAL USE ONLY
	PVPO Number
	8200081

Place numbers in the boxes (e.g.) for the characters that best describe typical plants of this variety. The symbol Δ indicates decimal.

COMPARISON VARIETIES FOR USE BELOW

1= Astoria 2= Exeter 3= Highland 4= Seaside 5= Penncross 6= Kingstown
7= Astra 8= Other Bardot

1. SPECIES:

1= Colonial (browntop) A. tenuis 2= Creeping A. stolonifera (A. palustris)
 3= Velvet A. canina ssp. canina 4= Brown bent A. canina ssp. montana
 5= Red top A. gigantea

2. ADAPTATION: (0= Not Tested, 1= Not Adapted, 2= Adapted)

Northeast 30 Southeast 10 North Central Pacific N. W.
 Other (Specify) Temperate, British

3. MATURITY (At first anthesis): Use comparison varieties

Days earlier than , Maturity same as , Days later than

4. HEIGHT (Average of longest 10 shoots from soil surface to top of head):

Cm Height (at maturity) Cm Shorter than } Comparison
Height same as } Variety
 Cm Taller than

5. GROWTH HABIT:

% Prostrate % Decumbent % Geniculate % Erect

Bentgrass - 3 -

10. LEMMA:

Shape: % Lanceolate % Ovate % Obovate % Elliptic % Oblong % Other (Specify) _____ Mm Width Mm Length (exclusive of awn)Color: % Off S i l v e r y % Other (Specify) _____Surface: % Glossy % DullTexture: % Smooth % PunctatePubescence: % Glabrous % Sparse % CopiousBasal Hairs: % Absent % Few % Many % Short o n g % Appressed % Ascending % SpreadingAwns: % Absent % Few % Many % Awn-pointed % Short % Long % Straight % Genuiculate

Awn Insertion on Lemma:

 % Basal i d d l e % Distal

11. PANICLE:

Type (in anthesis): % @en % CompactAnthocyanin: % Absent e s e n tBranches in Anthesis: % Appressed l o % Ascending % SpreadingBranches in Bruit: % Appressed % Ascending % SpreadingBranch Surface: % Smooth % Scabrous

12. SEED:

 Grams per 1000 seed

13. SPRING GREEN UP:

 1= Early (Exeter) 2= Medium (Astoria) 3= Late (Kingstown)

14. ENVIRONMENTAL RESISTANCE: (0= Not tested, 1= Susceptible 2= Resistant)

- Cold Heat Drought Shade Other (Specify) _____

15. DISEASE RESISTANCE (0= Not tested 1= Susceptible 2= Resistant):

- | | |
|--|--|
| <input checked="" type="checkbox"/> Red Leaf Spot - Drechslera erythrospila | <input type="checkbox"/> Helminthosporium Leaf Spot
(Bipolaris sorokiniana) |
| 10 Melting Out - Drechslera poae
(Helminthosporium vagans) | <input type="checkbox"/> Dollar Spot -(Sclerotinia homoeocarpa) |
| <input type="checkbox"/> Pythium Blight - (P. aphanidermatum) | <input type="checkbox"/> Pythium Blight (P. ultimum) |
| <input type="checkbox"/> Fusarium Blight (F. roseum) | <input type="checkbox"/> Fusarium Blight (F. tricinctum) |
| <input checked="" type="checkbox"/> Fusarium Patch (Pink Snow Mold)
(F. nivale) | <input checked="" type="checkbox"/> Powdery Mildew (Erysiphe graminis) |
| <input checked="" type="checkbox"/> Ophiobolus Patch (O. graminis) | <input type="checkbox"/> Stripe Smut (Ustilago striiformis) |
| <input type="checkbox"/> Copper Spot (Gloeocercospora sorghi) | <input type="checkbox"/> Tyghula.&icht (Snow Scald)
(T. incarnata) |
| <input checked="" type="checkbox"/> Red Thread (Corticium fuciforme) | <input type="checkbox"/> Brown Patch (Rhizoctonia solani) |
| 01 Stem Rust (Puccinia graminis) | <input type="checkbox"/> Crown Rust (P. coronata) |
| <input type="checkbox"/> Leaf Rust (P. paae-nemoralis) | <input type="checkbox"/> Other _____ |

16. INSECT RESISTANCE (0= Not tested, 1= Susceptible, 2= Resistant):

- | | |
|--|--|
| <input type="checkbox"/> European Chafer
(Amphimallon solstitialis) | <input type="checkbox"/> Garden Chafer
(Phyllopertha horticola) |
| <input type="checkbox"/> Chinch Bug (Blissus insularis) | <input type="checkbox"/> Webworm (Crambus spp.) |
| <input type="checkbox"/> Armyworm (Cutworm)
(Pseudaletia unipuncta) | <input type="checkbox"/> Other _____ |

17. GIVE VARIETY(S) THAT MOST CLOSELY RESEMBLE THE SUBMITTED VARIETY: For the following characteristics indicate degree of resemblance (D.R.) with one of the following numbers: 1= Submitted variety is less than, lighter, or inferior to similar variety, 2= Same as, 3= More than, darker or superior, etc.

Character	Similar Variety	D.R.	Character	Similar Variety	D.R.
Growth Habit	Bardot	2	Leaf Color	Exeter	2
Awn Length	Bardot	2	Panicle Type	Bardot	2
Seed Weight	Highland	2	Turf Fineness, ., ., .	Saboval	2
Cold Resistance	Bardot	2	Heat Resistance	unknown	
Drought Resistance	unknown		Shade Resistance	Unknown	1
Brown Patch	unknown				

18. COMMENTS:

Duchess is resistant to the known lethal dose of Aminotriazole for grasses

	Percent Mortality	
	1 kg/ha	2 kg/ha (Aminotriazole)
Duchess	0	4
Bardot	38	76
Poa annua	87	100
Holcus lanatus	84	100

6. VEGETATIVE REPRODUCTION:

Rhizomes 1= Absent 2= Present

Stolons 1= Absent 2= Present

% Rhizomes to stolons

7. LEAF BLADE:

Color: 1= Yellowish Green (Cohaneey) 2= Light Green (Washington)
3= Green (Exeter) 4= Dark Green (Kingstown, Tracenta)
5= Bluish Green (Highland) 6= Other (Specify) - - -

Texture: (fineness)
1= Very fine (Kingstown) 2= Fine (Exeter)
3= Medium fine (Astoria) 4= Medium (Seaside)
5= Medium coarse (Virginia) 6= Coarse (Vermont)

Stomatal density upper leaf surface (Number/mm²)

Lower Surface: % Smooth % Rough

Upper Surface: % Smooth % Rough

Margins: % Smooth % Rough

Mm Width (Average of 10)

Mm Narrower than

Width same as cl

Mm Wider than

Comparison
Variety

Mm Width (Flag leaves)

Cm Length (Flag leaves)

8. LEAF SHEATH:

Anthocyanin: 1= Absent 2= Present

% Red sheaths

9. LIGULE (Lower and middle leaves):

Shape at Apex: % Acute % Rounded % Truncate

% Other (Specify) _____

Pubescence: % Glabrous % Pubescent

Margins: % Entire % Toothed

% Other (Specify) _____

Mm Length