No. 7700017

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

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

ITALIAN RYEGRASS
"Deltonic'

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* 10th *day of* July *in the year of our Lord one thousand nine hundred and* eighty.

Attest:

Commissioner
Plant Variety Protection Office
Grain Division

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 DELTONIC	2. KIND NAME Italian ryegrass	FOR OFFICIAL USE ONLY PV NUMBER 7700017
3. GENUS AND SPECIES NAME Lolium multiflorum Lam.	4. FAMILY NAME *(Botanical)* Festuloliaceae	FILING DATE 11-30-76 / TIME 3:00 A.M. P.M. FEE RECEIVED $ 250.00 / BALANCE DUE $ 11-30-76
	5. DATE OF DETERMINATION April 1976	$ 250.00 / $ 5/6/80 $ / $
6. NAME OF APPLICANT(S) Soil Fertility Dunns Ltd.	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* Hartham, Corsham, Wiltshire, SN13 0QA. ENGLAND.	8. TELEPHONE AREA CODE AND NUMBER 0249-712051

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)* Subsidiary to public company	10. STATE OF INCORPORATION United Kingdom	11. DATE OF INCORPORATION 1956

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

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? [ ] 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.

19/11/76
(DATE)

(SIGNATURE OF APPLICANT)

T. I. EMECZ
Head
Plant Breeding Station

(DATE)

(SIGNATURE OF APPLICANT)

EXHIBIT A

Origin and Breeding History of the Variety

Deltonic Italian ryegrass originated from British diploid material consisting of the S.22 variety and of some wild ecotypes. These were subjected to chromosome doubling. Treatment was carried out on the seed. Seedlings were checked for chromosome number and confirmed tetraploids were placed in individual performance test trials. Positive selection was carried out primarily for lateness of ear emergence date and earliness of spring growth. Selected genotypes were placed in a polycross. Progeny assessment was based on maternal lines and was carried out in a competitive environment for yield. Final selection was based on general combining ability assessed on the maternal lines. Clonal propagates were used to produce the first generation of the synthetic. Subsequent generations were produced from seed with negative selection in the early stage. The commercial material is the fourth generation. Pre-basic seed is always produced from the same foundation stock, consequently all fourth generation commercial material represent the same genetic structure and should be indistinguishable.

The variety is 8-10 days later than Tetila Tetrone and is the latest tetraploid Italian ryegrass known. The range of variation in ear emergence date within the variety is about 3-4 days. A copy of the ear emergence dates obtained at Hartham is enclosed, which shows Deltonic in comparison with other known varieties. No variants were observed regarding morphological features.

The variety is a good yielder, but does have a shorter duration of 18-24 months. It suits conservation type of usage more than grazing. Trials have been carried out in a number of European countries, as well as in Canada. Copies of the results from France and from Canada are enclosed.

EXHIBIT B

Botanical Description of Variety

Deltonic is a synthetic tetraploid variety, the chromosome number being 4n = 28. It is a very late variety, its ear emergence being 8-12 days later than Tetila Tetrone. Its growth habit is very erect. Plant height at ear emergence is very tall. The colour of the foliage is very dark green. The leaves are very long and extremely wide. It produces very few flowering heads in the year of sowing. Its spring growth commences very early, but it is not a very persistent type of Italian ryegrass and its usage is primarily for 18-24 months. Its winter hardiness is satisfactory and it has a good resistance to mildew and rust.

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EAR EMERGENCE DATES AT HARTHAM

	1969	1970	1971	1972
Deltop	21.5.	13.5.	17.5.	19.5.
Deltex	2.6.	26.5.	24.5.	31.5.
Deltonic	5.6.	31.5.	31.5.	5.6.
Tetila	28.5.	20.5.	20.5.	24.5.
S.22	2.6.	27.5.	25.5.	31.5.

TIE/SJB
23.1.73.

RESULTS WITH SFD TETRAPLOID ITALIAN RYEGRASS VARIETIES IN TRIALS AT HARTHAM DURING 1973

DM Yield in Grammes/Plot

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	1	2	3	4	5	6	7
Management	Hay 240N	Grazing 330N	Hay 240N	Hay 240N	Hay 240N	Hay 240N	Hay 240N
Sowing Time	1972 Spring	1972 Autumn	1972 Autumn	1972 Autumn	1972 Autumn	1973 Spring	1973 Spring
Harvest of Main Cut			30th May	11th June	19th June	5th July	24th June
	YIELD						
Deltop	4876	2519	4491	-	-	3678	-
Deltex	5412	2507	-	5506	-	-	2816
Deltonic	5859	2524	-	-	4233	-	-
S.22	4887	2357	-	-	-	-	-
Tetrone	5058	2578	-	-	-	-	-
R.v.P.	-	-	4095	4986	4441	3170	2535
SF 486	-	-	-	-	-	3109	-
Nickersons Green Circle	-	-	-	-	-	3181	2413
LSD at 0.05	295	NS	286	312	NS	353	216

FOOTNOTE: It was fairly obvious from the grazing type of management (column 2 and 9) that the differences are not significant is gained from earlier or later development, if the time of defoliation is not adjusted to the developmental stage. This was type of management, when the main harvest was adjusted to the developmental stage of Tetrone. In this case (column 1) only De superior to the controls because the cutting time happened to suit its natural growth rhythm. In subsequent hay trials (colum cutting time was adjusted to the development of the experimental varieties, and in this case both Deltex and Deltop significan In the silage type of management, which is shown in column 8, the main cut was carried out individually on each variety accord ence date, and again Deltex and Deltonic were significantly superior to the controls. It can be seen, therefore, that advent later varieties can be obtained only if the defoliation is adjusted to the needs of the variety.

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.

rec. 11/30/76
3 p.m.

Essais comparatifs
Deltop-Deltex-Deltonic

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ITALIAN TRIAL RESULTS AT

LA MENITRÉ (VILMORIN-ANDRIEUX)

Variety	1973		1974		Rank No	2 Years Total
	Rank No	DM Yield t/ha	Rank No	DM Yield t/ha		
Fat	5	7.02	7	6.78	7	13.80
Deltex	7	5.88	1	8.53	6	14.41
Delecta	1	8.24	6	6.84	2	15.08
Deltonic	2	7.91	4	7.60	1	15.51
Tiara	4	7.25	3	7.69	3	14.94
Tetrone	6	6.73	2	8.17	4	14.90
Deltop	3	7.25	5	7.43	5	14.68

TIE/JKR
27.1.75

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EXHIBIT E

Statement of Applicants Ownership

Soil Fertility Dunns Limited, Hartham, Corsham, Wiltshire, England is the sole and original breeder of the Italian ryegrass variety, Deltonic, for which it solicits a certificate of protection. The variety has been entered in the United Kingdom official trials in December 1971, and it is undergoing consideration for the National List and granting of Plant Variety Rights. Commercialisation in the United Kingdom is expected to commence in 1978.

EXHIBIT "D"

Data indicative of novelty

Deltonic is a tetraploid Italian ryegrass most similar to Tetrone. Its distinctive characters from Tetrone are as follows:

1. Its Spring growth commences a week earlier.
2. Its ear emergence is 8 to 12 days later (Deltonic is the latest Italian ryegrass known).
3. Its seed size is bigger.
4. Its height at ear emergence is 11 cm taller than Tetrone (Deltonic is the tallest Italian ryegrass known).
5. Its growth habit is more erect than Tetrone. (Deltonic is the most erect Italian ryegrass variety).

Dr. Tibor I. Emecz
General Manager

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CROP: Italian ryegrass (*Lolium multiflorum*)
Westerwolds ryegrass (*L. multiflorum* var. *westerwoldicum*)

LOCATION: Research Station, Charlottetown, P. E. I. COOPERATOR: H. T. Kunelius

SOIL: Fine sandy loam EXP. DESIGN: Randomized block

NO. OF REPLICATES: 3 SIZE OF PLOT: 0.6 x 5 m

SOIL ANALYSIS:

OM	pH	N	P_2O_5	K_2O	Ca	Mg
3.1	5.9	H	240(L)	360(H+)	1850(M)	340(H+)

PRECEDING CROP: Summer fallow SEEDED: May 14, 1975

RATE OF SEEDING: 25 kg/ha

FERTILIZATION: 750 kg/ha of 10-20-20 broadcast before seeding
500 kg/ha of 15-5-15 after the 1st harvest
500 kg/ha of 15-5-15 after the 2nd harvest

PEST CONTROL: Sprayed with MCPB (Tropotox) at 15 oz a.i./acre, 2-3 leaf stage of annual ryegrass.

DATES OF HARVEST: Cut 1 - Promenade July 16, 1975
- Other cultivars July 22, 1975
Cut 2 - All cultivars August 21, 1975
Cut 3 - All cultivars October 23, 1975

Cultivar	Dry matter yield, kg/ha			
	Cut 1	Cut 2	Cut 3	Total
Maris Ledger	2289 abc	1305 a	2872 a	6466 a
Deltonic	2497 a	1209 a	2449 bcd	6155 ab
Delecta	2250 abc	1316 a	2574 abc	6140 ab
Combita	2177 abc	1192 a	2585 ab	5954 ab
KO-42	2469 a	1197 a	2277 b-e	5943 ab
Italco	2406 ab	1312 a	2166 de	5884 ab
Lyra	2278 abc	1168 a	2243 cde	5689 bc
Turgo	2212 abc	1290 a	2098 e	5600 bc
Barmultra	1894 c	1194 a	2323 b-e	5411 bc
Tetrelite	1995 bc	1110 a	2302 b-e	5407 bc
Promenade*	1438 d	1367 a	2339 b-e	5144 c
(Lemtal)	(2338) ab	(1214) a	-	-

*Westerwolds ryegrass

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TRIAL RESULTS AT THE

OFFICIAL CENTRES FOR THE 1973 SEASON

DM Yield - T/ac

Variety	Cambridge	Edinburgh	Trowscoed
R.v.P.	5.2	3.4	4.5
Deltex	5.7	3.6	5.0
Deltonic	6.0	3.4	4.3
Deltop	6.1	3.5	5.0

FOOTNOTE:

Data from Belfast not yet obtained

The relative performance of the three varieties varied with the centre.

Error margins are not known.

TIE/JKR
18.2.74

FORM GR-470-36
(9-76)

FORM APPROVED: OMB NO. 40-R3712

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF CULTIVARS
RYEGRASS
(Lolium spp.)

NAME OF APPLICANT(S): Soil Fertility Dunns Limited

VARIETY NAME OR TEMPORARY DESIGNATION: DELTONIC

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code): Plant Breeding Dept., Soil Fertility Dunns Ltd., Hartham, Corsham, Wiltshire, SN13 0QA. ENGLAND.

FOR OFFICIAL USE ONLY
PVPO NUMBER

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 if either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all petrinent comparative trial and evaluation data.

1. SPECIES:

1 — 1 = L. MULTIFLORUM (annual or Italian: includes Westerwoldicum) 2 = L. PERENNE (perennial) 3 = L. RIGIDUM (includes Wimmera)
4 = HYBRID (of species) _____ 5 = OTHER (Specify) _____

2. PLOIDY:

2 — 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER (Specify) _____

3. DURATION:

1 — 1 = ANNUAL OR BIENNIAL 2 = SHORT LIVED PERENNIAL (3-4 years) 3 = PERENNIAL (more than 4 years)

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

9 Ect 9/19/79

~~5~~ — 1 = VERY EARLY 3 = EARLY 5 = MEDIUM 7 = LATE 9 = VERY LATE

10 DAYS EARLIER THAN ..... 6 STANDARD CULTIVAR
DAYS LATER THAN ..... STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above):

95 CM. HIGH
CM. SHORTER THAN ..... STANDARD CULTIVAR
CM. TALLER THAN ..... STANDARD CULTIVAR

6. PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead). Use standard cultivars from above for comparison:

PERCENT DAMAGE OF APPLICATION CULTIVAR
PERCENT DAMAGE OF ..... STANDARD CULTIVAR

7. TURF DENSITY Use standard cultivars from above:

TILLERS PER 100 SQ. CM.
LESS TILLERS PER 100 SQ. CM. THAN .... STANDARD CULTIVAR
MORE TILLERS PER 100 SQ. CM. THAN ... STANDARD CULTIVAR

8. FLAG LEAF (at full growth) Use standard cultivars from above:

29 CM. LENGTH (from ligule to tip)
13 MM. WIDTH (at widest point)
CM. SHORTER THAN ..... STANDARD CULTIVAR
CM. LONGER THAN ..... STANDARD CULTIVAR
MM. NARROWER THAN ..... STANDARD CULTIVAR
MM. WIDER THAN ..... STANDARD CULTIVAR

3 FLAG LEAF AT BOOT STAGE: 1 = DEFLEXED 3 = RECURVED 5 = HORIZONTAL 7 = SEMI-ERECT 9 = ERECT

STANDARD CULTIVARS

1 = GULF
2 = WIMMERA 62
3 = LINN
4 = PELO
5 = NORLEA
6 = ABERYSTWYTH S-23
7 = MANHATTAN
8 = PENNFINE

9. LEAVES:

[1] VERNATION: 1 = LEAVES ROLLED IN YOUNG SHOOTS
2 = LEAVES SEMI-ROLLED (folded with rolled edges)
3 = LEAVES FOLDED IN YOUNG SHOOTS

[1 0 0] % PLANTS WITH ANTHOCYANIN IN LOWER LEAF SHEATH

[3] FOLIAGE COLOR: 1 = YELLOW GREEN
2 = MEDIUM GREEN
3 = BLUE GREEN

10. SPIKE:

[ ] MM. SPIKE LENGTH (tip to internode below lowest floret)

[ ] MM. SHORTER THAN . . . . . [ ]
[ ] MM. LONGER THAN . . . . . [ ]
} USE STANDARD CULTIVARS FROM ABOVE

[ ] MG. PER TEN SPIKES (trimmed to internode below lowest floret)

[ ] MG. LIGHTER PER TEN SPIKES THAN . . . . . [ ]
[ ] MG. HEAVIER PER TEN SPIKES THAN . . . . . [ ]
} USE STANDARD CULTIVARS FROM ABOVE

[ ] FLORETS PER SPIKELET

PERCENTAGE OF PLANTS WITH:

RACHIS: [ ] % SMOOTH [ ] % ROUGH

SPIKE COLOR: [1 0 0] % GREEN [ ] % PURPLE

LEMMA: [1 0 0] % AWNED [8] MM. AWN LENGTH

[ ] MM. GLUME LENGTH

[ ] 1 = SPIKELET LENGTH NEARLY EQUAL TO OUTER GLUMES
2 = SPIKELET LENGTH MUCH LONGER THAN OUTER GLUMES

11. COLEOPTILE:

[1 0 0] % PLANTS WITH ANTHOCYANIN IN COLEOPTILE

12. ANTHER COLOR:

[ ] % PLANTS WITH WHITE ANTHERS [ ] % PLANTS WITH YELLOW ANTHERS

[ ] % PLANTS WITH PURPLE ANTHERS

13. ROOT AND PLANT CHARACTERS:

[ ] % PLANTS WITH PROSTRATE GROWTH HABIT [1 0 0] % PLANTS WITH FLUROESCENT ROOTS

[1 0 0] % PLANTS WITH UPRIGHT GROWTH HABIT

14. SEED:

[6] MG. PER 1,000 SEED [8 0] MM. TOTAL LENGTH OF 10 SEEDS [2 0] MM. TOTAL WIDTH OF TEN SEEDS

15. DISEASE (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

8	CROWN RUST (Puccinia coronata)	0	DOLLAR SPOT (Sclerotinia)	0	BROWN PATCH (Rhizoctonia)
6	LEAF SPOT (Helminthosporium)	8	MILDEW		OTHER (Specify)
0	SNOW MOLD (Typhula)	0	RED THREAD (Corticium)		

16. INSECT (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

0 (Specify) _____

17. GIVE RESEMBLANCE VALUE IN LEFT COLUMN AND VARIETY CODE NUMBER IN RIGHT COLUMN FOR VARIETY WITH WHICH COMPARISON IS MADE (1 = LESS THAN, 2 = SAME AS, 3 = MORE ERECT, MORE RESISTANT, DENSER, MORE PERSISTENT, DARKER OR GREATER HEIGHT.):

RESEMBLANCE	CHARACTER	SIMILAR VARIETY	
3	PLANT HABIT (erectness)	1	1 = GULF
2	TILLERING	1	2 = WIMMERA 62
3	WINTER HARDINESS	1	3 = LINN
2	HIGH TEMP. STRESS RESISTANCE	1	4 = PELO
2	TURF PERSISTENCE	1	5 = NORLEA
3	PLANT COLOR	1	6 = ABERYSTWYTH S-23
3	VERTICAL SEEDLING GROWTH RATE	1	7 = MANHATTAN
	CROWN DENSITY		8 = PENNFINE
	MOWER SHREDDING RESISTANCE		

18. GIVE AREA OF ADAPTATION AND INTENDED USE: Hay or silage

19. GIVE AREA TEST RESULTS PRESENTED FROM: Ontario, CANADA, U.K., FRANCE

COMMENTS: