No. 7400078

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Ohio Agricultural Research Development Center

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 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.)

WHEAT

'Ruler'

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* 20th *day of* November *in the year of our Lord one thousand nine hundred and* seventy-four

Attest:

S. Rollin

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz

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	2. KIND NAME	FOR OFFICIAL USE ONLY
~~TN 1542~~ RULER	Soft Red Winter Wheat	PV NUMBER 7400078
3. GENUS AND SPECIES NAME: Triticum aestivum L.	4. FAMILY NAME (Botanical): Gramineae	FILING DATE 3-18-74 / TIME 3:00 P.M.
	5. DATE OF DETERMINATION: July 20, 1973	FEE RECEIVED $250.00 / BALANCE DUE $—
		$250.00 / $—
		$250.00 / $—

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
Ohio Agricultural Research & Development Center	Wooster, Ohio 44691	216-264-1021

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

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

Dr. H. N. Lafever
Agronomy Department
Ohio Agricultural Res. & Dev. Center
Wooster, Ohio 44691

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.

3/13/74 (DATE) — C.W. Donoho Jr. - Assoc. Director (SIGNATURE OF APPLICANT)

3/12/74 (DATE) — Howard N. Lafever (wheat breeder) (SIGNATURE OF APPLICANT)

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. ~~TN 1542 (temporary designation)~~ RULER originated in Ohio from a hand-pollinated cross of a Purdue University line known as 'L494A1-8-5-5' by 'Lucas' using Lucas as the pollen parent. The cross was made in 1957 and was designated '757'. L494A1-8-5-5 was a line selected from the cross of 'Norin 10-3' by 'Purdue R4746A6'. Purdue R4746A6 originated from a complex cross of (Kawvale-Fultz-Hungarian-W38-Wabash-Fairfield-Trumbull^3-Hope-Hussar) X (Trumbull-Fultz sel.-Minhardi-Wabash-Purplestraw-Chinese-Michigan Amber). Lucas was an Ohio-developed variety and the breeding history of Lucas may be found in Technical Bulletin 1278, U.S.D.A. entitled "Classification of Triticum Species and of Wheat Varieties Grown in the United States".

2. The line traces back to a single head selection made in the F_6 generation in 1963. The line was advanced to replicated yield trials in 1966 at Wooster, Ohio only, two locations in 1967, four locations in 1968, 5 locations in 1969, and at least 7 locations each succeeding year through 1973, all in Ohio. Further purification of the line was made by making a total of 208 head selections in 1967, 1970, and 1972. Breeders seed was comprised of the bulk of the progeny of these latter head selections. The line was first entered in the Uniform Eastern Soft Wheat Nursery in 1971 and continued in 1972 and 1973.

3. The line appears to be very homogeneous as observed in the field for the past 3 generations. This would logically be expected as the line was developed from a single head selected in F_6 with further selection in the F_{10}, F_{13} and F_{15} generations.

4. The line appears to be very stable and true breeding. However, some sterility occurs on ~~TN 1542~~ RULER under unusual environmental conditions which can lead to the occurrence of off-types the following generation due to outcrossing with adjacent varieties. The type of outcrosses varies depending on what variety is adjacent when these conditions occur. Most off-types can be expected to resemble ~~TN 1542~~ RULER as this line would be serving as the maternal parent. The number of off-types would be dependent on the proximity and maturity of adjacent varieties when sterility conditions occur, but have been observed to be minimal.

Exhibit B

Botanical Description of the Variety

'RULER' ~~TN 1542~~ is a very short, midseason soft red winter wheat with a dark green foliage. The stem is stiff and erect. At maturity the head is only slightly nodding. At heading the flag leaf is semi-erect. Winterhardiness under Ohio conditions is excellent. Early fall growth is mostly prostrate to semi-erect. Tillering ability is very good. TN 1542 appears very vigorous under most growth conditions.

'RULER' ~~TN 1542~~ is moderately tolerant to acid-soil conditions, very resistant to soil-borne spindle streak mosaic virus and moderately resistant to loose smut, but susceptible to most races of leaf rust, stem rust, and moderately susceptible to powdery mildew. It is also resistant to the Great Plains, A, C, and F races of Hessian fly.

'RULER' ~~TN 1542~~ heads about 5 days later than Arthur, produces large, mid-dense, fusiform heads with yellow anthers and round-shoulder glumes of medium length which are awnleted. Tip awns are from 1 to 3 cm. in length.

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)
Ohio Agricultural Research & Development Center

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Wooster, Ohio 44691

FOR OFFICIAL USE ONLY

PVPO NUMBER
74000 78

VARIETY NAME OR TEMPORARY DESIGNATION
Ruler

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

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

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2 3 0] FIRST FLOWERING

[2 3 5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[ ] NO. OF DAYS *EARLIER* THAN .....

[0 5] NO. OF DAYS *LATER* THAN .....

[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

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

[0 9 9] CM. HIGH

[0 4] CM. TALLER THAN .....

[ ] CM. SHORTER THAN .....

[1] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[ ] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

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

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

[1] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[2 2] 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:

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

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

[1 2] MM. LEAF WIDTH *(First leaf below flag leaf)*

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

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

[2 7] CM. LEAF LENGTH *(First leaf below flag leaf)*:

Exhibit D

Data Indicative of Novelty

'RULER' ~~TN 1542~~ is a soft red winter wheat which most closely resembles Logan and Lucas, however, it is about 10 cm shorter, 2 days earlier, has stiffer straw, is more susceptible to leaf rust, and most resistant to wheat spindle streak mosaic virus than Logan. ~~TN 1542~~ RULER is about 4 days earlier and 15 cm shorter than Lucas.

ROTTERDAM (The Netherlands)

Office 31, Blaak
P.O.B. 182
Telephone 010 - 142211
Telegrams Cebeco
Telex No. 21398
P.C. account 5658
Bank: Centrale Rabobank
Head-Office Utrecht
No. of account 30.00.00.065

CEBECO-HANDELSRAAD

Nationale coöperatieve aan- en verkoopvereniging voor land- en tuinbouw g.a.
National agricultural co-operative wholesale society

By Airmail
U.S. Department of Agriculture
Agricultural Marketing Service, Grain Division
National Agricultural Library
BELTSVILLE - Maryland 20705
U.S.A.

Dept.:		Extension:	ROTTERDAM,
Seed	dW/vG.	278	August 31st, 1976.

Gentlemen:

We refer to your letter of July 30, 1976 from which we learned that you were kind enough to refer our request for 2 kg. seed sample of "Ruler" wheat to Dr. Joseph Craddock, Plant Genetics and Germplasm Institute, ARS, Beltsville, Md. 20705.

This will thank you for your kindness and acknowledge due receipt of the 2 kg. of "Ruler" winter wheat. We shall be glad if you inform Dr. Craddock of the sample having been received.

Very truly yours,

CEBECO-HANDELSRAAD

mod. 910.05

Exhibit D

Data Indicative of Novelty

RULER ~~TN 1542~~ is a soft red winter wheat which most closely resembles Logan and Lucas, however, it is about 10 cm shorter, 2 days earlier, has stiffer straw, is more susceptible to leaf rust, and most resistant to wheat spindle streak mosaic virus than Logan. RULER ~~TN 1542~~ is about 4 days earlier and 15 cm shorter than Lucas.

Exhibit E

Statement of Applicant's Ownership

The Ohio Agricultural Research and Development Center, Wooster, Ohio is the sole, original and first developer and owner of ~~TN 1542~~ (Ryker) variety of soft red winter wheat for which it solicits a certificate of protection.

FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=(Mid-dense)

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

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

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

[1 1] 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.)*

[3] 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

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

13. COLEOPTILE COLOR:

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

14. SEEDLING ANTHOCYANIN:

[2] 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

[1] 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 4] MM. WIDTH

[3 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'

[3] 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)

[1] STEM RUST *(Races)* 15B-2,15B-6

[1] LEAF RUST *(Races)* UN05-66A,UN01-688, UN2-70-22, UN0168A

[0] STRIPE RUST *(Races)* _____

[2] LOOSE SMUT

[1] POWDERY MILDEW 151,32,31,113

[0] BUNT

[2] OTHER *(Specify)* spindle streak mosiac virus

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 [1] B [2] C

[1] D [1] E [2] F [1] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Lucas	Seed size	Lucas
Leaf size	Lucas	Seed shape	Lucas
Leaf color	Lucas	Coleoptile elongation	Lucas
Leaf carriage	Logan	Seedling pigmentation	Redcoat

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.

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)
Ohio Agricultural Research & Development Center

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Wooster, Ohio 44691

FOR OFFICIAL USE ONLY

PVPO NUMBER
740078

VARIETY NAME OR TEMPORARY DESIGNATION
Ruler

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.

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2. TYPE:

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

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

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

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][3][0] FIRST FLOWERING

[2][3][5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[ ][ ] NO. OF DAYS *EARLIER* THAN .....

[0][5] NO. OF DAYS *LATER* THAN .....

[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[1]

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

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

[0][4] CM. TALLER THAN .....

[ ][ ] CM. SHORTER THAN .....

[1] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[ ]

6. PLANT COLOR AT BOOTING *(See reverse)*:

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

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[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

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

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

[1] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

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10. LEAF:

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

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[1][2] MM. LEAF WIDTH *(First leaf below flag leaf)*

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

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

[2][7] CM. LEAF LENGTH *(First leaf below flag leaf)*: