No. 8000038

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

North American Plant Breeders

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 eighteen 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 (7 U.S.C. 2541-2542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Trident'

PLANT VARIETY PROTECTION OFFICE · U.S. DEPARTMENT OF AGRICULTURE

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* March *in the year of our Lord one thousand nine hundred and* eighty-two.

Attest:

Kenneth A. Evans

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R Block

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

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

1a. TEMPORARY DESIGNATION OF VARIETY: NAPB 61	1b. VARIETY NAME: Trident	FOR OFFICIAL USE ONLY — PV NUMBER: 8000038
2. KIND NAME: Alfalfa	3. GENUS AND SPECIES NAME: Medicago Sativa	FILING DATE: 12-27-79 — TIME: 3:30 A.M. (P.M.)
4. FAMILY NAME (BOTANICAL): ~~Leguminacea~~ FABACEAE	5. DATE OF DETERMINATION: December 1975	FEE RECEIVED: $ 500.00 / $ 250.00 — DATE: 12-27-79 / 1/5/82
6. NAME OF APPLICANT(S): North American Plant Breeders	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*: 5201 Johnson Drive, P. O. Box 2955, Mission, Kansas 66205	8. TELEPHONE AREA CODE AND NUMBER: 913-384-4940
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*: Corporation	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION: Connecticut	11. DATE OF INCORPORATION: March 9, 1973

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
Mr. Giles E. Dixon, Research Director
North American Plant Breeders
P. O. Box 2955, Mission, Kansas 66205

DR. J. B. MOUTRAY
R.R. 3
AMES, IOWA 50010

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, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [ ] 13D. Exhibit D, Additional Description of the Variety.

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.)* [ ] 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? 2 only
No registered class
[X] FOUNDATION [ ] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed 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 Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

12-19-79
(DATE)

(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

EXHIBIT A

Origin and Breeding History of the Variety

'Trident'

'Trident' is a 36 clone synthetic variety with parentage tracing to 'Apollo' (23 clones), an NAPB Flemish germplasm pool (8 clones), 'WL 318' (4 clones) and an NAPB central germplasm pool (one clone). 'Trident' was derived by submitting the above named varieties and germplasm to additional screening for Phytophthora root rot resistance in a field nursery at Ames, Iowa. An average of five cycles of phenotypic recurrent selection for Phytophthora resistance were used in the development of 'Trident'.

Breeder seed was formed by interpollinating approximately 20,000 cuttings derived from the 36 parent clones in isolation near Nampa, Idaho.

During seed multiplication no variants beyond the limits defined under Exhibit C have been found and multiplication procedure will ensure that seed being sold as 'Trident' will not be shifted in characteristics beyond presently acceptable limits for alfalfa varieties.

It is also confirmed that Trident meets presently acceptable levels of uniformity for alfalfa varieties.

EXHIBIT B

Novelty Statement

'TRIDENT'

'Trident' most closely resembles the vareity 'Apollo' considering all characteristics. 'Trident' differs from 'Apollo' by having more Phytophthora resistance (Barnes letter) and less resistance to the spotted alfalfa aphid biotype H (table 1).

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

8000038

AGRICULTURAL RESEARCH
NORTH CENTRAL REGION
PLANT SCIENCE RESEARCH UNIT
DEPARTMENT OF AGRONOMY AND PLANT GENETICS
UNIVERSITY OF MINNESOTA
1509 GORTNER AVENUE
ST. PAUL, MINNESOTA 55108

AUG 14 1979

August 10, 1979

Dr. Jim B. Moutray
Director of Forage Research
North American Plant Breeders
R.R. #3
Ames, IA 50010

Dear Jim:

Your letter of May 29, requesting assistance differentiating the Phytophthora root rot resistance of several alfalfa varieties caught me at a very busy season. Sorry for the delay in answering. I hope it has not inconvenienced you.

According to my records and those of the National Alfalfa Certified Variety Review Board, G7730 is not a recognized alfalfa variety. We have not tested any such variety at Minnesota. Unfortunately, we have not tested 'Apollo', 'Trident', and 'Answer' in the same test for Phytophthora root rot resistance. But, it is possible to compare their respective resistances in relation to the resistant check variety 'Agate'. Data are presented for both average severity index (ASI) and % resistant plants.

	ASI per test			
Entry	1974	1976F	1977F	1977P
Saranac (Susceptible Check)	4.19	4.31	4.74	4.52
Agate (Resistant Check)	2.61	2.83	3.07	2.94
Apollo	2.73	----	----	2.92
Answer 63	----	2.34	2.58	----
Trident 61	----	2.42	2.63	----
LSD 5% Level	.46	.45	.48	.36
CV %	9.5	7.6	8.2	6.1

Entry	% Resistant plants per test			
	1974	1976F	1977F	1977P
Saranac (Susceptible Check)	02	2.0	0.7	01
Agate (Resistant Check)	43	34.8	34.7	43
Apollo		----	----	
Answer		57.0	49.4	
Trident	76	61.7	52.4	65

Based on our observations in M[illegible]llo has slightly le[illegible] resistance than Agate, but the[illegible] not statistically [illegible] economically different. Both [illegible] are more resistant than Agate, therefore they would be more resistant than Apollo.

I hope the above data will be useful. Best wishes.

Sincerely,

Don Barnes

DONALD K. BARNES
Research Geneticist

DKB:sjl

cc: F. I. Frosheiser

1980 Edition MN Misc Report 24

Table 2. Winterhardiness index and disease resistance of alfalfa varieties eligible for certification

Variety	Developer or owner[1]	Winterhardiness (Index)[2]	RESISTANT PLANTS[3] Bacterial wilt (percent)	Phytophthora root rot (percent)
VERY WINTERHARDY		---------- highest value best ----------		
Norseman	Barzen of Minneapolis[a]	7.9	30	4
Ladak	USDA (foreign introduction)[chr]	7.5	8	2
Travois	S. Dakota Agr. Exp. Sta.[cr]	7.4	37	1
Ramsey	Minnesota Agr. Exp. Sta. & USDA[m]	6.7	37	9
WINTERHARDY				
Baker	Nebraska Agr. Exp. Sta. & USDA[cirt]	6.5	50	3
Vernal	Wisconsin Agr. Exp. Sta. & USDA[cehijkmoqrstu]	6.5	42	2
Titan	Rudy Patrick Co.[f]	6.4	60	2
Conquest	Pioneer Hi-Bred International Inc.[m]	6.3	21	4
123	DeKalb Ag Research Inc.[d]	6.3	41	3
WL 215	Waterman-Loomis Co.[cj]	6.3	36	4
Agate	Minnesota Agr. Exp. Sta. & USDA[chijkmoqrstu]	6.0	65	43
Iroquois	Cornell University[cijostu]	6.0	61	1
Ladak 65	Montana Agr. Exp. Sta.[a]	6.0	36	2
Nugget	P-A-G[1]	5.9	46	<1
520	Pioneer Hi-Bred International Inc.[n]	5.9	40	1
521	Pioneer Hi-Bred International Inc.[n]	5.9	19	1
524	Pioneer Hi-Bred International Inc.[n]	5.9	24	1
Blazer	Land O'Lakes[i]	5.9	53	19
545	Pioneer Hi-Bred International Inc.[n]	5.8	35	25
SX-10	Sexauer Co.[r]	5.7	5	3
Phytor	Northrup King & Co.[k]	5.5	34	24
Valor	Land O'Lakes[i]	5.5	36	2
Weevlchek	Farmers Forage Res. Coop.[c]	5.5	57	2
120	DeKalb Ag. Research Inc.[d]	5.5	57	39
Anchor	Rudy Patrick Co.[f]	5.4	36	3
Gladiator	Northrup King Co.[k]	5.4	57	1
Polar 1	Pride Seed Co.[p]	5.4	49	8
Ranger	Nebraska Agr. Exp. Sta. & USDA[cehijmoru]	5.4	18	2
WL 220	Waterman-Loomis Co.[j]	5.4	49	12
MODERATELY WINTERHARDY				
Pacer	Land O'Lakes[i]	5.3	33	8
Citation	North American Plant Breeders[j]	5.2	45	2
Marathon	Cargill[b]	5.2	36	2
Apollo	North American Plant Breeders[f]	5.1	36	40
Tempo	Farmers Forage Res. Coop.[c]	5.1	26	2
A59	E.F. Mangelsdorf & Bros. Inc.[q]	5.0	16	4
Classic	Farmers Forage Res. Coop.[c]	5.0	39	7
530	Pioneer Hi-Bred International Inc.[n]	5.0	38	2
WL 309	Waterman-Loomis Co.[cju]	4.7	25	3
WL 311	Waterman-Loomis Co.[c]	4.7	36	2
Answer	Midland Cooperatives, Inc.[j]	4.6	50	66
Honeoye	Cornell University[s]	4.6	16	<1
Primal	Pride Seed Co.[p]	4.6	62	9
Saranac AR	Cornell University	4.6	29	8
WL 318	Waterman-Loomis Co.[cju]	4.6	32	20
G777	Funk Seed Int.[g]	4.5	25	4
Saranac	Cornell University[imo]	4.5	49	2
Thor	Northrup King & Co.[r]	4.5	69	1
Trident	P-A-G[1]	4.5	37	71
SX-418	The Sexauer Co.[r]	4.5	33	— 2
A-57	Embro Seed Co. Inc.[q]	4.4	12	6
Warrior	Northrup King & Co.[k]	4.3	20	<1
131	Cal/West Seeds[d]	4.3	10	1
531	Pioneer Hi-Bred International Inc.[n]	4.3	23	3
Olympic	North American Plant Breeders[e]	4.2	39	3
WL 219	Waterman-Loomis Co.[c]	4.2	27	9
Hi-Phy	Farmers Forage Res. Coop.[c]	4.1	64	26

[1]1980 seed suppliers: a. Barzen of Minneapolis, b. Cargill Seeds, c. Cenex, d. DeKalb, e. Farmland Industries, f. Field Seed Farms, g. Funk Seeds International, Inc., h. Interstate Seed and Grain Co., i. Land O'Lakes, Inc., j. Midland Cooperatives, Inc. k. Northrup King Co., l. P-A-G Seeds, m. Peterson Forage Seed Div., n. Pioneer Hi-Bred International, Inc., o. Premium Seed Co., p. Pride Co., Inc., q. Ramy Seed Co., r. The Sexauer Co., s. Twin City Seed Co., t. Werner Farm Seeds, Inc., u. Peterson-Biddick Co. [2]Based on fall growth after cutting 1st week of September: 1 = tallest (least winterhardy), 9 = shortest. [3]Plants with little or no injury are classified as resistant.

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Minnesota Miscellaneous Report 24 1981

Table 4. Winterhardiness index and disease resistance of alfalfa varieties eligible for certification

Variety	Developer or owner[1]	Winter hardiness (index)[2]	RESISTANT PLANTS[3] Bacterial wilt (percent)	Phytophthora root rot (percent)
VERY WINTERHARDY		highest value best		
Norseman	Barzen of Minneapolis[a]	7.9	30	3
Ladak	USDA (foreign introduction)[chr]	7.5	8	2
Travois	S. Dakota Agr. Exp. Sta.[cr]	7.4	37	1
WINTERHARDY				
Vernal	Wisconsin Agr. Exp. Sta. & USDA[acehjklmoqrstuv]	6.5	42	5
Baker	Nebraska Agr. Exp. Sta. & USDA[cjrt]	6.5	50	2
Titan	Rudy Patrick Co.[f]	6.4	60	2
123	DeKalb Ag Research Inc.[d]	6.3	41	3
WL 215	Waterman-Loomis Co.[cj]	6.3	36	4
Agate	Minnesota Agr. Exp. Sta. & USDA[chjmoqrstu]	6.0	65	43
Iroquois	Cornell University[cjostu]	6.0	61	1
Ladak 65	Montana Agr. Exp. Sta.[a]	6.0	36	2
Nugget	P-A-G[l]	5.9	46	1
520	Pioneer Hi-Bred International Inc.[n]	5.9	40	4
521	Pioneer Hi-Bred International Inc.[n]	5.9	19	2
524	Pioneer Hi-Bred International Inc.[n]	5.9	24	8
Blazer	Land O'Lakes[i]	5.9	53	26
545	Pioneer Hi-Bred International Inc.[n]	5.8	35	30
SX-10	Sexauer Co.[r]	5.7	5	2
Phytor	Northrup King Co.[k]	5.5	34	30
Valor	Land O'Lakes[i]	5.5	36	2
Weevlchek	Farmers Forage Res. Coop.[c]	5.5	57	2
120	DeKalb Ag. Research Inc.[d]	5.5	57	39
Anchor	Rudy Patrick Co.[fv]	5.4	36	5
Gladiator	Northrup King Co.[k]	5.4	57	1
Polar 1	Pride Seed Co.[p]	5.4	49	10
Ranger	Nebraska Agr. Exp. Sta. & USDA[chijoru]	5.4	18	4
WL 220	Waterman-Loomis Co.[j]	5.4	49	12
MODERATELY WINTERHARDY				
A-54	Ramy Seed Co.[q]	5.3	26	5
Pacer	Land O'Lakes[i]	5.3	33	8
Citation	North American Plant Breeders[j]	5.2	45	3
Marathon	Cargill[b]	5.2	36	2
Apollo	North American Plant Breeders[fv]	5.1	36	36
Tempo	Farmers Forage Res. Coop.[c]	5.1	26	8
A-59	E. F. Mangelsdorf & Bros. Inc.[q]	5.0	16	4
Classic	Farmers Forage Res. Coop.[c]	5.0	39	7
Magnum	Dairyland Seed Co. Inc.[w]	4.7	51	5
WL 309	Waterman-Loomis Co.[cju]	4.7	25	4
WL 311	Waterman-Loomis Co.[c]	4.7	36	5
Answer	Midland Cooperatives, Inc.[j]	4.6	50	66
Honeoye	Cornell University[a]	4.6	16	1
Primal	Pride Seed Co.[p]	4.6	62	9
Saranac AR	Cornell University	4.6	29	8
WL 318	Waterman-Loomis Co.[cju]	4.6	32	21
G777	Funk Seed Int.[g]	4.5	25	4
Saranac	Cornell University[mot]	4.5	49	3
Thor	Northrup King Co.[k]	4.5	69	1
Trident	P-A-G[l]	4.5	37	71
SX-418	The Sexauer Co.[r]	4.5	33	2

Table 1. Reaction of NAPB alfalfa varieties to spotted alfalfa aphid biotype H[1]

Variety	% seedling survival	Variety	% seedling survival	Variety	% seedling survival
G7730	0	Apollo	48.25	Apollo	46.25 R
Answer	9.96	MSTT res.ck.	88.75	MSTT res. ck.	92.0
Trident	17.69 MR				
MSTT res. ck.	75.55				
LSD.05	13.46	LSD.05	22.83	LSD.05	19.29
test August 1979		test October 1979		test January 1979	

[1]Tests conducted by Dr. M. Nielson University of Arizona.

FORM APPROVED, OMB NO. 40-R3712

FORM GR 470-32 (3/75)

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

EXHIBIT C

OBJECTIVE DESCRIPTION OF VARIETY

Alfalfa (Medicago sativa L. complex)

NAME OF APPLICANT(S)
North American Plant Breeders

ADDRESS (*Street and No., or R.F.D. No., City, State, and Zip Code*)
5201 Johnson Drive
P. O. Box 2955
Mission, Kansas 66205

VARIETY NAME OR TEMPORARY DESIGNATION
Trident

FOR OFFICIAL USE ONLY
PVPO NUMBER 8000038

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.

NOTE: For single plant data a minimum of 100 plants is suggested Minimum of 200 plants used.

INDICATE AREA WHERE TEST WAS CONDUCTED. FURTHER EXPLANATION CAN GO IN COMMENTS AT THE END OF THE FORM.

1. PRIMARY AREA OF ADAPTATION

[2]
1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST
4 = SOUTHEAST 5 = SOUTHWEST 6 = SOUTHERN PLAINS
7 = INTERMOUNTAIN

[ ] AREA TESTED 1 2 3 6

2. WINTER HARDINESS

5 DCB 12 Nov 1981
[~~7~~]
1 = NON-HARDY (Mesa Sirsa) 3 = INTERMEDIATE NON-HARDY
5 = MODERATELY HARDY (Saranac) 7 = HARDY (Vernal)
9 = EXTREMELY HARDY (Norseman)

[2] AREA TESTED

[2] SOURCE OF INFORMATION: 1 = ANTICIPATED 2 = MEASURED

3. FALL GROWTH HABIT

[6]
1 = ERECT (Mesa Sirsa) 3 = SEMIERECT (DuPuits)
5 = INTERMEDIATE (Saranac) 7 = SEMIDECUMENT (Vernal)
9 = DECUMBENT (Norsement)

[2] AREA TESTED

4. RECOVERY AFTER FIRST SPRING CUTTING

[4]
1 = VERY FAST (Mesa Sirsa) 3 = FAST (Saranac) 5 = INTERMEDIATE
7 = SLOW (Vernal) 9 = VERY SLOW (Norseman)

[2] AREA TESTED

5. FLOWERING DATE (FIRST SPRING GROWTH)

[0|3] DAYS EARLIER THAN . . . . . [4]
[ ] DAYS LATER THAN . . . . . [ ]
1 = MESA SIRSA 2 = LAHONTAN
3 = SARANAC 4 = VERNAL
5 = NORSEMAN

[2] AREA TESTED

6. CROWN TYPE

[5]
1 = SPREADING ROOTS 3 = SPREADING RHIZOMES (Teton)
5 = BROAD (Vernal) 7 = INTERMEDIATE (Saranac)
9 = NARROW (Mesa Sirsa)

[2] AREA TESTED

7. PLANT COLOR

[5]
3 = DARK GREEN (Weevlchek) 5 = GREEN (Vernal)
7 = LIGHT GREEN (Ranger)

[2] AREA TESTED

8. HAIRINESS

[| |] % PLANTS WITH PUBESCENT STEMS [| |] % PLANTS WITH PUBESCENT PODS

9. POD SHAPE

[| |] % PLANTS WITH TIGHT COILS [| |] % PLANTS WITH LOOSE COILS [| |] % PLANTS WITH SICKLE PODS (Less than 1 coil)

10. GIVE ITEM LENGTH FREQUENCY DISTRIBUTION FOR SUBMITTED AND 1 TO 5 STANDARD VARIETIES 1/

VARIETY NAME	STEM LENGTH FREQUENCY DISTRIBUTION 2/											AVERAGE STEM LENGTH
	0 – 5 mm. %	6 – 10 mm. %	11 – 15 mm. %	16 – 20 mm. %	21 – 30 mm. %	31 – 40 mm. %	41 – 50 mm. %	51 – 60 mm. %	61 – 70 mm. %	71 – 80 mm. %	81 + mm. %	

11. FLOWER COLOR 3/ (DETERMINE COLOR ON FRESHLY OPENED FLOWERS)

0 9 9	% PURPLE	0 0 1	% VARIEGATED		% YELLOW		% CREAM		% WHITE

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
BACTERIAL WILT	(SUBMITTED)	40.5	38		1977 Univ. Minnesota St. Paul, Minnesota
	(RES. CK.) VERNAL	44.4	42		
	(SUS. CK.) NARRAGANSETT	2.2	02		
ANTHRACNOSE	(SUBMITTED)	25.0	22		1978 N. Carolina State University, Raleigh, N.C.
	(RES. CK.) ARC	73.8	65		
	(SUS. CK.) SARANAC	4.4	04		
COMMON LEAF SPOT	(SUBMITTED)				
	(RES. CK.) RAMSEY				
	(SUS. CK.) RANGER				
DOWNY MILDEW	(SUBMITTED)				
	(RES. CK.) SARANAC				
	(SUS. CK.) KANZA				
PHYTOPHTHORA ROOT ROT	(SUBMITTED)	61.7	76		1976 University Minnesota St. Paul, Minnesota
	(RES. CK.) AGATE	34.8	43		
	(SUS. CK.) SARANAC	2.0	02		
Fusarium wilt	(SUBMITTED)	53.9			1978 Univ. Minnesota St. Paul, Minnesota
OTHER	(RES. CK.) Moapa 69	87.1	too high		
Fusarium Oxysporum	(SUS. CK.) Mn GN-1	2.4			

1/ Preferred standards: Saranac, Vernal, Norseman, Lahontan, Mesa Sirsa. Twelve hours light at 25° C with 20,000 lux of cool white florescent; 2,000 lux of incandescent filament light and twelve hours darkness at 5° C.

2/ From cotyledonary node to tip of stem 20 days after planting.

3/ For further clarification consult USDA Agricultural Handbook No. 424.

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in ARS-NC-19, September 1974.

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

INSECT	CULTIVAR	% SEEDLING SURVIVAL	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
PEA APHID	(SUBMITTED)				
	(RES. CK.) KANZA				
	(SUS. CK.) RANGER				
Biotype H SPOTTED ALFALFA APHID	(SUBMITTED)	17.7		16	1979 Tucson, Arizona
	MSTT ~~(RES. CK.) KANZA~~	75.5	← NOT STD ✓		
	(SUS. CK.) RANGER				

INSECT	CULTIVAR	% DEFOLIATION		5	TEST, YEAR & LOCATION 4/
ALFALFA WEEVIL	(SUBMITTED)				
	(RES. CK.) ARK				
	(SUS. CK.) VERNAL				

INSECT	CULTIVAR	% RESISTANT PLANTS	EMERGED ADULTS PER PLANT	EMERGED LSD .05	TEST, YEAR & LOCATION 4/
ALFALFA SEED CHALCID	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) SONORA				

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
POTATO LEAF-HOPPER	(SUBMITTED)	4.62			1977 NAPB, Ames, Iowa
	Weevlcheck (RES. CK.)	36.82	← NOT STD ✓		
	Saranac (SUS. CK.)	7.95	←		
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in ARS-NC-19, September 1974.

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
NEMATODE	**CULTIVAR**	**% RESISTANT PLANTS**	**INDEX (ASI)**	**ASI LSD .05**	**TEST, YEAR & LOCATION 4/**
STEM NEMATODE	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) RANGER				
NORTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) NEV. SYN. XX				
	(SUS. CK.) LAHONTAN				
SOUTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) MOAPA 69				
	(SUS. CK.) LAHONTAN				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

13. INDICATE A VARIETY THAT MOST CLOSELY RESEMBLES THE VARIETY SUBMITTED FOR THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
AREA OF ADAPTATION	Apollo	PLANT HEIGHT	Apollo
RECOVERY AFTER CUTTING	Apollo	WINTER HARDINESS	Apollo

REFERENCES

Barnes, D.K., and C.H. Hanson, An Illustrated Summary of Genetic Traits in Tetraploid and Diploid Alfalfa, ARS Technical Bul. 1370.
Barnes, D.K., et al, Standard Tests to Characterize Pest Resistance in Alfalfa Varieties. ARS-NC-19, September 1974.
Nittler, L.W., G.W. McKee, and J.L. Newcomer, Principles and Methods of Testing Alfalfa Seed for Varietal Purity. New York Agricultural Experiment Station Bul. 807.
USDA Agricultural Handbook No. 424.

COMMENTS