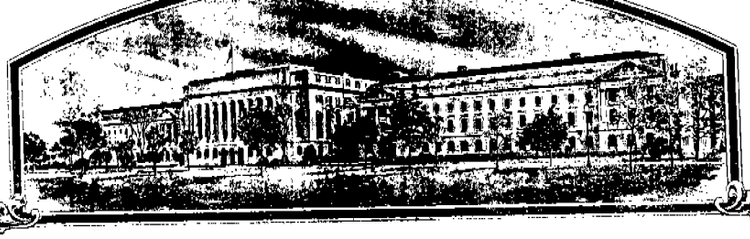

No. 7600023

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 *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 EX-[illegible]UDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, [illegible]MPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT [illegible]Y THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT [illegible] 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Citation'

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* eighty.

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION	2. KIND NAME	FOR OFFICIAL USE ONLY
Citation (Tested as RP 103)	Alfalfa	PV NUMBER 7600023
3. GENUS AND SPECIES NAME: Medicago sativa	4. FAMILY NAME *(Botanical)*: Leguminacea	FILING DATE 12-1-75 / TIME 12:30 P.M.
	5. DATE OF DETERMINATION: January 1972	FEE RECEIVED $250 $250 $250.00 / BALANCE DUE $ — $ — $ 10/27/80

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
North American Plant Breeders	~~P. O. Box 991~~ P.O. Box 2955 5201 Johnson Dr. Mission, KS 66205 ~~Little Rock, Arkansas 72203~~ KE	501-374-1652

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Connecticut	March 9, 1973

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

~~Mr. Barry W. A. Greengrass, General Manager~~ Mr. Giles E. Dixon
North American Plant Breeders
~~P. O. Box 991~~ P.O. Box 2955
~~Little Rock, Arkansas 72203~~ 5201 Johnson Dr.
Mission, KS 66205 KE

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.)* [ ] 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 [ ] 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~~.

December 2, 1975 (DATE) — Jim B Moultray (SIGNATURE OF APPLICANT)

December 2, 1975 (DATE) — (SIGNATURE OF APPLICANT)

EXHIBIT A

Origin and Breeding History

CITATION

Citation is a 7-clone limited generation synthetic cultivar out of the recurrent selection program which began in 1960. Primary consideration in the recurrent program has been forage and seed yield, bacterial wilt and pea aphid resistance and winterhardiness. Other characteristics considered were seedling vigor, fall and spring vigor, recovery after cutting, various leaf and stem disease and leafhopper yellowing.

Citation is a combination Flemish-hardy cultivar with parent clones tracing to the Flemish types Saranac (one), Alfa (one) and DuPuits (two) and the hardy types Vernal (two) and Narragansett (one).

Breeders seed of Citation was produced in 1972 in an isolated block in Idaho by transplanting approximately 1100 cuttings of each of the seven parent clones in a randomized arrangement. Stability of the cultivar will be assured since all commercial seed will trace to the original breeders seed which is held in cold storage by North American Plant Breeders. Foundation seed will be produced only from breeders seed while certified seed may be produced from breeders or foundation seed. Seed produced from certified seed will not be recognized as Citation.

AMENDED EXHIBIT A

Citation: Origin and Breeding History

It is confirmed that during seed production no variants beyond the limits defined under Exhibit C have been found and that the multiplication procedure will ensure that the seed being sold as Citation will not have shifted in characteristics beyond accepted limits for alfalfa varieties.

ADDENDUM TO EXHIBIT A

CITATION - - UNIFORMITY

It is also confirmed that:

"CITATION MEETS PRESENTLY ACCEPTABLE LEVELS OF UNIFORMITY FOR ALFALFA VARIETIES."

NORTH AMERICAN PLANT BREEDERS

Aug 1 1978

Date

Giles E. Dixon
Research Director

EXHIBIT B

Botanical description of Citation

Citation exhibits most growth habits typical of Flemish varieties, i.e. good seedling vigor, fast recovery following cutting and upright growth. Citation is about midway between Saranac and Vernal in fall dormancy.

Most plants have large hollow stems typical of Flemish types, with a minority of plants with numerous small solid stems.

Citation flowers earlier than other varieties tested being 6-7 days earlier than Vernal. Flowers are mostly purple with a few blues and very few green and cream.

Bacterial wilt resistance is similar to Vernal with pea aphid resistance 45-50 percent. Tolerance to leafhopper yellowing is similar to Vernal and better than Saranac. Forage yield is high with seed yield better than Vernal and Saranac.

TABLE 1

1973 Spaced Plant Nursery

University of Minnesota

1974

Entry	Minnesota Seed lot No.	Fall growth* Score (10-17-73)	Winter injury** Score (5-7-74)
African	2437	2.50	4.52
DuPuits		3.30	2.07
Saranac (SCC 72)	2694	4.66	2.16
Ranger	2449	5.19	2.15
Vernal (VCC 72)	2695	5.88	1.55
Norseman	2405	7.60	1.51
LSD 5% level		.39	0.23
LSD 1% level		.51	0.30
CV		7.7%	10.6%

*Seeded 5-24-73 and thinned to one plant per 10-12 inches of row. Eight replications. 20 ft. row per plot. Plants clipped 9-7-73. Fall dormancy reading made October 17, 1973.

Fall dormancy scored as 0-9: 0 = 18 in. or higher, 1 = 16" - 18", 2 = 14"-16", 3 = 12"-14", 4 = 10"-12", 5 = 8"-10", 6 = 6"-8" 7 = 4"-6", 8 = 2'-4", 9 = 0"-2".

** Calculated on basis of average severity of winter injury of individual plants in each of 8 replications. Injury scored 1-5, 1 = no injury and 5 = plant dead.

Your entry(ies)	Rudy Patrick Seed Co.		
RP 103 Citation (Foundation)	2669	5.17	1.71

TABLE 2

1974 Alfalfa Fall Dormancy Trial*

University of Minnesota

1974 Data

Entry	Minn. Seed Lot #	Number of plants in each class** 0	1	2	3	4	5	6	7	8	9	Average Score
African	2437	0	0	2	4	19	13	6	0	0	0	4.47
DuPuits		0	0	0	0	1	19	33	18	1	0	5.97
Saranac		0	0	0	0	1	11	21	25	12	0	6.46
Ranger	2449	0	0	0	0	2	5	15	27	5	1	6.49
Vernal VCC72	2695	0	0	0	0	0	0	8	16	15	1	7.21
Norseman	2405	0	0	0	0	0	0	1	6	35	22	8.14
LSD 5%												.54
1%												.72
CV												6.0

* Seeded 5-23-74 and thinned to one plant per 10-12 inches of row. Four replications. 22 ft. row per plot. Plants clipped 9-9-74. Fall dormancy reading made October 10, 1974.

** Fall dormancy scored as 0-9: 0 = 18 in. or higher, 1 = 16"-18", 2 = 14"-16", 3 = 12"-14", 4 = 10"-12", 5 = 8"-10", 6 = 6"-8", 7 = 4"-6", 8 = 2"-4", 9 = 0"-2".

Your entries - North American Plant Breeders

Citation Br.	3011	0	0	0	0	0	9	15	18	13	2	6.75
Citation Fdn.	3012	0	0	0	0	1	7	16	21	26	3	6.94
NAPB 41 Atlas	3058	0	0	0	0	0	13	23	26	17	1	6.62
NAPB 42 Victor	3048	0	0	0	0	0	3	24	21	8	2	6.69
NAPB 43 Olympic	3049	0	0	0	0	1	13	17	28	11	2	6.58
NAPB 44 Apollo	3050	0	0	0	0	0	4	25	28	17	0	6.75

Mailed to Dr. Jim Moutray
10-23-74

Laddie J. Elling

cc: Duane M. Smith

TABLE 4

1974 Spaced Plant Nursery[1], NAPB Ames, Iowa

Fall Dormancy

	1975 Data (height in inches)[2] Number of Plants in Each Category																			1975
Entry	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Average
Apollo	1	5	6	8	10	12	16	15	17	26	10	30	12	15	8	4	1	0	0	9.5
Atlas	0	2	1	5	5	16	23	33	15	29	17	25	6	9	6	3	0	0	1	10.1
Olympic	0	2	1	3	6	10	9	20	9	28	15	37	11	22	6	2	5	3	1	10.6
Victor	0	4	2	1	4	14	8	14	14	29	20	27	7	9	4	3	1	0	0	9.8
Nugget	0	1	3	5	6	8	8	16	10	30	17	13	10	6	1	1	0	0	0	9.4
Citation	0	1	4	5	6	10	17	27	18	17	20	18	7	6	3	0	0	0	0	9.4
Titan	0	0	4	6	9	20	15	25	14	18	15	10	6	7	2	2	0	0	0	8.7
Anchor	0	1	1	3	2	7	10	20	15	22	17	17	5	11	4	0	0	0	0	9.8
Vernal	1	5	5	9	13	19	25	24	20	22	16	15	4	2	2	1	0	1	0	8.2
Saranac	0	0	1	3	7	12	10	26	18	39	24	37	14	9	6	1	3	0	0	10.1

1 Seeded 5-14-74 and thinned to 12" spacing June '74.

2 1975 cut September 2, read October 14, average of 178 plants per variety.

TABLE 5

Fall dormancy of alfalfa varieties in forage trials

Entry	NAPB Ames, Iowa[1] 10-22-74	NAPB Ames, Iowa[1] 10-14-75	NAPB Ames, Iowa[1] 10-22-74	NAPB Ames, Iowa[1] 10-14-75	NAPB Ames, Iowa[1] 10-15-75	NAPB Brookston[2] Indiana 10-28-75	Univ.Neb.[2] Mead 10-6-75	Texas A & M[1] Bushland 10-15-75	Univ. Wisc.[1] Janesville 10-22-75
Apollo	6.12	11.6	6.0	14.1	5.9	5.4	---	11.4	7.62
Atlas	---	---	6.5	14.1	6.4	4.0	---	13.0	---
Olympic	7.32	13.7	6.5	14.1	7.3	2.2	4.25	13.4	9.35
Victor	7.20	13.6	6.5	14.1	6.6	3.0	5.00	14.6	8.26
Nugget	5.6	12.4	5.4	12.7	5.0	8.0	---	---	---
Citation	6.1	12.2	5.6	14.1	4.9	6.0	5.00	---	---
Anchor	5.4	13.2	5.6	13.2	5.4	6.4	---	9.1	---
Titan	4.5	11.9	4.8	12.0	5.0	7.8	---	9.5	---
Vernal[3]	4.4	9.8	4.7	11.3	---	5.4	5.75	9.1	6.12
Saranac	7.0	14.0	6.7	14.3	5.7	5.2	4.75	10.6	8.06
Agate	5.2	11.6	4.8	12.2	4.9	8.4	---	8.3	---
LSD 5%		1.9		.8		1.25			
C. V.		11.9		4.9		19.5			
Seeded	4-74		5-74		4-75	4-75	4-74	8-74	5-75

1 Height in inches

2 Higher ratings indicate less fall growth

3 Left out of data from 1975 seedings. Seed received as certified Vernal does not have Vernal fall dormancy characteristics.

TABLE 6

Crown Width of Alfalfa Varieties at Ames, Iowa

Variety	Av. Width[1] Inches	No. Plants
Anchor	4.78	139
Nugget	4.48	130
Citation	4.22	156
Apollo	4.05	195
Atlas	4.73	199
Olympic	4.34	185
Victor	4.79	158
Titan	4.94	160
Saranac	3.89	207

Seeded in 30" rows May 1974 and thinned to one plant per foot. Measured October 31, 1975.

TABLE 7

Pod Shape and Pubescence of NAPB Alfalfa Varieties, October 1975, Warden, Washington

Variety	% Plants With[1] Pubescent Pods	% Plants With Tight Pods	% Plants With Loose Pods	% Plants With Sickle Pods
Anchor	89	86	14	0
Nugget	66	87	13	0
Citation	86	90	10	0
Apollo	82	88	12	0
Atlas	77	82	18	0
Olympic	79	81	19	0
Victor	93	84	16	0

1 1-4 rating, 1 = most hair 1 + 2 = % pubescent pods

TABLE 8

1973 Bacterial Wilt Trial

University of Minnesota

1973

Entry	Minn. Seed Lot #	Plants Resistant* Actual %	Plants Resistant* Transformed %	Average Severity Index **
Narragansett	AS 4	.01	0.57	4.42
Ranger	AR 132	15.13	22.77	2.98
Vernal	FC 33696	36.91	37.42	2.30
LSD 5% Level			8.4	.41
CV			16.4%	9.90%

* Considering plants read 0 and 1 as resistant

** Calculated on basis of average severity infection of each plant

Your entry (ies) _____

RP 103 Foundation Citation	2669	38.27	37.88	2.07

TABLE 9

1974 Bacterial Wilt Trial

University of Minnesota

Entry	Minnesota Seed lot No.	Average severity index*	Actual percent resistant plants**
Narragansett	AS-4	4.30	0.0
Ranger	AR-132	2.71	17.2
Vernal	FC 33696	2.14	35.1
LSD 5% level		0.42	
LSD 1% level		0.56	
CV		10.7%	

*Calculated on basis of average severity infection of individual plants in each of 3 replications.

**Plants scored 0 and 1 (on a 0-5 scale) considered resistant.

Your entry (ies): Rudy Patrick Seed Co.

RP103, BRI-73 Breeders	Citation 3011	2.14	36.7
RPW73, FD103 Foundation	Citation 3012	1.88	45.3

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)	wrong scoring system			NAPB Ames, Iowa 1972-73 (Table 16)
	(RES. CK.) KANZA				
	(SUS. CK.) RANGER				
SPOTTED ALFALFA APHID	(SUBMITTED)				
	(RES. CK.) KANZA				
	(SUS. CK.) RANGER				

INSECT	CULTIVAR	% DEFOLIATION	AVG. SEVERITY	ASI	TEST, YEAR & LOCATION 4/
ALFALFA WEEVIL	(SUBMITTED)		only ASI's		Univ. Nebraska 1975 Av. of two ratings six days apart.
	(RES. CK.) ARK				
	(SUS. CK.) VERNAL				

INSECT	CULTIVAR	% RESISTANT PLANTS		ED 5	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)	wrong scoring system			NAPB Ames, Iowa 1975 (Table 17)
	Weevlchek (RES. CK.)				
	Ranger (SUS. CK.)				
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	Anchor	PLANT HEIGHT	Anchor
RECOVERY AFTER CUTTING	Anchor	WINTER HARDINESS	Anchor

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

STEM LENGTH FREQUENCY DISTRIBUTION FOR SUBMITTED AND 1 TO 5 STANDARD VARIETIES 1/

VARIETY NAME	STEM LENGTH FREQUENCY DISTRIBUTION 2/ 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. %	AVERAGE STEM LENGTH

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

071 % PURPLE 029 % VARIEGATED 000 % YELLOW 000 % CREAM 000 % 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)	43	44	N..37	Av. of Univ. Minn. 1973-1974 tests (Tables 8-9)
	(RES. CK.) VERNAL	42	42		
	(SUS. CK.) NARRAGANSETT	00	00		
ANTHRACNOSE	(SUBMITTED)	1973	1974	SL AND	TABLES OF 15 SEPT 80
	(RES. CK.) ARC				
	(SUS. CK.) SARANAC	NAPB 1980			
COMMON LEAF SPOT	(SUBMITTED)				
	(RES. CK.) RAMSEY				
	(SUS. CK.) RANGER				
DOWNY MILDEW	(SUBMITTED)				
	(RES. CK.) SARANAC				
	(SUS. CK.) KANZA				
PHYTOPHTHORA ROOT ROT	(SUBMITTED)	— not given	only asl's at a diffent location		See Table 15
	(RES. CK.) AGATE	54.5			
	(SUS. CK.) SARANAC	8.7			
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

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.

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*)
P. O. Box 991
Little Rock, Arkansas 72203

VARIETY NAME OR TEMPORARY DESIGNATION
Citation

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 is either 99 or less or 9 or less.

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

1. PRIMARY AREA OF ADAPTATION

All except # 5

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

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

[ ] AREA TESTED
1,2,3,4,6,7

2. WINTER HARDINESS

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

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

[2] AREA TESTED
See Table 1

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

[3] 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)

[ ][ ] DAYS EARLIER THAN . . . . .
[ ][ ] DAYS LATER THAN . . . . .

[ ] 1 = MESA SIRSA 2 = LAHONTAN
3 = SARANAC 4 = VERNAL
5 = NORSEMAN

[ ] AREA TESTED

6. CROWN TYPE

[6] 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

[0|8|6] % PLANTS WITH PUBESCENT PODS

9. POD SHAPE

[0|9|0] % PLANTS WITH TIGHT COILS

[0|1|0] % PLANTS WITH LOOSE COILS

[0|0|0] % PLANTS WITH SICKLE PODS (Less than 1 coil)

TABLE 15

Phytophthora Resistance of Apollo Alfalfa in NAPB Trials

Entry	Ames 1974[1] Phytophthora Nursery % Resistant Plants	Brookston, Indiana % Stand 7-21-74	74-85-01-01[2] % Stand 5-14-75
Apollo	58.8	72	96
Anchor	9.1	30	62
Nugget	--	24	28
Citation	--	30	64
Agate	54.5	64	92
Saranac	8.7	18	24
Titan	--	22	56
Ramsey	--	42	62
Vernal	--	28	62
LSD .05	14.3	17.14	36.8
C. V.	21.8	14.38	35.8
Replications	12	5	5

1 Procedures used are those desctibed in ARS - NC-19

2 Forage trial seeded April 18, 1974, with 100% stands. May rains kept ground saturated for three weeks. Phytophthora root rot severely depleted stands.

TABLE 16

Pea Aphid Resistance of Nugget and Citation alfalfa in NAPB Ames, Iowa, Greenhouse Tests[1]

Entry	Test 1	Test 2	Test 3	Test 4	Test 5	Average
Citation	38.8	65.6	61.8	32.5	36.9	47.1
Nugget	10.5	26.4	23.8	10.7	- -	17.9
Kanza KCC 72	41.8	49.3	48.5	23.4	32.4	39.1
Vernal VCC 72	0.0	1.4	2.3	0.8	3.2	1.9
Ranger	5.3	4.3	4.6	0.3	9.9	4.9
Dawson DCC 72	- -	7.5	21.4	5.6	- -	11.5
Seeded	11-14-72	11-27-72	12-21-72	1-17-73	2-23-73	
Final Count	12-27-72	1-18-73	1-31-73	2-21-73	4-11-73	
Comment	Good Test	Good Test	Good Test	Very severe Test	Fair Test	

[1] Each test replicated, 55 seeds per plot, pea aphids added 7 days after seeding and periodically thereafter.

Resistance = Number survivors at final count divided by stand at 7 days.

TABLE 17

1974 Spaced Plant Nursery, NAPB Ames, Iowa

Leafhopper Yellowing Tolerance[1]

Entry	% resistance[2]	Average Severity[2] Index	Number of plants rated
Apollo	59	3.40	178
Atlas	38	3.95	133
Olympic	65	3.31	175
Victor	56	3.38	146
Nugget	45	3.83	120
Citation	55	3.48	154
Titan	53	3.52	144
Anchor	16	4.63	128
Vernal	55	3.56	163
Saranac	37	3.97	201
Ranger	24	4.16	186
Weevlchek	87	2.70	198

1 Seeded 5-14-74 and thinned to 12" spacing June '74, ratings made 8-27-75.

2 Procedures used are those described in ARS-NC-19, 1-9 rating, 1-3 counted as resistant. Lower ASI ratings are most desirable.

TABLE 18

Leafhopper yellowing tolerance of alfalfa varieties in NAPB forage trials[1]

Entry	Ames, Iowa 7-17-74	Ames, Iowa 7-6-75	Ames, Iowa 7-17-74	Ames, Iowa 7-6-75	Ames, Iowa 8-28-75	Brookston, Ind. 7-1-75	Brookston, Ind. 8-13-75	Brookston, Ind. 8-13-75	Brookston, Ind. 6-26-75	Brookston, Ind. 8-25-75	Average
Apollo	4.8	3.2	3.6	3.8	3.2	3.0	6.0	5.8	4.2	2.8	4.0
Anchor	5.2	4.8	5.0	5.0	4.0	7.4	7.4	6.8	4.2	4.4	5.4
Atlas	--	--	4.0	4.6	3.4	--	--	3.8	3.0	3.4	--
Olympic	4.8	4.2	4.0	5.0	2.8	6.2	5.8	4.4	2.6	2.8	4.3
Victor	4.4	3.0	3.2	4.2	2.8	5.8	7.2	5.6	3.6	2.4	4.2
Nugget	5.2	4.0	3.8	4.4	2.6	6.2	7.2	6.4	3.6	4.8	4.8
Citation	5.0	3.8	4.0	4.2	2.6	6.4	6.6	3.6	2.8	2.6	4.2
Vernal[2]	5.0	3.8	4.0	4.6	--	5.6	4.6	3.6	--	--	--
Saranac	5.4	5.2	4.6	5.0	4.0	7.5	8.2	5.6	3.6	2.4	5.2
Titan	4.2	3.0	3.6	4.0	2.0	4.4	4.6	3.6	2.0	2.2	3.4
Agate	5.6	5.3	4.2	5.0	4.2	3.8	6.6	7.0	4.4	4.0	5.0
Seeded	4-74		5-74		4-75	4-74		5-74	4-75		

1 Lower numbers indicate less yellowing

2 Left out of data from 1975 seedings. Seed received as certified Vernal does not have Vernal fall dormancy characteristics.

TABLE 19

Bloom Note on Alfalfa Varieties at Hutchinson, Kansas

Variety	% Flowering[1]
Titan	27
Anchor	39
Vernal	23
Saranac	42
Apollo	33
Atlas	48
Victor	52
Olympic	38
Citation	61
Nugget	47
Agate	27
Kanza	25

1 First cutting made 5-20-75, bloom note taken 7-1-75 in forage plots

TABLE 23

Leafhopper yellowing tolerance of Citation alfalfa as compared to Anchor[1]

	Ames, Iowa		Brookston, Indiana									Ames, Iowa
	7-30-76	7-30-76	6-29-76	7-26-76	6-29-76	8-2-76	7-8-76	6-27-77	8-1-77	6-27-77	8-1-77	6-30-77
Citation	2.8	2.6	5.6	4.0	5.4	6.2	3.6	2.6	4.6	4.6	4.4	3.6
Anchor	4.2	4.0	7.8	5.0	6.2	7.6	7.6	4.8	6.6	6.4	6.4	4.0
Seeded	4-74	5-74	4-74	4-74	5-74	4-75	4-76	4-75	4-75	4-76	4-76	4-77
C. V. %	26.7	24.5	23.6	27.1	23.2	24.5	38.3	30.2	25.8	31.5	33.0	23.1
LSD.05	1.3	1.0	2.0	1.7	1.4	2.0	2.2	1.2	1.6	1.7	2.0	1.1

[1]Lower numbers indicate less yellowing

TABLE 23 CONT.

Leafhopper yellowing tolerance of Citation alfalfa as compared to Anchor[1]

	Brookston, Indiana	Ames, Iowa	Average of 15 ratings 1976-78	
	9-15-78	9-18-78	7-9-78	
Citation	4.6	4.8	5.0	4.3
Anchor	5.4	5.6	6.0	5.8
Seeded	4-76	4-77	4-78	
C.V.%	27.5	24.7	13.6	
LSD.05	1.5	1.3	.9	

[1]Lower numbers indicate less yellowing

From 1972 Minn. Misc. Report 24

Table 22. Fall growth habit, disease resistance, and insect resistance characteristics of certified alfalfa varieties under Minnesota conditions

Variety according to winter-hardiness	Certification applicant*	Fall growth† (score)	Bacterial wilt‡ (% res.)	Common leafspot§ (% res.)	Lepto leafspot§ (% res.)	Spring blackstem§ (% res.)	Leafhopper yellowing§ (% res.)
Very winterhardy							
Beaver	Canada Dept. of Agric.	7.4	28	26	8	36	38
Norseman	Barzen of Minneapolis	7.9	34	34	10	27	36
Teton	S. Dakota Agr. Exp. Sta.[g]	7.4	17	51	6	30	61
Travois	S. Dakota Agr. Exp. Sta.[g]	7.4	42	42	7	44	72
Winterhardy							
ATRA 55	Arnold-Thomas Seed Service[f]	6.0	27	44	33	22	30
Dawson	USDA & Nebraska Agr. Exp. Sta.[g]	6.5	16	32	13	22	18
Iroquois	Cornell University[g]	6.0	69	44	10	40	26
Ladak	USDA (foreign introduction)	7.5	9	22	7	23	43
Ladak 65	Montana Agr. Exp. Sta.[g]	6.0	40	16	4	29	23
Narragansett	Rhode Island Agr. Exp. Sta.	5.9	<1	44	11	44	24
Progress	Caladino Farm Seeds Inc.[e]	5.4	29	18	9	18	39
Ranger	USDA & Nebraska Agr. Exp. Sta.[g]	5.4	16	11	1	7	16
Scout	Farmers Forage Res. Coop.[a]	5.8	13	30	9	19	32
Team	USDA	5.4	<1	51	10	38	59
Titan	W. R. Grace & Co.[d]	6.4	68	31	16	60	47
Weevlchek	Farmers Forage Res. Coop.[a]	5.5	64	47	22	38	74
WL 202	Waterman-Loomis Co.[b]	6.0	39	7	12	39	29
WL 215	Waterman-Loomis Co.[b]	6.3	40	23	15	38	23
123	DeKalb Agric. Assoc. Inc.	6.3	46	8	22	39	51
153	DeKalb Agric. Assoc. Inc.	5.7	2	7	5	19	27
520	Arnold-Thomas Seed Service[f]	5.6	45	25	17	42	42
522	Arnold-Thomas Seed Service[f]	5.3	45	15	10	40	30
525	Arnold-Thomas Seed Service[f]	5.7	43	29	24	52	21
Victoria	Arkansas Agr. Exp. Sta.	6.3	5	47	9	43	46
Vernal	Wisconsin Agr. Exp. Sta. & USDA[g]	6.5	47	23	14	41	29
Moderately winterhardy							
A24	Embro Seed Co. Inc.[c]	4.2	5	64	3	28	25
A59	E. F. Mangelsdorf & Bros. Inc.[c]	5.0	18	21	12	42	18
Anchor	Rudy-Patrick Co.	5.4	40	58	13	18	13
Apex	W. R. Grace & Co.[d]	4.6	<1	48	10	20	28
Bonus	Cal/West Seeds[e]	4.7	13	17	18	40	45
Cardinal	Northrup King & Co.	3.2	<1	76	11	13	18
DuPuits	Northrup King & Co.	3.0	<1	76	5	21	18
Europa	H. W. Walcott & Co.	3.3	<1	81	12	21	20
Glacier	Northrup King & Co.	4.4	<1	56	16	42	24
Kanza	USDA & Kansas Agr. Exp. Sta.	4.4	72	9	19	28	26
Saranac	Cornell University[g]	4.5	55	49	18	37	20
Stride	Caladino Farm Seeds Inc.[e]	3.0	2	58	7	17	31
Tempo	Farmers Forage Res. Coop.[a]	5.1	29	42	11	19	31
Thor	Northrup King & Co.	4.5	78	..		..	..
Warrior	Northrup King & Co.	4.3	22	55	12	26	16
WL 303	Waterman-Loomis Co.[b]	4.3	12	22	20	32	37
WL 305	Waterman-Loomis Co.[b]	4.7	25	13	9	47	36

* Sold in Minnesota by: a. Land O'Lakes-Felco, b. Midland Cooperatives, Inc., c. Ramey Seed Co., d. Rudy Patrick Co., e. Peterson Seed Co., f. Pioneer Hi-Bred International, Inc., and g. Seed available from several sources.

† Fall growth after cutting in 1st week of September scored 1 to 9: 1 = tallest, 9 = shortest. This is a general indication of winterhardiness. Those with low numbers are usually less winterhardy than those with higher numbers.

‡ Plants within each variety scored for bacterial wilt from 0 to 5: 0 = no symptoms, 5 = plant dead. Percent resistant plants (% res.) is based on the number of plants in 0 and 1 categories.

§ Plants within each variety scored for degree of injury from 1 to 5: 1 = no injury, 5 = severe injury. Percent resistant plants (% res.) is based on the number of plants in 1 and 2 categories.

TABLE 1-1

GROWTH CHAMBER ANTHRACNOSE RACE 1 EVALUATION

OF ALFALFA - NAPB MAY - JUNE, 1980

Entry	Percent of Resistance*
Arc	26.8
Saranac	0.1
Citation	0.0
Olympic	11.5
Atlas	13.7
LSD (.05)	3.8
CV %	56.54

Replications - 10 with average of 72 plants per replication

Planted 05-16-80

Inoculated 05-23-80

*Scored 06-03-80, all plants surviving were classed as resistant, test was quite severe.

TABLE 1-2

ALFALFA ANTHRACNOSE FIELD RATINGS - NAPB

AUGUST - SEPTEMBER, 1980 AMES, IOWA

Entry	Trial 7601[1]	Trial 7701[2]
Arc	1.2	1.4
Saranac	4.4	(Honeoye) 6.0
Citation	6.0	6.4
Olympic	1.2	1.6
Atlas	1.0	1.4
LSD (.05)	1.4	1.5
CV %	38.6	33.3

[1]Planted spring 1976, score of 1 = no dead or dying stems per plot to 8 = 30% of plants with dead or dying stems. Scored 08-30-80. Taken from 30 entry forage yield trial.

[2]Planted spring 1977, score of 1 = no dead or dying stems per plot to 8 = 35% of plants with dead o dying stems. Scored 09-05-80. Taken from 30 entry forage yield trial.

REVISED (2ND REVISION) EXHIBIT D

DATA INDICATIVE OF NOVELTY

CITATION

Citation is most similar to the variety Anchor. Citation differs from Anchor in that it has more tolerance to potato leafhopper yellowing. Citation also differs from Anchor in that it has a significant percentage of variegated flowers (about 29%), while Anchor has only a trace of variegated flowers (about 2%).

EXHIBIT E

Statement of the Basis of Applicant's Ownership

Citation was bred by North American Plant Breeders.

BILL OF SALE AND ASSIGNMENT

KNOW ALL MEN BY THESE PRESENTS that AGRIPRO BIOSCIENCES INC., a Delaware corporation (hereinafter referred to as "Seller"), pursuant to that certain Asset Purchase Agreement of even date herewith by and between Seller and AGR ACQUISITION CORPORATION, a Delaware corporation (hereinafter referred to as "Buyer") and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby grant, bargain, sell, assign, convey and deliver unto Buyer, all of Seller's right, title and interest in and to the plant varieties owned/registered by Seller and more particularly set forth on Exhibit A attached hereto for which PVP Certificates have been issued by or may be pending before the U. S. Department of Agriculture.

TO HAVE AND TO HOLD UNTO PURCHASER, its successors and assigns forever.

IN WITNESS WHEREOF, Seller has executed this Bill of Sale and Assignment as of the 30th day of June, 1994.

AGRIPRO BIOSCIENCES INC.

BY: W. A. Zama

Title: President

STATE OF KANSAS, COUNTY OF JOHNSON

Before me, the undersigned, a Notary Public of the State and County aforesaid, personally appeared W. A. ZAMA with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who, upon oath, acknowledged himself to be the PRESIDENT of Agripro Biosciences Inc., the within named bargainor, a corporation, and that he as such PRESIDENT, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as PRESIDENT.

WITNESS my hand and Notarial Seal at office the day and year above written.

Alma M. Weaver
Notary Public

My Commission Expires:
June 22, 1998

ALMA M. WEAVER
NOTARY PUBLIC
STATE OF KANSAS
My Appt. Exp. June 22, 1998

State of Delaware

Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "AGR ACQUISITION CORPORATION", CHANGING ITS NAME FROM "AGR ACQUISITION CORPORATION" TO "AGRIPRO SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF JUNE, A.D. 1994, AT 4:30 O'CLOCK P.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.

SECRETARY OF STATE

2394087 8100

AUTHENTICATION: 7169071

944121584

DATE: 07-01-94

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
AGR ACQUISITION CORPORATION

AGR Acquisition Corporation, a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware,

DOES HEREBY CERTIFY:

FIRST: that the Board of Directors of said corporation, by the unanimous written consent of its members filed with the minutes of the Board, adopted a resolution proposing and declaring advisable the following amendment to the Certificate of Incorporation of said corporation:

RESOLVED, that the Certificate of Incorporation of this corporation be amended by changing the Article thereof numbered "ARTICLE I" so that, as amended, said Article shall be and read as follows:

"ARTICLE I

Name

The name of the corporation (hereinafter called the 'Corporation') is Agripro Seeds, Inc."

SECOND: That in lieu of a meeting and vote of stockholders, the sole shareholder of the corporation has given unanimous written consent to said amendment in accordance with the provisions of Section 228 of the General Corporation Law of the State of Delaware.

THIRD: That the aforesaid amendment was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

FOURTH: That the capital of said corporation shall not be reduced under or by reason of said amendment.

IN WITNESS WHEREOF, said AGR Acquisition Corporation has caused this certificate to be signed by Gary T. Hancock, its President, and attested by Ann Steelman, its Secretary, this 30th day of June, 1994.

AGR ACQUISITION CORPORATION

BY: Gary T. Hancock
Gary T. Hancock, President

ATTEST:

BY: Ann Steelman
Ann Steelman, Secretary

LAW OFFICES

BURCH, PORTER & JOHNSON

130 NORTH COURT AVENUE

MEMPHIS, TENNESSEE 38103

TELEPHONE 901-523-2311
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R. MICHAEL POTTER
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RICKY E. WILKINS
TODD A. ROSE
REVA M. KRIEGEL
SUSAN CLARK TAYLOR
DOUGLAS F. HALIJAN
JOHN W. CAMPBELL
R. PORTER FEILD

CHAS. N. BURCH 1868-1936
H. D. MINOR 1868-1947
CLINTON H. MCKAY 1889-1943
JESSE E. JOHNSON, JR. 1913-1980
JOHN S. PORTER 1909-1990

MORGAN KEEGAN OFFICE
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MEMPHIS, TENNESSEE 38103
TELEPHONE 901-527-2311
TELECOPIER 901-527-4199

July 25, 1994

Ms. Ann Zempolich
Plant Variety Protection Office
U. S. Department of Agriculture
500 NAL Building
10301 Baltimore Boulevard
Beltsville, MD 20705

Re: Agripro Biosciences Inc. Sale of PVPs to AGR Acquisition Corporation (which has changed its name to Agripro Seeds, Inc.)

Dear Ms. Zempolich:

I am enclosing herewith the Bill of Sale and Assignment wherein Agripro Biosciences Inc. has sold and assigned all of its right, title and interest in and to the PVPs listed on the attachment to the Bill of Sale to AGR Acquisition Corporation and hereby request that your records be changed to show the new owner as Agripro Seeds, Inc., the new name of AGR Acquisition Corporation. It is our understanding that the attachment was generated by someone in your office and forwarded to Agripro Biosciences Inc. at its request, and was subsequently forwarded to our office as attorneys for the purchaser in connection with the sale transaction.

As I indicated to you in our several previous telephone conversations, AGR Acquisition Corporation changed its corporate name to Agripro Seeds, Inc. the same date as the closing of the sale. I am enclosing herewith a copy of the Certificate of Amendment filed by the Delaware Secretary of State wherein the corporate name is changed.

If I counted correctly, there are 149 PVP certificates listed on the attachment to the Bill of Sale and Assignment. I am enclosing a check in the amount of $3,725.00 payable to United States Treasury in payment of the $25.00 per certificate fee to change the owner's name on your records.

THIS DOCUMENT HAS A COLORED BACKGROUND — NOT A WHITE BACKGROUND THIS DOCUMENT HAS A COLORED BACKGROUND

HELENA

HELENA CHEMICAL COMPANY
Suite 3200 – Clark Tower
5100 Poplar Avenue
Memphis, Tennessee 38137

DATE 7-8-94

CHECK NUMBER 22406

PROTECTION AMOUNT EXACTLY PAY 3725 00 CTS

PAY THIS AMOUNT $3,725.00

PAY TO THE ORDER OF United States Treasury

HELENA CHEMICAL COMPANY
by

AUTHORIZED SIGNATURES