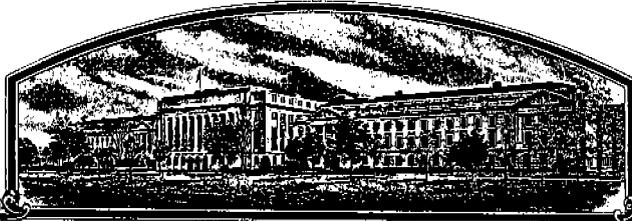


No.

7400089



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Growers Seed Association

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 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.)

COTTON

'GSA 71'

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 24th day of November in the year of our Lord one thousand nine hundred and seventy-five



Attest:

L. J. Rollins
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Buttz
Secretary of Agriculture

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1. VARIETY NAME OR TEMPORARY DESIGNATION GSA 71	2. KIND NAME Cotton	FOR OFFICIAL USE ONLY	
		PVPO NUMBER 7400089	
3. GENUS AND SPECIES NAME Gossypium hirsutum	4. FAMILY NAME (Botanical) Mallow	FILING DATE 4.15.74	TIME 10 A.M.
	5. DATE OF DETERMINATION 4-15-73	FEE RECEIVED \$750	CHARGES —
6. NAME OF APPLICANT(S) Growers Seed Association AGRIGENETICS CORP. 88A 5/5/86	7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Box 1656 Lubbock, Texas 79408	8. TELEPHONE AREA CODE AND NUMBER 806-747-4125	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation	10. STATE OF INCORPORATION Texas	11. DATE OF INCORPORATION ?-	
12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers: Noble Koepf, Director of Research Growers Seed Association Lubbock, Texas 79408 AC806-747-4125			

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- 12A. Exhibit A, Origin and Breeding History of the Variety (See Section 52, P.L. 91-577)
- 12B. Exhibit B, Botanical Description of the Variety
- 12C. Exhibit C, Objective Description of the Variety
- 12D. Exhibit D, Data Indicative of Novelty
- 12E. Exhibit E, Statement of the Basis of Applicant's Ownership

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. (See Section 52, P.L. 91-577).

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), P.L. 91-577) (If "Yes," answer 14B and 14C below.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
14B. Does the applicant(s) specify that this variety be limited as to number of generations? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	14C. If "Yes," to 14B, how many generations of production beyond breeder seed? Foundation; Registered; Certified

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

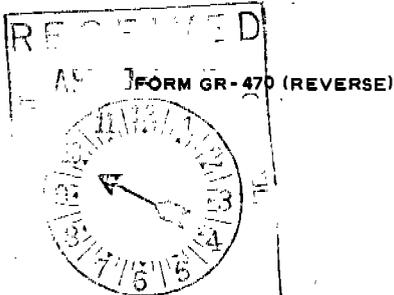
The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act (P.L. 91-577).

4-8-74
(DATE)

4-10-74
(DATE)

Carl A. Mousberg
(SIGNATURE OF APPLICANT)

Noble Koepf 1
(SIGNATURE OF APPLICANT)



INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and \$50.00 fee to U.S. Dept. of Agriculture, Consumer and Marketing Service, Grain Division, Hyattsville, Maryland 20782. 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.

- 12a 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.

- 12b 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.

- 12c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

- 12d Provide complete data indicative of novelty. Seed and plant specimens may be submitted and seeds submitted may be sterile. Where possible, include photographs of plant comparisons, chemical tests, etc.

- 12e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

GROWERS SEED LUBBOCK, TEXAS
ASSOCIATION P.O. BOX 1656
AC 806 747-4125 Zip 79408

Exhibit A

ORIGIN AND BREEDING OF THE VARIETY GSA 71

This breeding effort was designed to develop varieties of cotton adapted to once-over stripper harvest in five areas: Central, Rolling Plains and High Plains of Texas, Mississippi Delta including Arkansas and Missouri, and Western Oklahoma.

These varieties were to be early, prolific, and rapid fruiting. They were to have tolerance to prevailing major diseases of cotton, and be adapted to insect control. They were to be storm resistant and stormproof. They were to be capable of producing strong, mature cotton fiber of good length suited to demands of the trade. They were to be adapted to mechanized production and multiple unit gin processing.

Nine stocks of cottonseed were assembled including six varieties, two strains, and one progeny line. Varieties Nucala 16-7-1, AHA 6-1-4, Bowden 41-B, and Roldo Rowden, all considered high quality cotton. Hopi, Stormproof 120, Empire WR and BBR 4-1-3 B₂, all considered early maturing, and Macha Stormproof.

This breeder furnished the seed of Acala Q6-2 to make the original cross with Hopi, thus beginning the breeding that resulted in development of the strain AHA 6-1-4. This strain produced fiber of high maturity and of tremendous strength under most all conditions.

Roldo Rowden: This variety produced strong fiber of high maturity. It was crossed with Empire WR--a variety resistant to Fusarium wilt and tolerant to Verticillium wilt. Empire WR was resistant to thrip injury. A backcross was made to Roldo Rowden, forming the strain designated as R (2) Empire 21. The number in parenthesis indicates Rowden occurred two times in the cross and backcross combination. R(2) Empire 21 indicated good tolerance to Verticillium wilt. See pedigree for illustration of crossing, *Figure 1.*

Nucala: This variety was a derivative of the original imported Acala cotton. It was bred and developed principally in Oklahoma and central Texas. It was early, prolific, and produced high quality fiber, but it was lacking in storm tolerance. It was crossed with Rowden 41-B, a large boll, storm tolerant, high maturity fiber. The hybrid was designated as NR 13-10-3. This hybrid was crossed with AHA 6-1-4 previously described, and the hybrid was designated as NR-AHA.

Stormproof (Macha): This cotton was stormproof enough to withstand weathering on the High Plains of Texas until March or April of the following year with no seedcotton loss on the ground. Macha was introduced into the breeding program for its stormproof character. See photograph, *Figure 2.* Fiber quality was only fair. Seed fuzz was sparse to an almost naked seed. There seemed to be a strong linkage between the stormproof character and sparse seed fuzz character.

Stormproof (Macha) was crossed with Hopi, an early, high strength cotton. One backcross was made to Macha, and the F_1 backcross was

crossed with Stormproof 120, a cotton developed at the Texas Agricultural Experiment Station at Lubbock. This cross, backcross, and cross combination was designated Stp. (2)-HStp.120. This multiple hybrid was crossed with NR-AHA previously described. This complex hybrid was crossed with [R(2)-Empire previously described, thus forming the complex hybrid (R(2)-Empire 21) F_6 x (NR-AHA) (Stp. (2)-Stp.120)] F_5 . This complex hybrid was crossed with [R(2)-Empire BBR B_2] F_6 , to gain bacterial blight resistance.

BBR4-1-3-6 B_2 : This was a progeny line developed in Oklahoma, which ^{was} ~~is~~ resistant to Races I and II bacterial blight. It was stormproof with short fibers.

BBR 4-1-3-6 B_2 was crossed with R(2) Empire 21 previously described, thus forming the complex hybrid (R(2)-Empire-BBR B_2), and plants resistant to bacterial blight were used as shown in pedigree, *Figure 1.*

After the last backcross and beginning with the F_2 generation, selecting and plant to row increase continued through 10 generations to develop GSA 71.

After each cross combination and backcross, if such were the case, selecting and plant to row increase was continued until stability was obtained before the type was used in further crossing. See pedigree for generations obtained before crossing, *Figure 1.*

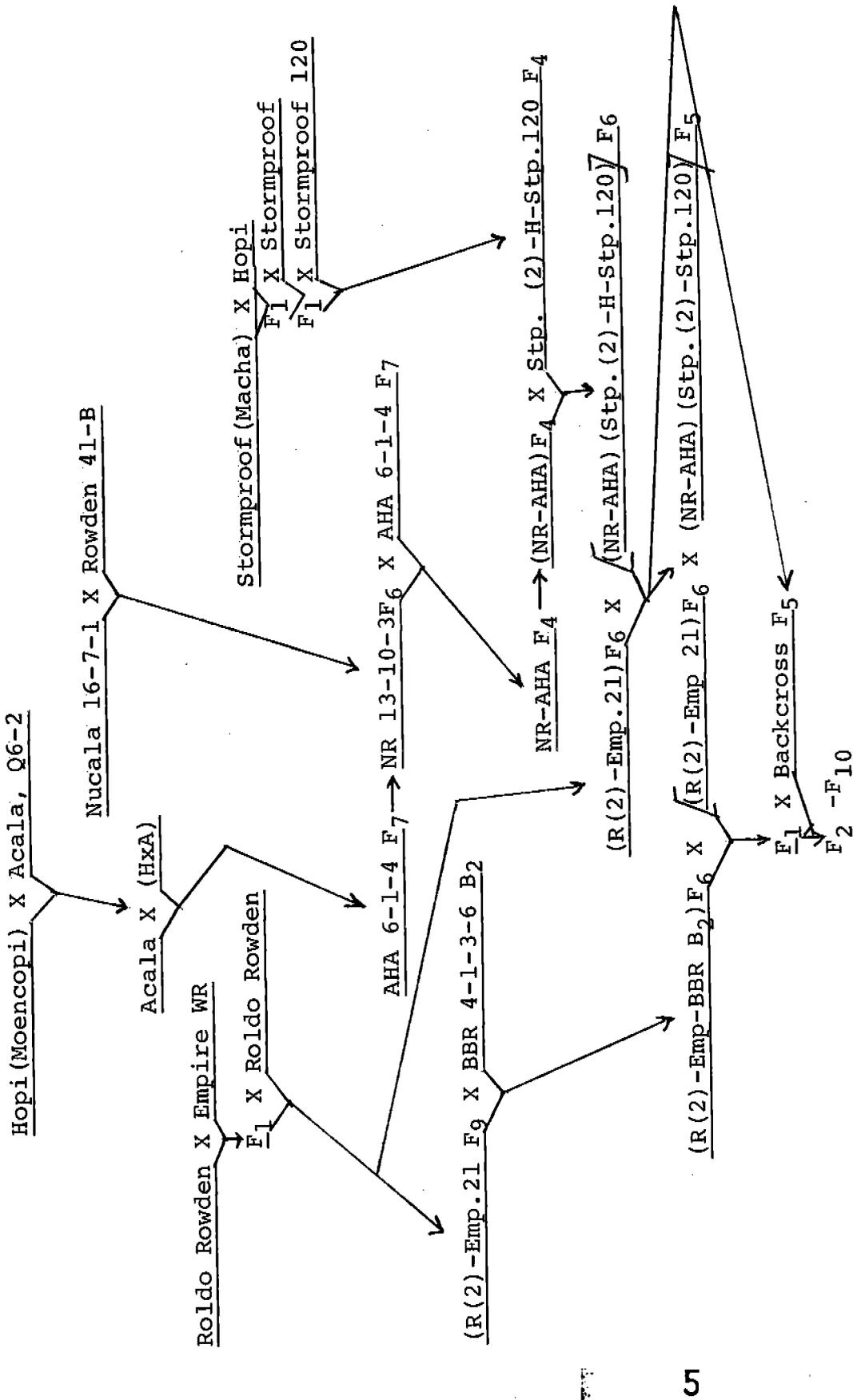


Figure 1: Pedigree of GSA 71 (C71001)

EXHIBIT A

Cotton Variety GSA 71

Type and Frequency of Variants

Beginning with the first year increase and continuing through the second, and third year increases only one variant occurred. The fruiting branches were six inches shorter than the varietal type. This characteristic was due to shorter branch nodes of the variant. All other plant characteristics were the same as the varital type. One plant of the variant type occurred in 20,000 plants of the varietal type.

Evidence of Stability

I have examined the plants of the first, second, and third year increases several times during the growing seasons. No variability has developed, and no deterioration has taken place. This indicates the variety GSA 71 has excellent stability and breeds true.

Exhibit B. Botanical Description of
Variety GSA 71 (C71001)

Gossypium Hirsutum

- Seeds: Medium to large size (Seed Index 12.0 - 14.5), larger at chalazal cap end and decreasing to a point a micropyle end. Seed fuzz sparse to medium, grayish brown in color. Under some environmental conditions large end of seed almost devoid of fuzz hairs. Seed coat thick and tough and resists cracking and shattering in mechanical harvesting and ginning. Mature seed properly harvested will result in rapid germination and emergence. Chemical seed analysis is given in Table No. 1.
- Seedlings: Mature, properly harvested and stored seed will produce strong, vigorous growing seedlings and subsequent uniform stand. Good growth continues under normal conditions.
- Root System: Vigorous tap-root and lateral root development under normal conditions. Growth persistent under minimum moisture conditions. Root epidermis light colored.
- Plant Type: Compact, narrow extremity in contrast to lateral branch development and indeterminate growth such as Deltapine and Acala types. GSA 71 has determinate

plant growth but fruit born higher off the ground than most determinate sorts. Plant types of GSA 71 and Acala 1517, are shown in Figure 3. Plant growth usually upright. Under some conditions plants become heavily loaded with large green bolls and causes the main stem to bend. When boll load becomes lighter with drying of bolls in maturity the plant regains most of upright posture.

Chrs ;
Bracts

Short to medium length, and growth is at an angle upward resulting in a narrow lateral fruiting area. Internodes short to intermediate in length. Vegetative branch development much reduced in close spacing of plants in the row, 3 to 6 plants per linear foot. Two to three prominent vegetative branches develop under wide spacing of plants, 18" - 24" in the row. Typical branching is shown in Figure 4.

Leaves: Medium to small in size, usually light green in color. Open foliage canopy. Pubescence light to moderate, with average length and density. Lobes moderately thick with divisions moderately defined.

Flowers: Average to large in size, and cream colored. Anthers prominent, with pistillate protruding, cream colored.

Bracts: Medium to large size, teeth prominent.

Bolls: Average to large in size, 6.25 grams per boll seed-cotton. Boll wall medium to thick. Bolls usually larger at center and tapering to point. Open bolls

storm resistant. Bolls generally 4-5 locked, under some conditions percentage of 5- locked bolls greater. Percent of 5-locked bolls greater. Percent of lint may vary from 35.0 to 38.0 percent depending on moisture conditions. The more moisture the lower the percentage and drier the season the higher percentage.

Fiber:

Under normal growth conditions fiber of GSA 71 is medium fine with a micronaire range of 4.0 to 5.0. When considerable cloudiness along with lower temperatures occur during wall thickening period of the fiber maturity is slowed to the extent immaturity is the result and readings of 2.8 to 3.4 micronaire are shown. Also, where some of the bolls on the plant are frozen before maturity in October immaturity of the fiber is shown. Length of fiber under ^optimum moisture and temperature conditions ranges from 1 1/32" to 1 1/16". Minimum moisture and drought conditions will reduce the length from 31/32" to 1". Under dry conditions and exposure in the field for 60 or more days, the length 1 1/32" to 1 1/16" may be reduced 1/16". The long field exposed bolls usually lose length of fiber through the multiple machine processing at the gin. Strength of fiber under ^optimum conditions has a Pressly range of 83,000 to 86,000 pounds. Long exposure in the field may reduce strength down to 75,000 to 80,000 pounds. Strength of 22's yarn of GSA 71 may vary from

a high of 125 pounds for cotton grown with optimum moisture and temperature to a strength of 110 pounds grown under minimum moisture and drought. Stilometer Elongation ranges from 6 to 9 percent. Quality of fiber produced with optimum moisture is shown in Table 2. Quality of fiber produced with minimum moisture and drought is given in Table 3. Fiber properties of lint produced with minimum moisture and used in spinning tests is given in Table 4. Spinning tests on this fiber is given in Table 5. Spinning test in detail is given on GSA 71, is given in Table 6.

Minimum moisture conditions. *Spinning Test + maximum moisture Table 6A.*

Plant Maturity: GSA 71 is rapid fruiting early maturing in comparison to most varieties. Short to midurn length internodes provides more fruiting positions in first half of fruiting season, consequently more bolls. See Figure 5 for flowering rate. Days from planting to first flower, to first open boll for 2 dates of planting was obtained on GSA 71 in comparison with an extremely early strain stormproof 90-Day, and Stripper 31A. See Table 7 for results. First frost usually results in considerable leaf drop on GSA 71, while the leaves cling to the plant for some varieties under the same conditions.

Disease Tolerance: Tolerant to Verticillium and bacterial blight diseases of cotton.

OBJECTIVE DESCRIPTION OF VARIETY

COTTON (GOSSYPIUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Growers Seed Association	FOR OFFICIAL USE ONLY
	PVPO NUMBER 7400089
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Box 1656, Lubbock, Texas 79408	VARIETY NAME OR TEMPORARY DESIGNATION GSA 71

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. SPECIES:

1 = GOSSYPIUM HIRSUTUM 2 = GOSSYPIUM BARBADENSE

2. AREA(S) OF ADAPTION (0 = Not Tested, 1 = Not Adapted, 2 = Adapted):

EASTERN DELTA CENTRAL HIGH PLAINS EL PASO AREA
 WESTERN LOW HOT VALLEYS SAN JOAQUIN OTHER (Specify) Rolling Plains

3. MATURITY (50% Open Boll):

<input type="text" value="1"/> <input type="text" value="4"/> NO. OF DAYS EARLIER THAN	<input type="text" value="1"/>	} 1 = COKER 310 2 = DELTAPINE 16 3 = STONEVILLE 213 4 = PAYMASTER 111 5 = ACALA 1517-70 6 = ACALA SJ-1 7 = LANKART 57 8 = OTHER (Specify) <u>Paymaster 101</u>
<input type="text" value="0"/> <input type="text" value="7"/> NO. OF DAYS LATER THAN	<input type="text" value="8"/>	

4. PLANT HABIT:

1 = SPREADING 2 = INTERMEDIATE 3 = COMPACT 1 = FOLIAGE SPARSE 2 = DENSE
3 = OTHER (Specify) Intermediate

5. PLANT HEIGHT:

<input type="text" value="6"/> <input type="text" value="0"/> CM. SHORTER THAN	<input type="text" value="5"/>	} 1 = COKER 310 2 = DELTAPINE 16 3 = STONEVILLE 213 4 = PAYMASTER 111 5 = ACALA 1517-70 6 = ACALA SJ-1 7 = LANKART 57 8 = OTHER (Specify)
<input type="text" value="2"/> <input type="text" value="5"/> CM. TALLER THAN	<input type="text" value="7"/>	

6. MAIN STEM:

1 = LAX 2 = ASCENDING 3 = ERECT CM. TO FIRST FRUITING BRANCH NO. OF NODES TO FIRST FRUITING BRANCH (from cotyledonary node)

7. LEAF:

CM. WIDTH OF WIDEST LEAVES AT MATURITY

8. LEAF PUBESCENCE:

1 = GLABROUS (HAIRS AS SPARSE AS D₂ SMOOTH)
2 = SMOOTH LEAF (DELTAPINE SMOOTH LEAF) 3 = PUBESCENT (STONEVILLE 213)
4 = HEAVY PUBESCENCE (H₁ OR H₂) 5 = OTHER (Specify)

9. LEAF COLOR:

1 = VIRESCENT YELLOW 2 = LIGHT GREEN 3 = DARK GREEN (Acala-442) 4 = RED
5 = OTHER (Specify)

10. LEAF TYPE:

1 = NORMAL 2 = OKRA 3 = SUPER OKRA 4 = OTHER (Specify)

11. FLOWER:

1 = NECTARILESS 2 = NECTARIED
 Petals: 1 = CREAM 2 = YELLOW Pollen: 1 = CREAM 2 = YELLOW

12. FRUITING BRANCH TYPE:

1 = CLUSTER 2 = SHORT 3 = NORMAL 1 = DETERMINATE 2 = INDETERMINATE

13. GOSSYPOL CONDITION:

1 = GLANDLESS 2 = REDUCED GLANDS 3 = NORMAL GLANDS 1 = NORMAL BUD GOSSYPOL
4 = OTHER (Specify) 2 = HIGH BUD GOSSYPOL

14. SEEDS:

± SEED INDEX (Fuzzy seed basis) Seed Fuzz: 1 = SPARSE (GREGG 35) 2 = MODERATE (DPL-16) 3 = HEAVY (ACALA SJ-1) 4 = OTHER (Specify) **11**

EXHIBIT D

DATA INDICATIVE OF NOVELTY OF
THE VARIETY GSA 71

SIMILARITY:

The variety of Cotton GSA 71 is probably more similar to Blanco 3363 than other upland varieties. The leaf type of GSA 71 and Blanco 3363 is normal. The flower is nectaried, petals and pollen are cream colored. Fruiting Branches are short and determinate. GSA 71 and Blanco 3363 have normal gossypol glands and fruiting buds have normal gossypol. Bolls have 4-5 locules and are pitted finely. The bolls are broader at the middle. The open bolls of GSA 71 and Blanco 3363 are storm resistant similar to Lankart 57 type. Bracteoles are similar, with length greater than width. The bracteoles teeth are fine.

DIFFERENCES:

Differences between cotton varieties GSA 71 and Blanco 3363. GSA 71 is adapted to the Delta, and High and Rolling Plains of Texas, and Blanco 3363 is adapted to the High Plains. The plant habit is intermediate and foliage is intermediate for GSA 71, while plant habit is compact for Blanco 3363 and the foliage is dense. In plant height of GSA 71 is 25cm taller than Lankart 57, and Blanco 3363 is 15cm taller than Lankart 57. The main stem of GSA 71 is erect, and that of Blanco 3363 is ascending. Cm to first fruiting branch, 9 for GSA 71 and 14 for Blanco 3363. Number of nodes to first fruiting branch, 6 for GSA 71 and 8 for Blanco 3363. Width of widest leaves at maturity 11cm for GSA 71 and 14cm

for Blanco 3363. The leaf of GSA 71 has pubescence similar to Stoneville 213 type, while that of Blanco 3363 is light pubescence. GSA 71 has leaf color light green and Blanco 3363 leaf color is dark green, Acala 4-42 type. GSA 71 has sparse seed fuzz (Gregg 35 type). Blanco 3363 has heavy seed fuzz similar to Acala SJ-1 type. Boll shape for GSA 71, length is equal to width, while boll for Blanco 3363 the length is less than width. Number of bracteole teeth, 9-11 for GSA 71, and 7-9 for Blanco 3363. Disease, GSA 71 is resistant to Race I bacterial blight, and Blanco 3363 is resistant to Race I and II bacterial blight.

14

Breadth

Length is greater
than widthLength is greater
than width

Teeth

Fine

Fine

15

EXHIBIT D

Tabular Form (Continued)

DIFFERENCES

GSA 71

Blanco 2363

Character

Adaptation	Delta; High Plains, Texas Rolling Plains, Texas	High Plains, Texas
Plant Habit	Intermediate	Compact
Foliage	Intermediate	Dense
Plant Height	25cm taller than Lankart 57	15 cm taller than Lankart 57

Main Stem

Erect

Ascending

Cm to First
Fruiting Branch

9

14

No. of Nodes to
First Fruiting
Branch

6

8

LeafWidth of Widest
Leaves at
Maturity

11cm

14cm

Leaf Pubescence

Pubescent (Stoneville 213)

Light Pubescence

Leaf Color

Light Green

Dark Green (Acala 4-42)

Seeds

Seed Fuzz

Sparse (Gregg 35)

Heavy (Acala SJ-1)

Bolls

Shape

Length is equal
to widthLength is less
than widthBracteoles

No. Teeth

9-11

7-9

DiseaseResistant to Race I
Bacterial BlightResistant to Races
I and II Bacterial
Blight

GROWERS SEED LUBBOCK, TEXAS
ASSOCIATION P.O. BOX 1656
AC 806 747-4125 Zip 79408

12E. Exhibit E, Statement of the Basis of Applicants' Ownership

Variety: GSA 71 (C71001)

Growers Seed Association, Box 1656, Lubbock, Texas, 79408, is sole owner of the variety designated GSA 71 (C71001). Land, capital, and equipment, and resident cotton breeder are maintained and employed in commercial cotton breeding. The breeder secures breeding seed stocks and grows in nurseries. The breeder makes hybrids through cross pollination, and makes plant selections. Primary and advanced seed increases are made on the High Plains area of Texas, and at Iquala, Mexico. Carl A. Moosberg is ^{the} Registered Cotton Breeder.

ASSIGNMENT OF
CERTIFICATES AND APPLICATIONS OF PLANT VARIETY PROTECTION

WHEREAS, GROWERS SEED ASSOCIATION, a Marketing Cooperative Association organized under the laws of the State of Texas, whose address is P.O. Box 1656, Lubbock, Texas 79408, did make applications for Certificates of Plant Variety Protection with the Plant Variety Protection Office of the United States Department of Agriculture which Applications and Certificates are numbered and bear the dates as follows:

7400089	November 24, 1975	for 'GSA 71'
76TQ007	March 18, 1977	for 'GSA 75'
710051	September 30, 1974	for Blanco 3363
740088	November 24, 1975	for Stripper 31A
790071	April 24, 1980	for 'GSA 74'
Pending Application		for 'GSA 78'

WHEREAS, GROWERS SEED ASSOCIATION is the sole and exclusive owner of said Applications and Certificates of Plant Variety Protection, and all interests therein, to and under the same and have the sole right to make this assignment; and

WHEREAS, TEXAS BANK FOR COOPERATIVES, a corporation organized under the laws of the United States of America, whose mailing address is P.O. Box 1424, Houston, Texas 77001, is desirous of acquiring the entire right, title and interest in and to the said Applications and Certificates of Plant Variety Protection;

NOW, THEREFORE, in consideration of and exchange for the sum of Ten Dollars and no/100 (\$10.00) paid in hand by GROWERS SEED ASSOCIATION, and other good and valuable consideration, in receipt of which is hereby acknowledged, GROWERS SEED ASSOCIATION, has sold, assigned, transferred and sent over to the TEXAS BANK FOR COOPERATIVES, the said Applications and Certificates of Plant Variety Protection, the same to be held and enjoyed by the TEXAS BANK FOR COOPERATIVES for its own use and enjoyment and the use and enjoyment of its successors, assigns or other legal representatives, to the end of the term for which said Applications and Certificates of Plant Variety Protection are granted or reissued, as fully and entirely as the same would have been held and enjoyed by GROWERS SEED ASSOCIATION if this assignment and sale had not been made, together with all claims for damages by reason of past infringement of said Applications and Certificates with the right to sue for and collect the same for its own use and enjoyment and

for the use and enjoyment of its successors, assigns or other legal representatives.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28th day of July, 1981.

GROWERS SEED ASSOCIATION

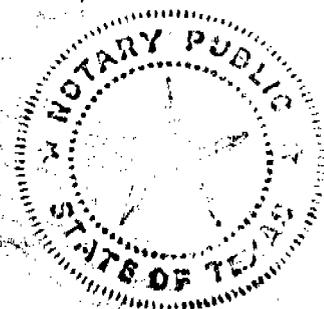
By R.D.M. Callister
Chairman

THE STATE OF TEXAS |

COUNTY OF LUBBOCK

BEFORE ME, the undersigned authority, on this day personally appeared R. D. M. CALLISTER, Chairman of GROWERS SEED ASSOCIATION, a corporation, who acknowledged to me that he executed the above and foregoing instrument as the act and deed of said corporation and for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 28th day of July, 1981.



C.C. Bloodworth
Notary Public in and for LUBBOCK
County, T E X A S.

C.C. Bloodworth
Expires 5-21-84

ASSIGNMENT OF
PLANT VARIETY PROTECTION CERTIFICATES

WHEREAS, GROWERS SEED ASSOCIATION, a marketing cooperative association organized under the terms of the State of Texas, whose address is P.O. Box 1656, Lubbock, Texas 79408, did make applications for and secure Certificates of Registration with the United States Plant Variety Protection Office which Certificates are numbered and bear the dates as follows:

<u>Plant Variety Registration No.</u>	<u>Variety</u>	<u>Filing Date</u>
7400089	for 'GSA 71'	November 24, 1975
76TQ007	for 'GSA 75'	March 18, 1977
7100051	for Blanco 3363	September 30, 1974
7400088	for Stripper 31A	November 24, 1975
7900071	for 'GSA 74'	April 24, 1980
7900072	for 'GSA 78'	June 19, 1980

WHEREAS, the TEXAS BANK FOR COOPERATIVES, a bank for cooperatives duly organized under the Farm Credit Act as amended, whose mailing address is P.O. Box 1424, Houston, Texas 77001, is the owner and holder of certain indebtedness of GROWERS SEED ASSOCIATION which are secured by certain liens and security interests including but not limited to general intangibles consisting of all trade names, trademarks, service marks, goodwill, germ plasm, proprietary seed rights, trade secrets, and all seed varieties and hybrids (the "Property"); and

WHEREAS, the maturity of the indebtednesses has now been accelerated and is now past due and owing and the TEXAS BANK FOR COOPERATIVES has taken possession of the collateral covered by the security instruments, and has the right pursuant to the security instruments and applicable laws

ASSIGNMENT OF
PLANT VARIETY PROTECTION CERTIFICATES - Page 1

See 79-01 Cotton for original

to pursue its remedies against the collateral, including without limitation, the selling and offering for sale thereof, as provided for under the security instruments and applicable law; and

WHEREAS, the TEXAS BANK FOR COOPERATIVES, as secured party, has exercised its right in the collateral of GROWERS SEED ASSOCIATION, as debtor, and is now desirous of selling certain items of collateral under lien at a private sale pursuant to Article 9 of the Texas Business and Commerce Code; and

WHEREAS, the TEXAS BANK FOR COOPERATIVES has the sole right to make this assignment; and

WHEREAS, AGRIGENETICS CORPORATION ("Buyer"), a corporation organized under the laws of the State of New Mexico, whose mailing address is 14142 W. 20th Avenue, Golden, Colorado 80401, is desirous of acquiring the entire right, title and interest in and to general intangibles formerly owned by GROWERS SEED ASSOCIATION together with the Certificates of Plant Variety Protection as identified from the TEXAS BANK FOR COOPERATIVES ("Seller"), through such a private sale under Article 9 of the Texas Business and Commerce Code.

NOW, THEREFORE, in consideration of and exchange for the sum of Ten and No/100 Dollars (\$10.00) paid in hand by Buyer, and other good and valuable considerations, the receipt and sufficiency of which is hereby acknowledged, the Seller, as secured party, has sold, assigned, transferred and sent over, through a private sale under Article 9 of the Texas Business and Commerce Code, to Buyer, all the Seller's interest and all the GROWERS SEED ASSOCIATION'S interest in the above-described Certificates of Plant Variety Protection and that part of the goodwill of the business connected

with the use of and symbolized by the Certificates, the same to be held and enjoyed by Buyer for its own use and enjoyment and the use and enjoyment of its successors, assigned by other legal representatives, and as it relates to the referenced Certificate, to enjoy to the end of the term for which said Certificates are granted or renewed, as fully and entirely as the same would have been held and enjoyed by TEXAS BANK FOR COOPERATIVES and GROWERS SEED ASSOCIATION if this assignment and sale had not been made, together with all claims for damages by reason of past infringement of said collateral or registrations with the right to sue for and collect the same for its own use and enjoyment of its successors, assigns or other legal representatives. Seller makes only those warranties and representations contained in Section 3.1 of the Asset Purchase Agreement dated December 9, 1981 between TEXAS BANK FOR COOPERATIVES and AGRIGENETICS CORPORATION.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 9th day of December, 1981.

ATTEST:


Assistant Corporate Secretary

TEXAS BANK FOR
COOPERATIVES

By: 
Assistant Vice President

THE STATE OF TEXAS §
 §
COUNTY OF DALLAS §

BEFORE ME, the undersigned authority, on this day personally appeared Assistant Vice President of TEXAS BANK FOR COOPERATIVES, known to me to be the person and officer whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this the 9th day of December, A.D., 1981.

Carolyn G. Farmer
NOTARY PUBLIC IN AND FOR
THE STATE OF TEXAS

Carolyn G. Farmer

My Commission Expires:

10-22-85

ASSIGNMENT OF CERTIFICATES AND
APPLICATIONS OF PLANT VARIETY PROTECTION

WHEREAS, GROWERS SEED ASSOCIATION, a Marketing Cooperative Association organized under the terms of the State of Texas, whose address is P.O. Box 1656, Lubbock, Texas 79408, did make applications for Certificates of Plant Variety Protection with the Plant Variety Protection Office of the United States Department of Agriculture which Applications and Certificates are numbered and bear the dates as follows:

7400089	November 24, 1975	for 'GSA 71'
76TQ007	March 18, 1977	for 'GSA 75'
7100051	September 30, 1974	for Blanco 3363
7400088	November 24, 1975	for Stripper 31A
7900071	April 24, 1980	for 'GSA 74'
7900072	June 19, 1980	for 'GSA 78'

WHEREAS, GROWERS SEED ASSOCIATION sold, assigned, transferred and sent over to the TEXAS BANK FOR COOPERATIVES, a corporation organized under the laws of the United States of America, whose mailing address is P.O. Box 1424, Houston, Texas 77001, all right, title and interest in and to the said Applications and Certificates of Plant Variety Protection pursuant to an assignment dated July 28, 1981;

WHEREAS, TEXAS BANK FOR COOPERATIVES is now the sole and exclusive owner of said Applications and Certificates of Plant Variety Protection, and all interests therein, to and under the same and has the sole right to make this assignment;

WHEREAS, AGRIGENETICS CORPORATION, a corporation organized under the laws of the State of New Mexico, whose mailing address is 624 27th Street, Lubbock, Texas 79404, is desirous of acquiring the entire

right, title and interest in and to the said Applications and Certificates of Plant Variety Protection; and

WHEREAS, GROWERS SEED ASSOCIATION acknowledges TEXAS BANK FOR COOPERATIVES' right to assign the said Applications and Certificates of Plant Variety Protection and GROWERS SEED ASSOCIATION desires to join in the assignment of all right, title and interest in and to the said Applications and Certificates of Plant Variety Protection in order to transfer any and all right, title or interest it may have in the same to AGRIGENETICS CORPORATION and to resolve any uncertainty which may exist as to the true and lawful owner of the said Applications and Certificates of Plant Variety Protection (e.g. AGRIGENETICS CORPORATION);

NOW, THEREFORE, in consideration of and exchange for the sum of One and No/100 Dollars (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, GROWERS SEED ASSOCIATION, has sold, assigned, transferred and sent over to AGRIGENETICS CORPORATION, all its right, title and interest in and to the said Applications and Certificates of Plant Variety Protection, the same to be held and enjoyed by the AGRIGENETICS CORPORATION for its own use and enjoyment and the use and enjoyment of its successors, assigns or other legal representatives, to the end of the term for which said Applications and Certificates of Plant Variety Protection are granted or reissued, as fully and entirely as the same would have been held and enjoyed by GROWERS SEED ASSOCIATION and the TEXAS BANK FOR COOPERATIVES if this assignment and sale had not been made, together with all claims for damages by reason of past infringement of said Applications and Certificates with the right to

sue for and collect the same for its own use and enjoyment and for the use and enjoyment of its successors, assigns or other legal representatives.

Growers warrants and represents the following, to-wit:

(i) To the best knowledge and belief of Growers, the Bank has validly and lawfully taken possession of the said Applications and Certificates of Plant Variety Protection pursuant to applicable provisions of the Texas Business and Commerce Code and agreements with Growers;

(ii) To the best knowledge and belief of Growers, the Bank's security interest giving rise to its possession of the said Applications and Certificates of Plant Variety Protection was a valid, prior and perfected security interest; and

(iii) To the best knowledge and belief of Growers, other than those previously communicated to Buyer in writing, there are no persons other than Growers or the Bank who have had or presently have any interest in the said Applications and Certificates of Plant Variety Protection nor does there exist any other facts which prevent Buyer from obtaining, pursuant to the terms, the execution and the delivery of this Bill of Sale, good and marketable title to the said Applications and Certificates of Plant Variety Protection, free and clear of all liens, pledges, charges and encumbrances whatsoever.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this
15 day of December, 1981.

GROWERS SEED ASSOCIATION

By: RDM^c Callister
Its: Chairman of Board

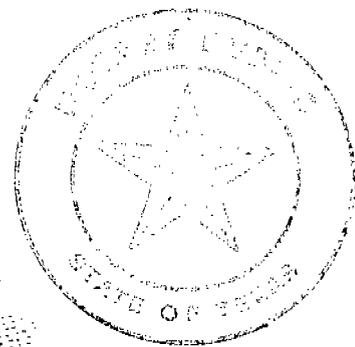
THE STATE OF TEXAS §
 §
COUNTY OF LUBBOCK §

BEFORE ME, the undersigned authority, on this day personally
appeared R.D. McCallister, ^{CHAIRMAN} _{OF BOARD} of GROWERS SEED
ASSOCIATION, a cooperative association, who acknowledged to me that he
executed the above and foregoing instrument as the act and deed of said
association and for the purposes and consideration therein expressed and in
the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 15 day of
December, 1981.

Step L Shanklin
NOTARY PUBLIC IN AND FOR
THE STATE OF TEXAS

My commission expires:
4-3-85



STEPHEN L. SHANKLIN

Per 2.B.c. 2-9-82

CERTIFICATES AND APPLICATIONS OF PLANT VARIETY PROTECTION

ASSIGNMENT AND SECURITY AGREEMENT

I. Parties, Collateral, and Other Obligations

THIS SECURITY AGREEMENT dated December 9, 1981 between AGRIGENETICS CORPORATION, a corporation duly organized under the laws of the State of New Mexico (the "Corporation"), having a mailing address at 14142 W. 20th Avenue, Golden, Colorado 80401 and the TEXAS BANK FOR COOPERATIVES (the "Bank") having a mailing address at P.O. Box 1424, Houston, Harris County, Texas.

PURSUANT to the terms and provisions of the Repayment Agreement of even date herewith between Corporation and the Bank, the Bank has agreed to lend to Corporation the sum of One Million Five Hundred Thousand and no/100 Dollars (\$1,500,000.00) at any time outstanding, and part of the inducement for the Bank to make such loan is the execution by Corporation of the Security Agreement of even date herewith (the "Agreement"), and this Security Agreement for filing with the Plant Variety Protection Office of the United States Department of Agriculture, such indebtednesses to be evidenced by promissory note ("Note") of even date herewith payable to the order of the Bank, and payment of the Note and any other Obligations of Corporation to the Bank pursuant to the Repayment Agreement of even date herewith are to be secured by, among other things, the security interests created hereby.

NOW, THEREFORE, in consideration of the premises, and as an inducement to the Bank to enter into the Repayment Agreement and to make the loans contemplated thereby, the Corporation hereby agrees with the Bank as follows: In order to secure payment of the Note and other Obligations (as defined in the Agreement), the Corporation hereby pledges, assigns and grants to the Bank a continuing security interest in and lien on all of the Applications and Certificates of Plant Variety Protection made with the Plant Variety Protection Office of the U.S. Department of Agriculture which Applications and Certificates are numbered and bear the dates as listed below with the right to sue, in Bank's own name or joined with Corporation, for past, present, or future violations of the rights in the protected varieties.

7400089
76TQ007

November 24, 1975
March 18, 1977

for 'GSA 71'
for 'GSA 75'

7100051
7400088
7900071
7900072

September 30, 1974
November 24, 1975
April 24, 1980
June 19, 1980

for Blanco 3363
for Stripper 31A
for 'GSA 74'
for 'GSA 78'

II. Prosecution and Maintenance of Trademarks

Corporation shall diligently apply for, prosecute, maintain and preserve its rights in the above trademarks, all expenses of which shall be borne by Corporation.

III. Termination

Upon the payment in full of all accounts due under the Note and all other Obligations of the Corporation due under the Agreement and this Security Agreement to the Bank, the Bank shall execute and deliver to the Corporation all such documents and instruments as shall be necessary to evidence termination of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed by their authorized representatives as of the date first above written.

ATTEST:

AGRIGENETICS CORPORATION

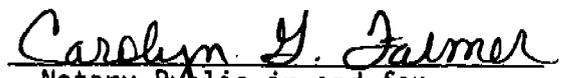

Secretary

By 

THE STATE OF TEXAS |
COUNTY OF Dallas |

BEFORE ME, the undersigned authority, on this day personally appeared James O. Gilbreath Jr., Vice President of Agrigenetics Corporation known to me to be the person and officer whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein shown.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this the 9th day of December, A.D., 1981.

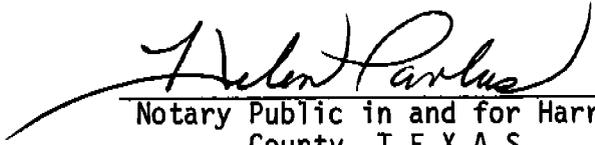

Notary Public in and for
County, T E X A S.

Carolyn G. Farmer
Expires: 10-22-85

THE STATE OF TEXAS
COUNTY OF HARRIS

BEFORE ME, the undersigned authority, on this day personally appeared James O. Gilbreath, Jr., Vice President of Agrigenetics Corporation, known to me to be the person and officer whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and in the capacity therein shown.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this the 9th day of February, A.D., 1982.


Notary Public in and for Harris
County, T E X A S.

HELEN PAVLAS
Notary Public State of Texas
My Commission Expires January 31, 1985
Bonded by L. Alexander Lovett, Lawyers Surety Corp.

7400089

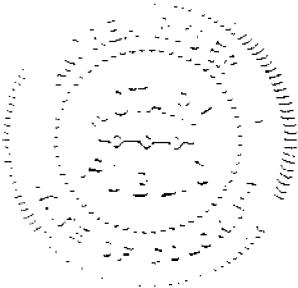
State of Colorado)
) ss
County of Boulder)

CERTIFICATE

I, Andrea Ryder, a notary public in and for the aforesaid county and state, hereby certify that the attached photocopy of an Assignment of Certificates and Applications of Plant Variety Protection is a true copy of the original thereof.

Andrea Ryder
Notary Public

My commission expires August 16, 1988.



ASSIGNMENT OF CERTIFICATES AND
APPLICATIONS OF PLANT VARIETY PROTECTION

WHEREAS, GROWERS SEED ASSOCIATION, a Marketing Cooperative Association organized under the terms of the State of Texas, whose address is P.O. Box 1656, Lubbock, Texas 79408, did make applications for Certificates of Plant Variety Protection with the Plant Variety Protection Office of the United States Department of Agriculture which Applications and Certificates are numbered and bear the dates as follows:

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7400088	November 24, 1975	for Stripper 31A
7900071	April 24, 1980	for 'GSA 74'
7900072	June 19, 1980	for 'GSA 78'

WHEREAS, GROWERS SEED ASSOCIATION sold, assigned, transferred and sent over to the TEXAS BANK FOR COOPERATIVES, a corporation organized under the laws of the United States of America, whose mailing address is P.O. Box 1424, Houston, Texas 77001, all right, title and interest in and to the said Applications and Certificates of Plant Variety Protection pursuant to an assignment dated July 28, 1981;

WHEREAS, TEXAS BANK FOR COOPERATIVES is now the sole and exclusive owner of said Applications and Certificates of Plant Variety Protection, and all interests therein, to and under the same and has the sole right to make this assignment;

WHEREAS, AGRIGENETICS CORPORATION, a corporation organized under the laws of the State of New Mexico, whose mailing address is 624 27th Street, Lubbock, Texas 79404, is desirous of acquiring the entire

right, title and interest in and to the said Applications and Certificates of Plant Variety Protection; and

WHEREAS, GROWERS SEED ASSOCIATION acknowledges TEXAS BANK FOR COOPERATIVES' right to assign the said Applications and Certificates of Plant Variety Protection and GROWERS SEED ASSOCIATION desires to join in the assignment of all right, title and interest in and to the said Applications and Certificates of Plant Variety Protection in order to transfer any and all right, title or interest it may have in the same to AGRIGENETICS CORPORATION and to resolve any uncertainty which may exist as to the true and lawful owner of the said Applications and Certificates of Plant Variety Protection (e.g. AGRIGENETICS CORPORATION); .

NOW, THEREFORE, in consideration of and exchange for the sum of One and No/100 Dollars (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, GROWERS SEED ASSOCIATION, has sold, assigned, transferred and sent over to AGRIGENETICS CORPORATION, all its right, title and interest in and to the said Applications and Certificates of Plant Variety Protection, the same to be held and enjoyed by the AGRIGENETICS CORPORATION for its own use and enjoyment and the use and enjoyment of its successors, assigns or other legal representatives, to the end of the term for which said Applications and Certificates of Plant Variety Protection are granted or reissued, as fully and entirely as the same would have been held and enjoyed by GROWERS SEED ASSOCIATION and the TEXAS BANK FOR COOPERATIVES if this assignment and sale had not been made, together with all claims for damages by reason of past infringement of said Applications and Certificates with the right to

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sue for and collect the same for its own use and enjoyment and for the use and enjoyment of its successors, assigns or other legal representatives.

Growers warrants and represents the following, to-wit:

(i) To the best knowledge and belief of Growers, the Bank has validly and lawfully taken possession of the said Applications and Certificates of Plant Variety Protection pursuant to applicable provisions of the Texas Business and Commerce Code and agreements with Growers;

(ii) To the best knowledge and belief of Growers, the Bank's security interest giving rise to its possession of the said Applications and Certificates of Plant Variety Protection was a valid, prior and perfected security interest; and

(iii) To the best knowledge and belief of Growers, other than those previously communicated to Buyer in writing, there are no persons other than Growers or the Bank who have had or presently have any interest in the said Applications and Certificates of Plant Variety Protection nor does there exist any other facts which prevent Buyer from obtaining, pursuant to the terms, the execution and the delivery of this Bill of Sale, good and marketable title to the said Applications and Certificates of Plant Variety Protection, free and clear of all liens, pledges, charges and encumbrances whatsoever.

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IN WITNESS WHEREOF, I have hereunto set my hand and seal this
15 day of December, 1981.

GROWERS SEED ASSOCIATION

By: R.D.M. Callister
Its: Chairman of Board

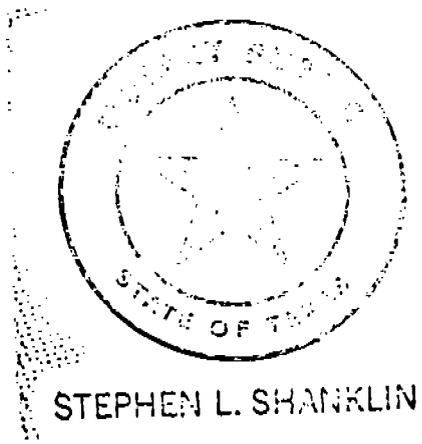
THE STATE OF TEXAS §
 §
COUNTY OF LUBBOCK §

BEFORE ME, the undersigned authority, on this day personally
appeared R.D. McCallister, ^{CHAIRMAN} OF BOARD of GROWERS SEED
ASSOCIATION, a cooperative association, who acknowledged to me that he
executed the above and foregoing instrument as the act and deed of said
association and for the purposes and consideration therein expressed and in
the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 15 day of
December, 1981.

Stephen L. Shanklin
NOTARY PUBLIC IN AND FOR
THE STATE OF TEXAS

My commission expires:
4-3-85



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7400089

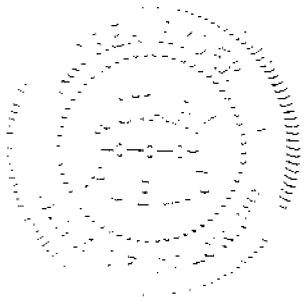
State of Colorado)
) ss
County of Boulder)

CERTIFICATE

I, Andrea Ryder, a notary public in and for the aforesaid county and state, hereby certify that the attached photocopy of the Articles of Merger of Agrigenetics Corporation (New Mexico) into Agrigenetics Corporation (Delaware) is a true copy of the original thereof.

Andrea Ryder
Notary Public

My commission expires August 16, 1988.



7400089

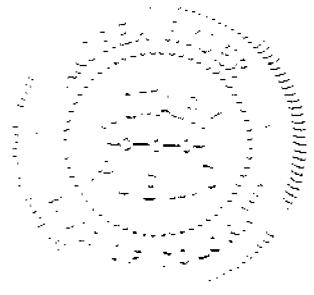
State of Colorado)
) ss
County of Boulder)

CERTIFICATE

I, Andrea Ryder, a notary public in and for the aforesaid county and state, hereby certify that the attached photocopy of the Articles of Merger of Agrigenetics Corporation (New Mexico) into Agrigenetics Corporation (Delaware) is a true copy of the original thereof.

Andrea Ryder
Notary Public

My commission expires August 16, 1988.

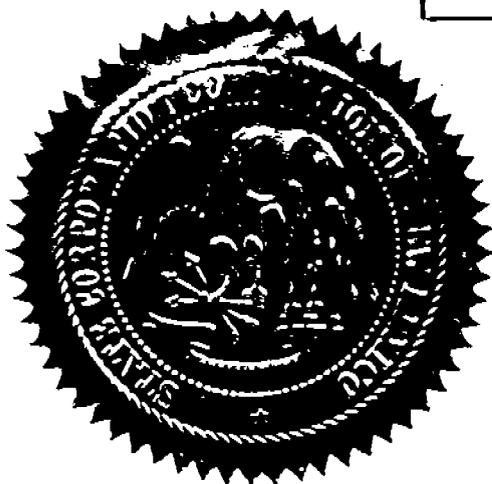


STATE OF NEW MEXICO

CERTIFICATE OF COMPARISON
OF

AGRIGENETICS CORPORATION

STATE OF NEW MEXICO
I hereby certify that the annexed is a true and complete copy of the 12 page document on file in this office.
DATED: August 31, 1982
STATE CORPORATION COMMISSION
BY: [Signature]
This Certification Stamp Replaces Our Previous Certification System.
NMSA 53-18-4 and 53-8-93 Effective 11-1-80



In Testimony Whereof, the State Corporation Commission of the State of New Mexico has caused this certificate to be signed by its Chairman and the seal of said Commission to be affixed at the City of Santa Fe

[Signature]
Chairman

ARTICLES OF MERGER

FILED IN OFFICE OF
STATE COMPTROLLER
NEW MEXICO

of

AGRIGENETICS CORPORATION
(New Mexico)

AUG 31 1982

into

CORPORATION
FRANCHISE TAX DEPT.

AGRIGENETICS' CORPORATION
(Delaware)

The undersigned officers of Agrigenetics Corporation, a New Mexico corporation, ("Agrigenetics New Mexico") and of Agrigenetics Corporation, a Delaware corporation, ("Agrigenetics Delaware") hereby certify as follows:

1. Agrigenetics New Mexico and Agrigenetics Delaware duly adopted and entered into the Plan and Agreement of Merger, dated August 2, 1982, a copy of which is attached hereto.

2. As to Agrigenetics New Mexico there are and were at all times relevant to the merger 9,580,964 shares of Common Stock, \$.10 par value, outstanding and no shares of Special Class A stock outstanding.

3. As to Agrigenetics Delaware, there were no shares outstanding at the time of the approval of the Plan and Agreement of Merger.

4. As to Agrigenetics New Mexico 8,281,485 shares of Common Stock, \$.10 par value, voted for the Plan and Agreement of Merger and no shares voted against the Plan and Agreement of Merger.

5. As to Agrigenetics Delaware the Plan and Agreement of Merger was duly approved by the Board of Directors pursuant to Delaware law prior to the issuance of any stock.

6. Agrigenetics Delaware hereby agrees that it may be served with process in New Mexico in any proceeding for the enforcement of any obligation of Agrigenetics New Mexico and

in any proceeding for the enforcement of the

AUG 31 1982

FRANCHISE

DEPT.

RECEIVED
AUG 31 1982

N. M. ST. CORP. COMM.
CORP. - FRANCHISE TAX DEPTS.

dissenting shareholder of Agrigenetics New Mexico against Agrigenetics Delaware.

7. Agrigenetics Delaware hereby irrevocably appoints the Secretary of State of New Mexico as its agent to accept service of process in any proceeding described in the preceding paragraph.

8. Agrigenetics Delaware will promptly pay to any dissenting shareholders of Agrigenetics New Mexico the amount, if any, to which such dissenting shareholder is entitled under the provisions of the New Mexico Business Corporation Act with respect to the rights of dissenting shareholders.

IN WITNESS WHEREOF, we have executed on behalf of Agrigenetics New Mexico and Agrigenetics Delaware, these Articles of Merger this 31st day of August, 1982.

AGRIGENETICS CORPORATION
A New Mexico Corporation

By Murray Robinson
Vice President

By James B. Almy, Jr.
Secretary

AGRIGENETICS CORPORATION
A Delaware Corporation

By Murray Robinson
Vice President

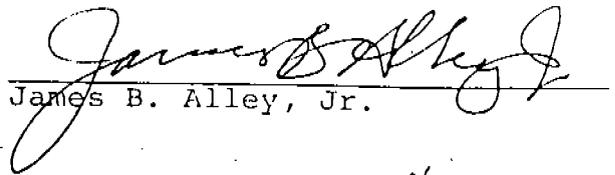
By James B. Almy, Jr.
Secretary

RECORDED
AUG 31 1982
CORP. - FRANCHISE TAX DEPTS.

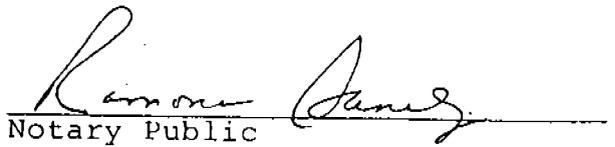
Verification

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

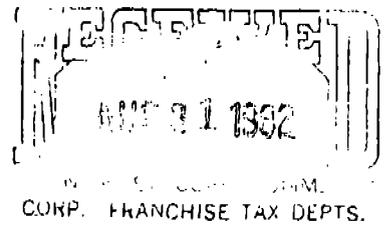
JAMES B. ALLEY, JR., Secretary of Agrigenetics Corporation, a New Mexico corporation, and Secretary of Agrigenetics Corporation, a Delaware corporation, states that he has read the foregoing Articles of Merger and that the statements therein are true and correct to the best of his knowledge and belief.


James B. Alley, Jr.

Subscribed and sworn to before me this 31st day of August, 1982.


Notary Public

My Commission expires:
8-22-83



PLAN AND AGREEMENT OF MERGER

THIS PLAN AND AGREEMENT OF MERGER ("Merger Agreement") is made and entered into this 2nd day of August, 1982 by and between AGRIGENETICS CORPORATION, a New Mexico corporation ("Agrigenetics New Mexico"), and AGRIGENETICS CORPORATION, a Delaware corporation and a wholly owned subsidiary of Agrigenetics New Mexico ("Agrigenetics Delaware").

WHEREAS, Agrigenetics New Mexico is a corporation duly organized and existing under the laws of the State of New Mexico;

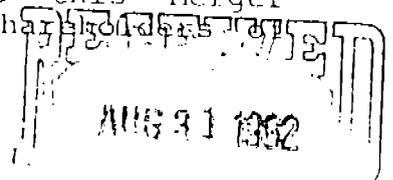
WHEREAS, Agrigenetics Delaware is a corporation duly organized and existing under the laws of the State of Delaware;

WHEREAS, on the date of this Merger Agreement Agrigenetics New Mexico has authority to issue twenty million four hundred fifty thousand shares, consisting of four hundred fifty thousand shares of Special Class A Stock, par value \$.10 per share ("New Mexico Special Class A Stock"), of which no shares are issued and outstanding; and twenty million shares of Common Stock, par value \$.10 per share ("New Mexico Common Stock"), of which 9,580,964 shares are issued and outstanding;

WHEREAS, on the date of this Merger Agreement Agrigenetics Delaware has authority to issue twenty-one million shares, consisting of one million shares of Special Class A Stock \$.10 par value ("Delaware Special Class A Stock"), of which no shares are issued and outstanding; and twenty million shares of Common Stock, par value \$.10 per share ("Delaware Common Stock"), of which ten shares are issued and outstanding and owned by Agrigenetics New Mexico;

WHEREAS, the respective Boards of Directors of Agrigenetics New Mexico and Agrigenetics Delaware have determined that it is advisable and to the advantage of said two corporations that Agrigenetics New Mexico merge into Agrigenetics Delaware upon the terms and conditions herein provided for the purpose of effecting the reincorporation of Agrigenetics New Mexico in the State of Delaware; and

WHEREAS, the respective Boards of Directors of Agrigenetics New Mexico and Agrigenetics Delaware have approved this Merger Agreement and the board of directors of Agrigenetics New Mexico has directed that this Merger Agreement be submitted to a vote of the shareholders of Agrigenetics New Mexico;



C ARCHISE TAX DEPTS

NOW, THEREFORE, in consideration of the mutual agreements and covenants set forth herein, Agrigenetics New Mexico and Agrigenetics Delaware hereby agree to merge as follows:

1. Merger. Agrigenetics New Mexico shall be merged with and into Agrigenetics Delaware, and Agrigenetics Delaware shall survive the merger ("Merger"). The Merger shall become effective upon the time and date of filing of such documents as may be required under applicable law ("Effective Date").

2. Directors and Officers and Governing Documents. The directors and officers of Agrigenetics Delaware shall be the same upon the Effective Date as they are immediately prior thereto. The Certificate of Incorporation of Agrigenetics Delaware, as in effect on the Effective Date, shall continue to be the Certificate of Incorporation of Agrigenetics Delaware as the surviving corporation without change or amendment until further amended in accordance with the provisions thereof and applicable laws. The By-Laws of Agrigenetics Delaware, as in effect on the Effective Date, shall continue to be the By-Laws of Agrigenetics Delaware as the surviving corporation without change or amendment until further amended in accordance with the provisions thereof and applicable laws.

3. Succession. On the Effective Date, Agrigenetics Delaware shall succeed to all the rights and obligations of Agrigenetics New Mexico and shall possess all the rights, privileges, powers and franchises as well of a public as of a private nature, and be subject to all the restrictions, disabilities and duties of Agrigenetics New Mexico; and all and singular, the rights, privileges, powers and franchises of Agrigenetics New Mexico, and all property, real, personal and mixed, and all debts due to Agrigenetics New Mexico on whatever account, as well for stock subscriptions as all other things in action or belonging to Agrigenetics New Mexico shall be vested in Agrigenetics Delaware; and all property, rights, privileges, powers and franchises, and all and every other interest shall be thereafter as effectually the property of Agrigenetics Delaware as they were of Agrigenetics New Mexico, and the title to any real estate vested by deed or otherwise in Agrigenetics New Mexico, shall not revert or be in any way impaired; but all rights of creditors and all liens upon any property of Agrigenetics New Mexico shall be preserved unimpaired, and all debts, liabilities and duties of Agrigenetics New Mexico shall thenceforth attach to Agrigenetics Delaware, and may be enforced against it to the same extent as if said debts, liabilities and duties had been incurred or contracted by it. All corporate acts, plans, policies, agreements, arrangements, approvals and authorizations of Agrigenetics New Mexico, its shareholders, board of directors and committees thereof, officers and agents which were valid and effective immediately prior

to the Effective Date, shall be taken for all purposes as the acts, plans, policies, agreements, arrangements, approvals and authorizations of Agrigenetics Delaware and shall be as effective and binding thereon as the same were with respect to Agrigenetics New Mexico. The employees and agents of Agrigenetics New Mexico shall become the employees and agents of Agrigenetics Delaware and continue to be entitled to the same rights and benefits which they enjoyed as employees and agents of Agrigenetics New Mexico. The requirements of any plans or agreements of Agrigenetics New Mexico involving the issuance or purchase by Agrigenetics New Mexico of certain shares of its capital stock shall be satisfied by the issuance or purchase of a like number of shares of Agrigenetics Delaware.

4. Further Assurances. From time to time, as and when required by Agrigenetics Delaware or by its successors and assigns, there shall be executed and delivered on behalf of Agrigenetics New Mexico such deeds and other instruments, and there shall be taken or caused to be taken by it all such further and other action, as shall be appropriate or necessary in order to vest, perfect or confirm, of record or otherwise, in Agrigenetics Delaware the title to and possession of all property, interests, assets, rights, privileges, immunities, powers, franchises and authority of Agrigenetics New Mexico, and otherwise to carry out the purposes of this Merger Agreement, and the officers and directors of Agrigenetics Delaware are fully authorized in the name and on behalf of Agrigenetics New Mexico or otherwise to take any and all such action and to execute and deliver any and all such deeds and other instruments.

5. Stock of Agrigenetics New Mexico. Upon the Effective Date, by virtue of the Merger and without any action on the part of the holder hereof, each share of the New Mexico Common Stock outstanding immediately prior thereto shall be changed and converted into and shall be one fully paid and nonassessable share of the Delaware Common Stock.

6. Stock Certificates. On and after the Effective Date, all of the outstanding certificates which immediately prior to the Effective Date represented shares of New Mexico Common Stock shall be deemed for all purposes to evidence ownership of, and to represent, shares of Delaware Common Stock into which the shares of New Mexico Common Stock formerly represented by such certificates have been converted as herein provided. The registered owner on the books and records of Agrigenetics Delaware or its transfer agents of any such outstanding stock certificate shall, until such certificate shall have been surrendered for transfer or otherwise accounted for to Agrigenetics Delaware or its transfer agents, have and be entitled to exercise any voting and other rights with respect to and to receive any dividend and other distributions upon the shares of Agrigenetics

Delaware Common Stock evidenced by such outstanding certificate as above provided.

7. Outstanding Options (Class A). Forthwith upon the Effective Date, each outstanding option to purchase shares of New Mexico Special Class A Stock granted under Agrigenetics New Mexico's Incentive Stock Option Plan (the "Plan") shall be converted into and become an option to purchase the same number of shares of Delaware Special Class A Stock at the same option price per share, and upon the same terms and subject to the same conditions as set forth in the Plan, as in effect on the Effective Date. The same number of shares of Delaware Special Class A Stock shall be reserved for purposes of the Plan as is equal to the number of shares of New Mexico Special Class A Stock so reserved as of the Effective Date. As of the Effective Date, Agrigenetics Delaware shall assume all obligations of Agrigenetics New Mexico under the Plan and the outstanding options or portions thereof granted pursuant to the Plan.

8. Outstanding Warrants (Common). Forthwith upon the Effective Date, any outstanding warrants or other options to purchase shares of New Mexico Common Stock shall entitle the holders to purchase the same number of shares of Delaware Common Stock upon the same terms and conditions as provided in the outstanding warrants or other applicable documents to which Agrigenetics New Mexico is a party.

9. Employee Benefit Plans. As of the Effective Date, Agrigenetics Delaware hereby assumes all obligations of Agrigenetics New Mexico under any and all employee benefit plans in effect as of said date or with respect to which employee rights or accrued benefits are outstanding as of said date.

10. Common Stock of Agrigenetics Delaware. Forthwith upon the Effective Date, the ten shares of Delaware Common Stock presently issued and outstanding in the name of Agrigenetics New Mexico shall be cancelled and retired and resume the status of authorized and unissued shares of Delaware Common Stock, and no shares of Delaware Common Stock or other securities of Agrigenetics Delaware shall be issued in respect thereof.

11. Covenants of Agrigenetics Delaware. Agrigenetics Delaware covenants and agrees that it will, on or before the Effective Date:

(a) Qualify to do business as a foreign corporation in the State of New Mexico, and in connection therewith irrevocably appoint an agent for service of process as required under the provision of Section 53-17-9 of the New Mexico Business Corporation Act.

(b) File any and all documents with the New Mexico State Corporation Commission necessary to the assumption by Agrigenetics Delaware of all the franchise tax liabilities of Agrigenetics New Mexico.

(c) Qualify to do business as a foreign corporation in the states where Agrigenetics New Mexico is qualified to do business and such other states as the board of directors deems necessary or desirable.

12. Book Entries. As of the Effective Date, entries shall be made upon the books of Agrigenetics Delaware in accordance with the following:

(a) The assets and liabilities of Agrigenetics Delaware shall be recorded at the same amounts at which they were carried on the books of Agrigenetics New Mexico immediately prior to the Effective Date, with appropriate adjustments to reflect the retirement of the ten shares of Delaware Common Stock presently issued and outstanding.

(b) There shall be credited to the Common Stock account of Agrigenetics Delaware the aggregate amount of the par value of all shares of Delaware Common Stock resulting from the conversion of the outstanding New Mexico Common Stock pursuant to the Merger.

(c) There shall be credited to the additional paid-in capital account of Agrigenetics Delaware the aggregate of the amount carried in the additional paid-in capital account of Agrigenetics New Mexico immediately prior to the Effective Date.

(d) There shall be credited to the retained earnings account of Agrigenetics Delaware the aggregate of the amount carried in the retained earnings account of Agrigenetics New Mexico immediately prior to the Effective Date.

13. Amendment. At any time before or after approval and adoption by the shareholders of Agrigenetics New Mexico and prior to the Effective Date, the Merger Agreement may be amended in any manner (except that Section 5 may not be amended without the approval of the shareholders of Agrigenetics New Mexico) as may be determined in the judgment of the respective Boards of Directors of Agrigenetics Delaware and Agrigenetics New Mexico to be necessary, desirable or expedient in order to clarify the intention of the parties hereto or to effect or facilitate the purposes and intent of this Merger Agreement; provided, however, that such amendment may not materially adversely affect the rights and interests of the stockholders of Agrigenetics New Mexico.

14. Abandonment. At any time before the Effective Date, this Merger Agreement may be terminated and the Merger may be abandoned by the board of directors of either Agrigenetics Delaware or Agrigenetics New Mexico or both, notwithstanding approval of this Merger Agreement by the stockholders of Agrigenetics Delaware or the shareholders of Agrigenetics New Mexico or both.

15. Counterparts. In order to facilitate the filing and recording of this Merger Agreement the same may be executed in two or more counterparts, each of which shall be deemed to be an original and the same agreement.

IN WITNESS WHEREOF, this Merger Agreement, having first been duly approved by resolution of the boards of directors of Agrigenetics New Mexico and Agrigenetics Delaware, is hereby executed on behalf of each of said two corporations by their respective officers thereunto duly authorized, on the date first above written.

AGRIGENETICS CORPORATION
A New Mexico Corporation

By: David J. Padwa
David J. Padwa
Chairman of the Board and
Chief Executive Officer

ATTEST:

By: James B. Alley, Jr.
James B. Alley, Jr.
Secretary and
General Counsel

AGRIGENETICS CORPORATION
A Delaware Corporation

By: David J. Padwa
David J. Padwa
Chairman of the Board and
Chief Executive Officer

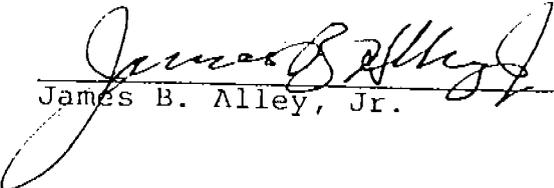
ATTEST:

By: James B. Alley, Jr.
James B. Alley, Jr.
Secretary and
General Counsel

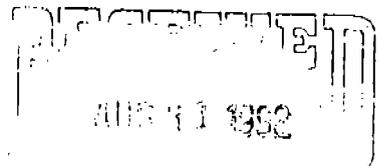
Certificate of Secretary

I, James B. Alley, Jr., Secretary of AGRIGENETICS CORPORATION, a Delaware corporation, hereby certify, as such Secretary, that no vote of the stockholders of said corporation was required with respect to the merger described in the Plan and Agreement of Merger to which this Certificate is attached and that said Plan and Agreement of Merger has been adopted pursuant to Subsection 251(f) of the General Corporation Law of the State of Delaware and that as of the date of this Certificate, the outstanding shares of said corporation were such as to render that subsection applicable.

IN WITNESS WHEREOF, I have executed this Certificate on behalf of said corporation this 2nd day of August, 1982.



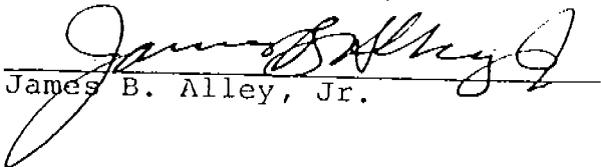
James B. Alley, Jr.



Certificate of Secretary

I, James B. Alley, Jr., Secretary of AGRIGENETICS CORPORATION, a New Mexico corporation ("Agrigenetics New Mexico"), do hereby certify, as such Secretary, that the Plan and Agreement of Merger to which this Certificate is attached, after having been first duly adopted and executed by Agrigenetics New Mexico and AGRIGENETICS CORPORATION, a Delaware corporation, was duly submitted to the stockholders of Agrigenetics New Mexico at a meeting of stockholders called for the purpose of acting on said Plan and Agreement of Merger after due notice of the time, place and purpose of said meeting was mailed to each holder of common stock of Agrigenetics New Mexico at his address as it appears on the records of Agrigenetics New Mexico in the manner provided by New Mexico law, and that at said meeting the Plan and Agreement of Merger was considered and a vote taken for its adoption or rejection and that at said meeting at least two-thirds of the outstanding common stock of Agrigenetics New Mexico entitled to vote thereon was voted for the adoption of said Plan and Agreement of Merger, and that at the time of said meeting no Special Class A stock was outstanding, and that thereby said Plan and Agreement of Merger was at said meeting duly adopted as the act of the stockholders of Agrigenetics New Mexico and as the agreement and act of Agrigenetics New Mexico.

IN WITNESS WHEREOF, I have executed this Certificate on behalf of said corporation this 27th day of August, 1982.


James B. Alley, Jr.

Second Execution of Plan and Agreement of Merger

The foregoing Plan and Agreement of Merger having been duly adopted and executed by AGRIGENETICS CORPORATION, a Delaware corporation ("Agrigenetics Delaware"), and by AGRIGENETICS CORPORATION, a New Mexico corporation ("Agrigenetics New Mexico"), in accordance with the General Corporation Law of the State of Delaware, and having been duly submitted to the stockholders of Agrigenetics New Mexico and having been duly adopted by the requisite vote of the outstanding stock of said corporation entitled to vote thereon, and no vote of the stockholders of Agrigenetics Delaware having been required, and those facts having been certified on said Plan and Agreement of Merger by the Secretary of Agrigenetics Delaware and by the Secretary of Agrigenetics New Mexico, the Chairman of the Board of Agrigenetics Delaware and the Chairman of the Board of Agrigenetics New Mexico do hereby execute said Plan and Agreement of Merger in accordance with the General Corporation Law of the State of Delaware, and the Secretary of Agrigenetics Delaware and the Secretary of Agrigenetics New Mexico do hereby attest such execution of their respective corporations as the respective act, deed and agreement of each of said corporations, on this 27th day of August, 1982.

AGRIGENETICS CORPORATION
A Delaware Corporation

By David J. Padwa
David J. Padwa
Chairman of the Board

ATTEST:

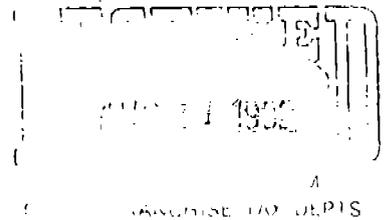
By James B. Alley, Jr.
James B. Alley, Jr.
Secretary

AGRIGENETICS CORPORATION
A New Mexico Corporation

By David J. Padwa
David J. Padwa
Chairman of the Board

ATTEST:

By James B. Alley, Jr.
James B. Alley, Jr.
Secretary



NOTE: Full merger documentation is on
file in transfer file.

For: Cotton Variety GSC 30)
Certificate No.: 8800048)
Issue Date: July 29, 1988)
Owner: Agrigenetics Corporation)

7400089

REQUEST FOR RECORDATION OF TITLE DOCUMENTS

Commissioner of the Plant
Variety Protection Office
United States Department
of Agriculture
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Sir:

Enclosed please find notarially certified copies of the
following merger documents:

1) merger of Agrigenetics Corporation, a New Mexico
Corporation into Agrigenetics Corporation, a Delaware Corporation;
and

2) merger of Agrigenetics Corporation, a Delaware
Corporation into The Lubrizol Corporation Corporation, an Ohio
Corporation.

Please record these documents against the above Plant
Variety Protection Certificates.

Title to said certificates should now be reflected in
Lubrizol Corporation, an Ohio Corporation.

Enclosed is a check in the amount of \$275.00 for the
recording fee (\$25.00 for each certificate).

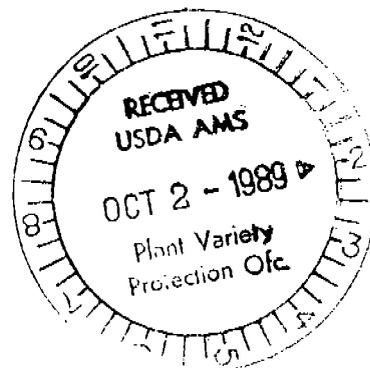
Respectfully submitted,

Ellen P. Winner

Ellen P. Winner
Patent Office Reg. No. 28,547

Greenlee and Associates
5370 Manhattan Circle
Suite 201
Boulder, CO 80303
(303) 499-8080

leb: 9/28/89



IN THE UNITED STATES DEPARTMENT OF AGRICULTURE

For: Cotton Variety Blanco 3363)
Certificate No.: 7100051)
Issue Date: September 30, 1974)
Owner: Agrigenetics Corporation)

For: Cotton Variety Stripper 31A)
Certificate No.: 7400088)
Issue Date: November 24, 1975)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSA 71)
Certificate No.: 7400089)
Issue Date: November 24, 1975)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSA 75)
Certificate No.: 7605007)
Issue Date: March 18, 1977)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSA 74)
Certificate No.: 7900091)
Issue Date: April 24, 1980)
Owner: Agrigenetics Corporation)

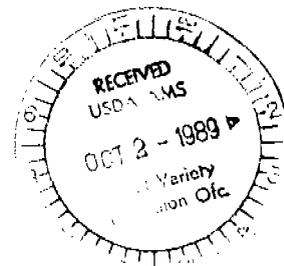
For: Cotton Variety GSA 78)
Certificate No.: 7900072)
Issue Date: June 19, 1980)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSC 25)
Certificate No.: 8400057)
Issue Date: December 21, 1984)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSC 20)
Certificate No.: 8400101)
Issue Date: November 30, 1984)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSC 27)
Certificate No.: 8700005)
Issue Date: August 31, 1987)
Owner: Agrigenetics Corporation)

For: Cotton Variety GSC 71)
Certificate No.: 8700006)
Issue Date: August 31, 1987)
Owner: Agrigenetics Corporation)



for Blanco 3363. The leaf of GSA 71 has pubescence similar to Stoneville 213 type, while that of Blanco 3363 is light pubescence. GSA 71 has leaf color light green and Blanco 3363 leaf color is dark green, Acala 4-42 type. GSA 71 has sparse seed fuzz (Gregg 35 type). Blanco 3363 has heavy seed fuzz similar to Acala SJ-1 type. Boll shape for GSA 71, length is equal to width, while boll for Blanco 3363 the length is less than width. Number of bracteole teeth, 9-11 for GSA 71, and 7-9 for Blanco 3363. Disease, GSA 71 is resistant to Race I bacterial blight, and Blanco 3363 is resistant to Race I and II bacterial blight.

EXHIBIT D

Similarity and Differences Between
GSA 71 and Blanco 3363
Shown in Tabular Form

SIMILARITY

	GSA 71	Blanco 3363
<u>Character</u>		
Leaf Type	Normal	Normal
<u>Flower</u>	Nectaried	Nectaried
Petals	Cream colored	Cream colored
Pollen	Cream colored	Cream colored
Fruiting Branch type	Short	Short
Growth	Determinate	Determinate
<u>Gossypoll Condition</u>	Normal glands Normal bud gossypol	Normal glands Normal bud gossypol
<u>Bolls</u>		
Locules	4-5	4-5
Pitted	Finely	Finely
Breadth	Broader at middle	Broader at Middle
Type	Storm resistant (Lankart 57)	Storm resistant (Lankart 57)
<u>Bracteoles</u>		
Breadth	Length is greater than width	Length is greater than width
Teeth	Fine	Fine