200100049

No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Dr. R. J. Mansholt's Veredelingsbedrijf B.V.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED 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 TWENTY 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 [illegible]ORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible]E PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT [illegible]ED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Markies'

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, D.C. this twenty-seventh day of September, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Se[illegible] Agriculture

200100049

REPRODUCE LOCALLY. *Include form number and date on all reproductions.*

FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Dr. R.J. Mansholt's Veredelingsbedrijf B.V.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

3. VARIETY NAME
Markies

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
c/o AGRICO
P.O. Box 70
8300 AB
Emmeloord, The Netherlands

5. TELEPHONE *(include area code)*
31-527-639911

6. FAX *(include area code)*
31-527-639880

FOR OFFICIAL USE ONLY

PVPO NUMBER
200100049

FILING DATE
01/02/01

FEES RECEIVED

FILING AND EXAMINATION FEE:
$ ① 2450.00 ② 255.00
DATE
① 01/02/01 ② 1/29/01

CERTIFICATION FEE:
$ 768.00
DATE
6/20/07

7. GENUS AND SPECIES NAME
Solanum Tuberosum

8. FAMILY NAME *(Botanical)*
Solanaceae

9. CROP KIND NAME *(Common name)*
Potato

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.) (Common name)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
The Netherlands

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
~~Can AGRICO Potato Corporation~~ KIRBY SAWATZKY PARKLAND SEED POTATOES LTD.
~~40 Cote Street~~ P.O. BOX 5581
~~Grand Falls, NB E3Y 1C4~~ LACOMBE, ALBERTA T4L 1X2
CANADA

14. TELEPHONE *(include area code)*
~~506-475-2279~~ 403-782-3122

15. FAX *(include area code)*
~~506-475-2620~~ 403-782-3154

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. [X] Exhibit A. Origin and Breeding History of the Variety
b. [X] Exhibit B. Statement of Distinctness
c. [X] Exhibit C. Objective Description of the Variety
d. [ ] Exhibit D. Additional Description of the Variety *(Optional)*
e. [X] Exhibit E. Statement of the Basis of the Applicant's Ownership
f. [ ] Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository)*
g. [X] Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
[ ] YES *(If "yes," answer items 18 and 19 below)* [X] NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[ ] YES [X] NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES *(If "yes," give names of countries and dates)* [ ] NO

First sales in April 1997 to Agrico growers in The Netherlands

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

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

SIGNATURE OF APPLICANT *(Owner(s))*		SIGNATURE OF APPLICANT *(Owner(s))*	
NAME *(Please print or type)* Jan J. van Hoogen		NAME *(Please print or type)*	
CAPACITY OR TITLE Sales manager U.S.A.	DATE 28-07-2000	CAPACITY OR TITLE	DATE

AGRICO Coöperatieve Handelsvereniging U.A. AGRICO P.O. BOX 70 8300 AB EMMELOORD HOLLAND

200100049

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits A, B, C, E; (3) at least 2,500 viable unt seeds, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue cultu be deposited and maintained in a public repository prior to issuance of a certificate; (4) check drawn on a U.S. bank for $ ($300 filing fee and $2,150 examination fee), payable to "Treasurer of the United States" *(See Section 97.175 of the Regul and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 30 days, then returned to the applic unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 1 Baltimore Blvd., Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application ar explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use ma materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the U States" in the amount of $300 for issuance of the Certificate.

Plant Variety Protection Office
Telephone: (301) 504-5518

ITEM

16a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;

(2) the details of subsequent stages of selection and multiplication;

(3) evidence of uniformity and stability; and

(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified.

16b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all ot varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;

(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences;

(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which cle indicate distinctness.

16c. Exhibit C forms are available from the PVPO for most crops; specify crop kind. Fill in Exhibit C (Objective Description Variety) form as completely as possible to describe your variety.

16d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accuratel conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.

16e. Section 52(4) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. The applica may be the actual breeder, the employee of the breeder, the owner through purchase or inheritance, etc.

17. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant may NO reverse this affirmative decision after the variety has been sold and so labelled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See P.L. 103-349 for additional information.)*

20. See Sections 41, 42, and 43 of the Act and Section 97.175 of the regulations for eligibility requirements.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownersl or assignment during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing change of ownership or assignment is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sectio 97.130, 97.131, 97.175(h) of Regulations and Rules of Practice.)*

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Se Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center–East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering an maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, includin suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Washington, DC 20250; and to the Office of Management and Budget, Paperwor Reduction Project (OMB No. 0581-0055), Washington, DC 20503.

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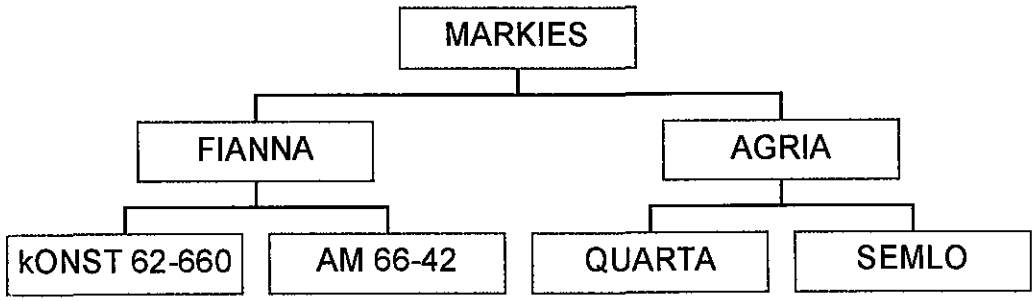
EXHIBIT A

PARENTAL LINEAGE



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#200100049

DRAFT Exhibit A Form

1. Describe the genealogy (back to and including public and commercial varieties, lines, or clones used) and the breeding method(s).

Markies originates from a cross by controled pollination between Fianna and Agria conducted in 1984.

Fianna is a cross between KO 62-660 and AM 66-42 from 1973.

Agria is a cross between Quarta and Semlo from 1976.

Selection on agronomical and resistance characteristics via negative mass selection.

2. Give the details of subsequent stages of selection and multiplication.

Year	Detail of Stage	Selection Criteria
1	Cross	
2	From seed to tuber in the greenhouse.	
3	One plant in the field.	Agronomical
4	Six plants in the field.	Agronomical
5	40 Plants, part seed, part ripe	Agronomical + Resis.
6	Two fields, seed and mature.	" "
7	Holland and abroad. 6 fields	" "
8	Holland and abroad. 12 fields	" "
9	Holland and abroad. 12 fields	" "
10	Holland and abroad. Plus introductions.	" "
~~11~~	~~National listing~~	Commercial value.

3a. Is the variety uniform? X Yes ____ No

How did you test for uniformity?

Potato is propagated vegetative. (clone)

Uniformity is tested at application for national listing (D.U.S.)

3b. Is the variety stable? X Yes ____ No

How did you test for stability? Over how many generations?

Stability is tested at application and yearly for multiplication by the N.A.K.. Since the beginning of large trials no off-types have been observed. ~~(Since 1995)~~ Since 1988 - Application breeding rights-Netherland 6 generations per letter April 3, 2007 LMC

4. Are genetic variants observed or expected during reproduction and multiplication? ____ Yes X No

If yes, state how these variants may be identified, their type and frequency.

AGRICO Coöperatieve Handelsvereniging voor Akkerbouwgewassen b.a. AGRICO EMMELOORD

Continue on additional pages if necessary.

#200100049

AGRICO Coöperatieve voor Akkerbouwgewassen AGRICO EMMELOORD

DRAFT Exhibit B Form

Based on overall morphology, MARKIES (*Applicant's new variety*) is most similar to AGRIA (*Most similar comparison variety(ies)*).

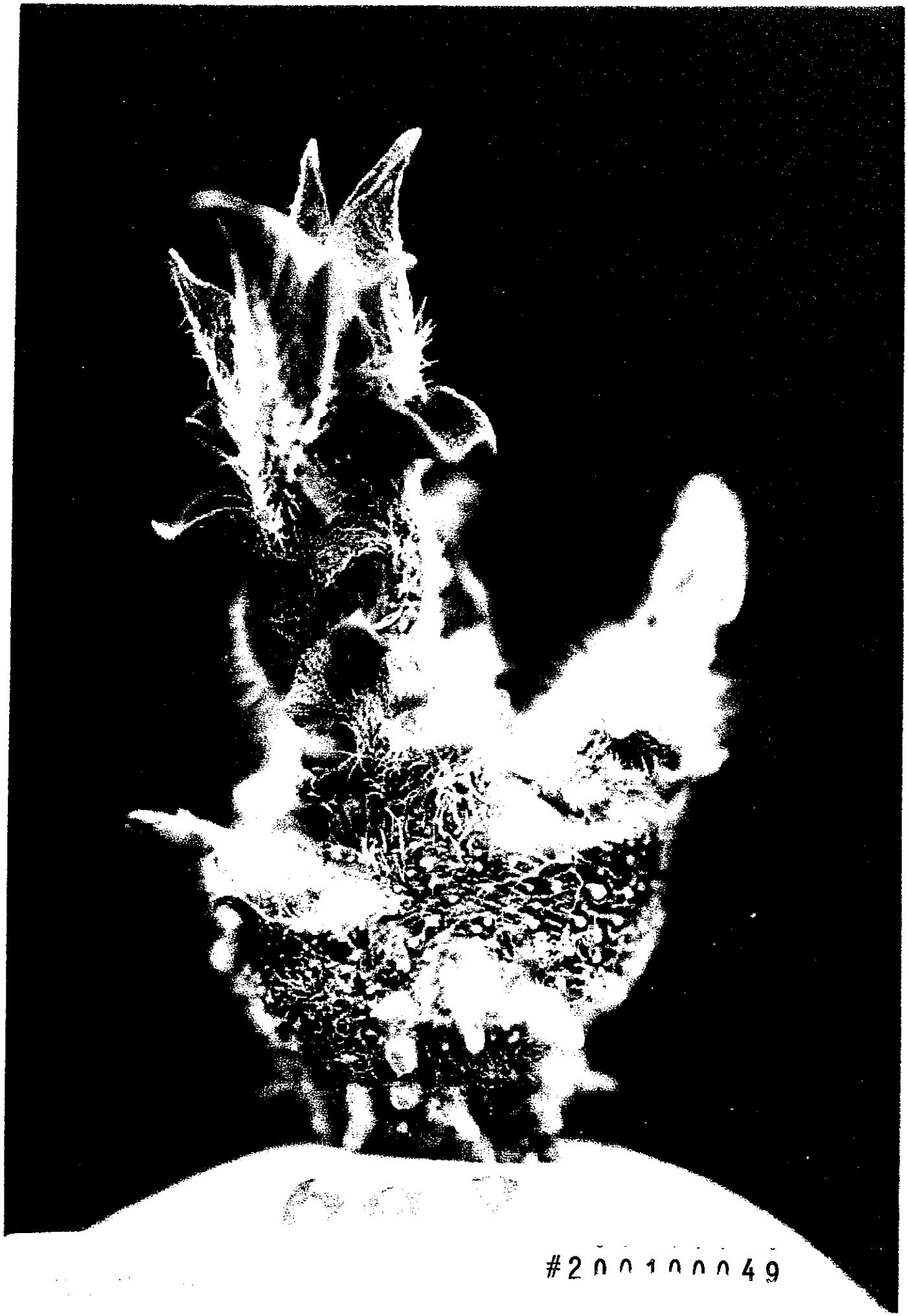
MARKIES (*Applicant's new variety*) most clearly differs from AGRIA (*Most similar comparison variety(ies)*) in the following traits:

Name the specific trait, then list the value of that trait for each variety in the comparison. Attach appropriate supporting evidence (see the Guidelines for Presenting Evidence in Support of Variety Distinctness, available from the PVP Office or website).

Eg. Terminal leaflet tip shape *Eg. Corolla inner Color* *Eg. NumberEye/Tuber*	*Cuspitate* *Violet (85A)* *15 +/- 2 (N=100)*	*Obtuse* *Red Purple (74B)* *30 +/- 4 (N=100)*	*photograph attached* *Royal Horticultural Society Colour Chart* *statistics attached*
1. Qualitative traits: Dry matter	Applicant's New Variety _____ 22%	1st Comparison Variety _____ 21%	Location of Evidence McCain Lamb Weston Agrico
2. Color traits: Color of flesh	6 = light yellow 18B RHS Colour Chart per letter April 3, 2007 LMC	7 = yellow 13B RHS Colour Chart	Raad voor plantenrassen P.O.Box 27 6710 BA Ede Holland
3. Quantitative traits: Tuber number	10 per plant	8 per plant	Raad voor plantenrassen
4. Other: Lightsprout shape Earliness	~~2 = ovoid~~ 3 Conical 4 = very late per letter April 20, 2007 LMC	4 = broad cylindrical 5½ = medium late	Raad voor plantenrassen

Use additional tables to present clear differences for additional comparison varieties. Use additional pages to present supporting evidence.

Copies of the official UPOV description, made by the "Raad voor Plantenrassen" of the varieties Agria and Markies are included.



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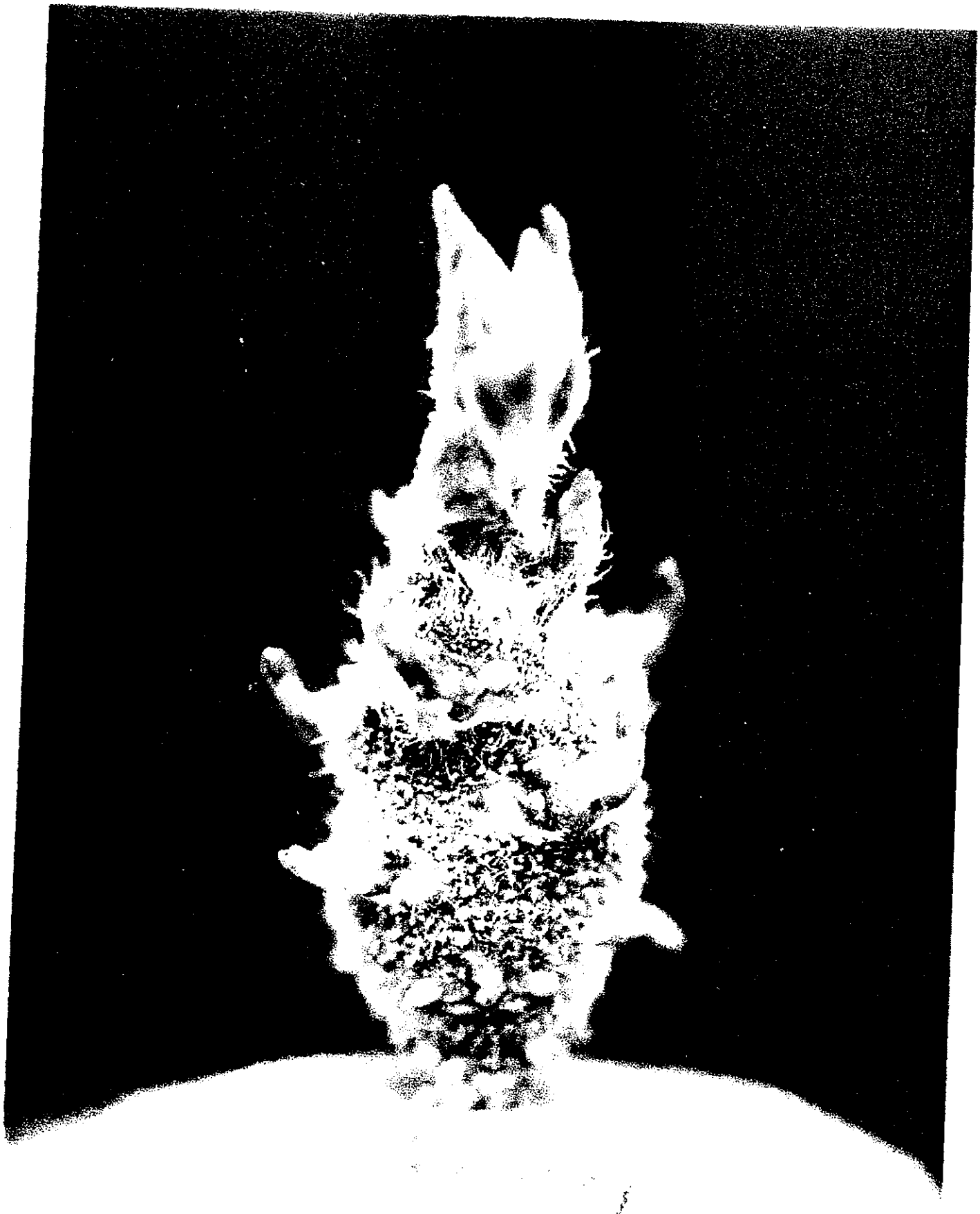

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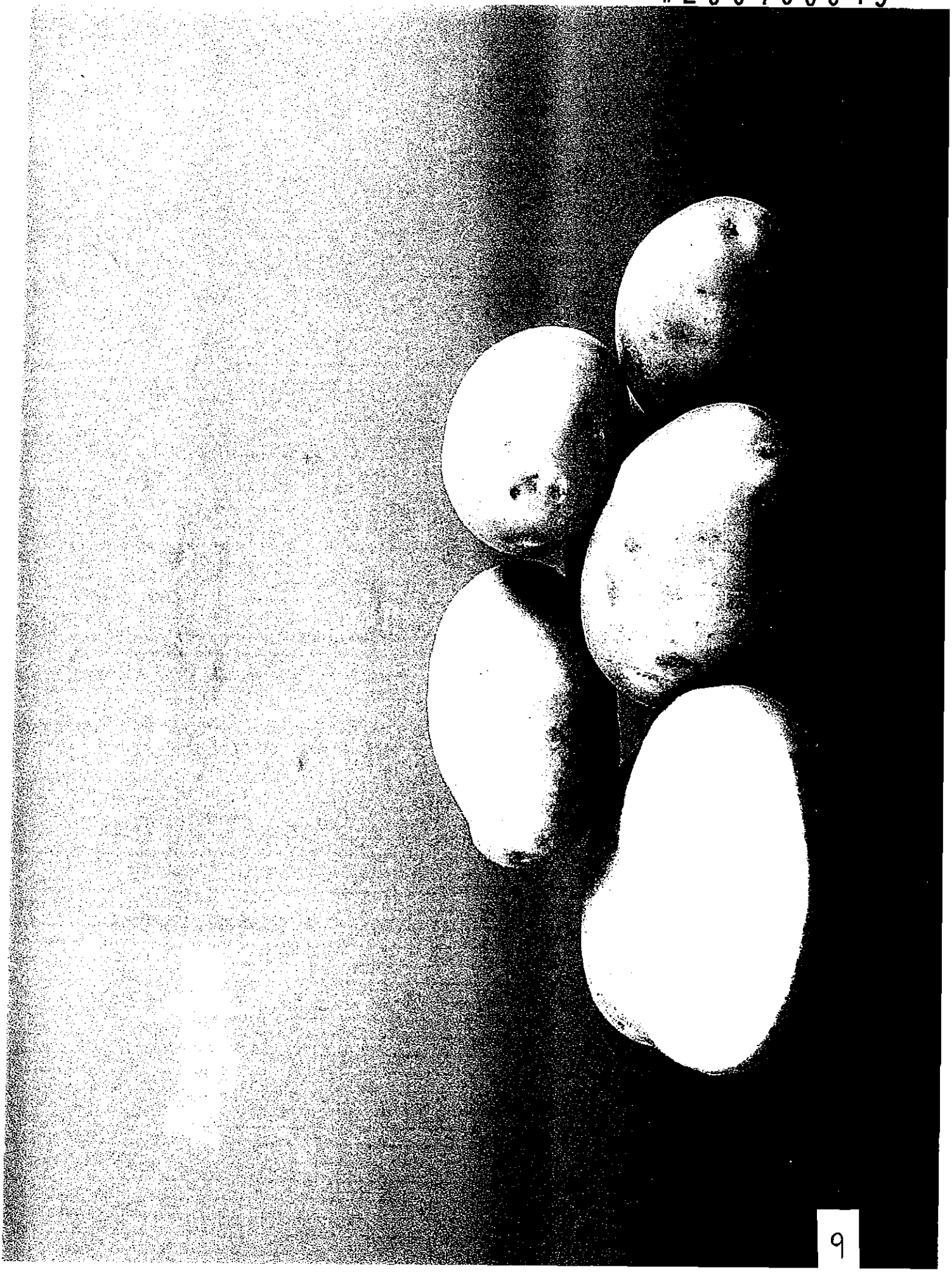

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MARKET

#200100049

AGRIA

#200100049 13

Reference number of reporting authority: ARD 1196 Markies

15. Characteristics included in the UPOV guidelines or national test guidelines

UPOV No.	Characteristics	States of Expression	Note	Remarks
Lightsprout				
1.	Size	medium to large	6	
2.	Shape	conical	3	
3.G	Anthocyanin coloration base	blue-violet	2	
4.	Intensity anthocyanin coloration base	strong	7	
5.	Pubescence base	medium to strong	6	
6.	Size tip	medium to large	6	
7.	Habit tip	medium to open	6	
8.	Intensity anthocyanin coloration tip	strong to very strong	8	
9.	Pubescence tip	medium to strong	6	
10.	Number root tips	few to medium	4	
11.	Protrusion lenticels	weak to medium	4	
12.	Length lateral shoots	short to medium	4	
Plant				
13.	Height	tall	7	
14.	Type	stem type	1	
15.	Growth habit	erect	3	
Stem				
16.	Thickness main stem	thick	7	
17.	Extension anthocyanin coloration	medium	5	

Reference number of reporting authority: ARD 1196

Leaf			
18.	Size	large	7
19.	Silhouette	closed to medium	4
20.	Intensity green colour	medium	5
21.	Extension anthocyanin coloration midrib	weak	3
Leaflet			
22.	Size	medium to large	6
23.	Width	medium	5
24.	Frequency coalescence	weak	3
25.	Waviness margin	weak to medium	4
26.	Depth veins	shallow to medium	4
27.	Anthocyanin pigmentation young leaflets at apical rosette	absent	1
28.	Glossiness upper side	dull to medium	4
29.	Frequency secondary leaflets on midrib	high	7
30.	Frequency secondary leaflets on terminal leaflet	medium to high	6
31.	Frequency secondary leaflets on lateral leaflet	medium	5
32.	Size secondary leaflets on lateral leaflet	small to medium	4
Inflorescence			
33.	Size	medium	5
34.	Anthocyanin coloration peduncle	weak to medium	4
35.	Frequency of flowers	high	7

Reference number of reporting authority: ARD 1196

36.	Anthocyanin coloration flower bud	weak	3
37.	Corolla size	medium	5
38G.	Colour inner side corolla	white	1
39.	Intensity anthocyanin coloration inner side corolla in col. Flowers		-
40.	Anthocyanin coloration of outer side in white flowers	absent	1
41.	Size white tips in coloured flowers		-
42.	Frequency fruits	absent or very few	1
Plant			
43.	Maturity	late	7
Tuber			
44.	Shape	oval	3
45.	Depth eyes	shallow to medium	4
46.	Smoothness skin	medium	5
47.G	Colour skin	yellow	1
48.	Colour of base of eye	yellow	1
49.	Colour flesh	light yellow	3
50.	Anthocyanin coloration skin in reaction to light	weak	3

16 Similar varieties and differences in relation to those varieties

Denomination of similar variety	Characteristic in which the similar variety is different	State of expression of similar variety	State of expression of candidate variety

The description given above characterizes the variety.

20010049

ARD 782

Annex to the report on technical examination

DESCRIPTION (translation)

Requesting authority :	Application No.
Reporting authority : Raad voor het Kwekersrecht, Wageningen, NL	Reference No. ARD 782

Species : Potato

Breeders reference :

Denomination : Agria

A. Characteristics, mentioned in the UPOV-testguideline TG/23/2 (dated 1974-09-16), are numbered

characteristics	RIVRO code	RIVRO description	UPOV code	UPOV description
TUBER				
1. Color of skin	1 2 3 4	1 yellow	1 2 3 4	1 yellow
2. Shape	3 4 5 6 7	6 long oval	1 2 3 4 5	3 long oval to long
3. Contour of the long tubers			1 2 3	–
4. Color of flesh	3 4 6 7	7 yellow	1 2 3	3 yellow
- Anthocyanin formation in skin	3 5 7	5 medium		
- Depth of eyes	1 3 4 6 7 9	3 shallow		
SPROUT				
5. Color of the base	2 3	3 blue-purple	1 2 3	3 blue-violet
- Intensity color of the base	1 3 4 6 7 9	7 strongated purple		
6. Color of the tip			1 2 3	3 blue-violet
7. Pubescence of the base	1 3 4 6 7 9	7 dense	1 5 9	9 very strong
8. Pubescence of the middle			1 5 9	9 very strong
9. Pubescence of the tip			1 5 9	5 medium
10. Shape of the whole sprout	1 3 4 6 7 9	7 elongated	1 2 3	3 cylindrical
- Size of the tip	1 3 4 6 7 9	6 rather large		
PLANT				
11. Anthocyanin color of the stem	1 3 4 6 7 9	4 rather weak purple	1 9	9 present
12. Presence of flower buds			1 9	9 present
13. Anthocyanin coloration of flower buds	1 3 4 6 7 9	3 weak purple	1 2 3	2 localized
14. Presence of flowers	1 3 4 6 7 9	7 many	1 9	9 present
15. Color of inner side petal	1 3 4 6 7 9	1 white	1 2 3	1 white
16. Color of outer side petal			1 2 3	1 white
17. Presence white tips on colored flowers			1 9	–
18. Time of maturity	1 3 4 6 7 9	6 rather late	3 4 6 7	6 medium to late
- Size of leaf	3 4 6 7	6 rather large		
- Size of leaflet	3 4 6 7	6 rather large		
- Size of secundary leaflets	3 4 6 7	6 rather large		
- Number of secundary leaflets	3 4 6 7	4 rather few		
19. Silhouette of the whole leaf				
20. Length leaflets as percentage of breadth	1 5 9	9 broad		

RAAD VOOR HET KWEKERSRECHT WAGENINGEN

Wageningen, 5 FEB. 1993

Certified copy
THE SECRETARY

200100049

ARD 782

B. Differences from those varieties which most closely resemble the variety.

The description given above characterizes the variety.

C. Additional data

Agria originates from the cross Quarta x Semlo.

RAAD VOOR HET KWEKERSRECHT
WAGENINGEN
Wageningen,
25 FEB. 1993
Certified copy
THE SECRETARY

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
Potato (*Solanum tuberosum* L.)

INSTRUCTIONS #200100049

The Objective Description Form:
The objective description form lists characteristics to be used as the basis for developing the description of pota varieties. It is designed to guide the applicant in describing a variety in detail so a meaningful comparison with other potato varieties can be accomplished. It is recommended that this form be completed in as much detail a possible to ensure an accurate description. Please fill in the requested data and place the appropriate number describes the varietal characters typical of this potato variety and the reference varieties in the respective boxe

Test Guidelines:
Any statistical and trial (field test) data that may be necessary to support the variety description should be attac to this form. Please include for trial data the plot size, number of replications, number of plants, plant spacing, t locations and growing periods. Trials should normally be conducted at one place, in the region that the variety been adapted for, with a minimum of one growing period in the United States. All comparative data should be determined from varieties entered in the same trials. The size of the plots should be such that plants or parts o plants may be removed for measuring and counting without prejudice to the observations which must be made the end of the growing period. As a minimum, each test should include a total of 60 plants which should be divi between two or more replicates. Separate plots for observation and measuring can only be used if they have b subject to similar environmental conditions. To determine color for a plant or plant parts a recognized standard color chart must be used such as the Royal Horticultural Society (RHS) Color Chart or Munsell Color Chart (MC

Reference Varieties:
The application variety should be compared to at least one reference variety preferably a set of reference variet The reference varieties should be market class standard varieties currently grown in the United States and or th variety (ies) most similar. The following varieties are recommended as market class standards to be used as reference varieties:

Yellow-flesh table-stock	Yukon Gold
Round-white table-stock	Superior
Chip-processing	Atlantic, Snowden, Norchip
Frozen-processing	Russet Burbank
Russet table-stock	Russet Burbank, Russet Norkotah, Goldrush
Red table-stock	Red Pontiac, Red Norland, Red Lasoda

If the applicant does not use one of the recommended reference varieties by the PVP office, a complete descrip of the reference variety should be submitted by the applicant (Exhibit C).

Characteristics:

Light sprout characteristics are supplied in **Figure 1**. The plant type and growth habit characteristics are collecte at early first bloom. **Figure 2** is supplied to help visualize the growth habit. For this descriptor, look at the stems rather than the stems and foliage. Plant maturity is measured at natural vine senescence.

Stem characteristics are also collected at early bloom. Stem anthocyanin coloration is divided into two descripto Location and intensity. **Figure 3** is supplied to give an example of stem wings.

Leaf characteristics are observed at early first bloom. Fully-developed leaves located on the middle third of the plant should be used. Leaf pubescence refers to general trichomes. **Figure 4** is supplied for examples of leaf silhouette. Leaf stipules are shown in **Figure 5** for visual definition. **Figure 6** is supplied to define leaf characteristics. **Figure 7** should be used to describe terminal and primary leaflet shape. **Figures 8 and 9** are u to describe the terminal and primary leaflet shape of tip and base, respectively. To measure the total number of primary leaflets pairs, collect 10 fully developed petioles (with leaves attached from each replication) and take the average number of secondary and tertiary leaflets. Glandular trichomes should be described in the Additional Comments and Characteristics (Descriptor 15).

Inflorescence characteristics should be measured at early first bloom. **Figures 10, 11 and 12** are supplied to describe anther and stigma shape, respectively. Corolla, calyx, anther, stigma, and pollen should be observed o newly opened flowers. Berry production should be based on field-grown plants rather than greenhouse plants.

Tuber characteristics should be observed following harvest. **Figures 13 and 14** are available to describe distribution of secondary color and tuber shape, respectively.

Disease and pest reactions should be based upon specific tests or statistical analysis rather than just field observations, rating 1 as Highly Resistance and 9 as Highly Susceptible, please follow the scale on each descript Other diseases or pests reactions not requested can be described if it is felt that it would be helpful to determine novelty of the variety.

Quality characteristics should be described according to the market use.

If the plant is transgenic, this gene insertion(s) should be described.

Chemical identification and any other characteristics can be described if they are helpful in distinguishing the variety.

Legend:

V = Application Variety

R1-R4 = Reference Varieties

* = Both the reference variety (ies) and application variety must be described for characteristics designated with a asterisk.

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
Dr. R.J. Mansholt's Veredelingsbedrijf B.V.		MARKIES

ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)

P.O.BOX 70
8300 AB Emmeloord
The Netherlands

PVPO NUMBER

#200100049

REFERENCE VARIETIES: Enter the reference variety name in the appropriate box.

Application Variety (V)	Reference Variety 1 (R1)	Reference Variety 2 (R2)	Reference Variety 3 (R3)	Reference Variety 4 (R4)
MARKIES	AGRIA	FIANNE		

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

1. MARKET CHARACTERISTICS:

*MARKET CLASS:
1 = Yellow-flesh Tablestock 2 = Round-white Tablestock 3 = Chip-processing 4 = Frozen-processing
5 = Russet Tablestock 6 = Other _____

V	R1	R2	R3	R4
4	1,4	4		

2. LIGHT SPROUT CHARACTERISTICS: (See Figure 1)

*LIGHT SPROUT: GENERAL SHAPE
1 = Spherical 2 = Ovoid 3 = Conica 4 = Broad cylindrica 5 = Narrow cylindrical 6 = Other _____

V	R1	R2	R3	R4
3	4	3		

*LIGHT SPROUT BASE: PUBESCENCE OF TIP
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
4	5	3		

*LIGHT SPROUT BASE: ANTHOCYANIN COLORATION
1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	R1	R2	R3	R4
3	3	2		

*LIGHT SPROUT BASE: INTENSITY OF ANTHOCYANIN COLORATION (IF PRESENT)
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
4	4	3		

* LIGHT SPROUT TIP: HABIT
1 = Closed 2 = Intermediate 3 = Open

V	R1	R2	R3	R4
2/3	2	3		

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
4	2	4		

LIGHT SPROUT TIP ANTHOCYANIN COLORATION
1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	R1	R2	R3	R4
3	3	2		

LIGHT SPROUT TIP: INTENSITY OF ANTHOCANIN COLORATION (IF PRESENT)
1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	R1	R2	R3	R4
5	4	4		

LIGHT SPROUT ROOT INITIALS: FREQUENCY
1 = Short 2 = Medium 3 = Long

V	R1	R2	R3	R4
2/3	2	2/3		

3. PLANT CHARACTERISTICS:

GROWTH HABIT: (See Figure 2)
3 = Erect (>45° with ground) 5 = Semi-erect (30-45° with ground) 7 = Spreading

V	R1	R2	R3	R4
3	3	3		

TYPE:
1 = Stem (foliage open, stems clearly visible) 2 = Intermediate 3 = Leaf (Foliage closed, stems hardly visible)

V	R1	R2	R3	R4
1	2	1		

MATURITY: Days after planting (DAP) at vine senescence

V	R1	R2	R3	R4
180	165	175		

PLANTING DATE:

V	R1	R2	R3	R4
15/04	15/04	15/04		

*REGIONAL AREA:
1 = Pacific North West (WA, OR, ID, CO, CA) 2 = North Central (ND, WI, MI, MN, OH) 3 = North East (ME, NY, PA, NJ, MD, MA, RI,)
4 = Mid-Atlantic Erect (VI, NC, SC, South NJ, FL) 5 = South (LA, TX, AZ, NE) 6 = Canada
7 = Europe 8 = England 9 = Latin America 10 = Brazil 11 = Other _____

V	R1	R2	R3	R4
7	7	7		

MATURITY CLASS:
1 = Very Early (<100 DAP) 2 = Early (100-110 DAP) 3 = Mid-season (111-120 DAP) 4 = Late (121-130 DAP) 5 = Very Late (>130 DAP).

V	R1	R2	R3	R4
5	4	5		

4. STEM CHARACTERISTICS: Measure at early first bloom

*** STEM ANTHOCYANIN COLORATION:**
1 = Absent 3= Weak 5 = Medium 7 = Strong 9 = Very Strong

V	R1	R2	R3	R4
5	4	4		

STEM WINGS: (See Figure 3)
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	R1	R2	R3	R4
6	5	6		

5. LEAF CHARACTERISTICS:

LEAF COLOR: *(Observe fully developed leaves located on middle 1/3 of plant)*
1 = Yellowing-green 2 = Olive-green 3 = Medium Green 4 = Dark Green 5 = Grey-green 6 = Other _____

V	R1	R2	R3	R4
3	3/4	2/3		

LEAF COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart
(Observe fully developed leaves located on middle 1/3 of plant and circle the appropriate color chart)

V	R1	R2	R3	R4
136B	131B	139A		

LEAF PUBESCENCE DENSITY:
1 = Absent 2 = Sparse 3 = Medium 4 = Thick 5 = Heavy

V	R1	R2	R3	R4
2	1/2	2		

LEAF PUBESCENCE LENGTH:
1 = None 2 = Short 3 = Medium 4 = Long 5 = Very Long

V	R1	R2	R3	R4
2	4	4		

(Note Descriptor #15 can be used to describe the type and length of the glandular trichomes observed.)

*** LEAF SILHOUETTE:** (See Figure 4)
1 = Closed 3 = Medium 5 = Open

V	R1	R2	R3	R4
3	4	3		

PETIOLES ANTHOCYANIN COLORATION:
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	R1	R2	R3	R4
3	5	5		

LEAF STIPULES SIZE: (Se Figure 5)
1 = Absent 3 = Small 5 = Medium 7 = Large

V	R1	R2	R3	R4
3	5	5		

TERMINAL LEAFLET SHAPE (See Figures 6 and 7)
1 = Narrowly ovate 2 = Medium Ovate 3 = Broadly Ovate 4 = Lanceolate 5 = Elliptical 6 = Obovate 7 = Oblong 8 = Other _____

V	R1	R2	R3	R4
3	3	2		

5. LEAF CHARACTERISTICS: (continued)

TERMINAL LEAFLET TIP SHAPE: (See Figures 6 and 8)
1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	R1	R2	R3	R4
2	2	3		

* TERMINAL LEAFLET BASE SHAPE: (See Figure 9)
1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	R1	R2	R3	R4
3	4	4		

TERMINAL LEAFLET MARGIN WAVINESS:
1 = Absent 2 = Slight 3 = Weak 4 = Medium 5 = Strong

V	R1	R2	R3	R4
3	2	2		

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	R1	R2	R3	R4
4	4	4		

RANGE:

V	R1	R2	R3	R4
3 to 4	3 to 5	3 to 5	to	to

PRIMARY LEAFLET TIP SHAPE: (See Figures 6 and 8)
1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	R1	R2	R3	R4
3	3	3		

PRIMARY LEAFLET SIZE:
1 = Very Small 2 = Small 3 = Medium 4 = Large 5 = Very Large

V	R1	R2	R3	R4
3/4	3/4	3/4		

PRIMARY LEAFLET SHAPE: (See Figures 6 and 7)
1 = Narrowly ovate 2 = Medium ovate 3 = Broadly ovate 4 = Lanceolate 5 = Elliptical 6 = Ovate 7 = Oblong 8 = Other _____

V	R1	R2	R3	R4
1	2	1		

PRIMARY LEAFLET BASE SHAPE: (See Figures 6 and 9)
1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	R1	R2	R3	R4
3	4	4		

NUMBER OF SECONDARY AND TERTIARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	R1	R2	R3	R4
4	6	5		

RANGE:

V	R1	R2	R3	R4
3 to 6	4 to 8	4 to 8	to	to

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	3	R1	5	R2	4	R3		R4	

RANGE:

V	1 to 5	R1	3 to 6	R2	3 to 6	R3	to	R4	to

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	7	R1	7	R2	7	R3		R4	

RANGE:

V	3 to 12	R1	5 to 12	R2	3 to 10	R3	to	R4	to

* COROLLA INNER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	155D	R1	112 D	R2	155 B	R3		R4	

* COROLLA OUTER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	155D	R1	112 D	R2	155 B	R3		R4	

* COROLLA INNER SURFACE COLOR: (Measure predominant color of newly open flower, if flowers are bi-color please use the ratio codes)
1 = White 2 = Red-violet 3 = Blue-violet 4 = Cream 5 = Red-purple 6 = Blue 7 = Pink 8 = Pink-white 9 = Purple 10 = Violet 11 = Purple-violet 13 = Violet-White 1:1 14 = Violet-White 1:3 15 = Violet-White 3:1 16 = Violet-White Halo 17 = Pink-White 1:1 18 = Pink-White 1:3 19 = Pink-White 3:1 20 = Pink-White Halo 21 = RedViolet-White 1:1 22 = RedViolet-White 1:3 23 = RedViolet-White 3:1 24 = RedViolet-White Halo 25 = BlueViolet-White 1:1 26 = BlueViolet-White 1:3 27 = BlueViolet-White 3:1 28 = BlueViolet-White Halo 12 = Other _____

V	1	R1	1	R2	1	R3		R4	

COROLLA SHAPE: (See Figure 10)
1 = Very rotate 2 = Rotate 3 = Pentagonal 4 = Semi-stellate 5 = Stellate

V	4	R1	3	R2	5	R3		R4	

6. INFLORESCENCE CHARACTERISTICS:

CALYX ANTHOCYANIN COLORATION:
1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very strong

V	5	R1	3	R2	7	R3		R4	

ANTHER COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsel Color Chart (Measure when newly opened flower is fully expanded and circle the appropriate color chart)

V	25B	R1	25B	R2	25A	R3		R4	

ANTHER SHAPE: (See Figure 11)
1 = Broad cone 2 = Narrow cone 3 = Pear-shaped cone 4 = Loose 5 = Other

V	2	R1	2	R2	1	R3		R4	

6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:
1 = None 3 = Some 5 = Abundant

V	5	R1	5	R2	5	R3		R4	

STIGMA SHAPE: (See Figure 12)
1 = Capitate 2 = Clavate 3 Bi-lobed

V	2	R1	2	R2	2	R3		R4	

STIGMA COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsel Color Chart (Circle the appropriate color chart)

V	142 A	R1	141 C	R2	142 A	R3		R4	

BERRY PRODUCTION: (Under field conditions)
1 = Absent 3 = Low 5 = Moderate 7 = Heavy 9 = Very Heavy

V	1	R1	1	R2	4	R3		R4	

7. TUBER CHARACTERISTICS:

* PREDOMINANT SKIN COLOR:
1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
10 = Purple 11 = Dark purple-black 12 = Other _____

V	3	R1	3	R2	3	R3		R4	

PREDOMINANT SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	19C	R1	19 C	R2	19 C	R3		R4	

SECONDARY SKIN COLOR:
1 = Absent 2 = Present (please describe)

V	1	R1	1	R2	1	R3		R4	

SECONDARY SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color)

V	–	R1	–	R2	–	R3		R4	

SECONDARY SKIN COLOR DISTRIBUTION: (See Figure 13)
1 = Eyes 2 = Eyebrows 3 = Splashed 4 = Scattered 5 = Spectacled 6 = Stippled 7 = Other _____

V	–	R1	–	R2	–	R3		R4	

SKIN TEXTURE:
1 = Smooth 2 = Rough (flaky) 3 = Netted 4 = Russetted 5 = Heavily russetted 6 = Other _____

V	1/2	R1	1	R2	1	R3		R4	

7. TUBER CHARACTERISTICS: (continued)

* TUBER SHAPE: (See Figure 14)
1 = Compressed 2 = Round 3 = Oval 4 = Oblong 5 = Long 6 = Other _____

V	R1	R2	R3	R4
3	4	3		

TUBER THICKNESS:
1 = Round 2 = Medium thick 3 = Slightly flattened 4 = Flattened 5 = Other _____

V	R1	R2	R3	R4
2	3	2		

TUBER LENGTH (mm):

AVERAGE:

V	R1	R2	R3	R4
120	130	100		

RANGE:

V	R1	R2	R3	R4
30 to 150	30 to 200	30 to 120	to	to

STANDARD DEVIATION:

V	R1	R2	R3	R4
–	–	–		

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	R1	R2	R3	R4
30 kg	30 kg	30 kg		

TUBER WIDTH (mm)

AVERAGE:

V	R1	R2	R3	R4
65	70	50		

RANGE:

V	R1	R2	R3	R4
25 to 90	25 to 100	25 to 80	to	to

STANDARD DEVIATION:

V	R1	R2	R3	R4
–	–	–		

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	R1	R2	R3	R4
30 kg	30 kg	30 kg		

7. TUBER CHARACTERISTICS: (continued)

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TUBER THICKNESS (mm):

AVERAGE:

V	50	R1	50	R2	40	R3		R4	

RANGE:

V	20 to 80	R1	20 to 70	R2	20 to 70	R3	to	R4	to

STANDARD DEVIATION:

V	-	R1	-	R2	-	R3		R4	

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	30kg	R1	30 kg	R2	30 kg	R3		R4	

TUBER EYE DEPTH:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	4	R1	3	R2	3	R3		R4	

TUBER LATERAL EYES:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	4	R1	3	R2	3	R3		R4	

NUMBER EYE/TUBER:

AVERAGE:

V	8	R1	8	R2	8	R3		R4	

RANGE:

V	7 to 9	R1	8 to 10	R2	5 to 9	R3	to	R4	to

DISTRIBUTION OF TUBER EYES:

1 = Predominantly apical 2 = Evenly distributed

V	2	R1	2	R2	2	R3		R4	

PROMINENCE OF TUBER EYEBROWS:

1= Absent 2 = Slight prominence 3 = Medium prominence 4 = Very prominent 5 = Other _____

V	2	R1	1	R2	1	R3		R4	

7. TUBER CHARACTERISTICS: (continued)

PREDOMINANT TUBER FLESH COLOR
1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
10 = Purple 11 = Dark purple-black 12 = Other _____

V	2	R1	3	R2	1	R3		R4	

PRIMARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	18 C	R1	13 B	R2	155 B	R3		R4	

SECONDARY TUBER FLESH COLOR:

1 = Absent 2 = Present, please describe: _____

V	1	R1	1	R2	1	R3		R4	

SECONDARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate co chart)

V	--	R1	-	R2	-	R3		R4	

NUMBER OF TUBERS/PLANT:
1 = Low (<8) 2 = Medium (8-15) 3 = High (>15)

V	1/2	R1	1	R2	2	R3		R4	

8. DISEASES CHARACTERISTICS:

DISEASES REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lessions in Number and Size 4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible 7 = Susceptible 9 = Highly Susceptible

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LATE BLIGHT: (Phytophthora)

V	R1	R2	R3	R4
3	4	4		

EARLY BLIGHT: (Alternaria)

V	R1	R2	R3	R4
5	3	4		

SOFT ROT (Erwinia)

V	R1	R2	R3	R4
5	7	5		

COMMON SCAB (Streptomyces)

V	R1	R2	R3	R4
5	6	6		

POWDERY SCAB (Spongospora)

V	R1	R2	R3	R4
6	6	3		

DRY ROT (Fusarium)

V	R1	R2	R3	R4
3	3	5		

POTATO LEAF ROLL VIRUS (PLRV)

V	R1	R2	R3	R4
3	4	5		

8. DISEASES CHARACTERISTICS: (continued)

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POTATO VIRUS X (PVX)

V	R1	R2	R3	R4
2	1	4		

POTATO VIRUS Y (PVY)

V	R1	R2	R3	R4
3	2	3		

POTATO VIRUS M (PVM)

V	R1	R2	R3	R4
0	0	0		

POTATO VIRUS A (PVA)

V	R1	R2	R3	R4
2	1	2		

GOLDEN NEMATODE (Globodera)

V	R1	R2	R3	R4
1	1	1		

ROOT – KNOT NEMATODE (Meloidogyne)

V	R1	R2	R3	R4
0	0	0		

OTHER DISEASE Wart deseage

V	R1	R2	R3	R4
5	5	1		

PHYSIOLOGICAL DISORDER

1 = Malformed shape 2 = Tuber cracking 3 = Feathering 4 = Hollow heart 5 = Internal necrosis
6 = Blackheart 7 = Internal sprouting 8 = Other _____

V	R1	R2	R3	R4
–	4	–		

9. PESTS CHARACTERISTICS:

PEST REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lessions in Number and Size
4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
7 = Susceptible 9 = Highly Susceptible

COLORADO POTATO BEETLE (CPB) (*Leptinotarsa*)

V	R1	R2	R3	R4
0	0	0		

GREEN PEACH APHID (*Myzus*)

V	R1	R2	R3	R4
3	3	3		

OTHER:

V	R1	R2	R3	R4
–				

OTHER:

V	R1	R2	R3	R4
_				

10. GENE TRAITS:

INSERTION OF GENES: 1 = YES 2 = NO [2]

IF YES, describe the gene(s) introduced or attach information:

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11. QUALITY CHARACTERISTICS:

CHIEF MARKET: French fries industry

SPECIFIC GRAVITY (wt. air/wt. air – wt. water)
1 = <1.060 2 = 1.060-1.069 3 = 1.070-1.079 4 = 1.080-1.089 5 = >1.090

V	5	R1	4	R2	5	R3		R4	

TOTAL GLYCOALKALOID CONTENT (mg./100 g. fresh tuber)

V	3	R1	2	R2	4	R3		R4	

OTHER QUALITY CHARACTERISTICS: Describe any other quality characteristics that may aid in identification, (e.g., chip-processing, french fry proces baking, boiling, after-cooking darkening). Please attach data and corresponding protocol.

Chips: frying at 190 C = 7
French fries: frying 3 minutes at 170 C = 8
Cooking: 32 minutes in a steamer = BC-7

12. CHEMICAL IDENTIFICATION:

Describe chemical traits of the candidate variety that aid in its identification (e.g., protien or DSN electrophoresis). Please attach data and the correspond protocol.

–

13. FINGER PRINTING MARKERS:

ISOZYMES 1 = YES 2 = NO [2]

IF YES, attach information

14. DNA PROFILE: 1 = YES 2 = NO [2]

IF YES, attach information

15. ADDDITIONAL COMMENTS AND CHARACTERISTICS:

Include any additional descriptors that would be useful in distinguishing the candidate variety.

Size of the light sprout: Markies = 6, Agria = 6, Fianne = 5

Figure 1: Light sprout

Light sprout dissection

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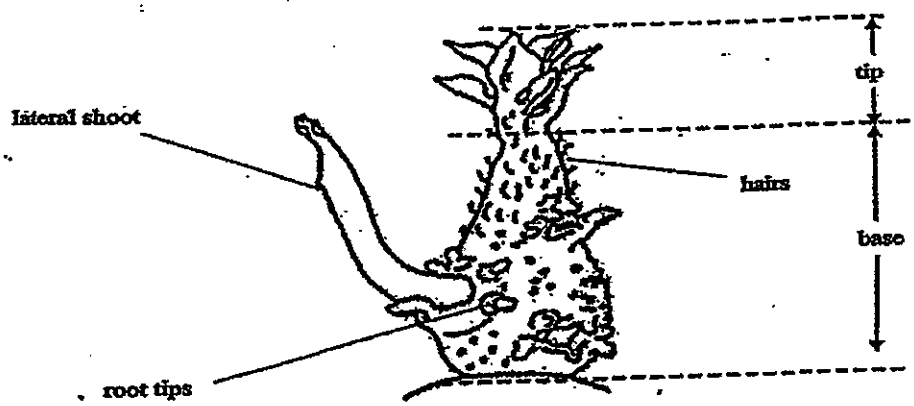
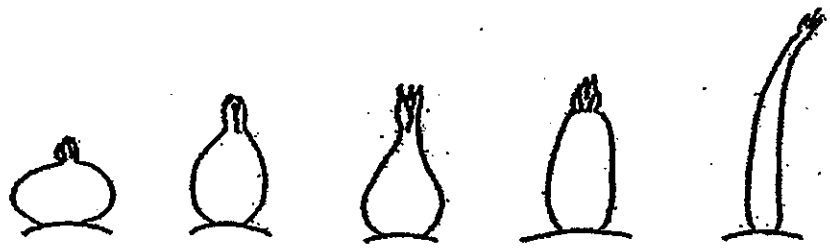


Light sprout shape



1 spherical | 2 ovoid | 3 conical | 4 broad cylindrical | 5 narrow cylindrical

Light sprout tip habit

1 closed | 2 intermediate | 3 open

The characteristic should be observed after about 10 weeks to obtain a good differentiation in the collection.

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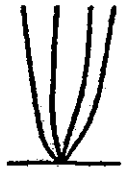
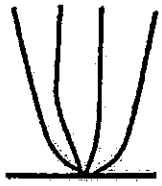
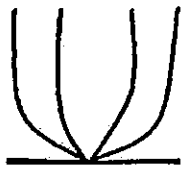
Figure 2: Growth Habit



Erect



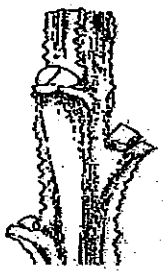
Semi Erect



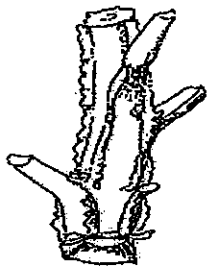
Spreading

Figure 3: Stem Wings

Weak



Medium



Strong

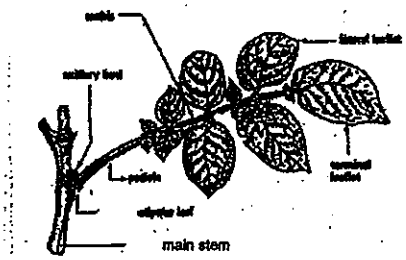
Figure 4: Leaf Silhouette

Closed

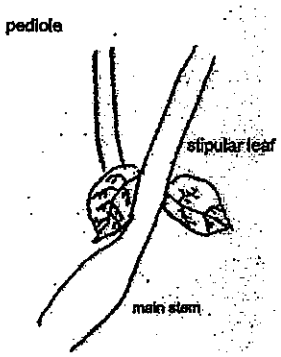
Medium

Open

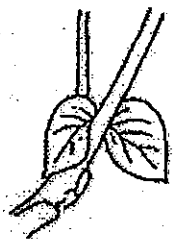
Figure 5: Leaf Stipules



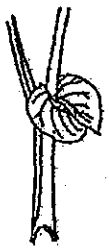
General structures



Small stipular leaf



Medium stipular leaf



Large stipular leaf

Figure 6: Leaf Dissection

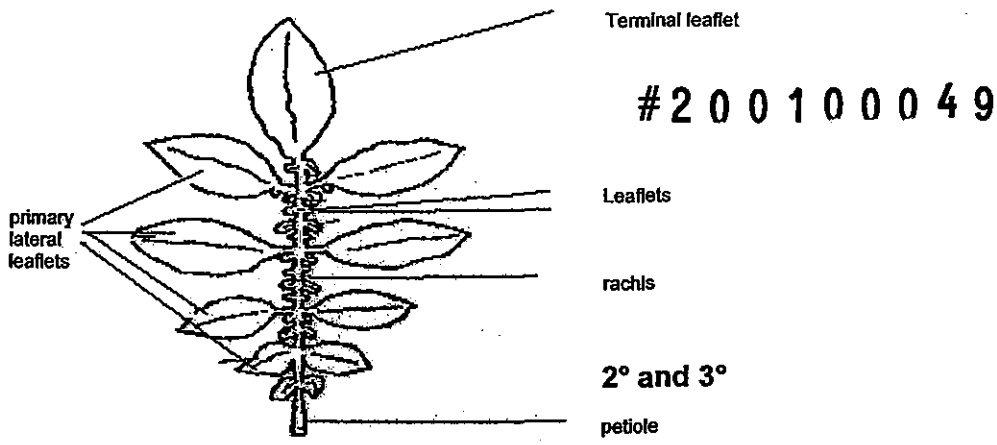


Figure 7: Terminal Leaflet Shape/Primary Leaflet Shape

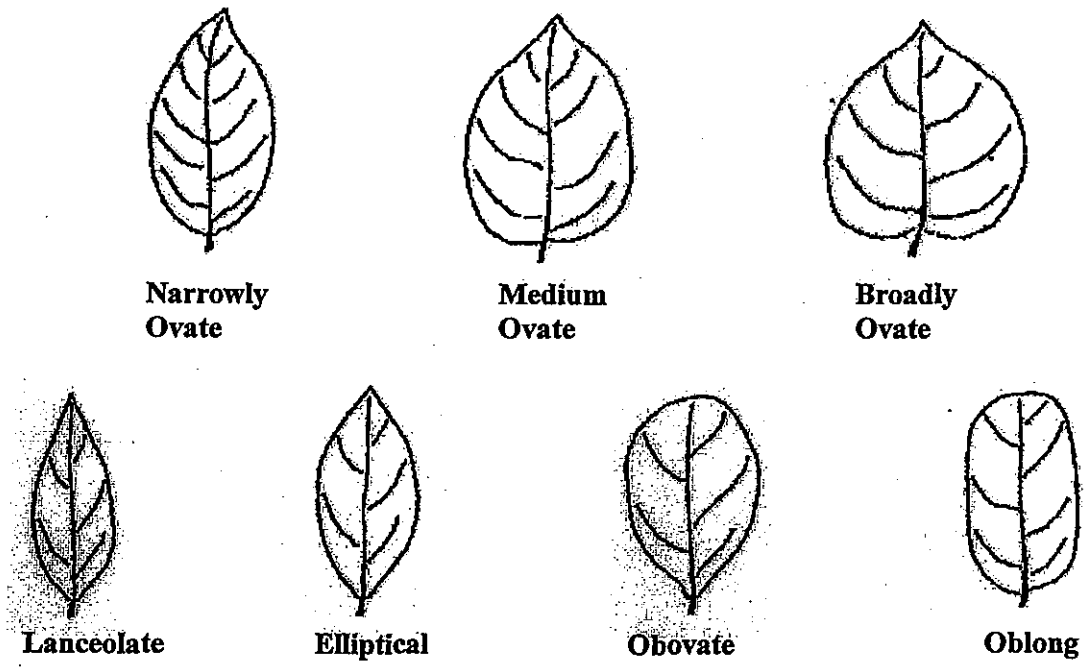


Figure 8: Terminal Leaflet Shape of Tip/Primary Leaflet Shape of Tip

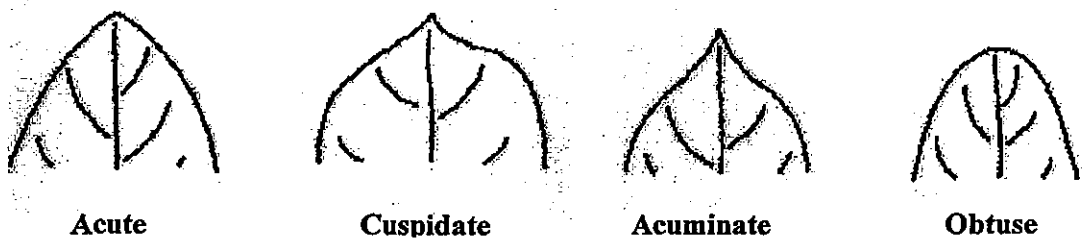


Figure 9: Terminal Leaflet Shape of Base/Primary Leafelet Shape of Base

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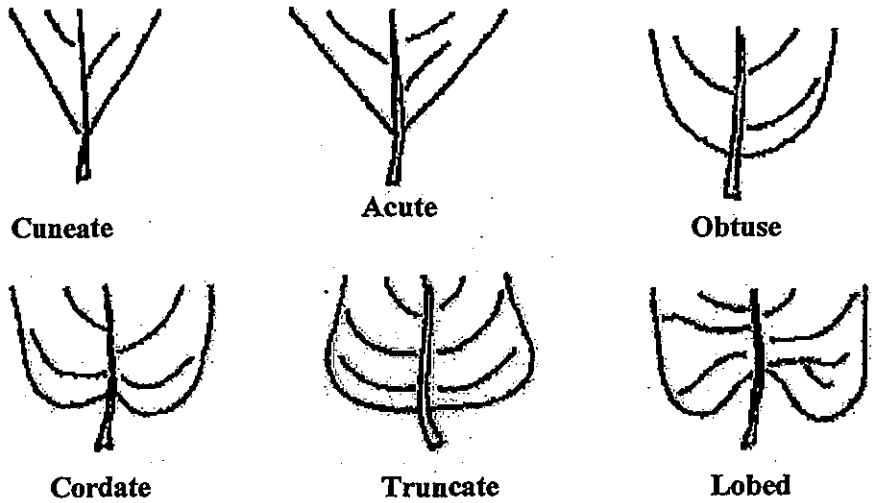


Figure 10: Corolla Shape

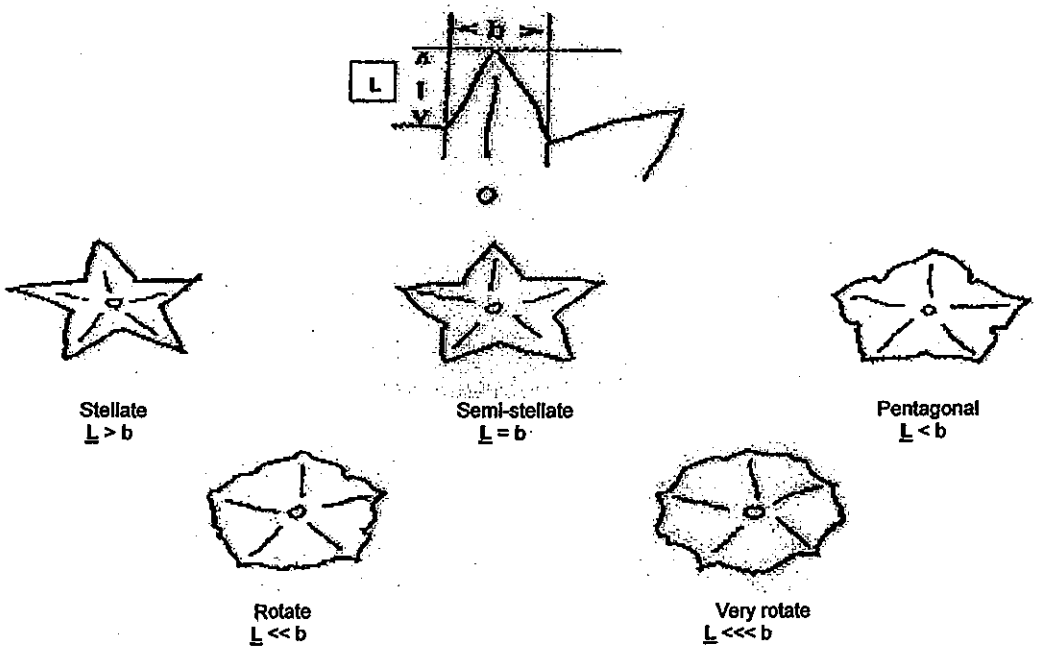
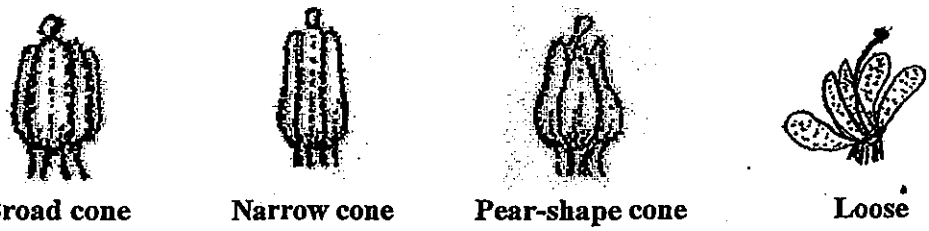


Figure 11: Anther Shape



36

Figure 12: Stigma Shape

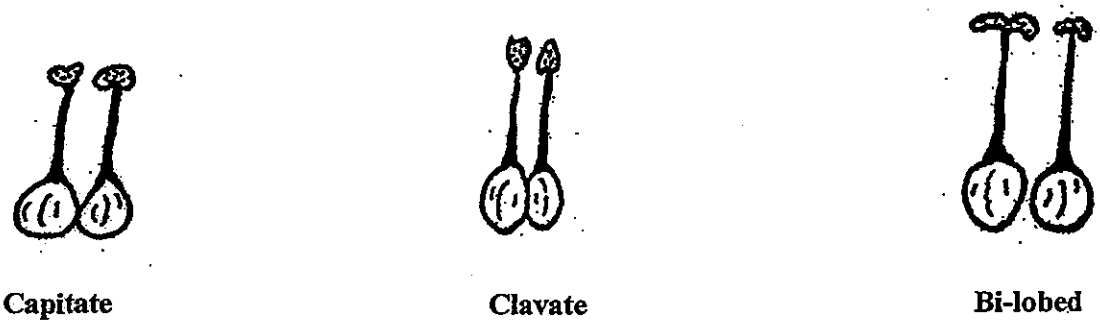


Figure 13: Distribution of Secondary Skin Tuber Color

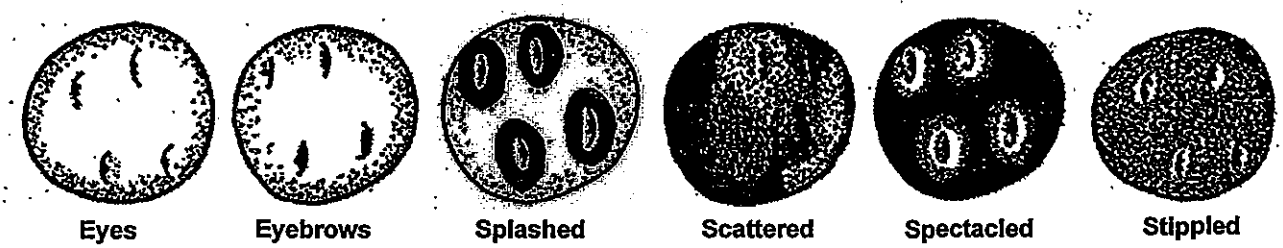
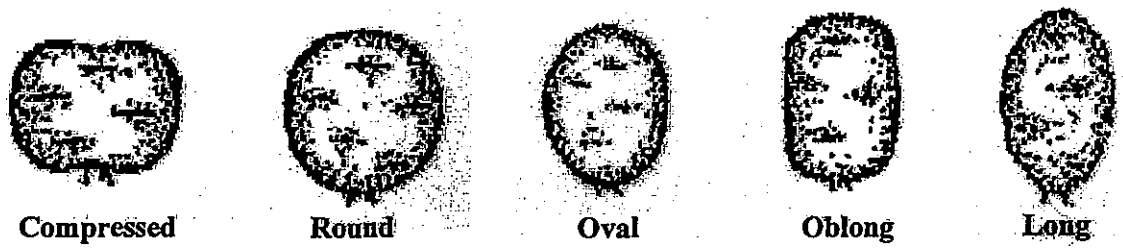


Figure 14: Tuber Shape



References:
Huaman, Z. 1986. Systematic botany and morphology of the potato. Technical information Bulletin 6. International Potato Center, Lima, Peru.

Huaman, Z., Williams, J.T., Salhuana, W. and Vincent, L. Descriptors for the cultivated potato and the maintenance and distribution of germplasm collections. 1977. International Board for Plant Genetic Resources. Rome, Italy.

Potato (*Solanum tuberosum* L.) Guidelines for the conduct of tests for distinctness, uniformity and stability. International union for the protection of new varieties of plants (UPOV). 2004-03-31.

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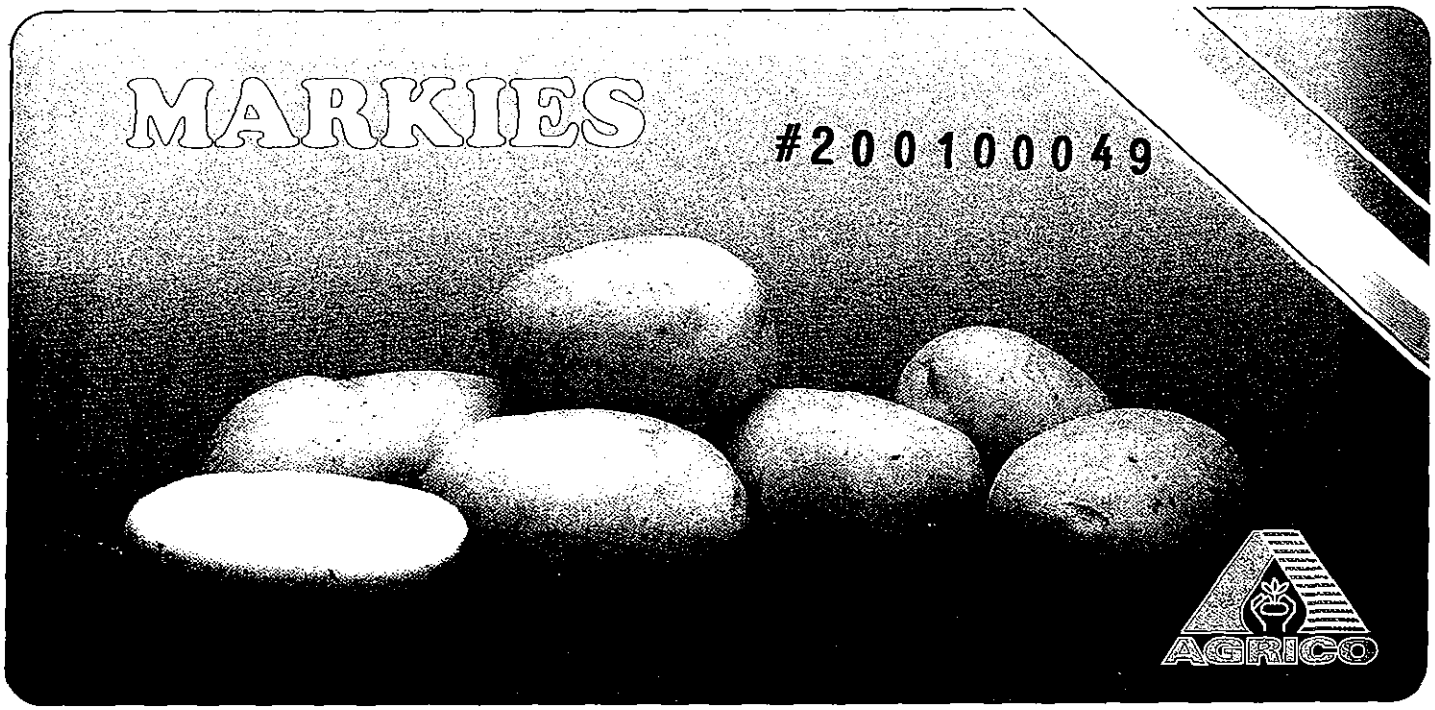
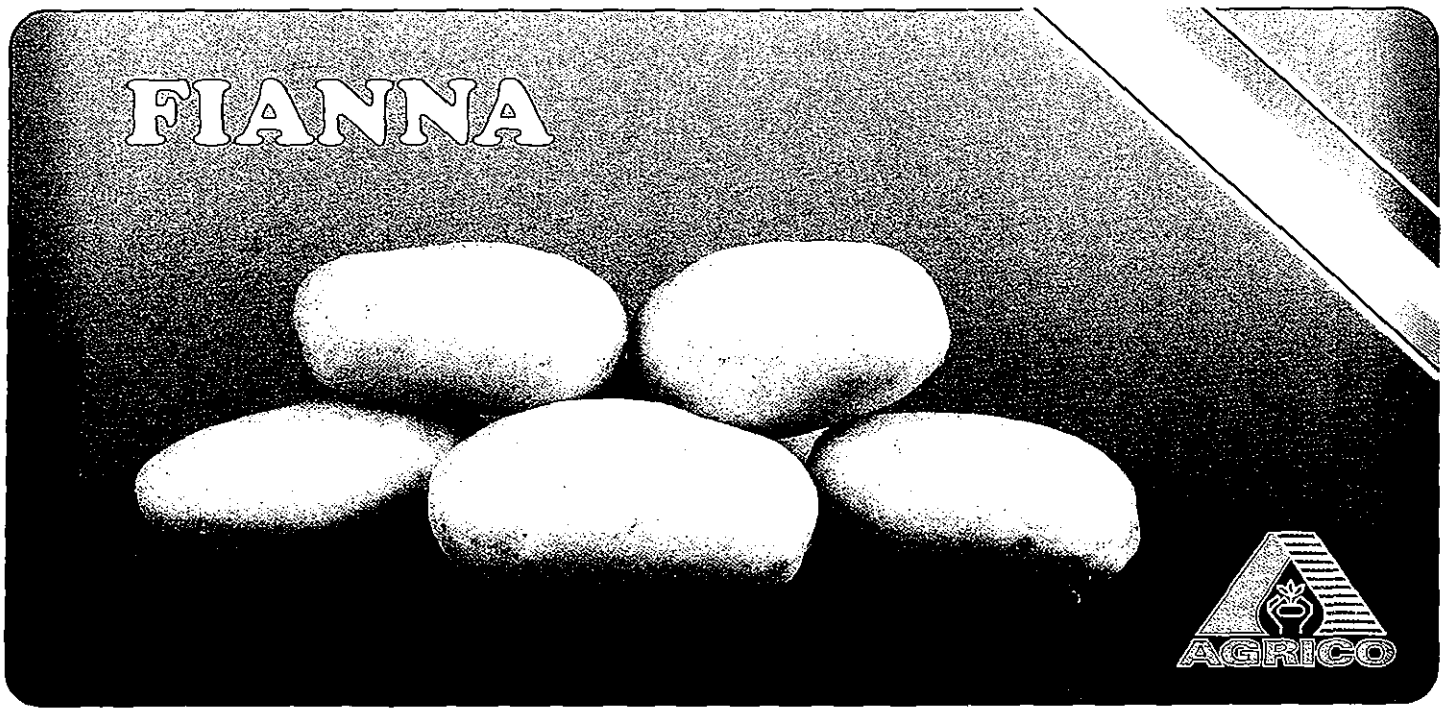
EXHIBIT D


MARKIES
#200100049
AGRICO

AGRIA


FIANNA
AGRICO

MARKIES

Medium late, nematode resistant ($Ro_{1,4}$) variety with excellent processing qualities.

Maturity: medium late

Tubers:

Shape	oval-long
Colour of skin	yellow
Colour of flesh	light yellow
Size	big
Number	rather low

Resistance to diseases:

Y-Virus	very good
Leafroll	good
Nematodes	resistant ($Ro_{1,4}$)
Common scab	rather good
Foliage blight	very good
Tuber blight	good

5H 0804

2006 NOV 30 PM 3:31

Destination: Fresh market, french fries and crisps.

Distinction: Excellent consumer quality combined with excellent processing qualities and attractive grading.

#200100049

AGRICO
8300 AB EMMELOORD
P.O.B. 70
☎ 31.527-63 99 11*
FAX 31.527-63 98 80
e-mail: seedpotatoes@agrico.nl

AGRIA

Medium late, nematode resistant variety with excellent french fries processing qualities and high yields with high percentage big tubers.

Maturity: medium late

Tubers:

Shape	long oval
Colour of skin	yellow
Colour of flesh	deep yellow
Size	very big
Number	few

Resistance to diseases:

Y-virus	very good
Leaf roll	medium
Nematodes	resistant ($Ro_{1,4}$)
Common scab	medium
Foliage blight	rather good
Tuber blight	good

5H 0804

2006 NOV 30 PM 3:29

Destination: French fries, crisps, fresh market.

Distinctions: The high yields and big size tubers makes Agria the ideal variety for the french fries processors.
Also very good fresh market quality.

AGRICO
8300 AB EMMELOORD
P.O.B. 70
☎ 31.527-63 99 11*
FAX 31.527-63 98 80
e-mail: seedpotatoes@agrico.nl

FIANNA

Medium late, nematode resistant variety with good processing quality.

Maturity: medium late

Tubers:

Shape	oval
Colour of skin	yellow
Colour of flesh	creamy white
Size	big
Number	medium

Resistance to diseases:

Y-virus	very good
Leaf roll	medium
Nematodes	resistant ($Ro_{1,4}$)
Common scab	rather good

2006 NOV 30 PM 3:28

Destination: French fries, fresh market.

Distinctions: Very high yields of uniform attractive tubers, with white flesh. Fianna is very suitable for processing or fresh consumption. It is also drought resistant.

AGRICO
8300 AB EMMELOORD
P.O.B. 70

VARIETY CHARACTERISTICS

#200100049

Variety: MARKIES

Breeder: Mansholt, Ulrum

Cross: Fianna x Agria

1	Destination	T	30	Average yield -clay	8½
2	Earliness	4	31	-sand	8
3	Lightsprout colour	BP	32	-starch	
4	Lightsprout shape	2	33	Under water weight	420
5	Plant-initial development	6	34	Dry matter content	22,7
6	-development	8	35	Consumption quality	7
7	-firmness	8	36	Cooking type	BC
8	-selection	7	37	Discolouration after cook.	7
9	Flower colour	W	38	Rawdiscolouration	
10	Flowernumber	7	39	Suitability for french fries	8
11	Berry formation	2	40	Suitability for crisping	7
12	Stolon length		41	TGA-level	<
13	Skincolour	Y		**Resistances:**	
14	Fleshcolour	6	42	Leafroll-virus	7
15	Tuber shape	OL	43	A-virus	8
16	Regularity shape	7	44	X-virus	8
17	Superficiality of eyes	8	45	Yn-virus	7
18	Tuberisation	6	46	Yntn-virus	7
19	Tubersize	8	47	Spraing	7
20	Regularity size	7	48	Late blight -foliage	7
21	Sprouting during conserv.	8	49	-tuber	7
	Sensibilities:		50	Fusarium	7
22	Knuckling	8	51	Common scab	5
23	Stolon end		52	Powdery scab	4
24	Second growth	7	53	Wart disease I / II	- / 4
25	Black spot	7	54	Erwinia	5
26	Growthcracs	8	55	Golden nematode -RO	RO1,4
27	Harvest-damage	6	56	-PA	
28	Sencor	6	57	Tolerance to nematodes	
29	Skin irritation	6			

AGRICO Coöperatieve Handelsvereniging voor Akkerbouwgewassen b.a. AGRICO EMMELOORD

AGRICO Coöperatieve Handelsvereniging voor Akkerbouwgewassen b.a.
AGRICO
EMMELOORD

Parameters of the variety characteristics table.

Destination: T = transformation
C = fresh consumption
S = Starch variety

Light sprout: BV = blue violet
RV = red violet
G = green

Earliness, development, number, shape, eyes, tuberisation, regularity, sprouting, yield, quality, discoloration, suitability:
9 = early, high, even, shallow, many, good.
4 = late, low, uneven, deep, few, bad.

Flower color: W = white
LP = light red purple
P = red purple
BP = blue purple

Skin color: Y = yellow
R = red
$Y_{(r)}$ = Yellow with red eyes (partly colored)

Flesh color: 4 = white
5 = cream
6 = Light yellow
7 = yellow
8 = dark yellow
9 = orange

Tuber shape: R = round
RO = round oval
O = oval
OL = long oval
L = long

Sensibilities: 8 = low sensibility.
4 = high sensibility.

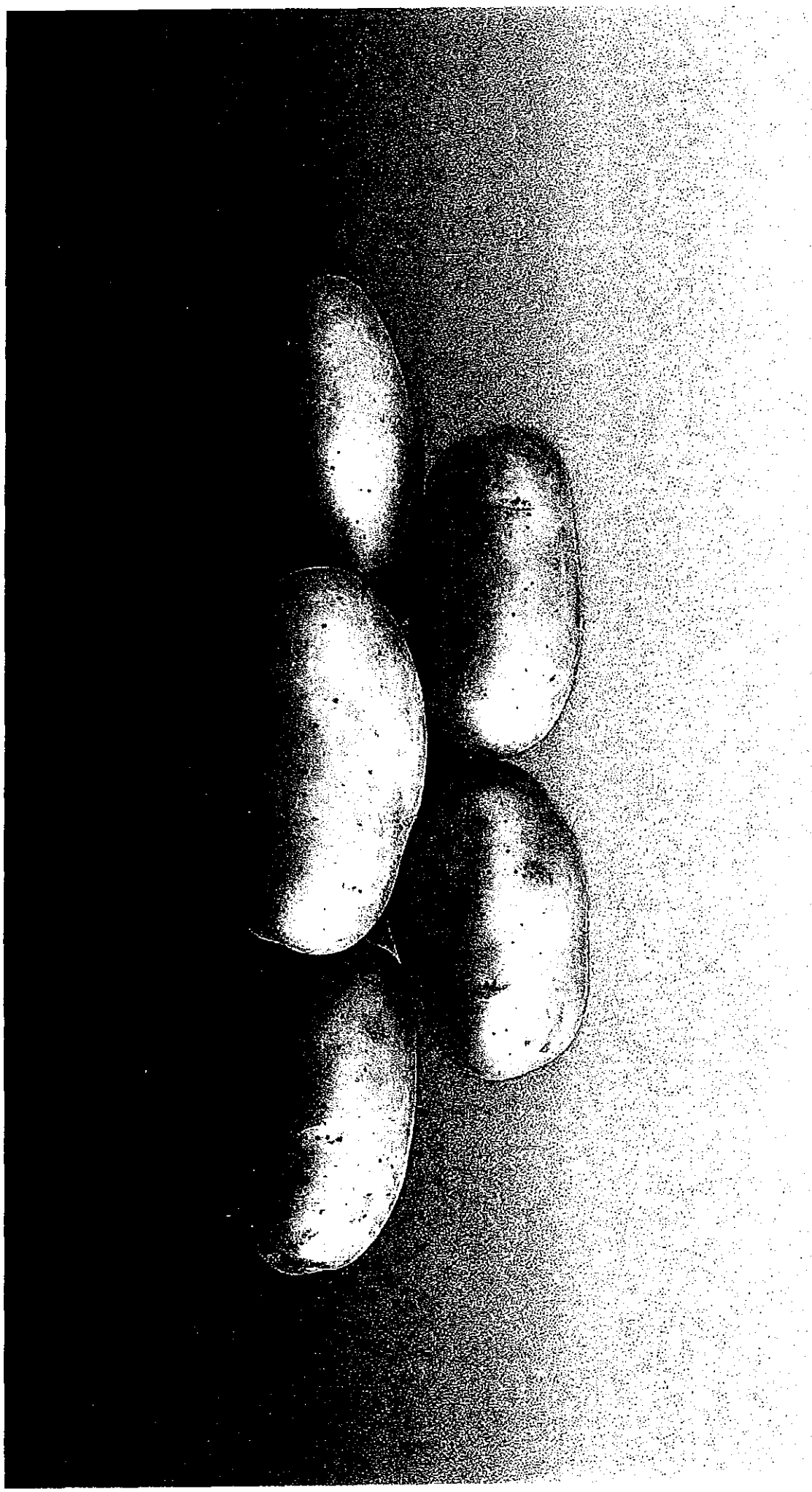
Resistances: I = Immune
9 = Resistant
3 = Susceptible

Wart resistance:
I = Immune
7-9 = good field tolerance
5-6 = poor field tolerance
1-4 = susceptible
S = susceptible

Golden nematode:
RO = Globodera rostochiensis: Ro1,4 = Resistant to fysio Ro1 and Ro4
Pa = Globodera palida:

FIANNE

#200100049



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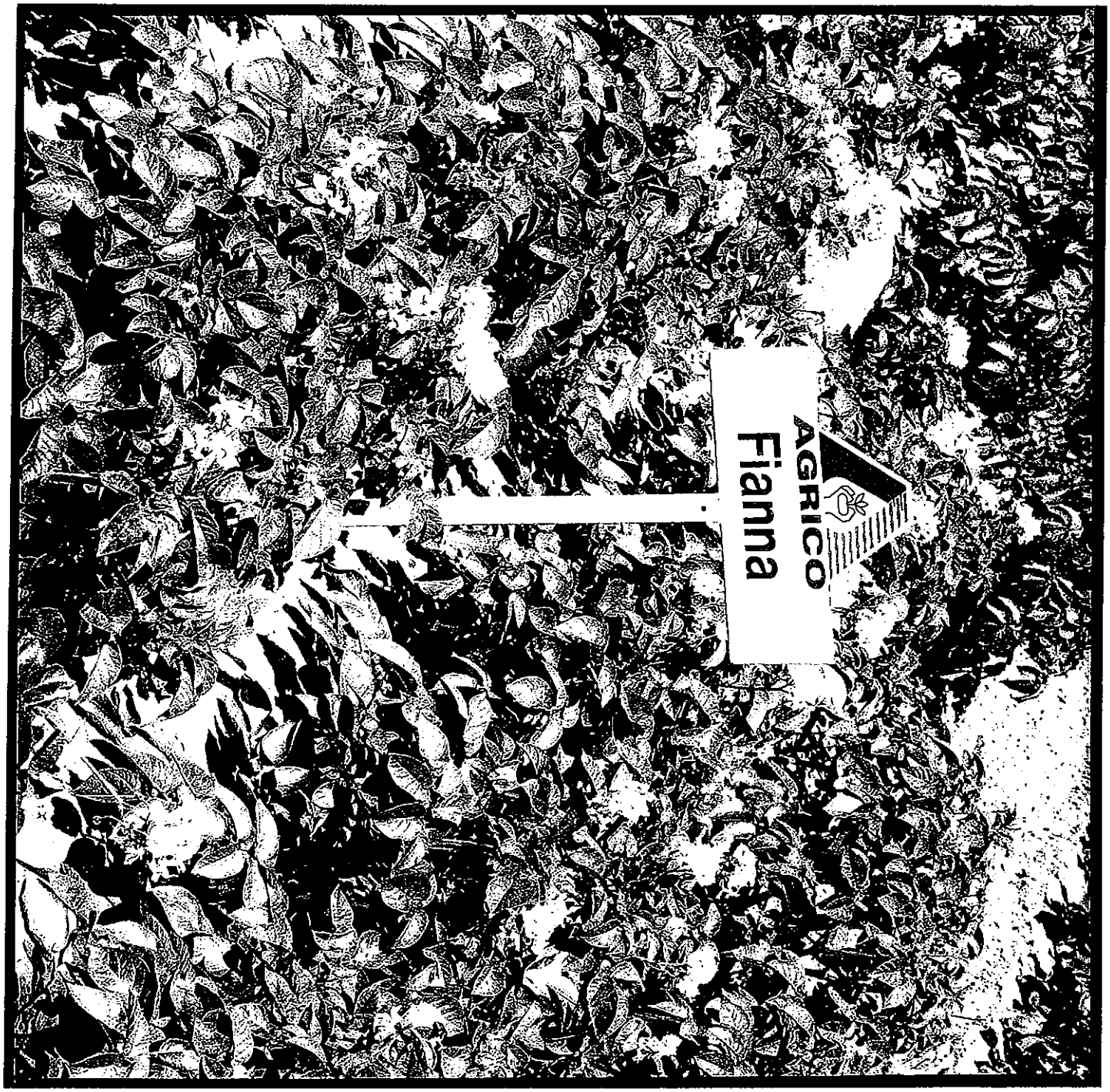

FIANNE

#200100049

200100049

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)
Dr. R.J. Mansholt's Veredelingsbedrijf B.V.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

3. VARIETY NAME
Markies

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
c/o AGRICO
P.O. Box 70
8300 AB
Emmeloord, The Netherlands

5. TELEPHONE *(include area code)*
31-527-639911

6. FAX *(include area code)*
31-527-639880

7. PVPO NUMBER
200100049

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [ ] YES [X] NO
If no, give name of country The Netherlands
per letter 04-20-2007 LMC

10. Is the applicant the original breeder? If no, please answer the following: [XX] YES [ ] NO

a. If original rights to variety were owned by individual(s):
Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country _____ [ ] YES [ ] NO

b. If original rights to variety were owned by a company:
Is the original breeder(s) U.S. based company? If no, give name of country _____

11. Additional explantion on ownership *(If needed, use reverse for extra space):*

Please see attachment

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter.

Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

#200100049

Dr R. J. MANSHOLT's VEREDELINGSBEDRIJF B.V.

INGEKOMEN EMMELOORD
19 APR 2000
O.C. BEANTWOORD

Statement of the Basis of the Applicant's Ownership

I/We, the undersigned, being the breeder(s) of the potato variety '**Markies**' do hereby declare that I/we are the owner(s) of this variety.

I/We have assigned the world wide marketing rights of the variety to AGRICO B.A. located in the city of Emmeloord, The Netherlands. In so doing, I/we have authorized AGRICO B.A. to propagate and distribute seed of the variety while also acting as my/our legal representative in all matters pertaining to the variety.

I/We understand that AGRICO B.A. has the right to appoint a local Agent to register this variety in the respective country.

R. Mansholt

Dr R.J. Mansholt's Veredelingsbedrijf B.V.

Dated and signed this 18th day of April, 2000.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TI USDA is an equal opportunity provider and employer.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	TEMPORARY OR EXPERIMENTAL DESIGNATION
Dr. R.J. Mansholt's Veredelingsbedrijf B.V.	c/o Agrico U.A., P.O.Box 70, 8300 AB Emmeloord, Holland	VARIETY NAME MARKIES
NAME OF OWNER REPRESENTATIVE (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	[redacted]
Parkland Seeds potato LTD.	P.O.Box 5581, Lacombe, Alberta T4L 1x2 Canada	PVPO NUMBER #200100049

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

AGRICO Coöperatieve Handelsvereniging voor Akkerbouwgewassen b.a. AGRICO EMMELOORD

Signature

19-09-2006
Date