No. 7800032

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Department of Horticulture and Forestry
Rutgers, The State University and Dr. Oved Shifriss

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, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS Y THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SQUASH

'Jersey Golden Acorn'

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* 29th *day of* September *in the year of our Lord one thousand nine hundred and* seventy-eight.

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(1-76)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
PLANT VARIETY PROTECTION OFFICE
NATIONAL AGRICULTURAL LIBRARY
BELTSVILLE, MARYLAND 20705

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1a. TEMPORARY DESIGNATION OF VARIETY Golden Acorn	1b. VARIETY NAME JERSEY ~~Rutgers~~ Golden Acorn R/S 11/27/79	FOR OFFICIAL USE ONLY PV NUMBER 7800032
2. KIND NAME Squash	3. GENUS AND SPECIES NAME Cucurbita pepo L.	FILING DATE 3-17-78 TIME 3:00 A.M. (P.M.)
4. FAMILY NAME (BOTANICAL) Cucurbitaceae	5. DATE OF DETERMINATION April 1, 1977	FEE RECEIVED $260.00 $250.00 $250.00 DATE 3-17-78 3-17-78 7-31-78
6. NAME OF APPLICANT(S) New Jersey Agricultural Experiment Station Rutgers University	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*) P.O. Box 231 New Brunswick, New Jersey 08903	8. TELEPHONE AREA CODE AND NUMBER 201-932-9711 201-932-9322

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*) New Jersey Agricultural Experiment Station	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION New Jersey - 1880	11. DATE OF INCORPORATION 1880

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

Dr. B. L. Pollack, Chairman
Department of Horticulture & Forestry, Blake Hall
P.O. Box 231
New Brunswick, New Jersey 08903

Dr. Oved Shifriss
Department of Horticulture & Forestry, Blake Hall
P.O. Box 231
New Brunswick, New Jersey 08903

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [x] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)* (enclosed)
- [x] 13B. Exhibit B, Novelty Statement. (enclosed)
- [x] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)* (enclosed)
- [x] 13D. Exhibit D, Additional Description of the Variety. (enclosed)

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* R/S [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [ ] YES [X] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal? [X] YES [ ] NO

16. The applicant(s) declare(s) 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.
2,500 seed mailed under separate cover to the above address.
The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

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

12/22/77
(DATE)

George H. Wiegand
(SIGNATURE OF APPLICANT)
Director, New Jersey Agr. Exp. Sta.

(DATE)

(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, National Agricultural Library, Beltsville, Maryland 20705. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give (1), the genealogy, including public and commerical varieties, lines, or clones used, and the breeding method. (2), the details of subsequent stages of selection and multiplication. (3), the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4), evidence of stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one 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 differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe; such as; plant habit, plant color, disease resistance, etc.

14A If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)

Oved Shifriss
June, 1978 (revised)

Exhibit A

RJS 11/27/79

Origin and Breeding History of '~~Rutgers~~ JERSEY Golden Acorn'

I. Major steps in breeding history

1. A genetically stable line was developed in 1954 through inbreeding and selection in the bicolor-fruited ornamental gourd, 'Pear', Cucurbita pepo var. ovifera Alef. This line carried a stable gene B for precocious fruit pigmentation.

2. Gene B was transferred from the BB line of the ornamental 'Pear' to the edible cultivar Small Sugar, bb, C. pepo L., through 8 backcrosses followed by selfing and selection. The new inbred, 'Precocious Small Sugar' (PSS) BB was developed in 1966.

3. Gene B was transferred from PSS to cultivar Table King, bb, through 6 backcrosses followed by selfing and selection. The isogenic BB line of Table King was established in Spring of 1977. It was tentatively named Golden Acorn but this name was changed later (December 19, 1977) into '~~Rutgers~~ JERSEY Golden Acorn.

4. To the best of my knowledge '~~Rutgers~~ JERSEY Golden Acorn' does not consist of regular genetic variants that are "part of the variety description". Specifically, we have tested 14 self-pollinated progenies of '~~Rutgers~~ JERSEY Golden Acorn', 50-62 plants in each progeny, or a total of 770 individuals all of which conformed to the expected phenotype of '~~Rutgers~~ JERSEY Golden Acorn'.

5. The above statement on genetic stability does not exclude the possibility that some rogues may occur in '~~Rutgers~~ JERSEY Golden Acorn' as a result of outcrossing. Indeed, we have recently found that our stock 77/IGA of '~~Rutgers~~ JERSEY Golden Acorn' consists of about 1% rogues, 11 out of 1200 plants. The 11 rogues were examined carefully and there is no doubt that they represent F_1 (Bb) contaminants. The seed of this stock was produced in isolation near Imlaystown, New Jersey, by a cabbage grower. Obviously the isolation was not perfect and some stray pollen from distant gardens contaminated this stock to the extent specified (1%). The seed that I sent you originated from lot #1 of the same stock. Therefore, it may also consist of about 1% rogues - exceptionally vigorous plants bearing fruits with green peduncles (Bb), of deviant shape, and sometime bicolor.

II. References

Shifriss, O. 1955. Genetics and origin of the bicolor gourds. J. Heredity 46: 213-222.
The genetic stabilization and identification of element B was reported in this paper.

_____. 1965. The unpredictable gourds. Amer. Hort. Mag. 44: 184-2-1.
Figures 10, 11, 12 of this paper illustrate clearly the difference between the standard, bb; and the precocious, BB, systems of fruit pigmentation.

Oved Shifriss
December, 1977

7800032

Exhibit B
Novelty Statement
Concerning Rutgers Golden Acorn

1. Comparable cultivars

'JERSEY ~~'Rutgers~~ Golden Acorn' is related to the 'Table Queen' group of winter squash cultivars of Cucurbita pepo L. This group includes 'Burpee Bush Table Queen', 'Mammoth Table Queen' (vine), 'Royal Bush', 'Table Ace' (semi bush), 'Table King' (bush), 'Table Queen' (vine), and 'Uconn' (bush). The fruits of this group of cultivars are acorn-shaped, dark green when ripe, and have similar culinary qualities.

But more specifically, 'JERSEY ~~'Rutgers~~ Golden Acorn' is isogenic to 'Table King' except for genes at locus B (see Exhibit A), 'Table King' being bb and 'JERSEY ~~Rutgers~~ Golden Acorn' BB.

2. Novelty statement

'JERSEY Unlike the green fruits of the above-listed commercial varieties, the fruits of ~~'Rutgers~~ Golden Acorn' are orange as the name of this variety implies. This clear difference in exterior color of the fruit is associated with several unique features.

(i) Yellow pigmentation occurs prior to anthesis, i.e., long before the pistillate flower opens. And this precocious yellow pigmentation extends most prominently to the proximal region of the corolla as well as to the peduncle (Figure 1 enclosed).

(ii) As the fruit grows it becomes progressively more deeply orange both externally and internally. Invariably, the flesh of 'JERSEY ~~'Rutgers~~ GOLDEN Acorn' is more deeply orange than that of 'Table King' (Figure 1). The same appears to be true with regard to the other comparable varieties.

(iii) Laboratory determinations show that the flesh of 'JERSEY ~~'Rutgers~~ Golden Acorn' contains 2-3 times more carotenes and 4-5 times more xanthophylls than the flesh of 'Table King'. With regard to total carotenes, 'Rutgers Golden Acorn' contains 1.6 times more beta carotene than 'Table King' (see attached table entitled 1977 Table King - Golden Acorn pigments).

(iv) According to a sensory test made by Dr. E. F. Stier of our Food Science Department, a statistically significant number of people prefer 'JERSEY ~~'Rutgers~~ Golden Acorn' over 'Table King' because the baked fruits (ripe) of the former are superior in flavor, tenderness, and freedom of fiber.

(v) Immature fruits, not over 2-inch in polar diameter, have unique quality when steamed and eaten whole (with butter, or margarine, and salt added to taste).

(vi) Under some still ill-defined ecological conditions, a small proportion (< 10%) of the fruits have a tiny green area at the proximal end very close to the peduncle. This green area is usually too small to be conspicuous.

(vii) Unlike 'Table King' and other comparable varieties, 'JERSEY ~~Rutgers~~ Golden Acorn' is susceptible to temporary leaf yellowing under some adverse conditions such as very low temperatures early in the Spring. But the plant usually overcomes this adversity and grows normally thereafter.

With respect to most morphological characteristics - including size and shape of leaves and flowers as well as growth habit - 'JERSEY ~~Rutgers~~ Golden Acorn' is indistinguishable from 'Table King'.

With respect to total yield, 'JERSEY ~~Rutgers~~ Golden Acorn' is either equal or superior to 'Table King', but it is probably later in maturity (see enclosed report entitled Comparative Yield of 'Golden Acorn' and its Related Cultivars by Joseph Steinke, Harry S. Paris, and Oved Shifriss). The available data suggest that the yield superiority of 'JERSEY ~~Rutgers~~ Golden Acorn' might be expressed in regions of long growing seasons and where temperatures during emergence are not below 60°F.

3. Comment

A Yellow Bush cultivar of the 'Table Queen' group was offered to the trade some years ago. But to the best of my knowledge this cultivar is no longer in commerce. Furthermore, whereas Yellow Bush belonged to the standard bb system of fruit pigmentation, 'JERSEY ~~Rutgers~~ Golden Acorn' belongs to the precocious BB system of fruit pigmentation. This means that the yellow fruit color of Yellow Bush was conditioned by gene Y. The Y gene is expressed at anthesis or post-anthesis stages and its effects on fruit quality are quite different from those of gene B. At any rate, the two varieties could be easily distinguished from each other by a number of features which separate the standard system from the precocious system of pigmentation.

4. Conclusion

'JERSEY ~~Rutgers~~ Golden Acorn' is most similar to 'Table King'.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-20
(12-16-74)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Pumpkin/
Squash/Gourd)

OBJECTIVE DESCRIPTION OF VARIETY

PUMPKIN/SQUASH/GOURD (*CUCURBITA SPP.*)

NAME OF APPLICANT(S)
N.J. Agricultural Experiment Station

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Rutgers - The State University
New Brunswick , New Jersey 08903

VARIETY NAME OR TEMPORARY DESIGNATION
RUTGERS GOLDEN ACORN
JERSEY rjs 11/27/79

FOR OFFICIAL USE ONLY
PVPO NUMBER
7800032

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. SPECIES:

[5] 1 = LAGENARIA 2 = MAXIMA 3 = MIXTA 4 = MOSCHATA 5 = PEPO 6 = OTHER (*Specify*) _____

2. KIND (According to use):

[2] 1 = PUMPKIN 2 = SQUASH 3 = GOURD

3. TYPE: See also Exhibit B,2v

[2] 1 = SUMMER (Vegetable Marrow) 2 = WINTER (Boston Marrow)

4. COTYLEDON:

[6][5] MM. LONG [3][8] MM. WIDE

[2] Apex: 1 = TAPERED 2 = ROUNDED 3 = NOTCHED [2] Veining: 1 = OBSCURE 2 = PLAINLY VISIBLE 3 = PROMINENT

[4] 1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN

5. PLANT:

[1] 1 = BUSH 2 = SEMI-BUSH 3 = LONG VINES [2] 1 = PILOSE 2 = PRICKLY 3 = GLABROUS

6. MAIN STEM:

[1] 1 = ROUND 2 = ANGLED [1][5] MM. DIAMETER AT MID-POINT OF FIRST INTERNODE [1][2][0] CM. AVERAGE LENGTH

[ ][ ] AVERAGE NUMBER OF INTERNODES

7. LEAVES:

[4] Shape: 1 = OVATE 2 = ORBICULAR 3 = RENIFORM 4 = RETUSE [3] Shape: 1 = NOT LOBED 2 = SHALLOW LOBED 3 = DEEP LOBED

[2] Margin: 1 = ENTIRE 2 = DENTICULATE 3 = DENTATE [1] Margin: 1 = FLAT 2 = FRILLED

[1][8] CM. WIDE [1][2] CM. LONG [1] Surface: 1 = SMOOTH 2 = BLISTERED

[3] Dorsal Surface: [3] Ventral Surface: } 1 = GLABROUS 2 = SOFT HAIRY 3 = BRISTLED

[4] 1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN [1] 1 = NOT BLOTCHED 2 = BLOTCHED WITH GRAY

[2][2] CM. PETIOLE LENGTH

8a. FLOWER - Pistillate:

[ ][2] CM. DIAMETER [2] Ovary: 1 = DRUM-LIKE 2 = TURBINATE 3 = FUSIFORM [3] Pedicel: CM. LENGTH Precociously-pigmented

[ ] Margin: 1 = STRAIGHT 2 = CURVED [ ] Margin: 1 = PLAIN 2 = FRILLED [ ][4] Sepals: MM. WIDTH [2][5] Sepals: MM. LENGTH

4.

[3]† Color: 1 = WHITE 2 = LEMON YELLOW 3 = MID-YELLOW 4 = DEEP YELLOW 5 = ORANGE

† Proximal region of corolla precociously pigmented , distal end normal

Oved Shifriss
December, 1977

7800032

Exhibit D

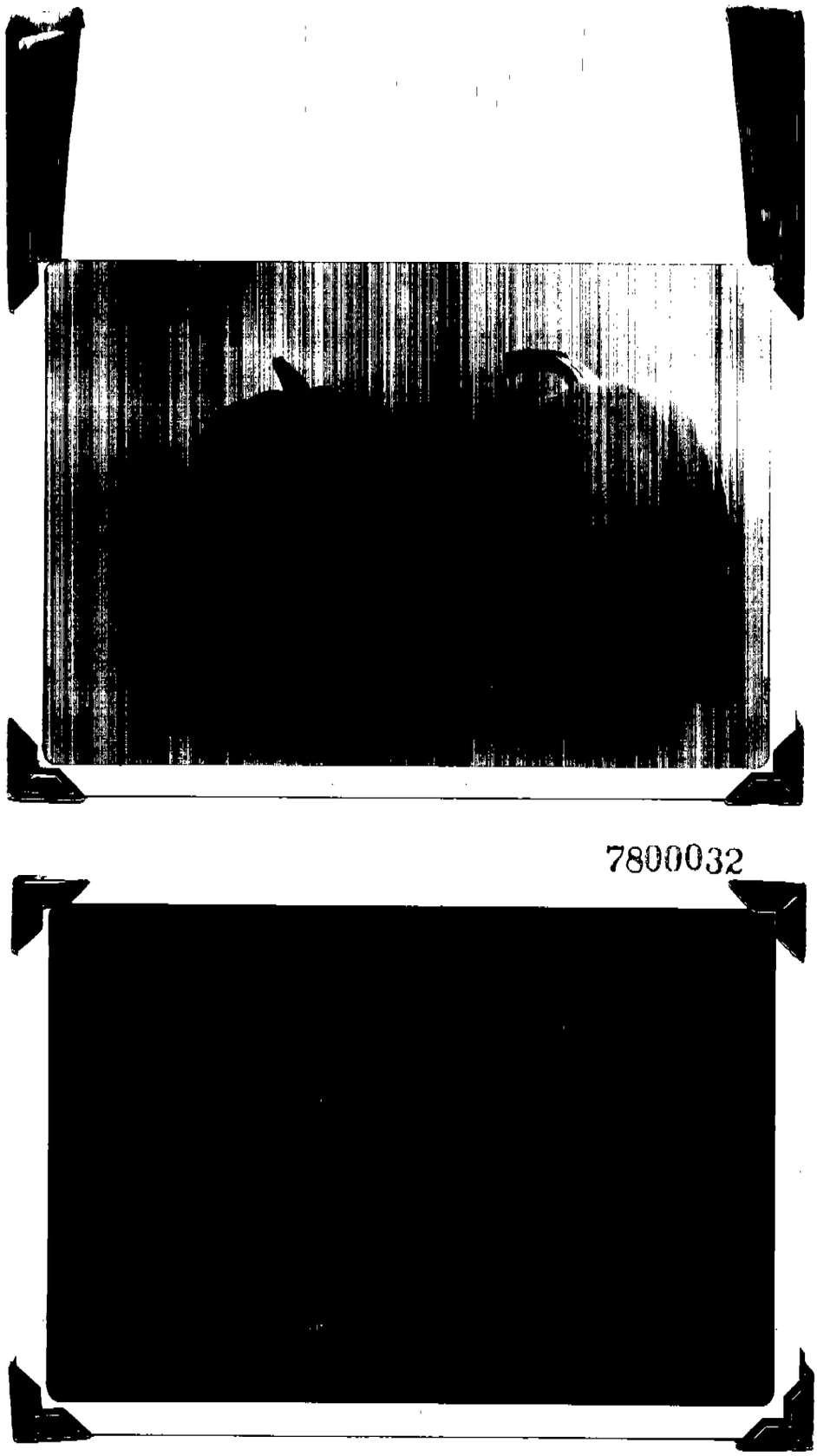
Additional Description of 'Rutgers Golden Acorn'

'JERSEY' RJS 11/27/79

Careful observations in the field suggest that plants of 'Rutgers' 'JERSEY' Golden Acorn' are more strongly female than plants of 'Table King'. But this suggestion has not been tested yet experimentally.

Excellent seed producer

(added by OS)



7800032

Figure 1. Fruits of 'Table King' (left) and 'JERSEY ~~Rutgers~~ Golden Acorn'. Note the extension of yellow pigmentation to the peduncle of the latter, a distinct "marker".

(0.42 natural size)

Oved Shifriss
11/21/77

1977 TABLE KING - GOLDEN ACORN PIGMENTS

Comparable levels of carotenes and xanthophylls in 'Table King' and 'Jersey Golden Acorn' R/S based on a composite fresh sample (10g) obtained from the mesocarp of 10 fruits of each cultivar. The two cultivars were grown in a replicated test in New Brunswick, New Jersey, summer 1977.

Cultivars[z]	Genotype	Carotenes[y] (γg/g)	BB/bb (carotenes)	Xanthophylls[y] (γg/g)	BB/bb (xanthophylls)
Table King	bb	2.40[x,w]		2.54[w]	
Jersey Golden Acorn R/S	BB	8.17[x,w]	3.4	12.38[w]	4.9

[z] The two cultivars are isogenic except for locus B.

[y] Determinations were made by the New Jersey Feed Laboratory, 910 Pennsylvania Ave., Trenton, N.J. 08603.

[x] According to determinations made by Nutrition International, Incorporated, 340 Commercial Avenue, New Brunswick, New Jersey 08902, Table King contains 401 IU/100g and Jersey Golden Acorn contains 638 IU/100g of beta carotene, the BB/bb ratio for beta carotene being 1.6. These determinations were based on a composite fresh sample taken from the same material used by New Jersey Feed Laboratory.

[w] In Centerton, N.J., 1977, the carotene values (γg/g) for bb, Bb, and BB (Jersey Golden Acorn) fruits of Table King background were 3.3, 6.2, and 6.1, the BB/bb ratio for total carotenes being 1.8; and the xanthophyll values (γg/g) for the same genotypes were 7.2, 33.8, and 33.6, the BB/bb ratio for total xanthophylls being 4.7 (data from the New Jersey Feed Laboratory). These data indicate that B is completely dominant over b with respect to both total carotenes and total xanthophylls.

7800032

December 1977

7800032

Comparative Yield of JERSEY Golden Acorn and its Related Cultivars

Joseph Steinke, Harry S. Paris, and Oved Shifriss

Background and Objective: Gene B was transferred from the ornamental gourd Pear to the edible cv. Small Sugar through eight backcrosses and from Small Sugar to cv. Table King through six additional backcrosses. The BB line of Table King background has been named tentatively Golden Acorn. This line was tested for yield during the 1977 season against its isogenic Bb and bb lines, as well as related cultivars, in four trials.

For Trial I, planted 4/12, five plants of each of the three isogenic lines were grown in Dr. W. O. Drinkwater's garden at the Vegetable Research Farm.

For Trial II, planted 4/30, ten plants of each of the isogenic BB and bb lines were grown on aluminum foil at the Vegetable Research Farm.

For Trial III, planted 4/29, five plants of each of the three isogenic lines, as well as of the standard Table King (Harris Seeds) were grown at the Centerton Research Farm.

For Trial IV, planted 6/29, an 8 x 8 Latin square design was used. Sixteen plants of each of the eight lines and cultivars were used, two plants per plot (total 128 plants). The lines and cultivars used, in addition to the isogenic BB, Bb and bb lines, were: 'Table Queen' (Harris), 'Mammoth Table Queen' (Northrup-King), 'Table Ace' (Harris), the F_1 of the cross 'Golden Acorn' x 'Table Queen' (Bb), and the F_1 of the cross 'JERSEY Golden Acorn' x Mammoth Table Queen' (Bb).

The results from Trials I and III were treated statistically with analysis of variance coupled with the honestly significant difference test. Trial II was treated statistically with a t-test.

The horizontal lines in the h.s.d. tables graphically depict the statistically significant differences between cultivars. If the same line underscores two or more cultivars, then the differences between these cultivars are not statistically significant. If any two cvs. are not underscored by the same line, then their difference is statistically significant.

Results

The data from Trial I are presented in Table 1 (A+B). There were no statistically significant differences between the isogenic lines for the first harvest, made on 9/2. The second harvest was made on 9/19. For the total harvest, the number of fruit in BB was significantly higher than that of bb. In total weight of fruits per plant, BB was also significantly greater than bb.

The data from Trial II are presented in Table 2. There were no statistically significant differences.

The data from Trial III are presented in Table 3. There were no statistically significant differences.

The data from Trial IV are presented in Table 4. The highest number of fruits per plot was borne by 'Table Queen', this number being highly significant statistically over the Bb and bb isogenic lines of 'Table King'. The second highest number of fruits per plot were borne by 'Jersey Golden Acorn', (TK, BB), this number being statistically significant over standard bb 'Table King'.

The average weight of fruit was highest in 'Mammoth Table Queen', and was highly significant statistically over all others. The cross 'Jersey Golden

Acorn' x 'Mammoth Table Queen' was next largest in fruit size, significantly larger than the others. 'Table Queen', 'Table Ace' and the cross 'Jersey Golden Acorn' x 'Table Queen' did not differ significantly in fruit size. The three isogenic lines of 'Table King' did not differ significantly in fruit size, either.

The total weight of fruits per plot was greatest in 'Mammoth Table Queen', statistically significant over the next highest, 'Table Queen'. 'Table Queen' did not differ statistically from the two crosses and 'Table Ace', but did differ from the three isogenic Table King lines. There was no difference between the three Table King lines.

Discussion

In no trial was 'Jersey Golden Acorn' (TK, BB) statistically inferior to standard 'Table King' in fruit number, fruit size,or total weight of fruits per plant. In Trials I and IV, 'Jersey Golden Acorn' yielded a statistically higher number of fruits than 'Table King' bb. This difference is highly significant in Trial IB and results in a significantly higher total weight of fruits per plant.

In Trial IV, in spite of the higher number of fruits per plant in 'Jersey Golden Acorn', there was no statistically significant difference between it and 'Table King' in total weight of fruits per plot. Quite a few fruits of 'Jersey Golden Acorn' from Trial IV did not appear to be fully mature at harvest, suggesting that the full yield potential of 'Jersey Golden Acorn' would be expressed only when 'Jersey Golden Acorn' is planted early and in longer growing seasons. In other words, 'Jersey Golden Acorn' might be later in maturity than 'Table King'. This lateness might be due to any one or a combination of the following causes:

(a) Setback in growth due to yellowing of leaves in juvenile plants.

7800032

(b) Failure of the early female flowers to set.

(c) Slower growth of fruits.

The largest component of yield (total weight of fruits) in Trial IV is not fruit number but fruit size ('Mammoth Table Queen' leads all others). Vine types outyield the semi-bush types which outyield the bushes. The difference in yields between vines, semi-bushes, and bushes may reflect the same wide spacing used for all lines. On a per acre basis, with closer spacing for the bushes and semi-bushes, yields might be the same for all three types.

The fruits of Bb hybrids exhibit a small green area around the blossom scar, or around the peduncle, or both. The extent of the green area varies between Bb hybrids. Statistical analysis has revealed that 'Table King' Bb fruits have the least amount of green, followed by the hybrid of 'Jersey Golden Acorn' x 'Mammoth Table Queen', followed by 'Jersey Golden Acorn' x 'Table Queen' which exhibits the greatest extent of green area. A more detailed presentation of the data will be made later.

Summary of Yield

'Jersey Golden Acorn' is in no case statistically inferior to but in some cases statistically superior to its parent, 'Table King', though it is probably later in maturity. The superiority of 'Jersey Golden Acorn' over 'Table King' may be best expressed when planted early in the season.

Resumé of other information

Based on other information to be reported later, (1) 'Jersey Golden Acorn' fruits contain 2-3 times more carotenes and 4-5 times more xanthophylls than 'Table King'; (2) a statistically significant number of people prefer 'Jersey Golden

Resume of other information cont'd

Acorn' over 'Table King' with respect to flavor, tenderness, sweetness and freedom from fibers; (3) immature fruits (not over 2" in polar diameter) of 'Golden Acorn' are superior in quality when steamed whole and might be used as a frozen product; (4) 'JERSEY Golden Acorn' is susceptible to leaf yellowing when exposed to low temperatures but plants usually recover quickly and grow normally thereafter.

Table 1A. Early harvest in Trial I - Analysis of variance , honestly significant difference - TK refers to 'Table King' background. Weight is expressed in grams.

1. Number of fruits per plant.

F ratio		H. s. d. Overlaps		
		TK Bb	TK bb	TK BB
0.67		4.4	4.0	3.6
	P = .05			
	P = .01			

2. Average weight of fruit.

F ratio		H. s. d. Overlaps		
		TK bb	TK BB	TK Bb
1.77		516	483	435
	P = .05			
	P = .01			

3. Total weight of fruits per plant.

F ratio		H. s. d. Overlaps		
		TK bb	TK Bb	TK BB
0.27		2050	1922	1772
	P = .05			
	P = .01			

Table 1B. Total harvest in Trial I - Analysis of variance, honestly significant difference. TK refers to 'Table King' background. Weight is expressed in grams.

1. Number of fruits per plant.

F ratio		H. s. d. Overlaps		
		TK BB	TK Bb	TK bb
8.81**		12.4	8.8	6.8
	P = .05			
	P = .01			

2. Average weight of fruit.

F ratio		H. s. d. Overlaps		
		TK bb	TK BB	TK Bb
1.77		609	554	550
	P = .05			
	P = .01			

3. Total weight of fruits per plant.

F ratio		H. s. d. Overlaps		
		TK BB	TK Bb	TK bb
5.39*		6860	4890	4113
	P = .05			
	P = .01			

* Significant at 5% probability level.

** Significant at 1% probability level.

Table 2. Data for Trial II, t - test. TK refers to 'Table King' background. Weight is expressed in grams.

1. Number of fruits per plant.

TK BB: 2.9	TK bb: 3.8	t = 1.99, P = 0.10 - 0.05

2. Average weight of fruit.

TK BB: 582	TK bb: 515	t = 1.73, P = 0.20 - 0.10

3. Total weight of fruits per plant.

TK BB: 1643	TK bb: 1930	t = 1.30, P = 0.30 - 0.20

Table 3. Data for Trial III. Analysis of variance, honestly significant difference. TK refers to 'Table King' background. HTK refers to a commercial stock of 'Table King' obtained from Harris. Weight is expressed in grams.

1. Number of fruits per plant.

F ratio		H. s. d. Overlaps			
		HTK, bb	TK, bb	TK, BB	TK, Bb
0.75		9.4	8.6	8.0	7.8
	P = .05				
	P = .01				

2. Average weight of fruit.

F ratio		H. s. d. Overlaps			
		TK, bb	TK, Bb	HTK, bb	TK, BB
0.51		557	541	538	499
	P = .05				
	P = .01				

3. Total weight of fruits per plant.

F ratio		H. s. d. Overlaps			
		HTK, bb	TK, bb	TK, Bb	TK, BB
3.16		5022	4757	4010	3947
	P = .05				
	P = .01				

Table 4. Data for Trial IV. Latin-Square design, honestly significant difference. See footnote for symbols of varieties. Weight is expressed in grams.

1. Number of fruits per plot.†

F ratio		H. s. d. Overlaps							
		B	F	G	D	C	H	E	A
4.16**		12.0	10.8	9.9	9.1	9.0	9.0	7.8	7.1
	P = .05								
	P = .01								

2. Average weight of fruit.

F ratio		H. s. d. Overlaps							
		C	H	B	D	G	A	E	F
65.91**		1100	755	616	578	540	479	411	393
	P = .05								
	P = .01								

3. Total weight of fruits per plot.†

F ratio		H. s. d. Overlaps							
		C	B	H	G	D	F	A	E
19.76**		9908	7448	6725	5356	5238	4159	3428	3169
	P = .05								
	P = .01								

Symbols of varieties grown:
- A = Table King, bb
- B = Table Queen, bb
- C = Mammoth Table Queen, bb
- D = Table Ace, bb
- E = Table King, Bb
- F = Table King, BB (Tentatively named Golden Acorn) 'JERSEY GOLDEN ACORN'
- G = F_1 (Table King, BB x Table Queen, bb), Bb
- H = F_1 (Table King, BB x Mammoth Table King, bb), Bb

** Significant at 1% probability level.

† Two plants per plot.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-20
(12-16-74)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Pumpkin/
Squash/Gourd)

OBJECTIVE DESCRIPTION OF VARIETY

PUMPKIN/SQUASH/GOURD (*CUCURBITA SPP.*)

NAME OF APPLICANT(S)
N.J. Agricultural Experiment Station

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Rutgers - The State University
New Brunswick , New Jersey 08903

VARIETY NAME OR TEMPORARY DESIGNATION
RUTGERS GOLDEN ACORN
JERSEY RJS 11/27/79

FOR OFFICIAL USE ONLY
PVPO NUMBER
7800032

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. SPECIES:

[5] 1 = LAGENARIA 2 = MAXIMA 3 = MIXTA 4 = MOSCHATA 5 = PEPO 6 = OTHER (*Specify*) _____

2. KIND (According to use):

[2] 1 = PUMPKIN 2 = SQUASH 3 = GOURD

3. TYPE: See also Exhibit B,2v

[2] 1 = SUMMER (Vegetable Marrow) 2 = WINTER (Boston Marrow)

4. COTYLEDON:

[6][5] MM. LONG [3][8] MM. WIDE

[2] Apex: 1 = TAPERED 2 = ROUNDED 3 = NOTCHED

[2] Veining: 1 = OBSCURE 2 = PLAINLY VISIBLE 3 = PROMINENT

[4] 1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN

5. PLANT:

[1] 1 = BUSH 2 = SEMI-BUSH 3 = LONG VINES

[2] 1 = PILOSE 2 = PRICKLY 3 = GLABROUS

6. MAIN STEM:

[1] 1 = ROUND 2 = ANGLED

[1][5] MM. DIAMETER AT MID-POINT OF FIRST INTERNODE

[1][2][0] CM. AVERAGE LENGTH

[ ][ ] AVERAGE NUMBER OF INTERNODES

7. LEAVES:

[4] Shape: 1 = OVATE 2 = ORBICULAR 3 = RENIFORM 4 = RETUSE

[3] Shape: 1 = NOT LOBED 2 = SHALLOW LOBED 3 = DEEP LOBED

[2] Margin: 1 = ENTIRE 2 = DENTICULATE 3 = DENTATE

[1] Margin: 1 = FLAT 2 = FRILLED

[1][8] CM. WIDE

[1][2] CM. LONG

[1] Surface: 1 = SMOOTH 2 = BLISTERED

[3] Dorsal Surface:
[3] Ventral Surface:
1 = GLABROUS 2 = SOFT HAIRY 3 = BRISTLED

[4] 1 = LIGHT GREEN 2 = GRAY-GREEN 3 = MEDIUM GREEN 4 = DARK GREEN

[1] 1 = NOT BLOTCHED 2 = BLOTCHED WITH GRAY

[2][2] CM. PETIOLE LENGTH

8a. FLOWER - Pistillate:

[2] CM. DIAMETER

[2] Ovary: 1 = DRUM-LIKE 2 = TURBINATE 3 = FUSIFORM

[3] Pedicel: CM. LENGTH Precociously-pigmented

[ ] Margin: 1 = STRAIGHT 2 = CURVED

[ ] Margin: 1 = PLAIN 2 = FRILLED

[4] Sepals: MM. WIDTH

[2.5] Sepals: MM. LENGTH

4.

[3] Color: 1 = WHITE 2 = LEMON YELLOW 3 = MID-YELLOW 4 = DEEP YELLOW 5 = ORANGE

Proximal region of corolla precociously pigmented , distal end normal

7800032

8b. FLOWER - Staminate:

[2 5] Sepals: MM LENGTH [4] Sepals: MM WIDTH [3] Pedicel: CM LENGTH

[3] Color: 1 = WHITE 2 = LEMON YELLOW 3 = MID-YELLOW 4 = DEEP YELLOW 5 = ORANGE

9. FRUIT (Market Maturity)

[1 2] CM LENGTH [1 0] CM WIDTH (Medial) [ ] CM WIDTH (Blossom end) [6 1 4] GM AVERAGE WEIGHT

[1] Shape according to variety type: 1 = ACORN 2 = BANANA 3 = BUTTERCUP 4 = BUTTERNUT 5 = CONNECTICUT FIELD 6 = CROOKNECK 7 = HUBBARD 8 = SCALLOP 9 = STRAIGHTNECK 10 = OTHER (Specify) _____

[4] Apex: 1 = DEPRESSED 2 = FLATTENED

[2] Base: 3 = ROUNDED 4 = TAPER POINTED

[3] Ribs: 1 = NONE 2 = INCONSPICUOUS 3 = PROMINANT

[2] Rib Furrows: 1 = SHALLOW 2 = MEDIUM DEEP

[2] Rib Furrows: 1 = NARROW 2 = MEDIUM WIDE 3 = WIDE

[1] Fruit Surface: 1 = SMOOTH 2 = FINE WRINKLE 3 = SHALLOWLY WAVY

[1] Warts: 1 = NONE 2 = FEW 3 = MANY

[ ] Blossom Scar Button: 1 = DEPRESSED 2 = SLIGHTLY EXTENDED 3 = RAISED ACORN

10. RIND

[1] MM THICKNESS AT MEDIAL [1] 1 = SOFT 2 = HARD 3 = WOODY & TOUGH

[1] COLOR PATTERN: 1 = REGULAR 2 = IRREGULAR

COLORS: (Select two when necessary, i.e. Grayish—Buff) [1 2] [0 4]

01 = WHITE 02 = CREAM 03 = YELLOW 04 = BUFF 05 = BROWN 06 = BRONZE 07 = GREEN 08 = ORANGE
09 = PINK 10 = RED 11 = BLUE 12 = GRAY 13 = BLACK 14 = OTHER (Specify) _____

[0 8] [ ] SELF OR GROUND

PATTERN:

[ ] [ ] STREAKS
[ ] [ ] STRIPES
[ ] [ ] SPOTS
[ ] [ ] BLOTCHES
[ ] [ ] LACE
[ ] [ ] OTHER (Specify) _____

LOCATION OF PATTERN COLORS:

[ ] 1 = NOT SPECIFIC
[ ] 2 = STEM END HALF
[ ] 3 = BLOSSOM END HALF
[ ] 4 = ACORN OR TORBAN
[ ] 5 = OTHER (Specify) _____

FE 56

11. FLESH

[1 1] Thickness: MM BLOSSOM END [1 8] Thickness: MM MEDIAL [2 5] Thickness: MM STEM END

7800032

[4] or 1 Texture: 1 = FINE 2 = GRANULAR 3 = LUMPY 4 = STRINGY

[2] Texture: 1 = SOFT 2 = FIRM 3 = BRITTLE

[2] Texture: 1 = DRY 2 = MOIST 3 = JUICY

[2] Flavor: 1 = INSIPID 2 = SLIGHTLY SWEET 3 = SWEET

[3] Quality: 1 = INEDIBLE 2 = GOOD 3 = EXCELLENT

[0 8] Color: (Choose from rind colors above)

12. SEED CAVITY: (Sectioned apex to base)

[8] CM LENGTH

[6] CM WIDTH

[1] & 2 Location: 1 = CONFORMS TO FRUIT SHAPE 2 = NEAR APEX 3 = APEX ONLY

[1] Placental Tissue: 1 = SPARSE 2 = MODERATELY ABUNDANT 3 = ABUNDANT

[1] Center Core: 1 = INCONSPICUOUS 2 = PROMINANT

13. FRUIT STALKS

[5] CM LENGTH

[1] CM DIAMETER

[2] 1 = ROUND 2 = IRREGULAR 5-sided

[ ] 1 = NOT TWISTED 2 = TWISTED

[ ] 1 = NOT TAPERED 2 = TAPERED

[ ] 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = CURVED

[3] Texture: 1 = SOFT 2 = SPONGY 3 = HARD

[ ] Farrows: 1 = NONE 2 = SHALLOW 3 = DEEP

[2] Surface: 1 = SMOOTH 2 = ROUGH 3 = SPINY

[2] Attachment End: 1 = NOT EXPANDED 2 = SLIGHTLY EXPANDED 3 = EXPANDED

[1] Detaches: 1 = EASILY 2 = WITH DIFFICULTY

[*] Color: 1 = LIGHT GREEN 2 = MEDIUM GREEN 3 = DARK GREEN

14. SEEDS See sample

[1 3] MM LENGTH

[8] MM WIDTH

[2] MM THICKNESS

[1] Face Surface: 1 = SMOOTH 2 = WRINKLED 3 = SLIGHTLY PITTED 4 = SCALY 5 = CREASED

[3] Color: 1 = WHITE 2 = CREAM 3 = BUFF 4 = BROWN

[1] Luster: 1 = DULL 2 = GLOSSY

[1] Margin: 1 = STRAIGHT 2 = CURVED 3 = TWISTED

[ ] Margin: 1 = ROUNDED 2 = WEDGE-LIKE

[1] Separation from pulp: 1 = EASY 2 = MODERATELY EASY 3 = DIFFICULT

[ ] GMS PER 100 SEEDS

[1 5 0] NO. SEEDS PER FRUIT

[1] 1 = NORMAL 2 = NAKED

15. DISEASE RESISTANCE: (O = Not Tested, 1 = Susceptible, 2 = Resistant) Probably similar to 'Table King'

[0] POWDERY MILDEW

[0] CUCUMBER MOSAIC

[0] SQUASH MOSAIC

[0] WATERMELON MOSAIC

[ ] OTHER (Specify) _____

16. INSECT RESISTANCE: (O = Not Tested, 1 = Susceptible, 2 = Resistant Probably similar to 'Table King'

[0] SQUASH BUG

[0] SQUASH BORER

[ ] OTHER (Speicfy) _____

17. INDICATE A VARIETY MOST CLOSELY RESEMBLING THAT SUBMITTED FOR EACH CHARACTER

CHARACTER	VARIETY	CHARACTER	VARIETY
PLANT HABIT	Table King	FRUIT SHAPE	Table King
LEAF TYPE	Ditto	FRUIT COLOR	Small Sugar (ripe)*
FLOWER TYPE	Ditto	CULINARY TYPE	Table King

*See Figure 1 in Exhibit E

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