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(54) **WALNUT TREE NAMED 'GILLET'**

(50) Latin Name: *Juglans regia*
Varietal Denomination: **Gillet**

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(57) **ABSTRACT**

A new and distinct variety of walnut tree denominated 'Gillet' is described. This new cultivar comes into bearing young, produces well mid-season, and bears a jumbo sized nut with light colored kernels of uniform size. The new cultivar can be harvested prior to 'Chandler' and furthermore shows low susceptibility to walnut blight.

7 Drawing Sheets

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FIELD OF THE INVENTION

Botanical/commercial classification: (*Juglans regia*)/new English walnut variety. Varietal denomination: cv. Gillet.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct variety of walnut tree *Juglans regia* which has been denominated varietally as 'Gillet,' and more particularly to such a walnut tree which has a harvest date approximately two weeks earlier than the walnut tree variety 'Chandler' (U.S. Plant Pat. No. 4,388) and which further produces a walnut that is jumbo in size with light colored kernels and which can be processed in shell or cracked.

It has long been recognized as desirable to provide walnut trees bearing large crops which are ripe for commercial harvesting and shipment midseason and exhibit low susceptibility to walnut blight. The tree of the present variety, 'Gillet,' produces a nut which is similar in some respects to common walnut tree varieties such as 'Chandler,' (U.S. Plant Pat. No. 4,388). However the new variety is ready for harvest approximately two weeks before 'Chandler,' and ten days after the common reference cultivar 'Payne' (not patented).

The new *Juglans regia* walnut tree of the present invention was created at Davis, Calif. in 1995 by a controlled cross of the cultivar 'Chico' and UC76-80 (neither patented). The pedigree is illustrated (FIG. 1).

Seeds from the cross were planted and the resulting 37 trees were carefully observed along with other trees in the walnut breeding program. When they began to bear nuts, data were collected annually on leafing date, first peak and last female flower bloom, first, peak and last male bloom, blight severity and yield (Table 1). Nuts were sampled,

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cracked, and data was collected on shell appearance, shell thickness, shell integrity, shell strength, nut weight, kernel weight, percent kernel, ease of kernel removal, kernel color, and percent kernel shrivel (Table 2). A single tree was selected from among progeny of this controlled cross based on its superior attributes. This selection was originally designated 'UC95-22-26,' and is now designated the 'Gillet' cultivar after Felix Gillet, a historical figure said to be responsible for introducing varieties suitable for the northern half of California and therefore responsible for the growth of the walnut industry early in the 20th century. Compared to 'Gillet' the parent UC76-80 is protandrous and the nut has a weaker shell; the parent 'Chico' has smaller nuts than 'Gillet' with a more difficult to extract kernel.

The new cultivar of the present invention has been propagated by grafting at Davis, Calif. on 'Paradox' hybrid rootstock. The distinctive characteristics of the new cultivar have been found to be stable and are transmitted to the new trees when asexually propagated.

SUMMARY OF THE INVENTION

It was found that the new *Juglans regia* cultivar of the present invention exhibits the following combination of characteristics:

- a) Comes into bearing young, with an excellent yield at age 3 years;
- b) forms jumbo-sized walnuts that possess light-colored kernels with little size variation in a given harvest;
- c) can be processed inshell or cracked;
- d) bears fruit laterally;
- e) yields a walnut crop that can be harvested 2 weeks prior to 'Chandler' (U.S. Plant Pat. No. 4,388).
- f) is protogynous, bearing female flowers before male flowers; and
- g) exhibits low susceptibility to blight.

BRIEF DESCRIPTION OF THE TABLES

Table 1 shows comparative tree evaluations.

Table 2 shows nut and kernel traits.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1—shows the pedigree of the 'Gillet' walnut.

FIG. 2—shows a tree of the 'Gillet' walnut at seven years.

FIG. 3—shows a near view of the typical current season's stem of the 'Gillet' walnut.

FIG. 4—shows a near view of the leaves of the 'Gillet' walnut.

FIG. 5—shows a near view of the nuts in the hull of the 'Gillet' walnut just prior to maturity.

FIG. 6—shows nuts in the hull of the 'Gillet' walnut at maturity.

FIG. 7—shows kernel and nut of the 'Gillet' walnut.

BOTANICAL DESCRIPTION OF THE PLANT

The description is based on an ungrafted walnut on its own roots and trees propagated by grafting on Paradox rootstock and growing in an orchard at Davis, Calif. Data were collected on the own rooted tree from 1999, at age 3 years, to 2003, age seven.

In 2002, scionwood from this tree was collected and grafted onto Paradox rootstock for further evaluation in three sites: Davis, Chico and Kearney.

The Munsell Book of Color is used in the identification of color. Also, common color terms are to be accorded their ordinary dictionary significance.

Botanical classification: *Juglans regia*.

Female parent.—'Chico'.

Male parent.—UC76-80.

The pedigree is shown (FIG. 1).

Plant: The growth habit of the tree is illustrated in FIG. 2. This 7 year old tree was approximately 22 feet in height with a canopy diameter of approximately 19 feet. The trunk diameter at 30 cm above the ground is approximately 20 cm. The silvery grey bark is typical of *Juglans regia*. The young bark is brown (2.9GY 2.3/3.6) with raised white lenticels (FIG. 3) and the older bark is grey (5Y 7.5/2) with lighter striations (7 YR 8/2). On one-year-old bark there are about 12 lenticels per 2.5 cm of stem measuring approximately 1.5 cm in diameter. 'Gillet's lenticels are oval, measure 2–10 mm by 1–2 mm and are light grey yellow brown (9.7YR 4.6/2.1). 'Gillet' has vigor similar to the 'Serr' variety. The surface texture of trunk branch, leaflets, hull and kernel are smooth.

Foliage: The dark green foliage is illustrated (FIG. 4) and is typical of *Juglans regia*. Leaf out during 1994–2003 has occurred on March 30 on the average. For comparative purposes the 'Payne' cultivar leafed out 9 days earlier and the 'Chandler' cultivar leafed out 7 days later during the same years. The typical leaf coloration is green, 6.1GY 3.2/5.8, on the upper surface, and slightly lighter (5.0GY 4.5/8.2) on the lower surface. The leaves are pinnately compound with 5–7 (9) leaflets. The full leaf length is approximately 37 cm and the width 26.6 cm. Leaflets are broadly elliptical and entire. The terminal leaflet averages 15 cm in length and 10 cm in width. The middle leaflets average 13 cm in length and 7.6 cm in width and the proximal leaflets

average 8.9 cm in length and 5.4 cm in width. If 7 leaflets are present the first (proximal) set is smallest averaging 6.3 cm in length and 4 cm in width. The rachis averages 22.4 cm in length and is 1–2 mm in diameter. Petioles average length is 7 cm, 2–4 mm in diameter and 5GY 7/8 in color.

Inflorescence: The tree is relatively precocious, an excellent yield being noted at age 3 years. Male flowers (catkins) were not present until age 5. This delay in male maturity is typical of *Juglans regia*. The catkin's diameter is about 15 mm and yellow-green (5GY 6/8). Catkin length ranges between 7 and 13 cm. From 1999 to 2003, first female bloom occurred on an average on April 4, peak bloom on April 8 and last bloom on April 15. From 2001 to 2003, average male flowering (pollen shedding) began April 10, peaked on April 18 and terminated April 27. In this protogynous tree, pollen shedding does not completely cover pistillate bloom suggesting that a pollinator would be needed for maximum yield in isolated areas. Both 'UC90-31-10' (patent application No. 10/912,852) and 'Serr' (unpatented) would be satisfactory pollinizers. The female flowers are typical of *Juglans regia* with two flowers per inflorescence borne at both terminal and lateral positions on current season's growth. Approximately 98% of the lateral buds contain inflorescences making yields much greater than trees that only bear flowers terminally. A typical female flower is approximately 5 to 7 mm at anthesis and the floral organs are typical of *J. regia*. The flowers appear vase-shaped when the two plumose stigmatic arms are curved outwardly. There are no petals. The flowers measure 5–7 mm in length and 3–5 mm in diameter and are yellow-green (5GY 6/8) in color. They are borne usually in twos on a 1 cm spike. The flower fragrance is typical of *J. regia* and is not noticeably different than the foliage fragrance.

Walnuts: The new cultivar commonly harvests at least eleven days before 'Chandler' and two weeks after 'Payne' but may become earlier as the clone ages. During 2003, nuts of this new cultivar were ready for harvest on October 1. This compares with 'Payne' that harvested September 21, and 'Chandler' that harvested October 19. The new cultivar has excellent yields of jumbo-sized walnuts. The hull is globose, 5 cm×5 cm, 5.8 mm thick and 2.5GY 8/6 in color. The apex is between rounded and truncate, the base is round and it is approximately 1.3–1.5 mm thick. The round nut-shell is tan, relatively smooth, and measures approximately 38.7 mm in length and 38.5 mm in width. The shell is strong and well sealed and the kernel is easy to remove. The kernel weighs 8.2 g and makes up 51.5% of the total nut weight of 16.0 g. Kernel color is considered excellent and scores mostly in the light to extra light categories of the USDA Standards for Grades of Shelled Walnuts as determined by using the standard Walnut Color Chart for kernels published by the Dried Fruit Association of California. In addition kernels of 'Gillet' scored 55 on the Relative Light Index used by Diamond Walnut of Stockton, Calif. These values are based on 5 year averages of ten walnut samples obtained each year from a young tree. Typical kernel dimensions are approximately 31.8 mm in length and 32.3 mm in width. The kernel is essentially round and splits into halves easily. It is plump in comparison to 'Chandler'. It is typical of commercial walnuts in terms of flavor and firmness, the latter varying according to the percent moisture after drying.

Hardiness: The non-bearing tree withstood a temperature of 21° F. in 1998.

Chilling requirement: Trees have not shown staggered leafing and bloom, symptoms of lack of chilling when exposed to over 767 chilling hours (hours under 45° F.).

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Disease resistance and susceptibility: Susceptibility to walnut blight has been low even though adjacent trees have been severely afflicted. No other unusual resistance or susceptibility to insects and diseases has been observed to date.

Usage: The new cultivar of the present invention provides a mid-season harvesting walnut cultivar with light colored kernels that can be used cracked or in shell.

TABLE 1

TREE EVALUATIONS					
	Leafing date	DAP L	Male bloom date	DAP M	Female bloom date
<u>1999</u>					
Payne	3/24	0	4/14	0	4/18
Tulare	4/10	17	4/17	3	4/25
Chandler	4/13	20	4/17	3	4/28
Sexton	4/6	13	4/18	4	4/19
Gillet	4/11	18			4/22
Forde	4/14	21			4/23
<u>2000</u>					
Payne	3/19	0	3/31	0	4/5
Tulare	4/3	15	4/11	11	4/15
Chandler	4/4	16	4/12	12	4/20
Sexton	3/28	9	4/5	5	4/10
Gillet	3/30	11			4/7
Forde	4/3	15			4/10
<u>2001</u>					
Payne	3/17	0	3/27	0	4/1
Tulare	3/29	12	4/10	13	4/20
Chandler	3/29	12	4/10	13	4/23
Sexton	3/22	5	3/26	0	4/7
Gillet	3/23	6	4/15	18	3/30
Forde	3/24	7	4/15	18	4/3
<u>2002</u>					
Payne	3/27	0	4/6	0	4/12
Tulare	4/6	10	4/15	9	4/24
Chandler	4/7	11	4/17	11	4/27
Sexton	4/1	5	4/10	4	4/15
Gillet	4/1	5	4/23	17	4/11
Forde	4/2	6	4/23	17	4/13
<u>2003</u>					
Payne	3/18	0	4/5	0	4/9
Tulare	4/5	18	4/18	13	4/26
Chandler	4/7	20	4/20	15	5/3
Sexton	3/24	6	4/5	0	4/9
Gillet	3/24	6	4/18	13	4/4
Forde	3/27	9	4/23	18	4/9
<u>5 YEAR AVERAGE</u>					
Payne	3/21	0	4/4	0	4/9
Tulare	4/4	14	4/14	10	4/22
Chandler	4/7	16	4/15	11	4/26
Sexton	3/29	8	4/6	2	4/12
Gillet	3/30	9	4/19	16	4/8
Forde	4/1	11	4/20	18	4/12
<u>1999</u>					
	DAP F	Harvest Date	DAP H	Season length	Overlap %
<u>1999</u>					
Payne	0	9/24	0	159	89
Tulare	7	10/5	11	166	27
Chandler	10	10/19	25	174	53
Sexton	1	10/1	7	165	88
Gillet	4	10/10	16	171	
Forde	5	10/22	28	182	

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TABLE 1-continued

TREE EVALUATIONS					
2000					
Payne	0	9/13	0	161	89
Tulare	10	10/3	20	172	100
Chandler	15	10/12	29	175	67
Sexton	5	9/30	17	173	54
Gillet	2	9/26	13	172	
Forde	5	10/7	24	180	
2001					
Payne	0	9/9	0	161	89
Tulare	20	9/27	15	160	85
Chandler	22	10/7	28	167	38
Sexton	6	9/29	20	175	53
Gillet	-2	9/18	9	172	
Forde	2	9/29	20	179	
2002					
Payne	0	9/18	0	159	60
Tulare	12	10/3	16	162	91
Chandler	15	10/9	21	165	75
Sexton	3	10/3	15	171	83
Gillet	-1	10/4	16	176	40
Forde	1	10/6	18	176	11
2003					
Payne	0	9/21	0	165	62
Tulare	17	10/5	14	164	92
Chandler	25	10/10	19	160	50
Sexton	0	10/6	15	180	100
Gillet	-5	10/1	10	180	42
Forde	0	10/3	12	177	20
5 YEAR AVERAGE					
		Male abundance	Female abundance	Lateral fruitfulness %	Yield Blight
1999					
Payne	6	7	100	6	3
Tulare	4	6	90	6	0
Chandler	4	5	90	5	3
Sexton	6	7	100	7	2
Gillet	5	5	90	5	0
Forde	6	100	4	0	
2000					
Payne	6	6	100	6	5
Tulare	6	6	100	6	4
Chandler	4	5	90	4	0
Sexton	5	6	100	6	0
Gillet	6	100	6	0	
Forde	5	100	6	0	
1999					
Payne	7	6	100	5	8
Tulare	6	6	70	5	3
Chandler	5	5	100	4	2
Sexton	5	6	100	6	1
Gillet	3	6	100	7	0
Forde	2	6	100	7	0
2002					
Payne	7	6	100	7	3
Tulare	5	6	100	6	0
Chandler	5	6	100	6	1
Sexton	6	6	100	6	0

TABLE 1-continued

TREE EVALUATIONS					
Gillet	4	6	100	6	0
Forde	4	6	100	6	0
<u>2003</u>					
Payne	5	6	100	6	7
Tulare	5	6	100	6	5
Chandler	4	6	100	4	0
Sexton	5	6	100	6	2
Gillet	6	6	100	7	1
Forde	4	6	100	7	2
<u>5 YEAR AVERAGE</u>					
Payne	6.2	6.2	100	6	5.2
Tulare	5.2	6	92	5.8	2.4
Chandler	4.4	5.4	96	4.6	1.2
Sexton	5.4	6.2	100	6.2	1
Gillet	4.3	5.8	98	6.2	0.2
Forde	3.3	5.8	100	6	0.4

KEY TO TABLE 1

Leaving date	Date when 50% of terminal buds have enlarged and the bud scales have split exposing the green leaves
DAP L	Days after Payne (reference cultivar) leafing
Male bloom date	Date when maximum pollen shedding occurs
DAP M	Days after Payne (reference cultivar) male bloom
Female bloom date	Date of maximum pistillate flower receptivity
DAP F	Days after Payne (reference cultivar) female bloom
Harvest Date	Date when 95% of the nuts separate from the hulls
DAP H	Days after Payne (reference cultivar) harvest
Season length	Days between female flowering and harvest
Overlap %	Percent of female bloom overlapped by male bloom
Male abundance	Male flower abundance: 3 low; 5 intermediate; 7 high
Female abundance	Female flower abundance: 3 low; 5 intermediate; 7 high
Lateral fruitfulness %	Percent of lateral buds with female flowers
Yield	Yield: 3 low; 5 intermediate; 7 high
Blight	Blight incidence: 3 low; 5 intermediate; 7 high
DFA	Dried Fruit Association of CA

TABLE 2

NUT AND KERNEL TRAITS						
SHELL						
	Texture	Color	Seal	Strength	Integrity	Thickness
<u>1999</u>						
Payne	5	5	5	5	7	1.3
Tulare	5	6	4	4	7	1.2
Chandler	5	4	5	4	7	1.2
Sexton	5	5	6	6	7	1.5
Gillet	5	5	3	5	7	1.5
Forde	5	5	5	5	7	1.6
<u>2000</u>						
Payne	5	5	5	5	7	1.4
Tulare	6	6	4	5	7	1.3
Chandler	5	5	5	4	7	1.4
Sexton	4	6	5	6	7	1.7
Gillet	6	5	4	4	7	1.3
Forde	8	5	4	5	7	1.2
<u>2001</u>						
Payne	5	5	5	5	7	1.5
Tulare	5	6	5	4	7	1.3
Chandler	5	4	5	4	7	1.5
Sexton	4	5	5	5	7	1.5
Gillet	6	5	4	4	7	1.3
Forde	8	5	4	5	7	1.2
<u>5 YEAR AVERAGE</u>						
Payne	5	5	5	5	7	1.5
Tulare	5	6	5	4	7	1.3
Chandler	5	4	5	4	7	1.5
Sexton	4	5	5	5	7	1.6

TABLE 2-continued

NUT AND KERNEL TRAITS						
NUT						
	Packing tissue	Inshell weight	Kernel weight	Kernel %		
<u>1999</u>						
Payne	5	5	5.2	7	1.4	
Tulare	5.2	5.8	4.8	4.2	7	1.2
Chandler	5	4.2	5	4.2	7	1.4
Sexton	4.2	5.2	5.2	5.4	7	1.5
Gillet	5.2	5	4	4.6	7	1.3
Forde	5.4	4.8	5	5.2	7	1.5
<u>2000</u>						
Payne	5	18.9	5.3	44.9		
Tulare	5	14.0	7.7	57.7		
Chandler	5	13.7	7.1	52.2		
Sexton	5	14.2	8.9	48.4		
Gillet	5	18.5	8.2	49.8		
Forde	5	18.8	9.7	51.7		
<u>2001</u>						
Payne	5	12.8	6.1	48.0		
Tulare	5	16.4	9.2	58.5		
Chandler	5	13.7	6.7	49.1		
Sexton	5	17.0	8.6	50.7		
Gillet	5	17.0	9.0	52.9		
Forde	5	17.3	10.3	58.8		
<u>2002</u>						
Payne	5	15.4	7.4	48.2		
Tulare	5	18.9	8.8	52.5		
Chandler	5	15.0	7.5	49.7		
Sexton	5	16.0	8.2	51.2		
Gillet	5	15.0	8.1	53.8		
Forde	5	15.1	8.0	53.0		
<u>2003</u>						
Payne	5	12.1	5.6	46.8		
Tulare	5	15.0	8.2	55.0		
Chandler	5	13.7	6.2	45.4		
Sexton	5	18.5	9.9	53.4		
Gillet	5	15.2	7.7	50.8		
Forde	5	16.7	8.9	53.4		
<u>5 YEAR AVERAGE</u>						
Payne	5	15.6	7.4	47.1		
Tulare	5	15.2	8.5	55.9		
Chandler	5	13.6	7.1	51.1		
Sexton	5	15.4	7.7	50.2		
Gillet	5	16.2	8.2	50.5		
Forde	5	17.6	9.1	51.7		
<u>2004</u>						
Payne	5	14.8	6.4	47		
Tulare	5	15.5	8.5	55.5		

TABLE 2-continued

NUT AND KERNEL TRAITS						
	Fill	Plumpness	Ease of removal	Blanks %	Extra light %	Light %
<u>1999</u>						
Payne	5	4	4	0	50	30
Tulare	5	5	4	0	0	100
Chandler	4	5	3	0	90	10
Sexton	5	5	4	0	100	0
Gillet	5	4	5	0	0	100
Forde	5	5	5	0	0	100
<u>2000</u>						
Payne	5	5	4	0	0	100
Tulare	5	5	5	0	0	100
Chandler	5	4	4	0	60	40
Sexton	5	5	5	0	0	80
Gillet	5	4	5	0	0	90
Forde	5	5	4	0	0	90
<u>2001</u>						
Payne	5	5	5	0	30	70
Tulare	5	5	5	0	0	100
Chandler	4	4	4	0	100	0
Sexton	6	5	5	0	40	60
Gillet	5	4	5	0	0	90
Forde	5	5	5	0	0	90
<u>2002</u>						
Payne	5	5	5	0	0	90
Tulare	5	5	5	0	0	100
Chandler	4	4	4	0	100	0
Sexton	6	5	5	0	50	50
Gillet	5	5	5	0	0	100
Forde	5	5	4	0	100	0
<u>2003</u>						
Payne	5	5	5	0	0	90
Tulare	6	5	4	10	33	67
Chandler	5	4	4	0	100	0
Sexton	5	5	5	0	40	40
Gillet	5	5	5	0	10	90
Forde	5	5	4	0	50	50
<u>5 YEAR AVERAGE</u>						
Payne	5	4.8	4.6	0	16	76
Tulare	5.2	5	4.6	2	7	93
Chandler	4.4	4.2	3.6	0	90	10
Sexton	5.6	5	4.8	0	46	48
Gillet	5	4.4	5	0	2	94
Forde	5	5.4	4.4	0	30	66
KERNEL						
	Light amber %	Amber %	Tip shrivel %	Other shrivel %	Veins %	
<u>1999</u>						
Payne	20	0	0	20	30	
Tulare	0	0	0	0	0	
Chandler	0	0	30	0	0	
Sexton	0	0	20	0	0	
Gillet	0	0	0	0	0	
Forde	0	0	0	0	0	

TABLE 2-continued

NUT AND KERNEL TRAITS						
	2000	2001	2002	5 YEAR AVERAGE		
Payne	0	0	10	0	30	
Tulare	0	0	20	0	0	
Chandler	0	0	40	0	0	
Sexton	20	0	10	0	10	
Gillet	10	0	20	0	20	
Forde	0	10	10	0	0	
<u>KEY FOR TABLE 2</u>						
Texture	Shell texture: 3 smooth; 5 medium; 7 rough					
Color	Shell color: 3 light; 5 medium; 7 dark					
Seal	Shell seal: 3 weak; 5 intermediate; 7 strong					
Strength	Shell strength: 3 weak; 5 intermediate; 7 strong					
Integrity	Shell integrity: 3 substantial area of shell missing; 5 small area of missing shell; 6 stem end hole; 7 complete shell					
Thickness	Shell thickness at mid-cheek in mm					
Packing tissue	Inner lining: 3 thin; 5 medium; 7 thick					
Inshell weight	gm					
Kernel weight	gm					
Kernel %	Kernel wt/ inshell wt x 100					
Fill	Kernel fill: 3 poor; 5 moderate; 7 well					
Plumpness	Kernel plumpness: 3 thin; 5 moderate; 7 plump					
Ease of removal	Ease of removal of kernel halves: 3 easy; 5 moderate; 7 difficult					
Blanks %	Percent of nuts without a kernel					
Extra light %	Percent of kernels in extra light category (DFA)					
Light %	Percent of kernels in light category (DFA)					
Light amber %	Percent of kernels in light amber category (DFA)					
Amber %	Percent of kernels in amber category (DFA)					
Tip shrivel %	Percent of kernels with tip shrivel like Chandler					
Other shrivel %	Percent of kernels with more substantial shrivel					
Veins %	Percent of kernels with conspicuous veins					
DFA	Dried Fruit Association of CA					

What we claim is:

1. A new variety of walnut tree substantially as shown and described herein.

* * * * *

FIG. 1

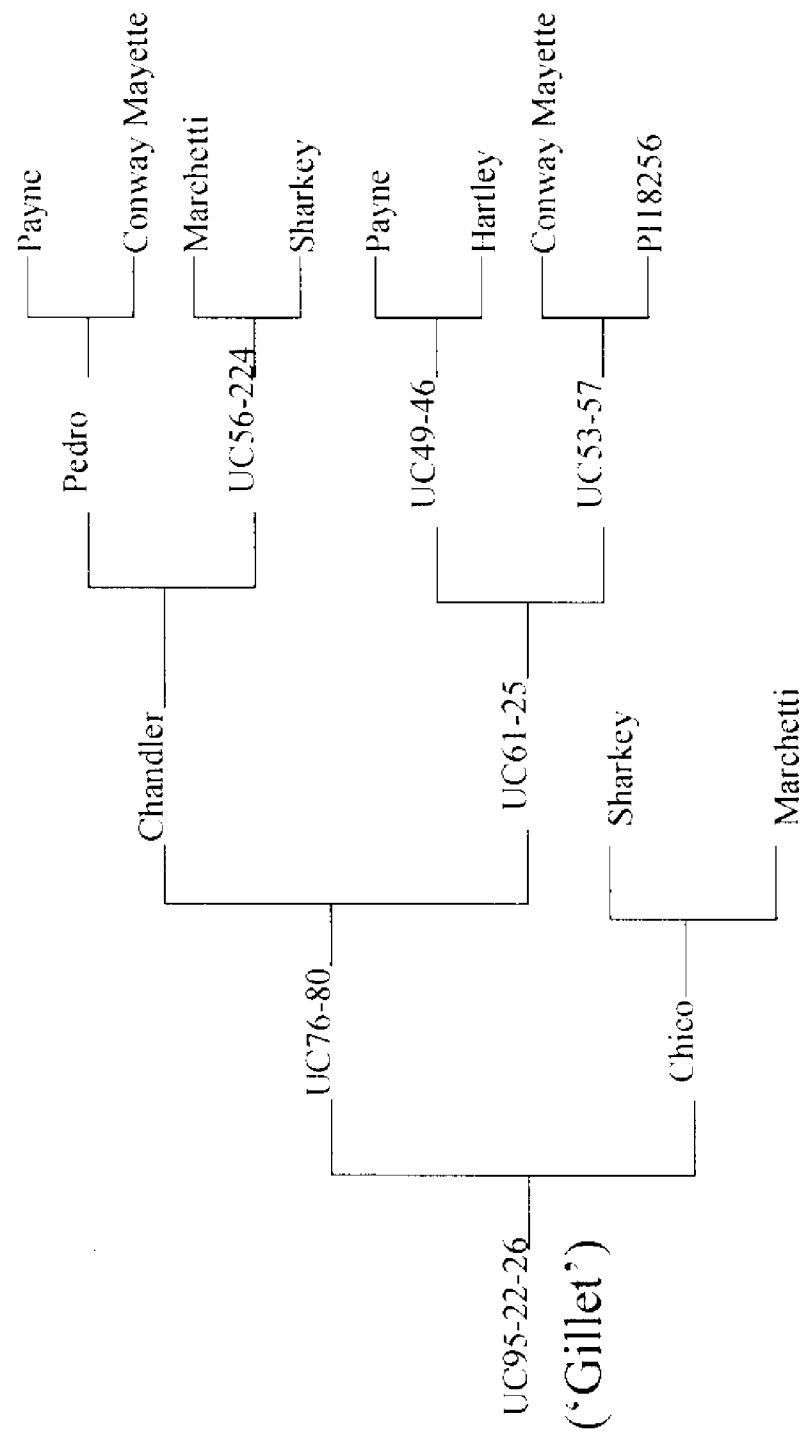


FIG. 2



FIG. 3



FIG. 4

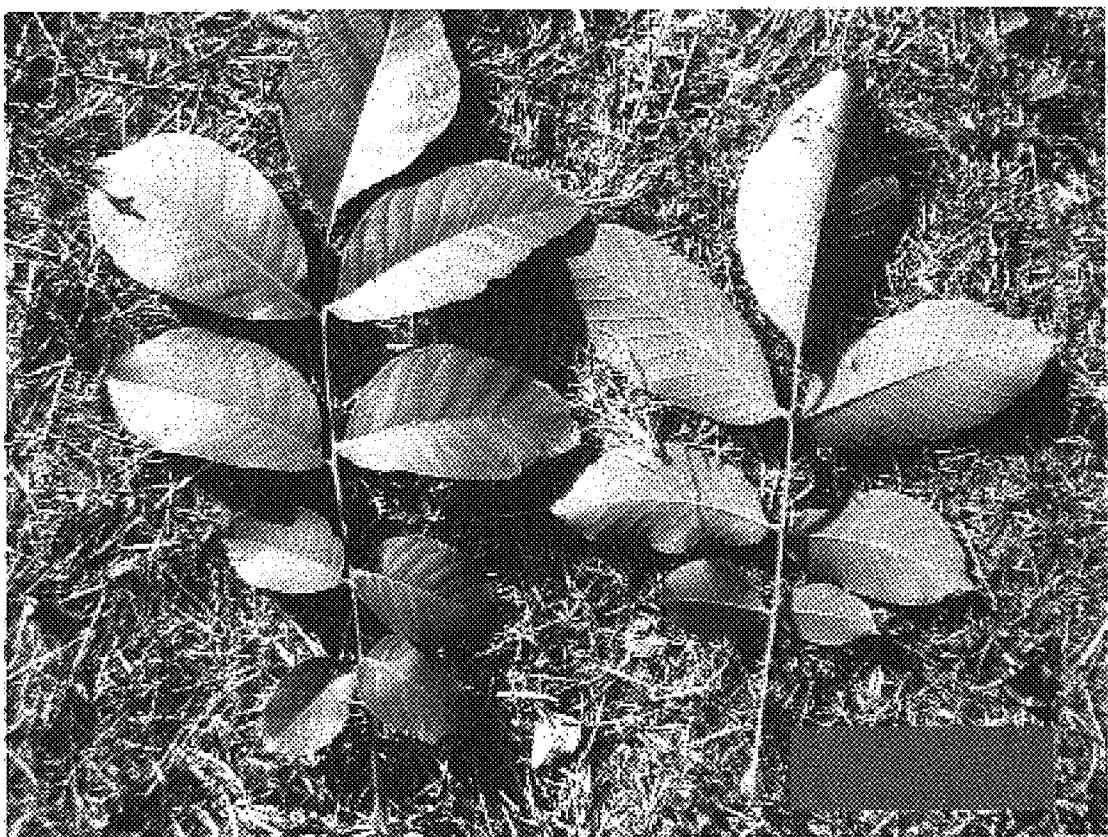


FIG. 5

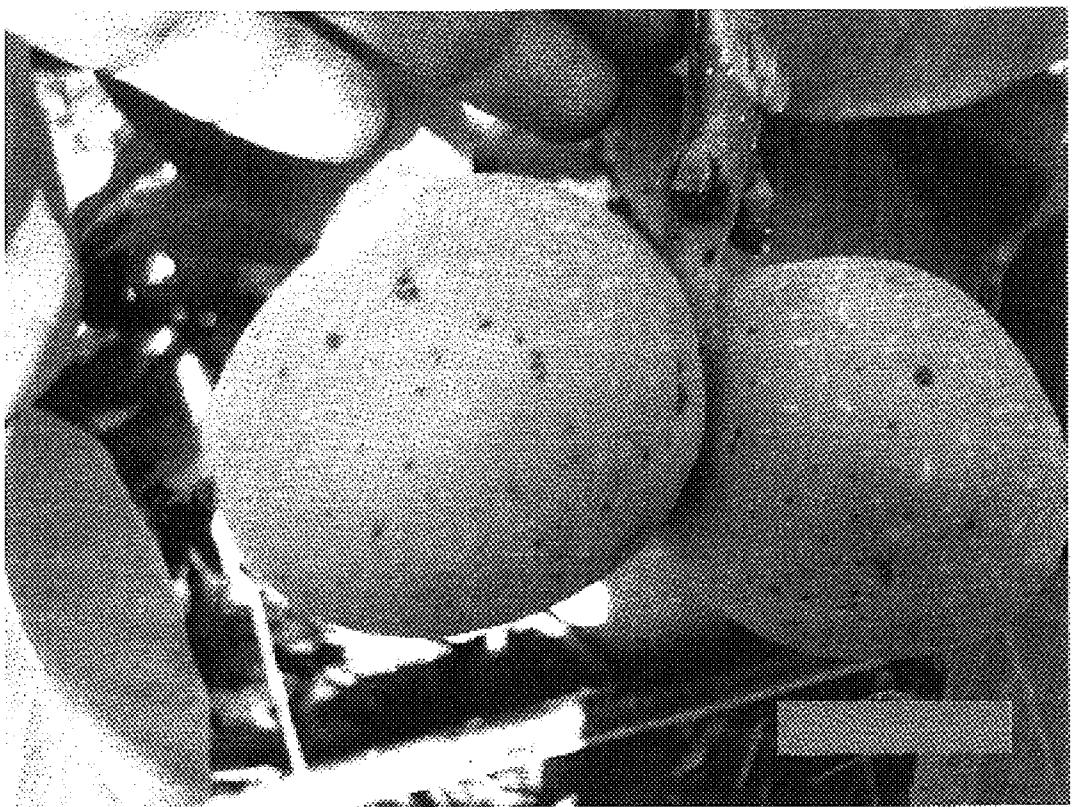


FIG. 6



FIG. 7

