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Leis et al.

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(54) **APPLE TREE NAMED 'RENOIRCIV'**

(50) Latin Name: *Malus domestica Mill.*  
Varietal Denomination: **RENOIRCIV**

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See application file for complete search history.

(56) **References Cited**  
**PUBLICATIONS**

Jankovic, P. "Sweet Resistance," *Fruit, Review for Fruit Growing, Viticulture, and Enology*, vol. No. 12, Issue No. XXI, Dec. 2010, pp. 9-10 (translation provided).\*

\* cited by examiner

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(57) **ABSTRACT**

A new and distinct *Malus domestica Mill.* apple tree variety named 'RENOIRCIV' particularly characterized by moderately vigorous tree with good habit and good productivity. Resistant to scab. The tree produces well on two-year-old branches, is self-thinning and naturally keeps to one or two apples per cluster. The shape of fruit is conical-obloid, slightly flattened. Yellowish-green ground color with russetting over 50-60% of the surface; fruit growing in direct sunlight may take on a light red hue on the exposed part. The flavor is excellent with a very intense aroma similar to 'Reinette blanche du Canada', but sweeter. The fruit is good to eat fresh, even directly after harvest. The flesh is yellow, firm and juicy. May be stored until April.

**4 Drawing Sheets**

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Latin name of the genus and species of the plant claimed:  
*Malus domestica Mill.*

Variety denomination: 'RENOIRCIV'.

**PRIORITY CLAIM**

This application claims priority to European Community Plant Variety Office Application No. 2011/1877, filed Jul. 26, 2011.

**BACKGROUND OF THE INVENTION**

The present invention relates to a new and distinct variety of apple tree, botanically known as *Malus domestica Mill.* of the Family Rosaceae, and hereinafter referred to by the variety denomination 'RENOIRCIV'.

The new *Malus* variety is a product of a planned breeding program conducted by the inventors, Michelangelo Leis, Alessio Martinelli, Gianfranco Castagnoli and Francesco Tagliani in S. Giuseppe di Comacchio (Ferrara), Italy. The objective of the breeding program was to develop new *Malus* varieties with improved production characteristics, high-quality flavour and aroma, and sustainability by increasing the tree's natural resistance. The primary objective of the

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research programme is to select new apple varieties with natural resistances, in particular to scab.

The new *Malus* variety, 'RENOIRCIV', originated from a cross made in a planned, controlled breeding program in S. Giuseppe di Comacchio (Ferrara), Italy. The female parent is an unpatented proprietary selection denominated 'FG-88'. The male parent is an unpatented proprietary selection denominated 'B9-5'. 'RENOIRCIV' was discovered and selected in August 2004 by the inventors as a flowering plant within the progeny of the stated cross in a controlled environment in S. Giuseppe di Comacchio (Ferrara), Italy.

Asexual reproduction of the new *Malus* variety by budding and grafting was first performed in September 2004 and in the following years in S. Giuseppe di Comacchio (Ferrara), Italy, and has demonstrated that the combination of characteristics as herein disclosed for the new *Malus* variety are firmly fixed and retained through successive generations of asexual reproduction. The new variety reproduces true to type.

**BRIEF DESCRIPTION OF THE INVENTION**

The following traits have been repeatedly observed and are determined to be unique characteristics of 'RENOIRCIV' which in combination distinguish this apple tree as a new and distinct variety:

1. Yellowish-green colour with russetting over 50-60% of the surface;
2. Scab resistance;
3. Medium vigor, open habit with short branches;
4. Self-thinning and naturally keeps to one or two apples per cluster;
5. The fruit is good to eat fresh, even directly after harvest;
6. High sugar content and
7. Long storage ability.

Of the commercial cultivars known to the inventors, the most similar in comparison to 'RENOIRCIV' is the variety 'Reinette blanche du Canada' (unpatented). In comparison to the similar variety 'Reinette blanche du Canada', 'RENOIRCIV' differs primarily in the traits listed in Table 1:

TABLE 1

Comparison with similar variety			
Denomination of similar variety	Characteristic in which the similar variety is different	State of expression of similar variety	State of expression of candidate variety
"Reinette blanche du Canada"	General Shape	Obloid	Conic
	Eating maturity	Late	Medium
	Resistance to disease	No	Scab resistant

In comparison to the parent varieties 'FG-88' and 'B9-5', 'RENOIRCIV' differs primarily in the traits listed in Table 2:

TABLE 2

Comparison with parent varieties			
Characteristic in which the variety is different	State of expression of candidate variety	State of expression of female parent variety 'FG-88'	State of expression of male parent variety 'B9-5'
Resistance to Scab	Yes	No	Yes
Fruit over color	Absent or very small	Red	Yellow
Fruit Shape	Conic	Globose	Ovoid
Area of russet on cheeks around the stalk	Very large; over 50-60% of the surface	Absent or small	Present around lenticels
Eating maturity	Medium	Medium	Very late

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying photographs illustrate the overall appearance of the new apple tree 'RENOIRCIV' showing the colors as true as is reasonably possible with color reproductions of this type. Color in the photographs may differ slightly from the color value cited in the detailed botanical description, which accurately describe the color of 'RENOIRCIV'. In the photographs the label shows the breeder's reference 'B3B9-207'.

FIG. 1: illustrates the plant of 'RENOIRCIV';  
 FIG. 2: illustrates the leaves of 'RENOIRCIV';  
 FIG. 3: illustrates the flowers of 'RENOIRCIV' and  
 FIG. 4: illustrates the fruits of 'RENOIRCIV'.

#### DETAILED BOTANICAL DESCRIPTION

The new *Malus* variety 'RENOIRCIV' has not been observed under all possible environmental conditions. The

phenotype of the new variety may vary with variations in environment such as temperature, light intensity, and day length without any change in the genotype of the plant.

The aforementioned photographs, together with the following observations, measurements and values describe the new *Malus* variety 'RENOIRCIV' as grown in the apple farm in S. Giuseppe di Comacchio (Ferrara), Italy, under conditions which closely approximate those generally used in commercial practice. The apple farm where 'RENOIRCIV' is grown is situated near the Adriatic sea (44°45' North, 12°11' East) and is zero (0) meters above sea level. The soil of the apple farm where 'RENOIRCIV' is grown is sandy, and the soil is treated with manure every year and irrigated with drip irrigation systems. The climate is temperate continental with high summer temperatures and low winter temperatures.

Unless otherwise stated, the detailed botanical description includes observations, measurements and values based on four (4) year old 'RENOIRCIV' trees that were grown in the apple farm in S. Giuseppe di Comacchio (Ferrara), Italy, from 2007 to 2010. All trees were of cropping maturity. Quantified measurements are expressed as an average of measurements taken from a number of individual trees of 'RENOIRCIV'. The measurements of any individual tree, or any group of trees, of the new variety may vary from the stated average.

Color references are made to The Royal Horticultural Society Colour Chart (R.H.S.), first publication (1966), except where general colors of ordinary significance are used. Color values were taken under daylight conditions at approximately at 10:00 am in S. Giuseppe di Comacchio (Ferrara), Italy.

All trees of 'RENOIRCIV', insofar as they have been observed, have been identical in all the characteristics described below.

##### Classification:

35 *Botanical*.—*Malus domestica* Mill.

##### Parentage:

*Female parent*.—*Malus domestica* Mill. 'FG-88' (unpatented proprietary selection).

*Male parent*.—*Malus domestica* Mill. 'B9-5' (unpatented proprietary selection).

##### Propagation: Budding and grafting on M9 rootstock.

##### Tree:

*Age*.—Observed plants were four years old.

*Vigor*.—Medium vigor.

*Tree type*.—Ramified.

*Habit*.—Spreading, branches angle is typically 45 to 75 degrees from the vertical stem.

*Density*.—Medium density.

*Cropping behavior*.—Precocious fruit bearing with good productivity.

*Type of bearing*.—Typically long shoot; brindle with fruiting apical bud.

*Production*.—4<sup>th</sup> year: 16 Kg.

*Size*.—Height: 2.8 m. Spread: 1.30 m. Trunk Diameter: about 45 mm as measured 20 cm above point of grafting.

*Surface texture*.—Smooth.

*Bark color*.—Brown, RHS 199 D.

*Trunk lenticels*.—Overall Shape: round to elongated.

Length: about 1.0 mm. Width: about 1.0 mm. Color: Yellow-brown RHS 164 C. Density: 2 to 3 per cm<sup>2</sup>.

*Branches*.—Number per tree: about 25 at four (4) years.

Length: Varies due to pyramidal shape of tree. At four (4) years, maximum of 90 cm to 110 cm; minimum of 30 cm to 50 cm. Diameter (at 3 years): About 14 mm.

Surface texture: smooth. Color (at 3 years): grey, RHS

201 A. Internode length: About 2.0 cm to 5.0 cm. Internode diameter: About 12 mm in the middle of branches.	Fruit:
<i>Branches lenticels</i> .—Length: 1.0 mm. Width: 0.5 mm. Color: Yellow-brown, RHS 164 B. Density: About 6 per cm <sup>2</sup> .	<i>Keeping quality</i> .—The fruit is good to eat fresh, even directly after harvest. It has a good shelf life.
Leaves:	<i>Maturity when described</i> .—Ripe for eating.
<i>Arrangement</i> .—Alternate, simple, petiolated.	<i>Maturity period after full bloom</i> .—About 130 days in S. Giuseppe di Comacchio (Ferrara) Italy.
<i>Lamina</i> .—Size: Length (4 year old): 93 mm (from 3 <sup>rd</sup> to 5 <sup>th</sup> fully expanded leaf). Width (4 year old): 50 mm (from 3 <sup>rd</sup> to 5 <sup>th</sup> fully expanded leaf).	<i>Date of first and last pickings</i> .—About 17 August and 25 August in S. Giuseppe di Comacchio (Ferrara) Italy (North 44°45'46.2", East 012°11'31.9") in year 2011.
<i>Length/width ratio</i> .—1.86. Overall Shape: elliptical. Base shape: obtuse. Apex shape: right angle. Margin: biserrate. Pubescence: absent on upper surface and weak pubescent on lower surface. Attitude in relation to shoot: upwards. Color (mature leaves): green, RHS 137 A on the upper side and 147 B underside. Color (immature leaves): green, RHS 143 A on the upper side and 138 B underside.	<i>General shape</i> .—Conic-obloid.
<i>Venation</i> .—Type: prominent pinnate venation from a midrib to the edge. Color: green, RHS 147 D.	<i>Average weight</i> .—240.37 g.
<i>Petiole</i> .—Length: about 31 mm. Diameter: about 1.85 mm in the middle. Texture: hairy. Color: yellow-green, RHS 139 C with anthocyanin coloration.	<i>Fruit size</i> .—Average height: 72.51 mm. Average diameter (at widest point): 84.3 mm.
<i>Stipule</i> .—Arrangement: adnate, grown together; small size.	<i>Position of maximum diameter</i> .—Between 3/4 of the height near stem end.
<i>Distance of stipules from basal attachment of petiole</i> .—Very short. Length: about 10 mm. Width: about 2 mm.	<i>Height/diameter ratio</i> .—0.86.
Spur:	<i>Stem</i> .—Length: about 29 mm. Diameter: 2 to 2.7 mm. Color: yellow-green group, RHS 153 B.
<i>Present</i> .—Present only occasionally on 2-3 year old shoots.	<i>Stalk cavity</i> .—Depth: average 18.44 mm. Width: average 41.98 mm.
<i>Distance between each spur</i> .—	<i>Eye basin</i> .—Aperture of eye: fully open. Depth: average 7.44 mm. Width: average 27.28 mm. Crowning at calyx end: moderate. Position of sepals: bent. Calyx tube: funnel form.
<i>Number of fruit per spur</i> .—	<i>Skin</i> .—Thickness: medium. Texture: rough to the touch, with russetting over 50-60% of the surface. Bloom: absent. Greasiness: absent. Firmness (at picking time): 7.5 to 8.5 kg/cm <sup>2</sup> . Overcolor color: if present, it is red RHS 44 B. Percentage of skin surface with overcolor color: the overcolor is absent or very small; it is present only on the fruit growing in direct sunlight, it may take on a light red hue on the exposed part. Pattern of overcolor: if present only solid flush. Intensity of overcolor: light. Ground color: yellow-green, RHS 153 C.
Flowers:	<i>Skin lenticels</i> .—The lenticels are not more evident because are russet as the skin. Shape: round. Length: about 1.0 mm. Width: about 1.0 mm. Color: greyed-yellow, RHS 161 A. Density: about 3 per cm <sup>2</sup> in the central area of the surface of fruit.
<i>Blooming time</i> .—Full bloom on April 9 <sup>th</sup> in S. Giuseppe di Comacchio (Ferrara) in year 2011.	<i>Flesh</i> .—Color: yellow, RHS 11C. Texture: firm, and juicy. Aroma: intense. Eating quality: excellent with a very intense aroma similar to 'Renette Blanche du Canada', but sweeter. Sugar content (at picking time): about 15.5° Brix. Acidity/Starch (at picking time): Acidity: about 8.0 g/l Malic acid/starch: 2.5 to 3 (Laimburg scale 1 to 5).
<i>Blooming period</i> .—8 to 12 days.	<i>Core</i> .—Symmetry of core: asymmetric. Distinctness of core lines: no more evident. Locules: Number (per fruit): 5 (five). Length: 12 mm. Width: 5.0 mm. Form: closed or slightly open.
<i>Fragrance</i> .—Slight.	<i>Seeds</i> :
<i>Type</i> .—Inflorescence.	<i>Number per fruit</i> .—6 to 15.
<i>Number of flowers per inflorescence</i> .—5 to 6.	<i>Number per locule</i> .—About 1 to 3.
<i>Flower size</i> .—Diameter: about 34 mm. Flower color: Primarily white, RHS 155 D; when petals fully opened, on the undersides of petals there are shades of red-purple, RHS 70 B; in the balloon stage, red-purple, RHS 58 B.	<i>Shape</i> .—Elliptic.
<i>Fruiting buds</i> .—The fruiting buds are located on reproductive brindle. Shape: rounded. Length: about 7.0 mm. Width: about 5.0 mm. Color: brown, RHS 200 C with hairy surface.	<i>Length</i> .—Average 7.0 mm.
<i>Petals</i> .—Arrangement: intermediate. Number per flower: typically five (5). Length: average 15.93 mm. Width: average 10.32 mm. Length/width ratio: 1.54. Overall shape: elliptic. Apex shape: obtuse. Base shape: rounded. Texture: smooth. Margin: entire. Color (upper surface): white, RHS 155 D. Color (lower surface): white, RHS 155 D with shade red-purple RHS 70 B.	<i>Width</i> .—Average 4.5 mm.
<i>Sepals</i> .—Number per flower: five (5). Length: average 7.81 mm. Width: average 3.31 mm. Length/width ratio: 2.4. Overall shape: lanceolate. Apex shape: acute. Texture: hairy. Margin: entire. Color: green, RHS 138 B.	<i>Color</i> .—Brown, RHS 177 A.
<i>Pedicel</i> .—Length: average 17.1 mm. Diameter: 2 to 3 mm. Texture: hairy. Color: green, RHS 139 C.	Reproductive organs:
	<i>Androecium</i> .—Stamens: Number per flower: about 20 (Twenty). Length: average 6.85 mm. Filament: Length: about 5.9 mm. Color: green-white, RHS 155 D. Anther: Shape: ovoid, flat in the center. Length: 1.81 mm. Diameter: 1.03 mm. Color: yellow, RHS 12

C. Pollen: Amount: abundant. Color: yellow, RHS 12  
B. Requirements: the crab apple "*Malus* Evereste" is  
good pollinator.

*Gynoecium*.—Stigma: Shape: funnel shape with recep-  
tive surface on top. Length: 0.9 mm. Width: 0.6 mm.  
5 Color: yellow-green, RHS 144 B. Style: Number per  
flower: 5 (Five). Length: about 10.35 mm. Width:  
about 0.3 mm. Color: yellow-green, RHS 145 B.  
Ovary: Length: about 3.0 mm. Width: about 2.0 mm.  
Color: green, RHS 141C.

*Use*.—Fresh market.

*Sensitivity to disease/pests*.—Scab resistance.

*Winter hardiness*.—Tolerance to temperatures of -12°  
10 C. without observed damage to wood and buds of

dormant apple trees; but open flowers and young fruit-  
lets are killed by exposure to -3° C. to -5° C., depend-  
ing on the length of exposure.

*Drought/heat tolerance*.—Good tolerance to heat, up to  
40° C., growth is limited by drought periods without  
irrigation.

*Shipping/storage characteristics*.—Very good storabil-  
ity under ULO-conditions (1° C., 2% O<sub>2</sub>, 2% CO<sub>2</sub>) for  
up to six (6) months.

We claim:

1. A new and distinct *Malus domestica* Mill. apple tree  
variety named 'RENOIRCIV', substantially as illustrated  
and described herein.

\* \* \* \* \*

FIG. 1



FIG. 2

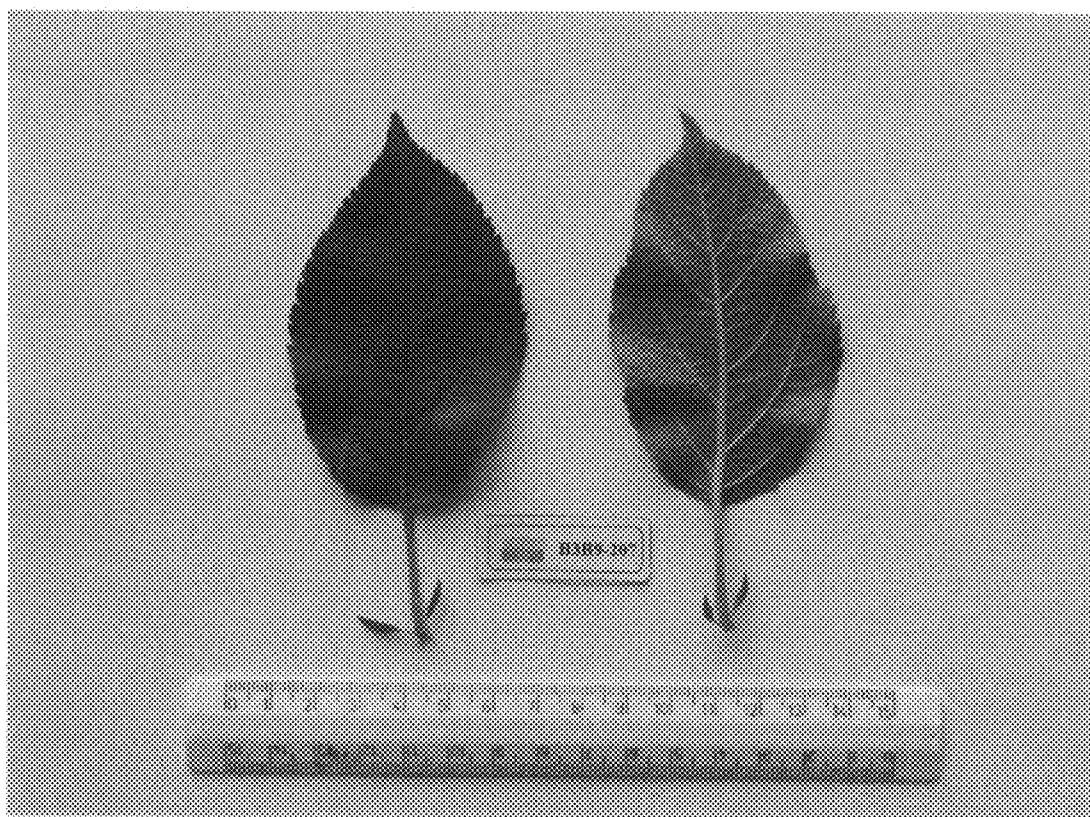
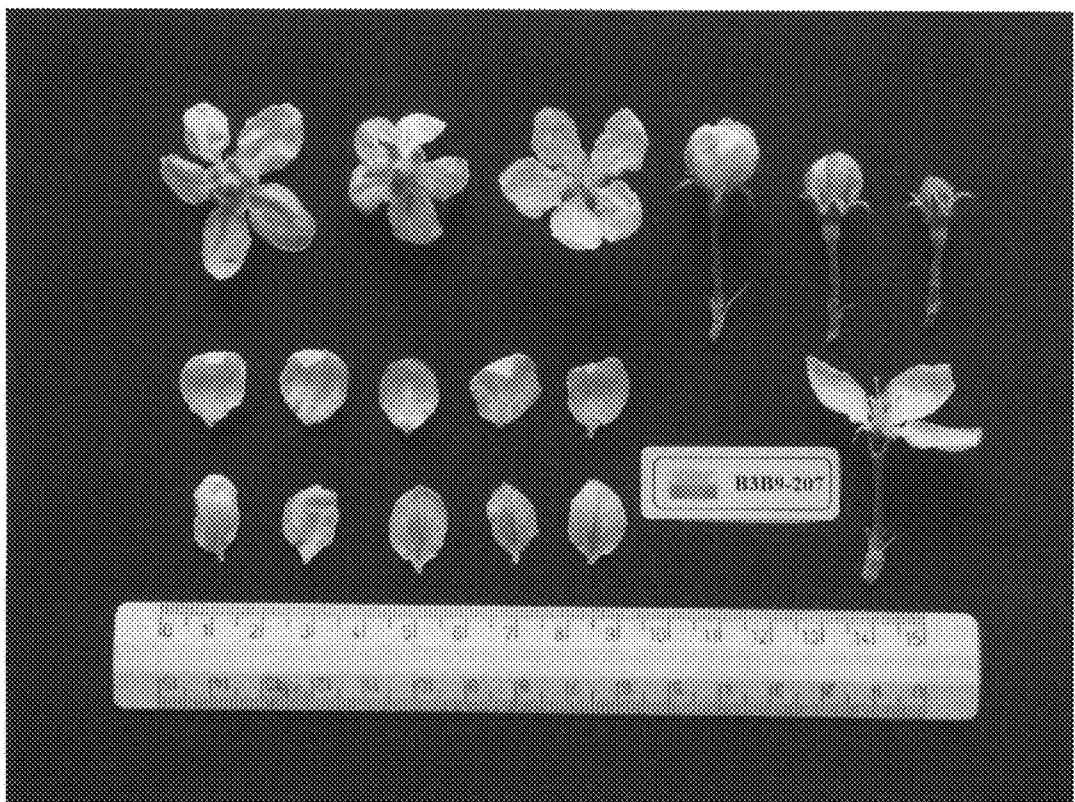


FIG. 3



**FIG. 4**

