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(54) **AVOCADO TREE NAMED ‘FLAVIA’**

(50) Latin Name: *Persea americana* Mill.
Varietal Denomination: **Flavia**

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patent is extended or adjusted under 35
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USPC **Plt./200**
CPC **A01H 5/0818** (2013.01)

(58) **Field of Classification Search**
USPC **Plt./200**
CPC **A01H 5/0818; A01H 5/08**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP139 P	8/1935	Hass	
PP5,309 P	10/1984	Whitsell	
PP17,947 P3 *	8/2007	Darvas	Plt./200
PP23,885 P3 *	9/2013	Pflum	Plt./200
PP24,279 P3 *	3/2014	Menge et al.	Plt./200

OTHER PUBLICATIONS

Francisco Gardiazabal I. et al.; Evaluation of Two New Hass Type
Varieties Found in Chile; 11 pages, 2007.

Michael T. Clegg et al.; Assessing the Genetic Determination of
Valuable Avocado Traits . . . ; 2007 Production Research Report,
California Avocado Commission; 5 pages.

* cited by examiner

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(57) **ABSTRACT**

A new variety, ‘Flavia’, was discovered in an avocado orchard
in Chile. The ‘Flavia’ avocado is notable for its larger fruit and
seed size as compared to ‘Hass’. ‘Flavia’ also has earlier fruit
maturity for harvesting than ‘Hass’.

7 Drawing Sheets

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Latin name of the genus and species: *Persea americana*
Mill.

Varietal denomination: ‘Flavia’.

BACKGROUND OF THE INVENTION

Currently, the main avocado variety in the world is ‘Hass’
(U.S. Plant Pat. No. 139, the contents of which are incorpo-
rated herein by reference). The main markets have year-round
supply of ‘Hass’ avocados and end consumers are very used to
buying ‘Hass’. Final consumers are used to buying and eating
‘Hass’ avocados. Many other avocado varieties have been
created and patented in the last few decades, but none of them
has been able to obtain important interest from growers as
there is a lack of interest in the market which still prefers
‘Hass’.

In the past few years, avocado fruit size has become one of
the challenges that avocado growers are facing. Net returns
can be doubled when growers move from small fruit to big
fruit (+200 grams). There are varieties, such as ‘Esther’, U.S.
Plant Pat. No. 5,309) that solved the fruit size problem by
providing a larger fruit. However, the skin of the fruit is green
and the market has no major interest for green skin avocado
varieties.

SUMMARY OF THE INVENTION

‘Flavia’ is a new and distinct variety of avocado tree *Persea
americana* Mill. The variety was first discovered in 1998 by

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Alfredo Schiappacasse Macchiavello, who noted a tree that
produced bigger fruit in his compact ‘Hass’ cultivated avo-
cado orchard in the Mallarauco Valley in Chile.

The ‘Flavia’ discovered tree is a spontaneously mutated
bud (a whole tree mutation) from ‘Hass’. Budwood from the
originally discovered tree was grafted into new trees and
planted in 2001 as a non-propagation trial in Quillota, Chile,
and has since been observed to remain true to type over
successive asexually propagated generations.

The tree was discovered, after observing through several
years, to have fruit size that was consistently larger than the
other ‘Hass’ trees from the orchard. After several evaluations,
it has been determined that the tree consistently produces
larger fruit than ‘Hass’. Moreover, ‘Flavia’ reaches minimum
dry matter level (23% DM), and thus can be harvested, four to
five weeks earlier than regular ‘Hass’. Also, the stem is wider
than in ‘Hass’, which is a characteristic in more than 80% of
the ‘Flavia’ fruits.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying photographs show specimens of the
tree and plant parts of the new ‘Flavia’ variety.

FIG. 1 is a photograph of the originally discovered ‘Flavia’
mother tree;

FIG. 2 is a photograph of the originally discovered ‘Flavia’
mother tree with a man for size reference;

FIG. 3 is a photograph depicting fruit and leaves of ‘Flav-
via’;

FIG. 4 is a photograph depicting fruit and leaves next to a hand holding a pen for size reference;

FIG. 5 is a photograph of four 'Flavia' fruit above four typical 'Hass' fruit, illustrating the enlarged nature of the 'Flavia' fruit;

FIG. 6 is a photograph depicting sectioned fruit of the 'Flavia' above regular 'Hass' fruit;

FIG. 7 is a photograph depicting the stem width comparison between 'Flavia' (left) and 'Hass' (right) for similar fruit sizes; and

FIG. 8 is a photograph depicting a stem width comparison between 'Flavia' (left) and 'Hass' (right) for similar fruit sizes.

DETAILED BOTANICAL DESCRIPTION OF THE VARIETY

The following detailed botanical description is based on observations and evaluations conducted between 2003 and 2006 of a trial planted in 2001 in Quillota, Chile. 'Flavia' at times is referred to by the code names GAMA 4022 or Andes 3. The four-year study evaluated and compared the 'Flavia' trees to similar trees grafted with 'Hass'. Budwood from the mother 'Flavia' tree, shown in FIGS. 1 and 2, was grafted into new trees which were planted as part of the non-propagation trial.

Aside from the fact that the 'Flavia' produces larger fruit than the regular 'Hass', and reaches dry minimum matter level four to five weeks earlier than regular 'Hass', it is otherwise nearly identical in color and appearance as to regular 'Hass' trees.

More particularly, the tree presents a vigorous upright growth, as illustrated in FIGS. 1 and 2. The young shoots are reddish in color. The young shoot lenticels are purple in color. The anise aroma of the leaf blade is absent or very weak, similar to 'Hass'. The inflorescence flowering type is similar to 'Hass' Type A.

The main botanical characteristics of the tree, including the leafs and flowers thereof are as follows:

Tree growth habit: Spreading.

Leaf blade anise aroma: Absent or weak.

Flowering type: A.

Seed (shape in longitudinal section): Ovate.

Tree size compared to 'Hass' (5 year old trees) planted at 6×2 m:

1. 'Flavia'.—Total Height: 3.56 meters (m). Length in Row: 2.62 m. Length Between rows: 3.42 m.
2. 'Hass'.—Total Height: 4.15 m. Length Between Row: 2.78 m. Length Between rows: 4.06 m.

Vegetative structures colors:

*Pedice*l.—Pantone 2290C.

Spring vegetative flush.—Pantone 2278C.

1 year old twig.—Pantone 370C.

Twigs older than 1 year.—Pantone 7741C.

Leaf description:

1. *Color*.—Upper Side color: Pantone 7735CP. Lower side color: Pantone 2263CP.
2. *Shape*.—Limb: Elliptic. Apex: Acuminate. Leaf torsion in all length: Absent. Torsion of the apex: Absent. Leaf Border undulation: Medium.

Leaf size: Mature spring flush.

	'Hass'	'Flavia'
Length (cm)	15.28	15.46
Width (cm)	6.45	6.47
Pedicel Length (cm)	4.85	4.98
Relation Length/Width	2.38	2.41

Flower description:

Flower type.—A.

Developing inflorescence.—Pantone 7486C-Pantone 7485C.

Expanded inflorescence.—Pantone 393C.

TABLE 1

Trunk Perimeter of 'Hass' and 'Flavia'			
Year	'Hass'	'Flavia'	
2003	23.9 s	What is claimed is: 0.1 s	
What is claimed is: 004	What is claimed is: 4.3 s	What is claimed is: 0.4 s	
What is claimed is: 005	What is claimed is: 5.1	What is claimed is: 2.7	
What is claimed is: 006	What is claimed is: 1.4 s	What is claimed is: 7.6 s	

In each row "s" indicates statistical difference (T-Student. P<0.05).

With respect to the fruit, the surface of the mature fruit is rough, similar to 'Hass', as shown in FIGS. 3-5. The thickness of the pedicel compared to the peduncle, at the junction, is thicker. The pedicel length is medium. The pedicel shape is cylindrical. There is no "nail head" pedicel. The thickness of the ripe fruit skin is moderately thick, similar to 'Hass'. Also similar to 'Hass', the ripe fruit color is a dark purple or black, as classified in the fruit color chart of The New Zealand Institute for Plant & Food Research Ltd.

However, unlike 'Hass', the shape in the longitudinal section or lateral view of the seed is generally ovate, as illustrated in FIG. 6. With respect to the fruit shape, the polar/equatorial relation of the fruit is higher in 'Flavia' than in 'Hass', as seen in FIGS. 5 and 6, making the fruit more elongated than 'Hass'. The seed of the 'Flavia' fruit is bigger than that of 'Hass', as shown in FIG. 6, and the seed/pulp relation is greater in 'Flavia' than in 'Hass'. As can be seen in FIG. 5, the fruit of 'Flavia' is much larger than that of regular 'Hass'.

With respect to the fruit, the stem width of the 'Flavia' is greater (11.57 mm) on average than 'Hass' (9.24 mm), as shown in FIGS. 7 and 8.

The following are additional fruit characteristics of 'Flavia':

	'Hass'	'Flavia'
Stem Color	Pantone 7495C	Pantone 7495C
Color of Fruit on Tree (Green)	Pantone 2427C	Pantone 2278C
Lenticel Color	Pantone 2294C	Pantone 2293C

Color of fruit when ripe (according to New Zealand Plant and Food Institute): Purple to Black.

TABLE 2

Fruit Production per Tree (Kg/Tree)		
Year	'Hass'	'Flavia'
2003	5.8	7.1
2004	13.4	20.7
2005	30.1	30.8
2006	31.7	41.0

In each row "s" indicates statistical difference (T-Student. P<0.05).

TABLE 3

Mean Number of fruits per Tree		
Year	'Hass'	'Flavia'
2003	23	24
2004	57	71
2005	129	108
2006	131	142.4

TABLE 4

Average fruit Weight (g)		
Year	'Hass'	'Flavia'
2003	248.3 s	302.7 s
2004	236.2 s	291.1 s
2005	234.0 s	285.3 s
2006	242.8 s	287.9 s

In each row "s" indicates statistical difference (T-Student. P<0.05).

TABLE 6

Fruit length (DP), fruit equatorial diameter (DE) and their relation (DP/DE) for each cultivar's fruit			
Variety	Polar Diameter (DP). mm	Equatorial diameter (DE). mm	relationship DP/DE
'Hass'	97.7 s	70.7 s	1.38 s
'Flavia'	106.0 s	72.6 s	1.46 s

In each column "s" indicates statistical difference (T-Student. P<0.05).

TABLE 7

Results of fruit Characteristics on size 50 fruits		
Parameter	'Hass'	'Flavia'
Seed weight (g)	24.8 b	32.2 a
Pulp weight (g)	214.1 b	207.4 a
% seed weight /fruit weight	10.4 b	13.4 a
Peduncle Insertion *	1.7 a	1.9 a

p < 0.05 Test de Student;

* Stem Insertion Angle: 1 = 70°-90. 2 = 50°-70. 3 = <50°.

p<0.05 Test de Student; * Stem Insertion Angle: 1=70°-90. 2=50°-70°. 3=<50°.

Another distinctive feature of 'Flavia' is that the fruit matures for harvesting four to five weeks earlier than regular 'Hass'. The time of fruit maturity for harvesting, when the fruit reaches minimum dry matter level (23% DM) is medium to late, between 'Fuerte' and 'Hass'.

TABLE 8

Dates in which cultivar reached harvest maturity(23% Dry Matter)		
Year	'Hass'	'Flavia'
2003	21 August	24 July
2004	09 September	12 August
2005	29 September	25 August
2006	07 September	03 August

What is claimed is:

1. A new and distinct variety of avocado tree, substantially as illustrated and described herein.

* * * * *



FIG. 1



FIG. 2



FIG. 3

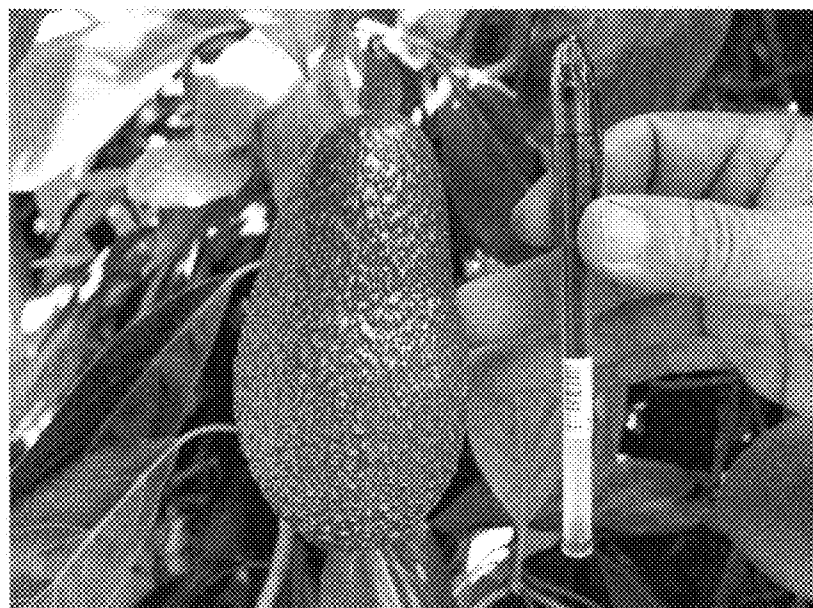


FIG. 4

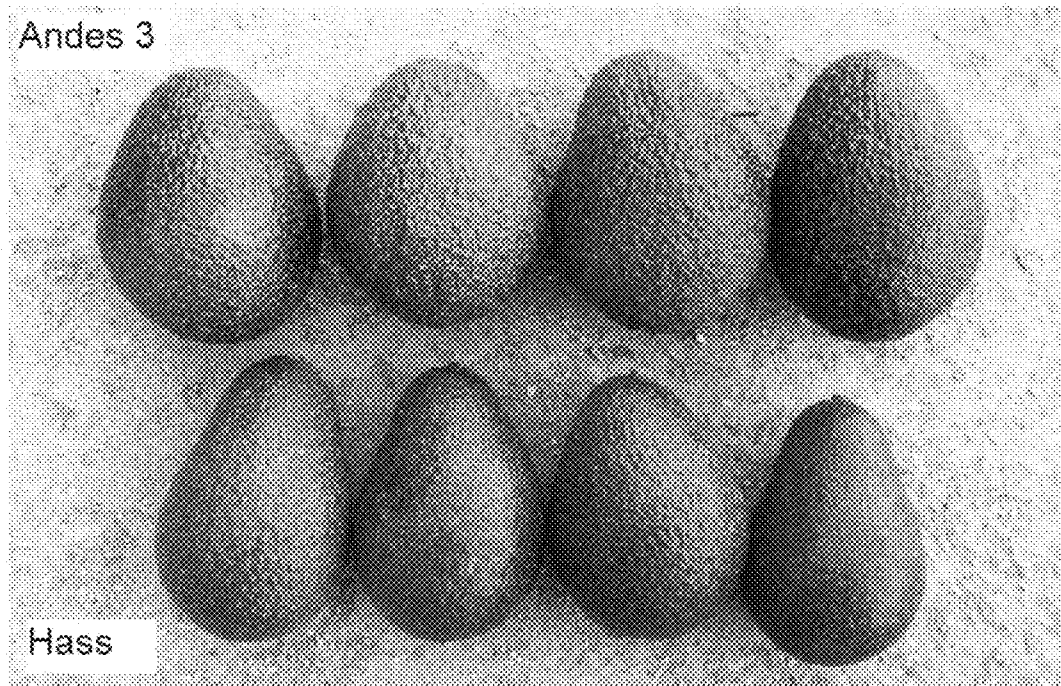


FIG. 5

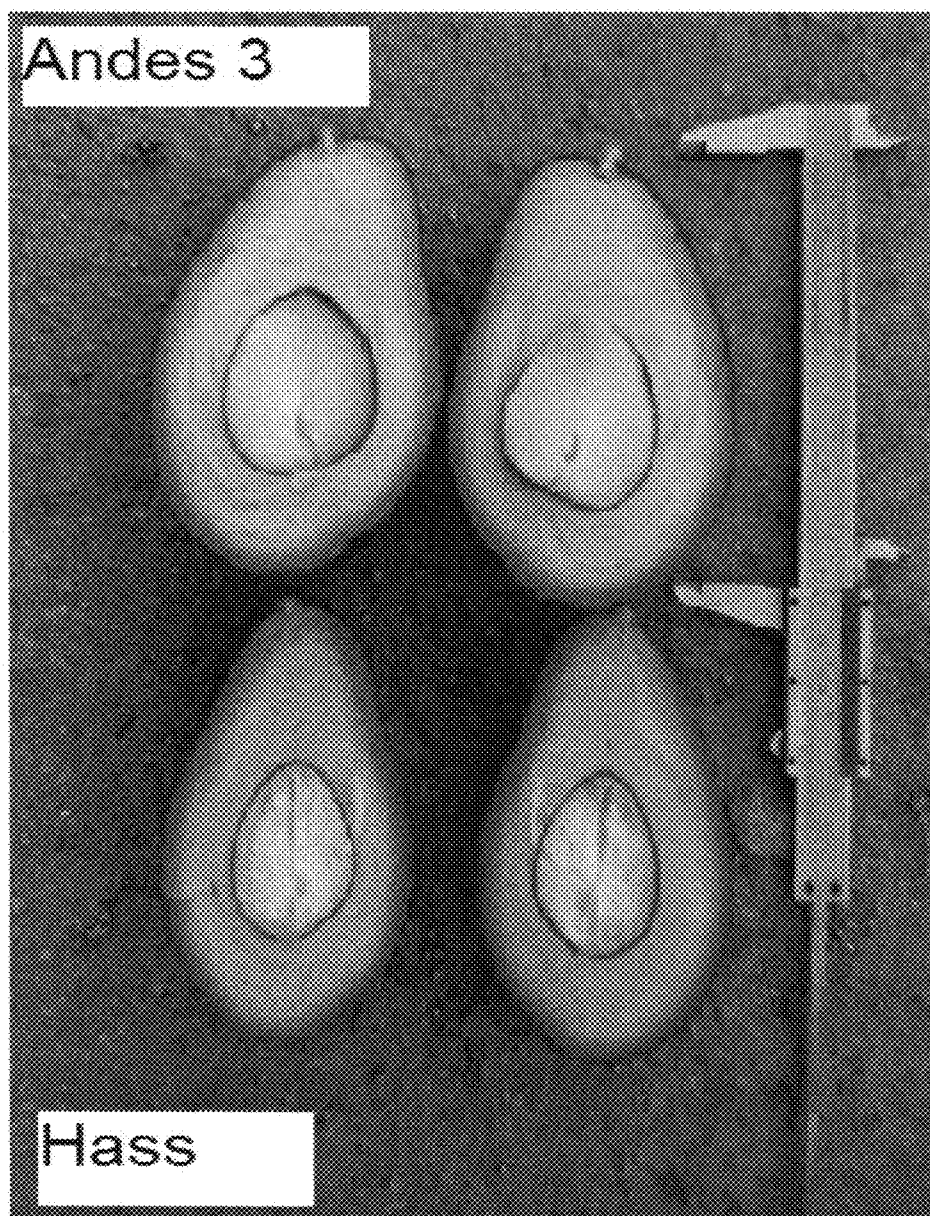


FIG. 6



FIG. 7

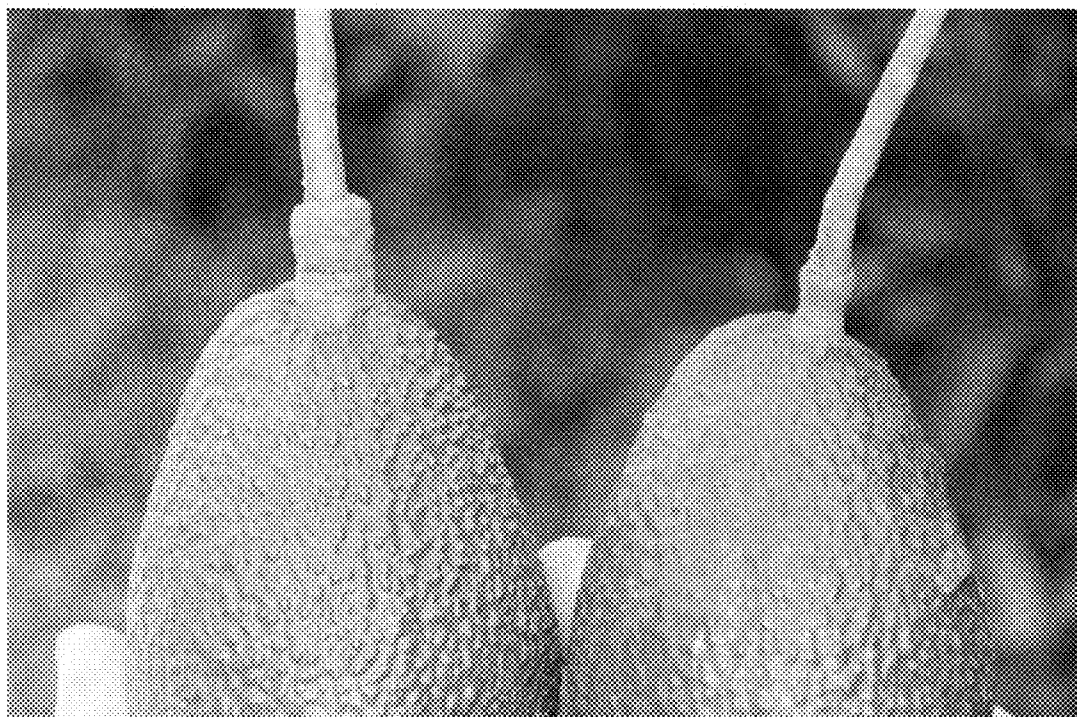


FIG. 8