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Holland et al.

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(54) **ALMOND TREE NAMED ‘ZOHAR’**

(30) **Foreign Application Priority Data**

(50) Latin Name: *Prunus dulcis*
Varietal Denomination: **Zohar**

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(52) **U.S. Cl.** **Plt./155**

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(58) **Field of Classification Search** Plt./155
See application file for complete search history.

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(57) **ABSTRACT**
A new and distinct almond variety of *Prunus dulcis* named ‘ZOHAR’, particularly characterized by self-fertility and production of high quality almond fruit with a large kernel.

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3 Drawing Sheets

1

2

Botanical name of the genus and species of the plant claimed: *Prunus dulcis*.
Variety denomination: ‘ZOHAR’.
This application claims priority under 35 U.S.C. § 119(f) of the Israeli Plant Breeders’ Rights Application No. 4168/08 filed Oct. 29, 2008.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct variety of almond tree, botanically known as *Prunus dulcis*, synonymous with *Prunus amygdalus* Batsch., *Amygdalus communis* L., and *Amygdalus dulcis* Mill., belongs to the Rosaceae family, and is hereinafter referred to by the variety denomination ‘ZOHAR’.

The new *Prunus dulcis* ‘ZOHAR’ is a product of a controlled breeding program conducted by the inventors Doron Holland, Irit Bar-Ya’akov, Kamel Hatib and Reuven Birger in the Yizre’el Valley, Israel. The objective of the breeding program was to develop a new *Prunus dulcis* variety which is self fertile and produces almond fruit of high quality and with a large kernel.

The new *Prunus dulcis* ‘ZOHAR’ originated from a cross made by the inventors in 2001 in Yizre’el Valley, Israel. The female or seed parent is the French, self-fertile *Prunus dulcis* variety designated ‘TNP335(89)(887)’ (unpatented), and the male or pollen parent is the local *Prunus dulcis* variety designated ‘Um El Fahem’ (unpatented). The new *Prunus dulcis* ‘ZOHAR’ was selected by the inventors from the progeny of the stated cross in a controlled environment in 2005 in Yizre’el Valley, Israel.

Asexual propagation of the new *Prunus dulcis* ‘ZOHAR’ by grafting onto (*Prunus persica* (L.) Batsch×*Prunus amygdalus* Batsch) rootstock designated GF.677 (unpatented), was first performed in February of 2006 in the orchard located in Yizre’el Valley, Israel. Asexual propagation of the new *Prunus dulcis* ‘ZOHAR’ has demonstrated that the com-

bination of characteristics as herein disclosed for the new variety is firmly fixed and retained through successive generations of asexual propagation. The new variety propagates true-to-type.

BRIEF DESCRIPTION OF THE INVENTION

The following traits have been repeatedly observed and are determined to be characteristics of ‘ZOHAR’ which in combination distinguishes this almond tree as a new, unique and distinct variety:
1. self-fertility;
2. production of high quality almond fruit; and
3. large kernel of almond fruit.
In comparison to the parental varieties, ‘TNP335(89)(887)’ (unpatented) and ‘Um El Fahem’ (unpatented), ‘ZOHAR’ differs primarily in the traits listed in Table 1.

TABLE 1

Comparison with parent varieties.			
Trait	New Variety ‘ZOHAR’	Female Parent ‘TNP335(89)(887)’ (unpatented)	Male Parent ‘Um El Fahem’ (unpatented)
Self-fertility	Present	Present	Absent
Beginning of flowering	February	March	February
Time of Ripening	July	August	July
Dry Fruit shell	Hard	Hard, Complete	Soft

Among the many commercial varieties known to the present inventors, the variety most similar to ‘ZOHAR’ is the female parent, ‘TNP335(89)(887)’, as described in the foregoing Table 1.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying photographs illustrate the overall appearance of the new *Prunus dulcis* ‘ZOHAR’ showing the

colors as true as is reasonably possible with colored reproductions of this type. Colors in the photographs may differ slightly from the color values cited in the detailed botanical description, which accurately describe the color of 'ZOHAR'.

FIG. 1, taken in 2009, shows a profile of a fruit-bearing, four-year-old, tree of 'ZOHAR'.

FIG. 2 shows different close-up images of typical dry fruit of 'ZOHAR'.

FIG. 3 shows different close-up images of typical kernels of mature fruit of 'ZOHAR'.

DETAILED BOTANICAL DESCRIPTION

The new *Prunus dulcis* 'ZOHAR' 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 almond tree.

The aforementioned photographs, together with the following observations, measurements and values describe trees of 'ZOHAR' as grown in Yizre'el Valley, Israel, in an open orchard, under conditions which closely approximate those generally used in commercial practice. The trees of 'ZOHAR' were planted in clay grumusol (vertisol) soil at an elevation of about 100 meters above sea level, at latitude 32°42'N., longitude 35°11'E. Yizre'el Valley is characterized by a Mediterranean subtropical climate, with an average annual rainfall of about 580 mm concentrated from November through March. Mean diurnal minimum temperature in January is 6° C. (43° F.), and mean diurnal maximum temperature in July is 33° C. (91° F.). Fertilization of about 250 kg/ha N and 300 kg/ha K is administered per year.

Unless otherwise stated, the detailed botanical description includes observations, measurements and values based on four year old 'ZOHAR' trees grown in Yizre'el Valley, Israel, from 2006 to 2009. Quantified measurements are expressed as an average of measurements taken from a number of trees of 'ZOHAR'. 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.), 1986 edition, except where general colors of ordinary significance are used. Color values were taken under conditions of full sunlight.

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

Classification:

Botanical.—*Prunus dulcis*.

Parentage:

Female or seed parent.—*Prunus dulcis* 'TNP335(89) (887)' (unpatented).

Male or pollen parent.—*Prunus dulcis* 'Um El Fahem' (unpatented).

Propagation: Grafting onto unpatented (*Prunus persica* × *Prunus amygdalus*) rootstock designated GF.677.

Growing conditions:

Light intensities.—Full sunlight.

Temperature.—Mean diurnal minimum temperature in January is 6° C. (43° F.), and mean Maximum temperature in July is 33° C. (91° F.).

Fertilization.—About 250 kg/ha N and 300 kg/ha K is administered per year.

Growth regulators.—No growth regulators are used.

Table of characteristics:

Tree.—Time of leaf bud burst: end of February. Vigor: strong. General shape: upright, narrow. Habit: a medium to large-sized tree with one trunk and 3 or 4 main branches; main branches spreading; crown symmetrical and elongated in shape. Branching habit: main branches angle is 30° to 60° with respect to trunk when allowed to grow naturally. Type of bearing: fruit set on branches mainly on distal part of branch. Height: about 5 m. Diameter of crown: about 11 m. Density of foliage: dense. Number of main branches per tree: 3 or 4 resulting from pruning. Length of main branches: varies; maximum of about 4 m; minimum of about 3 m. on average, branches grow about 50 cm to 60 cm per growing season, new branchlets form, radiating from the older, primary branch.

Trunk.—Diameter of trunk: 44-45 cm (rootstock). Color of bark: greyed brown. Surface of bark: semi rough. Lenticles length: 1.5 to 2.5 cm. Lenticels width: about 0.5 cm. Lenticles density: medium. Lenticles shape: elongated. Lenticles color: grey RHS 201 A.

Current season shoot.—Shape in cross section: round. Length: up to 1.5 m. Thickness: 2-4 mm. Color: green RHS 146 C. Anthocyanin coloration: present on sunny side. Intensity of anthocyanin coloration: medium.

One-year-old shoot.—Shape in cross section: round. Length: up to 2 m. Thickness: about 0.5 cm. Color: green RHS 146 C. Anthocyanin coloration: present, RHS 176 B. Intensity of anthocyanin coloration: strong. Pubescence: glabrous. Feathering: usually none. Lenticles: none. Spurs: not yet developed.

Foliage.—Density: medium.

Leaf blade.—Length: 70-90 mm. Width: 25-33 mm. Length/width ratio: small. Shape: broad ovate. Shape of base: obtuse. Shape of apex: acute. Shape in cross section: concave. Green color upper side: dark green between RHS 147 A and RHS 147 B. Green color lower side: gray green RHS 137 C. Undulation of margin: medium. Incisions of margin: crenate. Depth of incision: 1 mm. Venation type: pinnate venation from central vein to the leaf edge. Prominence of main vein on lower side: very strong. Color of main vein on lower side: gray green RHS 147 D.

Petiole.—Length: 20-35 mm. Thickness: 1-2 mm. Color on upper side: gray green RHS 147 C. Color on lower side: gray green RHS 147 D. Shape in cross section: concave.

Flower buds.—Distribution: rarely on spurs.

Flower bud.—Shape: ovate. Length: 8-10 mm. Diameter: 5-6 mm. Color: brown between RHS 200 C and RHS 200 D. Hairiness: covered with white hairs RHS 155 C. Attitude towards shoot: held out. Color of tip of petals: white pink RHS 56 D, fades away with development.

Vegetative bud.—Shape: conical. Length: 6-7 mm. Diameter: 3-4 mm. Color: brown RHS 200 C. Hairiness: covered with white RHS 155 C. Attitude towards shoot: held out. Time of development of vegetative bud: after flowering.

Flower.—Type: flowers are born single or clustered with 2 or 3 per cluster mainly on branches rarely on spurs. Diameter: 25-35 mm. Number of stamen: numerous.

Number of pistils: one. Position of stigma compared with anthers: at level or slightly above. Fragrance: none or very slight.

Petal.—Number of petals: five. Shape: rounded. Shape of apex: rounded. Shape of tip: indented. Depth of incision tip: 1-2 mm. Shape of Base: nearly right angle with tiny claw. Length: 16-20 mm. Width: 12-16 mm. Undulation of margin: medium. Margin: entire. Color of upper side: white RHS 155 D. Color of lower side: white RHS 155 D with pink blush RHS 62 C.

Sepal.—Number of sepals per flower: five. Shape: broad elliptic. Length: 3-4 mm. Width: 3-4 mm. Shape of apex: rounded. Margin: entire. Color of outer side: grayish green RHS 138 B with strong anthocyanin coloration RHS 184 B. Color of inner side: green RHS 145 B sometimes with medium anthocyanin coloration RHS 184 B. Internal color at base: dark orange RHS 23 B. Hairiness: medium.

Stamen.—Filament length: 4-6 mm. Filament color: white RHS 155 A with purple RHS 183 D. Anthocyanin coloration of filament: present. Anther size: minuscule. Pollen color: yellow RHS 5 B.

Style.—Style length: 10-14 mm. Style color: yellowish green RHS 149 D. Style hairiness: strong. Style hairs color: white.

Stigma.—Size: very small. Color: yellowish green RHS 149 D.

Ovary.—Shape: cylindrical. Pubescence: very strong.

Green fruit.—Type: drupe. Size: medium. Length: 40-45 mm. Width: 28-35 mm. Thickness of exocarp: 3-5 mm. Shape: elongated. Shape of apex: right angle. Shape of base: truncate. Color of outer side: yellow green RHS 145 B. Color of inner side: light green RHS 145 C. Pubescence: strong. Surface: smooth velvety. Color of pubescence: very light green RHS 145 D. Time of maturity: end July.

Dry fruit.—Shape: elongated. Average weight: 8 g. Length: 32-39 mm. Width: 25-28 mm. Thickness: 17-18 mm. Color: medium brown RHS 164 B. Sur-

face: smooth. Shape of apex: right angle with mucron. Thickness of endocarp: thick. Resistance to cracking: strong. Left-over of hull (Residue of exocarp on dry fruit): none. Keel development: weak. Splitting: absent.

Fruit.—Percentage of double kernels: none. Eating quality: excellent. Keeping quality: dried fruit and nuts can be stored for over 1 year. Maturity when described: ripe for eating. Maturity period: end of July in Yizre'el Valley, Israel. Date of first and last picking (harvest): about July 15th and July 30th in Newe Yaar, Israel. Distribution on tree: well distributed throughout.

Kernel.—Shape: ovate. Size: large. Average weight: 1.6 g. Length: 24-28 mm. Width: 14-17 mm. Thickness: 7-8 mm. Main color: brown red RHS 164 A. Rugosity: slightly rough. Taste: sweet.

Time of beginning of flowering.—Beginning of flowering end of January in Yizre'el Valley, Israel.

Flowering period.—Up to 10 days depending on weather conditions.

Cropping behavior.—Harvest starts and ends during 2 weeks from the end of July in Yizre'el Valley, Israel.

Production per year.—Fruit production depends on fruit set which depends on prevailing weather conditions, and subsequent development of fruit.

Market: Food market.

Disease/pest resistance: No atypical resistance has been noted.

Disease/pest susceptibility: No atypical resistance has been noted.

Winter hardiness: Tolerant to temperatures down to -3° C. without observed damage to wood and buds of dormant almond trees.

Drought/heat tolerance: Tolerant to temperatures up to 40° C., growth is limited by drought periods without irrigation. What is claimed is:

1. A new and distinct variety of Almond tree named 'ZOHAR', as illustrated and described herein.

* * * * *

FIG. 1



FIG. 2



FIG. 3

