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Izsak et al.

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[54] **STRAWBERRY PLANT NAMED 'MALAH'**

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[58] **Field of Search** Plt./48, 49, 208, Plt./209

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[57] **ABSTRACT**

A new and distinct variety of strawberry (*Fragaria L.*) called 'Malah' is a cross between 'Dorit' and 'Chandler', and flowers early on a scale of "very early" to "very late."

2 Drawing Sheets

FIELD OF THE INVENTION

The present invention relates to a new and distinct variety of strawberry (*Fragaria L.*) called 'Malah'.

BACKGROUND

This new variety was developed from an organized scientifically designated breeding program, carried out at the Agricultural Research Organization, the Volcani center, Bet Dagan, Israel. This new variety originated as a single seedling selected from a seedling population obtained from crosses between the strawberry varieties 'Dorit' and 'Chandler'. The variety was asexually vegetatively propagated at Bet Dagan, Israel through runners and the propagation ran true.

SUMMARY OF THE INVENTION

The new variety 'Malah' is able to grow in September and produce fruit starting in November and lasting until summer. The production of fruit beginning in November (Northern Hemisphere, latitude 30–33 degrees) is two months earlier than short day varieties of *Fragaria L.* The fruit of the 'Malah' variety is characterized by good taste, good shape and good size.

BRIEF DESCRIPTION OF THE FIGURES

FIG. **1**: Photograph of the 'Malah' variety, illustrating the fruits.

FIG. **2**: Photograph of the 'Malah' variety, illustrating a cross-section of the fruits.

FIG. **3**: Photograph of the 'Malah' variety, illustrating the entire plant with foliage, flowers and fruit.

DETAILED BOTANICAL DESCRIPTION OF THE INVENTION

The 'Malah' variety was grown in winter, under polyethylene tunnels in Israel. 'Malah' is an infra short day variety, which flowers earlier than short day type strawberry varieties. Infra-Short-Day (I.S.D.) varieties are defined as varieties which initiate flower bud primordia under long light regimes of 13–14 hours at the time night temperatures are about 22° C., compared to strawberry types classified as short-day or day-neutral, which do not initiate flower bud primordia under the above-mentioned conditions, thus resulting in early flowering and fruit production. The plants are grown in polyethylene tunnels to prevent malformation

of the fruit that can be caused by wind and rain. Flowering and fruit production are not affected by the use of polyethylene tunnels.

This production procedure is utillized in normal agricultural practices by the skilled artisan and does not involve temperature or light control. Plants were stored at 0° C. from January through April. They were then planted in the nursery without further treatment. Runners with plantlets were produced during summer. These young plantlets were collected from the nursery in September and transferred to raised beds. Average temperatures at that time of the year are 30° C. during the day and 22° C. at night. Water and fertilizers were applied through drip irrigation.

An example of an optimum planting date is between September 5 and 15, with the approximate date of flowering on October 5–15, and the approximate date of first fruiting on November 5–15; or if planting is carried out between September 25 and 30, flowering occurs approximately on October 25–30, and first fruiting on November 25–30. Flowering is not induced by chilling, but by natural exposure to short day length (long nights) characteristic of late fall and early winter.

Strawberry plants in general are self-fertile, as is 'Malah'; no pollinator is needed as pollination is brought about by insects and wind.

Color readings described herein were taken under natural light conditions and color identifications were made by reference to The Royal Horticultural Society Color Chart (R.H.S.C.C.) except where common terms of color definition are employed.

The pertinent characteristics of the present invention are presented in Table 1 and Table 2. Additionally, the variety 'Malah' (1) has no tendency toward fruit malformation; (2) disease resistance appears normal in that no particular problematic conditions arose during trials; and (3) the type of bearing is not remontant, i.e. 'Malah' blooms continuously during late fall and winter.

Fruit shape of 'Malah' is longer than broad, with primary, secondary and tertiary fruit possessing almost similar shape (Table 2). The fruit is of strong firmness with an orange red color (Table 2).

The variety 'Malah' flowers two months earlier than known short-day strawberry varieties. A close known comparable variety would be Dorit (Table 1); also see the new varieties mentioned in U.S. Plant Pat. No. 7,881 (SHARON); U.S. Plant Pat. No. 7,876 (SHALOM); U.S. Plant Pat. No. 7,865 (SMADAR); U.S. Plant Pat. No. 7,869

(Dorit); U.S. Plant Pat. No. 8,746 (OFRA); U.S. Plant Pat. No. 8,748 (Virginia); U.S. Plant Pat. No. 8,747 (NAMA).

Additionally early flowering results in early fruit production. Total Soluble Solids (T.S.S.), percent acidity, aroma evaluation and taste are presented in Table 4, by comparing to the varieties listed in Table 3.

TABLE 1

PLANT CHARACTERISTICS OF 'MALAH'

MORPHOGICAL TRAIT	DESCRIPTION
Botanical Classification	Fragaria L.
Plant	
1) Height	16–18 cm
2) Diameter	31–38 cm
3) Habit	Globose
4) Density	Dense
5) Vigor	Medium to strong
Leaf:	
1) Length	20–24 cm
2) Width	15–18 cm
3) Green color of Upper Side	Very dark RHS ca. 147 A
4) Blistering	Medium
5) Cross section	Concave
6) No. of leaflets	Sometimes > 3
Petiole	
1) Length	11–14 cm
2) Thickness	4–5 mm
3) Pubescence	Strong
4) Green Color	Light RHS ca. 144 B
Terminal leaflet	
1) Length/Width ratio	As long as broad
2) Shape of base	Obtuse
3) Shape of Teeth	Rounded
4) Length	6–7 cm
5) Width	6–7 cm
Calyx	
1) Diameter of Primary Calyx	50–57 mm
2) Diameter of Secondary Calyx	35–48 mm
3) Diameter of Tertiary Calyx	30–40 mm
4) Size of Inner Calyx in relation to Outer Calyx	Larger
Flower	
1) Diameter of Primary Flower	28–30 mm
2) Diameter of Secondary Flower	22–30 mm
3) Diameter of Tertiary Flower	25–32 mm
4) Spacing of petals	Touching
5) Petal length	10–15 mm
6) Petal width	11–14 mm
7) Petal length/width	As long broad
8) Time of beginning flowering	Early
9) Fragrance	None
Stolon	
1) Number per Plant ca. 18	
2) Thickness	3.8–5.0 mm
3) Pubescence	Medium
4) Anthocyanin coloration	Absent or very weak
Inflorescence	
1) Position relative to foliage	Above
2) Peduncle length	17–18 cm
3) Peduncle thickness	ca, 3 mm
4) Peduncle color	light green
5) Peduncle pubescence	strong

The description of 'Malah' is based on the test guidelines for *Fragaria L.* of the International Union for the Protection of New Plant Varieties (UPOV). Only characteristics which are relevant for comparing varieties are listed; for example, there are no varietal differences acknowledged in the characteristic "color of lower side of leaf".

The time of beginning of fowering is scaled as from "very early" to "very late". "Very early" is defined as approximately the first week of October under the prevailing conditions, while "very late" is defined as approximately the first week of December. 'Malah' is scaled as "early" while 'Dorit' is between "very early to early" and "early", and 'Chandler' is "very late".

Strawberry plants have dichotome inflorescences, thus producing one primary, two secondary and four tertiary flowers per inflorescence. Flowers of higher order do not normally produce commercial fruit.

TABLE 2

FRUIT CHARACTERISTICS OF 'MALAH'

CHARACTERISTIC	DESCRIPTION
Time of first ripening	Early*****
Primary Fruit	
1) Length	48–55 mm
2) Width	38–45 mm
3) Shape	Bi-conical
4) Weight	ca. 40 g
Secondary Fruit	
1) Length	45–53 mm
2) Width	35–43 mm
3) Shape	Bi-conical
4) Weight	ca. 28 g
Tertiary Fruit	Medium
1) Length	40–48 mm
2) Width	30–36 mm
3) Shape	Cylindrical
4) Weight	ca 21 g
Band without achenes	Medium
Unevenness of surface	Absent or very weak
Color	Orange red 43A
Evenness of color	Uneven
Glossiness	Medium
Insertion of achenes	Above surface
Insertion of calyx	Slight basin
Pose of calyx segments	Clasping or detached
Size of calyx in relation to fruit diameter	Very large
Adherence of calyx	Strong
Firmness	Firm
Color of Flesh	Light red 42D
Evenness of flesh color	Uneven
Sweetness	Strong to very strong.
Acidity	Medium

Note:
*****The time of first ripening, approximately one month after beginning of flowering, is scaled as from "very early" to "very late". "Very early" is defined as approximately the first week of November, while "very. late" is defined as the first week of January. 'MALAH' is scaled as early, while "DORIT" is between "very early to early" and "early", and "CHANDLER" is "very late". The shape of 'MALAH' fruit is not similar to other varieties. There is no difference in shape of fruit between primary, secondary fruit. The tertiary fruit differs slightly from the former two. See Table 4.

TABLE 3

COMPARATIVE YIELD[1] OF 'MALAH'

	November	December	January	February	March	April
Malah	20	40	120	130	130	130
Dorit	30	70	100	100	100	100
Ofra	50	60	60	100	100	100

TABLE 3-continued

COMPARATIVE YIELD[1] OF 'MALAH'

	November	December	January	February	March	April
Chandler	0	0	30	150	150	120

[1]The time of beginning of ripening for 'MALAH' fruit is the end of November. The time of ripening for "Ofra" (infra short day U.S. Plant Pat. No. 8746) fruit is "very early". The time of ripening for "DORIT" (infra short day U.S. Plant Pat. No. 7869) fruit is between "very early to early" and "early". The time of ripening for "CHANDLER" (short day U.S. Plant Pat. No. 5262) fruit is "very late".
Note:
Average yield in g/m^2, in Ramat Hadar, Israel.

TABLE 4

COMPARATIVE FRUIT CHARACTERISTICS OF 'MALAH'

	T.S.S.[a]	Acidity[b]	Aroma[c]	Taste
Malah	12.0–14.0	1.2	5	Very good
Dorit	8.5–9.5	1.0	5	Good
Ofra	8.0–9.5	1.0	4	Good

TABLE 4-continued

COMPARATIVE FRUIT CHARACTERISTICS OF 'MALAH'

	T.S.S.[a]	Acidity[b]	Aroma[c]	Taste
Chandler	6.5–7.5	0.8	4	Slightly acidic

Notes:
[a]Total Soluble Solids (Sugars) expresses fruit sweetness and was determined with a refractometer; for strawberry fruit a T.S.S. of 14.0 is very sweet, while below 6.5 is not sweet.
[b]Percent of acidity was determined as follows: 2 cc of juice extract was mixed with 20 cc of water. Five drops of phenolphthaleine was added and the mixture was titrated with NaOH. The percent acidity is calculated as the quantity of NaOH (cc) × 0.32.
[c]The aroma value is a subjective expression obtained by tasting, using a scale from 1 (no aroma) to 5 (strong aroma).

What is claimed is:

1. A new distinct variety of strawberry plant substantially as illustrated and described and distinguished as being able to grow in September and produce fruit starting in November and lasting until summer, with fruit having a good taste and shape.

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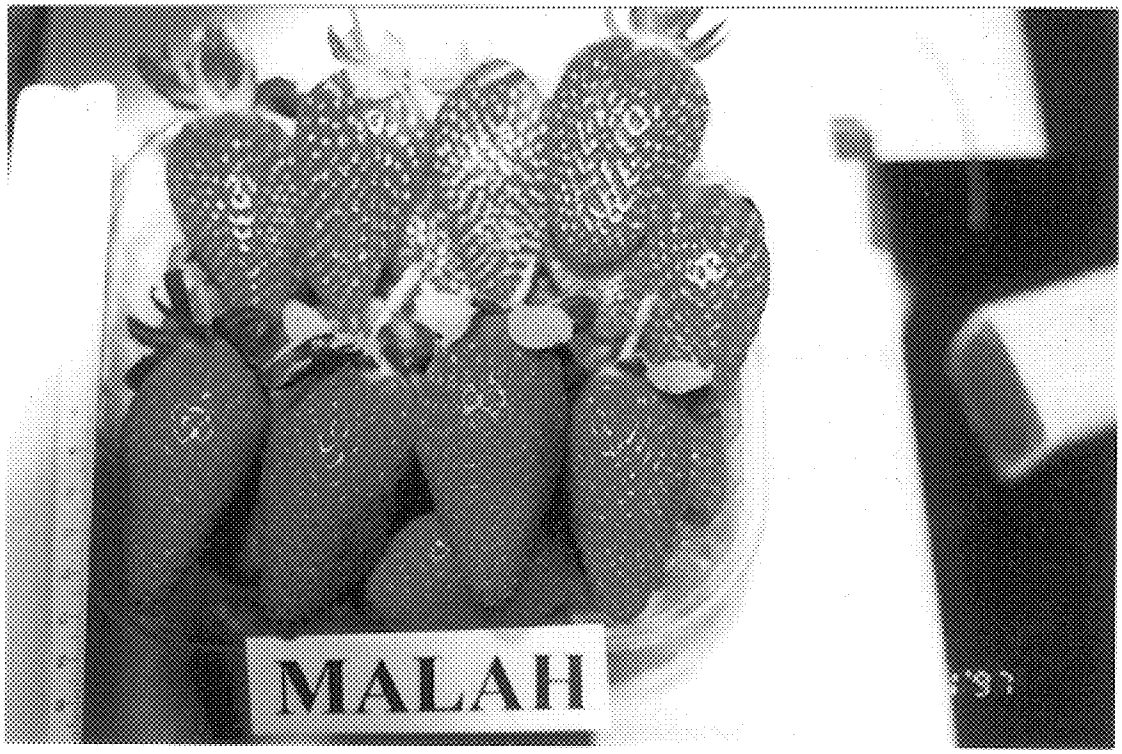

FIG 1

FIG 3

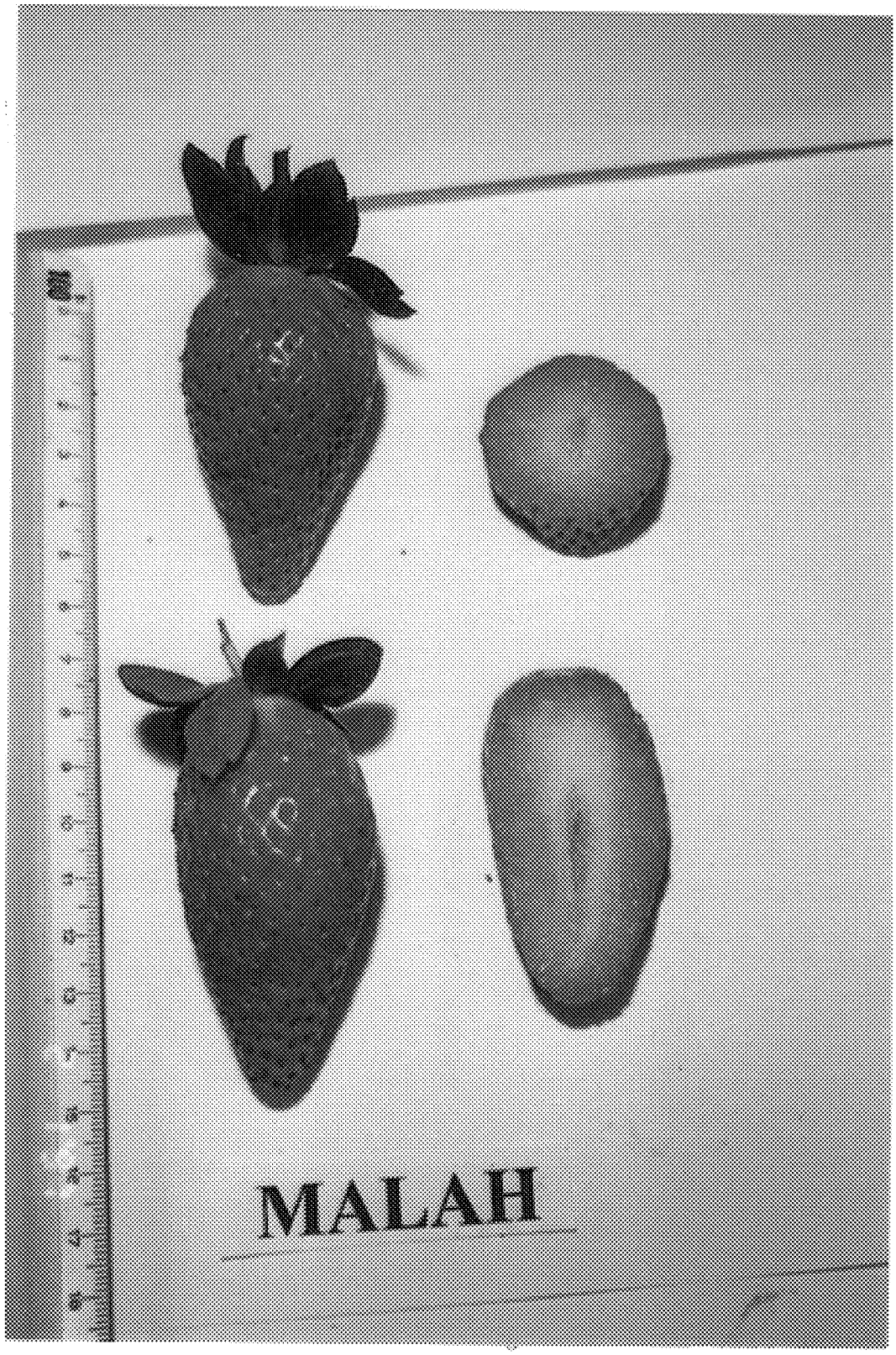

FIG 2