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Nelson et al.

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(54) **STRAWBERRY PLANT NAMED**
'FPS-15.2016-31'

CPC A01H 5/08; A01H 5/00; A01H 6/7409;
A01H 6/74

See application file for complete search history.

(50) Latin Name: *Fragaria x ananassa*
Varietal Denomination: **FPS-15.2016-31**

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP18,000 P2 9/2007 Meulenbroek
PP25,070 P3 11/2014 Leis et al.
PP29,794 P2 * 11/2018 Nelson Plt./209

* cited by examiner

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(57) **ABSTRACT**

This invention relates to a new and distinct variety of strawberry plant named 'FPS-15.2016-31'. This new strawberry plant named 'FPS-15.2016-31' is primarily adapted to the growing conditions of the central coast of California, and is primarily characterized by its red fruit color, medium fruit size and conical fruit shape; very good fruit flavor, very good skin firmness, with seeds held even with the surface; very smooth fruit surface, even fruit color, with none or very slight difference between primary and secondary fruits; plant that provides a large first flower flush, then follows up throughout the summer with a small second flush of flowers; large plant size, upright plant habit, with medium density and strong vigor; and stolons with very strong anthocyanin intensity, medium pubescence, and an upward attitude.

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

5 Drawing Sheets

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USPC **Plt./208**

(58) **Field of Classification Search**
USPC **Plt./208**

1

Latin name of the genus and species of the plant claimed:
Fragaria x ananassa.
Variety denomination: 'FPS-15.2016-31'.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct strawberry variety named 'FPS-15.2016-31'. This new variety is a result of a controlled cross made in 2015 in an ongoing breeding program between strawberry variety designated 'Sonata' as the seed (female) parent, and strawberry variety designated 'Murano' as the pollen (male) parent. The variety is botanically known as *Fragaria x ananassa*.

The seedling resulting from the aforementioned cross was selected from a controlled breeding plot in Santa Cruz County, California in the spring of 2017. After its selection, the new variety was asexually propagated by stolons in San Joaquin County, California. The new variety was tested extensively over the next several years in fruiting fields in Santa Cruz County, California. This propagation has demonstrated that the combination of traits disclosed herein as characterizing the new variety are fixed and remain true-to-type through successive generations of asexual reproduction.

BRIEF SUMMARY OF THE INVENTION

'FPS-15.2016-31' is primarily adapted to the climate and growing conditions of the central coast of California. The

2

nearby Pacific Ocean provides the humidity and moderate temperatures needed to produce a strong, vigorous plant and maintain fruit quality during the April through July production months.

The following traits have been repeatedly observed and are determined to be unique characteristics of 'FPS-15.2016-31', which in combination distinguish this strawberry plant as a new and distinct variety:

1. Fruit is red in color, medium in size and conical in shape;
2. Fruit has very good flavor, very good skin firmness, with seeds held even with the surface;
3. Fruit surface is very smooth, even in color, with none or very slight difference between primary and secondary fruits;
4. Plant provides a large first flower flush, then follows up throughout the summer with a small second flush of flowers;
5. Plant is large in size, upright in habit, with medium density and strong vigor; and
6. Stolons have a very strong anthocyanin intensity, with medium pubescence and an upward attitude.

The strawberry variety that is believed to be most closely related to the new variety 'FPS-15.2016-31' is 'Inspire' (U.S. Plant Pat. No. 29,794). In side-by-side comparisons to

the similar strawberry variety ‘Inspire’, ‘FPS-15.2016-31’ differs by the following combination of characteristics as described in Table 1.

TABLE 1

Characteristic	‘FPS-15.2016-31’	‘Inspire’ (U.S. Plant Pat. No. 29,794)
Fruit: flesh color	Red	Light red
Fruit: firmness of flesh	Medium	Very firm
Fruit: color of internal flesh	Medium red (43A)	Light red (34C)
Fruit: keeping quality	Good to very good (7-10 days)	Excellent (10-14 days)
Plant: size	Large (with strong vigor)	Medium (with medium vigor)
Stolon: anthocyanin coloration	Red purple group (59B)	Greyed red group (181B)
Stolon: Anthocyanin intensity	Very strong	Medium
Terminal leaf: shape of base	Obtuse	Acute
Foliage: size	Large	Medium
Foliage: shape in cross section	Slightly concave	Flat to slightly convex
Petiole: length	Long (25.9 cm)	Short (10.2 cm)

For identification, a series of molecular markers have been determined for this new variety.

‘FPS-15.2016-31’ differs from its parents, ‘Sonata’ and ‘Murano’ by the following combination of characteristics as described in Tables 2 and 3.

TABLE 2

Characteristic	‘FPS-15.2016-31’	‘Sonata’ (U.S. Plant Pat. No. 18,000)
Fruit: shape	Conical	Round
Fruit: size	Medium to large	Small to medium
Fruit: flavor	Very good	Fair
Plant: size	Large	Medium

TABLE 3

Characteristic	‘FPS-15.2016-31’	‘Murano’ (U.S. Plant Pat. No. 25,070)
Fruit: color	Orange red to red (42A)	Vivid red (45A)
Fruit: glossiness	Strong	Medium
Plant: fruit truss position relative to foliage	Beneath	Level with
Plant: size	Large	Medium to large

BRIEF DESCRIPTIONS OF THE PHOTOGRAPHS

The accompanying color photographs illustrate the overall appearance of typical specimens of the new strawberry variety ‘FPS-15.2016-31’ at various stages of development, as true as it is reasonably possible with color reproductions of this type. Color in the photographs may differ slightly from the color value cited in the botanical descriptions which accurately describe the color of ‘FPS-15.2016-31’. The depicted plant and plant parts of the new strawberry variety ‘FPS-15.2016-31’ are approximately three to four months old. The photographs were taken in Santa Cruz County, California.

FIG. 1 shows fruiting field characteristics of ‘FPS-15.2016-31’, taken in the month of May 2023;

FIG. 2 shows upper and lower surfaces of flower and flower parts of ‘FPS-15.2016-31’, taken in the month of May 2023;

FIG. 3 shows typical fruiting truss and truss parts of ‘FPS-15.2016-31’, taken in the month of May 2023;

FIG. 4 shows upper and lower surfaces of leaf and leaf parts of ‘FPS-15.2016-31’, taken in the month of May 2023; and

FIG. 5 shows internal and external mature fruit characteristics of ‘FPS-15.2016-31’, taken in the month of May 2023.

DETAILED BOTANICAL DESCRIPTION

The new variety ‘FPS-15.2016-31’ has not been observed under all possible environmental conditions. The characteristics of the new variety ‘FPS-15.2016-31’ may vary in detail, depending upon variations in environmental factors, including weather (temperature, humidity and light intensity), day length, soil type and location. In addition, the characteristics of any parental variety or comparison variety included in Tables 1, 2 and 3 of the present invention may vary in detail, depending upon variations in environmental factors, including weather (temperature, humidity and light intensity), day length, soil type and location.

The aforementioned photographs, together with the following description of the new variety ‘FPS-15.2016-31’, unless otherwise noted, are based on observations taken during the 2023 growing season in Santa Cruz County, California. These measurements and ratings were taken from plants of ‘FPS-15.2016-31’ dug from a low-elevation nursery located in San Joaquin County, California in December 2022 and planted approximately two months later in Santa Cruz County, California. The approximate age of the observed plants is three to four months. Yield observations including average weight and marketable yield, along with fruit quality characteristics including soluble solids, are averaged from six years of data collected from the 2018 through 2023 growing seasons. Flower measurements and characteristics are from secondary flowers unless otherwise noted. Fruit characteristics and measurements are from secondary fruit, unless otherwise noted.

Where noted, color terminology follows The Royal Horticultural Society Colour Chart, London, Sixth Edition (2015).

The following characteristics describe fruit, plant, stolon, foliage, fruiting truss, flower, reproductive organs and pest and disease characteristics of the new strawberry ‘FPS-15.2016-31’.

Fruit characteristics:

Color of mature fruit.—42A (ranges from orange red to red).

Color of internal flesh.—43A (medium red).

Color of core.—43C (light red).

Average length (cm).—4.4.

Average width (cm).—3.6.

Size.—Medium.

Average length/width ratio.—1.24 (ranges from slightly longer than broad to much longer than broad).

Hollow center average length (mm).—25.8.

Hollow center average width (mm).—9.1.

Hollow center expression.—Weak.

Season average weight (gm).—20.2.

Marketable yield season (gm/plant).—240.
Predominant shape.—Conical.
Difference in shape between primary and secondary fruit.—None or very slight.
Band without achenes.—Absent or very narrow.
Evenness of surface.—Even or very slightly uneven.
Evenness of color.—Even or very slightly uneven.
Glossiness.—Ranges from medium to strong.
Insertion of achenes.—Level with surface.
Average calyx diameter (cm).—4.2.
Position of calyx attachment.—Ranges from level to raised.
Attitude of sepals.—Downward.
Size of calyx in relation to fruit diameter.—Slightly larger.
Adherence of calyx (when fully ripe).—Strong.
Firmness of flesh.—Medium.
Keeping quality.—Very good.
Fruit market.—Fresh.
Post-harvest fruit longevity (at 1 to 3 degrees celsius).—Very good to good (7 to 10 days).
Distribution of red color of the flesh.—Marginal and central.
Flavor.—Very good.
Soluble solids (% brix).—9.0.
Achene color, shaded side.—153C (yellow green group).
Achene color, sun-exposed side.—184A (greyed purple group).
Achene average length (mm).—1.7.
Achene average width (mm).—1.3.
Achene average weight (mg).—0.7.
Achene average quantity per berry.—244.5.
Achene shape.—Ovate.

Time of flowering:
Flowering season (50% of plants with at least one flower).—Early (April in Watsonville, California).
Maturing season (50% of plants with mature fruit).—Early (May in Watsonville, California).
Flowering season.—April through June (in Watsonville, California).
Harvest season.—April through July (in Watsonville, California).
Harvest maturity.—Early to mid-season (May).
Plant hardiness.—Zone 9 (USDA Plant Hardiness Zone Map).
Type of bearing.—Not remontant.

Plant characteristics:
Average height (cm).—40.9.
Average spread (cm).—35.9.
Average crowns per plant.—4.3.
Size.—Large.
Habit.—Upright.
Density.—Medium.
Vigor.—Strong.

Stolon characteristics:
Color.—144A (yellow green group).
Anthocyanin coloration.—59B (red purple group).
Anthocyanin intensity.—Very strong.
Pubescence.—Medium.
Attitude of hairs.—Upward.
Average quantity in nursery (per square foot).—6 to 7 (medium).
Average diameter at first bract (mm).—4.2 (thick).
Length from mother plant to first daughter (cm).—32.6.

Terminal leaflet characteristics:
Average length (cm).—11.9.
Average width (cm).—10.1.
Average area terminal (cm²).—120.2.
Average length/width ratio.—1.17 (longer than broad).
Shape of base.—Obtuse.
Shape of apex.—Obtuse.
Margins (shape of teeth).—Obtuse (serrate to crenate).
Average serrations per leaf.—24.5.

Foliage characteristics:
Color of upper surface.—137A (ranges from light green to medium green).
Color of lower surface.—N148B (yellow green group).
Color of venation, upper surface.—151B (yellow green group).
Color of venation, lower surface.—145C (yellow green group).
Number of leaflets.—3.
Leaf size.—Large.
Average length (cm).—16.5.
Average width (cm).—21.4.
Average area foliage (cm²).—235.8.
Shape in cross section.—Ranges from slightly concave to slightly concave to flat.
Interveinal blistering.—Ranges from medium to strong.
Texture of upper surface.—Smooth.
Texture of lower surface.—Ranges from smooth to medium.
Venation pattern.—Pinnate reticulate.
Leaf glossiness.—Ranges from absent or weak to medium.
Leaf variegation.—Absent.

Petiole characteristics:
Petiole color.—N144D (yellow green group).
Petiole average length (cm).—25.9.
Petiole average diameter (mm).—5.9.
Attitude of hairs.—Strongly outward.
Frequency of bract leaflets.—0% (none).
Size of bract leaflets.—N/A.
Pubescence.—Sparse.
Petiolute color.—N144D (yellow green group).
Petiolute average length (mm).—13.8.
Petiolute average diameter (mm).—3.0.

Stipule characteristics:
Color.—145A (yellow green group).
Anthocyanin coloration.—60D (red purple group).
Anthocyanin intensity.—Ranges from medium to strong.
Average length (mm).—30.2.
Average width (mm).—9.1.
Shape.—Triangular.
Texture.—Light.
Shape of base.—N/A.
Shape of apex.—Acute.
Margins.—Entire (smooth).

Fruiting truss characteristics:
Anthocyanin coloration.—181B (greyed red group).
Anthocyanin intensity.—Absent or very weak.
Average length at maturity (cm).—31.0.
Position relative to foliage.—Beneath.
Flower quantity (season average per plant).—30 to 40 (medium).
Average fruit quantity per truss.—4.4 (medium).
Attitude at first pick.—Prostrate.

- Primary pedicel color*.—144C (yellow green group).
Primary pedicel average length (cm).—8.1.
Primary pedicel average diameter (mm).—2.4.
Pedicel attitude of hairs.—Ranges from upward to slightly outward. 5
Pedicel texture.—Weak.
Primary peduncle color.—144C (yellow green group).
Primary peduncle average length (cm).—10.0.
Primary peduncle average diameter (mm).—4.8. 10
Peduncle texture.—Weak.
 Flower characteristics:
Petal color, upper surface.—155B (white group).
Petal color, lower surface.—155B (white group).
Petal average length (mm).—9.4.
Petal average width (mm).—10.3. 15
Petal average length/width ratio.—0.91 (Ranges from broader than long to as long as broad).
Average petal quantity per flower.—5.5.
Petal shape.—Rounded.
Petal texture.—Smooth. 20
Petal shape of base.—Obtuse.
Petal shape of apex.—Rounded.
Petal margins.—Entire (smooth).
Sepal color, upper surface.—137A (green group).
Sepal color, lower surface.—144B (yellow green group). 25
Sepal average length (mm).—15.9.
Sepal average width (mm).—7.9.
Sepal average length/width ratio.—2.0.
Average sepal quantity per flower.—10.8. 30
Sepal shape.—Elliptical.
Sepal texture.—Smooth.
Sepal shape of apex.—Acute.
Sepal margins.—Acute (serrated).
Flower bud color.—144B (yellow green group). 35
Flower bud shape.—Cup.
Flower bud average length (mm).—4.0.
Flower bud average diameter (mm).—5.0.

- Corolla average diameter (mm)*.—22.1 (ranges from small to medium).
Flower average depth (mm).—2.0 (medium).
Calyx average diameter (mm).—32.0.
Size of calyx relative to corolla.—Larger.
Arrangement of petals.—Overlapping.
Size of inner calyx relative to outer calyx.—Larger.
 Reproductive organs:
Anther color.—13A (yellow group).
Filament color.—1B (yellow green group).
Filament average length (mm).—2.5.
Anther average length (mm).—2.0.
Anther average width (mm).—1.0.
Anther shape.—Elliptic.
Pollen amount.—Moderate. 15
Ovary color.—150B (yellow green group).
Style color.—150B (yellow green group).
Pistil average quantity per flower.—244.5.
Pistil average length (mm).—1.7.
Style average length (mm).—1.1. 20
Stigma average diameter (mm).—0.7.
Stigma shape.—Broad elliptic.
 Disease and pest reactions:
Powdery mildew (sphaerotheca macularis).—Susceptible.
Angular leaf spot (xanthomonas fragariae).—Unknown.
Botrytis fruit rot (botrytis cinerea).—Unknown.
Fusarium wilt (fusarium oxysporum).—Unknown.
Anthraco nose crown rot (colletotrichum fragariae).—Unknown. 30
Two-spotted spider mite (tetranychus urticae).—Moderately susceptible.
 We claim:
 1. A new and distinct strawberry plant named 'FPS-15.2016-31', as herein described and illustrated by the characteristics set forth above. 35

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FIG. 1



FIG. 2



FIG. 3



FIG. 4

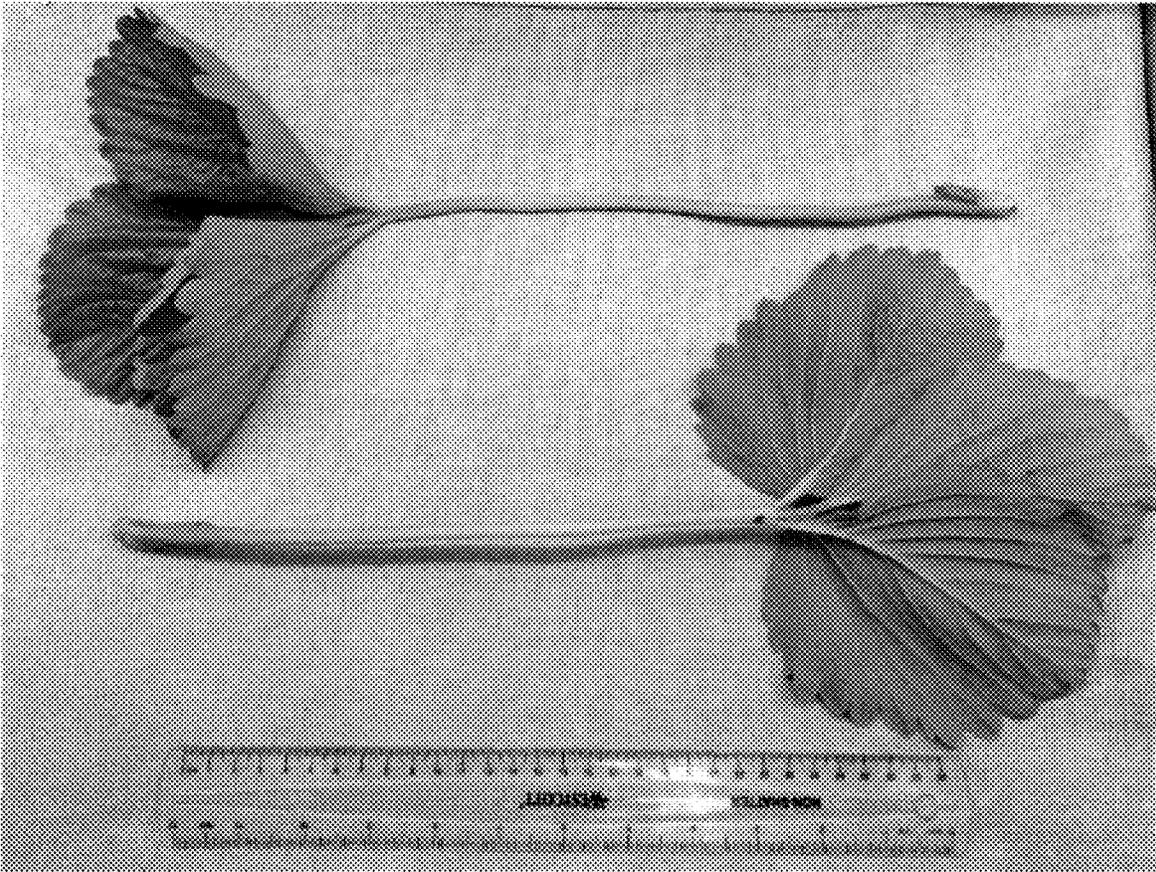


FIG. 5

