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(54) **STRAWBERRY PLANT DESIGNATED 'BG-378'**

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(57) **ABSTRACT**

This invention relates to a new and distinct winter planted short-day variety of strawberry known as 'BG-378'. This new variety is primarily adapted to the growing conditions of the southern coast of California. It is particularly characterized by its strong vigorous plant, moderately dense yet still remaining slightly open in growth habit, medium to large berry size, and fruit and flowers visible above the plant throughout much of the season. The fruit is medium red in color with good flavor, good juiciness and moderately firm texture.

2 Drawing Sheets

SUMMARY OF THE INVENTION

The present invention relates to a new and distinct short-day strawberry variety designated as 'BG-378'. This new variety is a result of a controlled cross of 'PS-592' (U.S. Plant Pat. No. 9,903) and 'Laguna' (U.S. Plant Pat. No. 8,663). The variety is botanically known as *Fragaria ananassa*. In comparison to the parental cultivar 'Laguna', 'BG-378' fruit is larger in size, has firmer skin, better overall fruit appearance, and better overall fruit yield. In comparison to parental cultivar 'PS-592', 'BG-378' fruit is larger in size, has higher overall fruit yield, and is more vigorous in plant growth. These comparisons are made in a side by side trial grown in Oxnard, Calif.

The seedling resulting from the aforementioned cross was asexually propagated by stolons in a nursery located in Lassen County, Calif., and was subsequently selected from a controlled breeding plot near Oxnard, Calif. in 1996. After its selection, the new variety was further asexually propagated in both Lassen County, Calif. and Siskiyou County, Calif. by stolons and extensively tested over the next several years in fruiting fields near Oxnard, Calif. 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 DESCRIPTION OF THE PHOTOGRAPHS

The accompanying color photographs show typical specimens of the new variety at various stages of development as nearly true as it is possible to make in color reproductions:

Photograph **1** shows a close-up view of typical field fruiting characteristics in mid-April 1999.

Photograph **2** shows a close-up view of fruit harvested in mid-April 1999 and packed in a standard twelve dry pint crate.

DESCRIPTION OF THE NEW VARIETY

'BG-378' is primarily adapted to the climate and growing conditions of the southern coast of California. This region

provides the necessary winter temperatures required for it to produce a strong vigorous plant and to remain in fruit production from January through June. The nearby Pacific Ocean provides the needed humidity and moderate temperatures to maintain fruit quality during the winter and spring production months. The following list of traits in combination define 'BG-378' as a unique variety distinguishing it from the most widely grown commercial variety in the region, 'Camarosa' (U.S. Plant Pat. No. 8,708).

'BG-378' is a large vigorous plant. When provided with optimum chilling in the nursery propagation fields prior to being dug and subsequently artificially cold stored prior to being planted, the plant of the new variety is larger and more vigorous than 'Camarosa'. The plant 'BG-378' is also less dense remaining a little more open in growth habit than 'Camarosa'. The foliage of 'BG-378' is similar in color yet overall larger in size than the foliage of 'Camarosa'. The upper leaf surface coloration of 'BG-378' is 7.5 GY 3/4 to 7.5 GY 3/6, and the lower surface is nearest to 7.5 GY 5/4 to GY 6/4 (Munsell color). Petioles of 'BG-378' are longer in length and larger in diameter than the petioles of 'Camarosa'. Table 4 illustrates foliage characteristics of 'BG-378' and 'Camarosa'.

'BG-378' is capable of long season fruit production with fruit of good size and good quality during the entire season when provided with optimum chilling in the nursery propagation fields and artificially cold stored prior to being planted. Fruit production begins in early to mid-January, up to 7 days later than 'Camarosa' and may continue cropping into June. 'BG-378' typically produces fewer runners per plant with a similar average fruit size and generally overall less production than 'Camarosa' (Table 1). The fruit of 'BG-378' is smoother with fewer longitudinal creases and better overall appearance and gloss than 'Camarosa'. The fruit of 'BG-378' has a lighter skin color than the fruit of 'Camarosa'. The flesh of the fruit of 'BG-378' is moderately firm while the flesh of the fruit of 'Camarosa' is extremely

firm. See Table 3 for fruit quality performance ratings. The seeds of 'BG-378' are held even with the surface of the fruit in contrast to 'Camarosa' which tends to have its seeds positioned slightly below the surface. 'BG-378' has an absent to narrow band without achenes under the calyx as compared to 'Camarosa' which has a medium band. The fruit of 'BG-378' is predominantly conical to cordate in shape as compared to 'Camarosa' which tends to be more cylindrical to wedge-shaped. The fruit of 'BG-378' is typically greater in length than width while the fruit of 'Camarosa' is much greater in length than width. The inflorescence of 'BG-378' is longer and much more visible above the plant canopy than the inflorescence of 'Camarosa' throughout much of the season. See Table 5 for inflorescence characteristics.

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

SPECIFIC DESCRIPTION OF THE NEW VARIETY

The following is a detailed description of 'BG-378', including the variety's morphological, and pest and disease reaction characteristics. This detailed description is based on observations taken during the 1999 growing season in Oxnard, Calif. These measurements and ratings were made from plants dug from a high-elevation nursery located in Siskiyou County, Calif. in October 1998 and planted 5 days later in Oxnard, Calif. The approximate age of the observed plant is 26 weeks for fruit evaluation; 28 weeks for flower evaluation; 29 weeks for foliage evaluation; and 34 weeks for inflorescence evaluation. Yield observations were taken from the 1998–1999 growing season. The characteristics of the new variety may vary in detail, depending upon variations in environmental factors, including weather (temperature, humidity and light intensity), day length, soil type and location without any change in the genotype. 'BG-378' has not been observed under all possible environmental conditions. Color terminology follows the Munsell Book of Colors. Munsell Color, Baltimore, Md. (1976).

Fruit Characteristics

'BG-378' fruit, fruit production and runner production (fruiting field) characteristics as compared to those of 'Camarosa'.

TABLE 1

1998–1999 market fruit yield, fruit size and runner productive characteristics from plants harvested from January through June 1, 1998 and 1999 of 'BG-378' dug from a high elevation nursery (Macdoel, California) during the first week of October and planted 4 to 5 days later and compared with 'Camarosa' in Oxnard, California.

Cultivar	1998 Total Fresh* Yield GM/PL	1999 Total Fresh* Yield GM/PL	1998–1999 Average Total Fresh* Yield GM/PL	1998–1999 Average Fruit Size Fresh GRM	1998 Average Runners/PL
'BG-378'	527	888	707	25.8	1.7
'Camarosa'	661	876	768	24.9	3.1

*Fresh fruit harvested from January through June 1

TABLE 2

Comparison of primary fruit characteristics of 'BG-378' and 'Camarosa' from Oxnard, California April 16, 1999

	Character 'BG-378'	Character 'Camarosa'
Munsell Color	7.5 R 3/10 to 7.5 R 4/10	5 R 3/8 to 5 R 3/10
Primary Fruit Length		
mean (cm)	5.0	5.2
range	4.4–5.6	4.7–5.7
Primary Fruit Width		
mean (cm)*	4.6	4.6
range	4.2–5.1	3.9–5.3
Primary Fruit Ratio (L/W)	1.09	1.13
Calyx Diameter		
mean (cm)	5.8	5.8
range	5.5–6.5	4.7–7.7

*Width is measured across the widest part of the berry, typically across the shoulders

TABLE 3

Comparison of 1997–1999 fruit quality characteristics of 'BG-378' and 'Camarosa' from Oxnard, California.*

	Character 'BG-378'	Character 'Camarosa'
Skin Firmness	7.7	8.7
Fruit Appearance	7.4	7.1
Fruit Gloss	8.1	7.5

*Results are averaged from 3 years of replicated holding tests performed from January through May 1997–1999. Ratings are based on a scale from 1–10; the higher the rating, the stronger the skin and more attractive and glossy the berry.

The average soluble solid content of the fruit measured in percent Brix is 8.4, with percent Brix being an indirect measurement of the sugar content in fruit. The fruit is medium to large in size and characteristically conical to cordate in shape. Berries are typically longer than wide as described by the length/width ratio. See Table 2 for fruit comparison characteristics. The primary berries are uniform in shape, only occasionally with longitudinal creases and irregularly wedge-shaped berries. The secondary and tertiary berries are typically much more uniformly conical in shape lacking longitudinal creases and irregular shapes. The fruit surface is medium red in coloration with a medium red colored flesh. The fruit coloration is moderately even to even around the surface of the berry. The fruit surface is smooth with the seeds held even with the surface. The seed coloration varies from a moderately yellow color to a medium red with prolonged exposure to direct sunlight. The seeds are spaced evenly over the surface of the berry with either a very narrow band or no band without achenes under the calyx. Occasionally, the primary berries will develop a seedy tip while the secondary and tertiary berries typically will not. The flesh is moderately firm, glossy and juicy, with good texture and good flavor. See Table 3 for fruit quality characteristics. The calyx is large in size, typically larger than the fruit diameter, with overlapping sepals. The pose of the calyx is almost never reflexed, (typically held flat to the berry). Occasionally, a necked berry may be produced. The calyx attaches firmly to the fruit below the surface. Fruit skin is considered moderately susceptible to cracking due to rain.

Plant Characteristics

The plant of 'BG-378' is vigorous, large in size with multiple crowns producing few runners when given the proper chilling levels prior to being dug, and artificially, prior to being planted. Excessive chilling will result in an over-vigorous, dense plant with a reduction in total fruit yield and increased runner production. The plant is globose in character growing semi-erect. The plant canopy becomes medium dense to remaining slightly open when given proper chilling and cold storage. The average plant height for 'BG-378' is 10.5 cm, with a range of 8–13 cm, and the average plant spread is 21.6 cm, with a range of 17–26 cm.

Foliage Characteristics

'BG-378' foliage characteristics as compared to those of 'Camarosa'.

TABLE 4

Comparison of foliage characteristics of 'BG-378' and 'Camarosa' from Oxnard, California, April 19, 1999.

	Character	
	'BG-378'	'Camarosa'
Munsell Color (upper surface)	7.5 GY 3/4 to 7.5 GY 3/6	5 GY 3/4 to 5 GY 3/6
Terminal Leaflet Length		
mean (cm)	7.5	7.0
range	5.5–8.9	6.1–8.8
Terminal Leaflet Width		
mean (mm)	7.0	6.6
range	5.6–8.6	6.0–7.7
Terminal Leaflet ratio (L/W)	1.08	1.08
Petiole Length		
mean (mm)	15.6	12.7
range	13–19	7–15
Petiolule Width		
mean (mm)	3.5	2.8
range	2.7–4.1	2.1–3.2
Petiolule Length		
mean (mm)	5.3	5.8
range	4–6	5–7
Serrations/Leaf		
mean (mm)	19.8	17.5
range	16–27	15–21
Serration Depth		
mean (mm)	4.8	5.0
range	4.1–5.5	4.6–5.9

The foliage of 'BG-378' typically has three leaflets per leaf, is medium to large in size, moderately glossy, light to medium green in color with medium blistering. The terminal leaflet is greater in length than width as described by the length/width ratio, rounded in shape with an obtuse to rounded base. See Table 4 for foliage comparison characteristics. The leaf cross section of an immature terminal leaflet tends to be concave while a fully mature leaflet tends to be slightly concave to slightly convex. Leaflets have many medium sized serrations. These serrations are rounded in shape, typically occur singly, occasionally in doubles. Petioles are considered long and moderately thick in diameter. Bract leaflets which typically develop on the petiole are extremely uncommon. Pubescence on the petioles is sparse, growing irregularly perpendicular to the petiole.

Flowers and Inflorescence

'BG-378' inflorescence and flower characteristics as compared to those of 'Camarosa'.

TABLE 5

Comparison of inflorescence characteristics of 'BG-378' and 'Camarosa' from Oxnard, California, May 29, 1999.

	Character	
	'BG-378'	'Camarosa'
Inflorescence Length		
mean (cm)	33.8	28.7
range	31–37	24–33
Primary Peduncle Length		
mean (cm)	22.4	15.2
range	19–25	11–22
Primary Peduncle Width		
mean (mm)	4.1	3.1
range	3.2–4.7	2.7–3.8
Primary Pedicel Length		
mean (cm)	6.2	7.9
range	4.6–8.6	6.5–10.5
Primary Pedicel Width		
mean (mm)	2.5	1.7
range	2.1–3.4	1.3–2.0

TABLE 6

Comparison of flower characteristics of 'BG-378' and 'Camarosa' from Oxnard, California, April 15, 1999.

	Character	
	'BG-378'	'Camarosa'
Primary Calyx Diameter		
mean (mm)	38.3	44.9
range	35–45	37–53
Primary Petal Length		
mean (mm)	14.1	12.8
range	12–16	11–14
Primary Petal Width		
mean (mm)	14.2	12.3
range	12–16	11–14
Primary Petal Ratio (L/W)	0.99	1.03
Petal/Primary Flower		
mean (mm)	7.4	6.4
range	5–9	5–7
Primary Sepal Length		
mean (mm)	15.9	18.3
range	14–18	15–22
Primary Sepal Width		
mean (mm)	5.4	8.3
range	5–7	6–10
Primary Sepal Ratio (L/W)	2.9	2.2

TABLE 6-continued

Comparison of flower characteristics of 'BG-378' and 'Camarosa' from Oxnard, California, April 15, 1999.

	Character	
	'BG-378'	'Camarosa'
Sepals/Primary Flower		
mean (mm)	15.2	12.7
range	11–18	10–15

The inflorescence of 'BG-378' is long, extending the flowers and fruit beyond the foliage during much of the season. The average number of peduncles per 'BG-378' plant is 6.8, with a range of 4–9 per plant, and the average number of pedicels per 'BG-378' plant is 13.4, with a range of 9–20 per plant. The primary peduncle is typically non-existent during the early portion of the season then lengthens as the fruiting season progresses. The primary peduncle is considered long and thick late in the season. The pedicel holding the primary berry is considered short and typically originates singly from the apex of the primary peduncle or seldom from one of the secondary peduncles. Secondary and tertiary berries are borne on pedicels arising from secondary peduncle apexes. The fruiting truss is typically prostrate at first picking. The average length of the fruiting truss is 33.8 cm, with a range of 31–37 cm. See Table 5 for inflorescence comparison characteristics. Flowers are medium in size with overlapping petals averaging 5 to 8 large obovate petals per primary flower. The petals are as broad as long as described by the length/width ratio and white in color. The corolla is typically smaller in relative comparison to the calyx. The average calyx diameter of 'BG-378' is 45.2 mm, with a range of 41–51 mm, and the average corolla diameter is 40.1 mm, with a range of 36–43 mm. See Table 6 for flower comparison characteristics. The average number of stamens per flower of 'BG-378' is 36.1, with a range of 34–38 per flower, and the average number of pistils per flower of 'BG-378' is 315, with a range of 231–418 per flower. Pollen is produced when the flower becomes fully open and the anthers mature. Weak anthocyanin coloration are present on the stolons, Munsell color rating near 2.5 YR 5/6–2.5 YR 5/8. Typically a large bract leaf is borne on a petiole which originates at the primary peduncle apex alongside the base of one of the secondary peduncles. Bract leaves occur on nearly every inflorescence. The sepals are elliptical and narrow in shape.

Pest Reactions

The new variety may not be resistant to any of the known insects, diseases or viruses common to California. It is known to be moferately susceptible to the two-spotted spider mite, aphid and flower thrips. It is also known to be moderately susceptible to grey fruit mold, powdery mildew and moderately susceptible to angular leafspot. The susceptibility of the new variety to any of the virus complexes of California has not been determined. -

We claim:

1. A new and distinct variety of strawberry plant designated as 'BG-378', as herein described and illustrated by the characteristics set forth above.

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