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Larson et al.

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(54) **STRAWBERRY PLANT NAMED 'MOJAVE'**

(50) Latin Name: ***Fragaria×ananassa* Duch.**
Varietal Denomination: **Mojave**

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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 273 days.

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(65) **Prior Publication Data**

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(51) **Int. Cl.**
A01H 5/00 (2006.01)

(52) **U.S. Cl.** **Plt./208**

(58) **Field of Classification Search** Plt./208
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP4,538	P *	5/1980	Bringhurst et al.	Plt./209
PP5,262	P *	7/1984	Voth et al.	Plt./208
PP8,708	P *	5/1994	Voth et al.	Plt./209
PP13,469	P3 *	1/2003	Larson et al.	Plt./208
PP19,472	P3 *	11/2008	Shaw et al.	Plt./208

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Anonymous. "Benecia Strawberry Plants and Mojave Strawberry Plants" Strawberry Plants.org Jun. 2, 2010 available at: http://strawberryplants.org/2010/06/benecia-strawberry-plants-mojave-strawberry-plants/.*

* cited by examiner

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(57) **ABSTRACT**

'Mojave' is typical of short-day (June bearing) strawberry cultivars and produces fruit over an extended period when treated appropriately in arid, subtropical climates. When treated with appropriate planting regimes, 'Mojave' has larger fruit and produces individual-plant yields greater than that of 'Camarosa' (U.S. Plant Pat. No. 8,708). It further produces similar quantities of fruit per plant but develops larger and higher quality fruit than 'Ventana' (U.S. Plant Pat. No. 13,649). 'Mojave' also produces a larger fraction of marketable fruit than any of the comparison cultivars.

4 Drawing Sheets

Genus and species: The strawberry cultivar of this invention is botanically identified as *Fragaria×ananassa* Duch.

Variety denomination: The variety denomination is 'Mojave'.

BACKGROUND OF THE INVENTION

This invention relates to a new and distinctive short-day type cultivar designated as 'Mojave'. This new cultivar was the result of a cross performed in 2004 between the cultivar 'Palomar' (U.S. Plant Pat. No. 19,472) and unreleased germplasm accession Cal 1.57-601 (unpatented). Accession Cal 1.57-601 was chosen as a parent due to its large, dark colored, and high quality fruit and also due to its high early-season productivity. 'Mojave' was first fruited at a center near Irvine, Calif. in 2005, where it was selected, originally designated Cal 4.44-603, and propagated asexually by runners. Following selection and during testing, the plant of this selection was designated 'C227'. It was later designated 'Mojave' for the purposes of introduction into commerce. Asexual propagules from this original source have been tested at Watsonville, Calif., in Irvine, Calif., and to a limited extent in grower fields starting in 2007. The cultivar is stable and reproduces true to type in successive generations of asexual reproduction.

BRIEF SUMMARY OF THE INVENTION

'Mojave' is typical of short-day (June bearing) strawberry cultivars and produces fruit over an extended period when

treated appropriately in arid, subtropical climates. When treated with appropriate planting regimes, 'Mojave' has larger fruit and produces individual-plant yields greater than that of 'Camarosa' (U.S. Plant Pat. No. 8,708). It further produces similar quantities of fruit per plant but develops larger and higher quality fruit than 'Ventana' (U.S. Plant Pat. No. 13,469). 'Mojave' also produces a larger fraction of marketable fruit than any of the comparison cultivars.

BRIEF DESCRIPTION OF THE DRAWINGS

The figures depict various characteristics of the 'Mojave' cultivar.

FIG. **1** shows the general flowering and fruiting characteristics of the plant in a field planting.

FIG. **2** shows a typical leaf at mid-season.

FIG. **3** shows representative mid-season fruit.

FIG. **4** shows a cross-section of representative mid-season fruit.

DETAILED DESCRIPTION OF THE INVENTION

'Mojave' is typical of short-day strawberry cultivars and produces fruit over an extended period when treated appropriately in arid, subtropical climates. The production pattern for 'Mojave' is similar to that of 'Ventana' and 'Palomar', although it is somewhat earlier to initiate fruiting with most

cultural treatments than 'Camarosa'. 'Mojave' initiates fruiting slightly later than 'Ventana' when established in late fall. 'Mojave' will be of special interest for winter plantings, where 'Camarosa', 'Ventana', and 'Palomar' have been successful, and in summer plantings where 'Pajaro' (U.S. Plant Pat. No. 4,538) and 'Chandler' (U.S. Plant Pat. No. 5,262) have been successful. Color descriptions are drawn to the Munsell Color Chart.

Plants and foliage:

Fruiting plants of 'Mojave' are similar in morphology to 'Camarosa', although slightly more open and erect and somewhat smaller than 'Ventana', throughout most of the production season with most cultural treatments. 'Mojave' plants are larger than those of 'Palomar' and similar in size to those of 'Camarosa' in most production environments. Comparative statistics for foliar characteristics near mid-season are given for 'Mojave' and three comparison cultivars in Table 1. Individual leaflets for 'Mojave' are larger than all three comparison cultivars. Leaves (including petioles) for 'Mojave' are similar in length to 'Ventana' and 'Camarosa', but with shorter petioles and larger leaflets. The leaves are longer than those for 'Palomar'. The adaxial (upper) surfaces of leaves for 'Mojave' are similar in color to 'Camarosa' and darker than 'Ventana' leaves at mid season, whereas the abaxial (lower) surface is somewhat lighter in color. Leaves of 'Mojave' have consistently more concavity than 'Camarosa', less concavity than 'Palomar' and are similar to those of 'Ventana'. 'Mojave' leaves have similar shape and number of serrations at mid season as the comparison cultivars.

TABLE 1

Foliar and plant characteristics for 'Mojave', 'Camarosa', 'Palomar', and 'Ventana'.

	Cultivar			
Foliar Character	'Camarosa'	'Ventana'	'Palomar'	'Mojave'
Plant height (mm)				
mean	299	277	262	291
range	280-320	250-300	250-290	270-300
Plant spread (mm)				
mean	431	432	388	433
range	395-490	370-485	360-455	400-470
Mid-tier leaflet				
Length (mm)				
mean	100	92	88	108
range	93-105	55-110	76-93	96-120
Width (mm)				
mean	87	79	72	87
range	80-100	73-90	65-80	77-95
Mid-tier leaf				
Length (mm)				
mean	290	314	244	308
range	267-325	235-350	160-282	270-400
Width (mm)				
mean	178	169	156	181
range	152-210	150-190	128-175	165-210
Leaf components				
Petiole length (mm)				
mean	194	220	169	201

TABLE 1-continued

Foliar and plant characteristics for 'Mojave', 'Camarosa', 'Palomar', and 'Ventana'.

	Cultivar			
Foliar Character	'Camarosa'	'Ventana'	'Palomar'	'Mojave'
range	170-220	190-240	150-175	165-245
Petiole diameter (mm)				
mean	5.1	4.9	4.5	4.8
range	4-6	4-6	4-5	4-6
Petiolule length (mm)				
mean	8.5	6.1	5.5	7.6
range	6-10	5-7	4-6	6-9
# leaflets/leaf	3	3	3, rarely 4 or 5	3
Leaf convexity	Some convex, most flat to slight concave	flat to very concave	concave to very concave	
Serrations				
number/leaf	19.5	20.6	20.6	20.5
range	18-21	18-23	18-23	18-24
shape	rounded, some semi-pointed	semi-pointed	semi-pointed	rounded, some semi-pointed
Leaf pubescence	light-moderate	light-moderate	moderate-light	moderate
Petiole pubescence				
density	heavy heavy	moderate-heavy	heavy	moderate-
direction	perpen-dicular	perpen-dicular to acropetal	perpen-dicular	perpen-dicular
Petiole color (Munsell)	2.5 GY 8/9	2.5 GY 8/9	2.5 GY 8/9	5 GY 8/8
Stipule length (mm)				
mean	33.8	31.9	33.3	35.9
range	30-45	25-40	25-41	19-40
Stipule color				
core	7.5 GY 9/4	2.5 GY 9/8	10 Y 9/9	2.5 GY 9/8
margins	7.5 GY 8/7	10 Y 8/11	2.5 GY 9/8	5 GY 7/10
Stolon base diameter (mm)	1.7	1.5	2.3	2.3
Stolons per nursery mother plant	28.0	18.8	25.5	22.5
Venation				
pattern	pinnate	pinnate	pinnate	pinnate
color	10 GY 7/8	5 GY 8/8	2.5 GY 8/9	7.5 G 8/7

Diseases and pest reaction:

'Mojave' is moderately resistant to powdery mildew (*Sphaerotheca macularis*), *Verticillium* wilt (*Verticillium dahliae*), and common leaf spot (*Ramularia tulasnei*). It is moderately susceptible to Anthracnose crown rot (*Colletotrichum acutatum*), and is highly susceptible to *Phytophthora* crown rot (*Phytophthora cactorum*) (Table 2). When treated properly, it has tolerance to two-spotted spider mites (*Tetranychus urticae*), equal to that for the comparison cultivars. 'Mojave' is tolerant to strawberry viruses encountered in California.

TABLE 2.

Disease resistance scores for 'Mojave' and three comparison cultivars. *Phytophthora* and *Verticillium* scores were obtained in evaluations conducted between 2004-2006; *Colletotrichum* was evaluated between 2005-2006.

Genotype	*Phytophthora* Resistance Score (5 = best)	*Verticillium* Resistance Score (5 = best)	*Colletotrichum* Resistance Score (5 = best)
'Camarosa'	3.06	3.08	3.1
'Ventana'	2.06	2.89	2.7
'Palomar'	2.81	4.14	3.0
'Mojave'	2.31	3.75	2.7

Flowering, fruiting, fruit, and production characteristics:

'Mojave' is similar to other California short-day strawberry cultivars (e. g. 'Ventana', 'Camarosa', and 'Palomar') in that it will flower over an extended period and into spring or summer, given appropriate local temperature and horticultural conditions. With very early plantation establishment (before October 1 in California), 'Mojave' produces fruit as early as 'Ventana' and 'Palomar', and earlier than 'Camarosa', with similar seasonal productivity to 'Ventana'. With later plantation establishment 'Mojave' initiates fruit later than 'Ventana', and is similar in production timing to 'Camarosa' and 'Palomar', with slightly lower seasonal productivity than 'Ventana'. Comparative statistics for flower and fruit characteristics near mid-season are given for the four cultivars in Table 4. The primary flowers for 'Mojave' are smaller than 'Ventana' and 'Camarosa', with a calyx that is usually larger than the corolla on primary fruit, and much smaller than 'Palomar'. The calyx for 'Mojave' varies in position, but frequently has a slight indent later in the season. The fruit shape for 'Mojave' can vary but is larger than the comparison cultivars, and is typically a short to medium and very symmetric conic. It is easily distinguished by fruit shape from 'Camarosa' (shortened and flattened conic), or 'Ventana' (medium symmetrical conic), and 'Palomar' (short symmetrical conic). External and internal fruit color for 'Mojave' is distinctly darker than the comparison cultivars (Table 3). Achenes vary from yellow to dark red, and are even with the fruit surface or slightly indented.

'Mojave' has been tested under a variety of cultural regimes, and optimal performance is obtained when nursery treatments and nutritional programs similar to those of 'Camarosa', 'Ventana', and 'Palomar' are used. In general, plants of 'Mojave' are equally vigorous as 'Camarosa' although 'Mojave' initiates growth more rapidly after transplant. 'Mojave' is less vigorous than 'Ventana', with very early season planting, but more vigorous than 'Palomar'. 'Mojave' retains excellent fruit quality in summer planting systems.

When treated with appropriate planting regimes, 'Mojave' has larger fruit and produces individual-plant yields greater than that of 'Camarosa'. It produces similar quantities of fruit per plant, but develops larger and higher quality fruit than 'Ventana' (Table 5). Commercial appearance ratings have been equal to or better than those for all of the comparison cultivars, and are substantially larger than 'Camarosa' and 'Ventana'. 'Mojave' produces a larger fraction of marketable fruit than any of the comparison cultivars. Fruit for 'Mojave' is slightly less firm than fruit from 'Ventana', and much less firm than the other comparison cultivars. Subjectively, 'Mojave' has outstanding flavor. The fruit will be exceptional for both fresh market and processing, and will be useful for home gardening purposes.

TABLE 3

Foliar and fruit color characteristics for 'Mojave' and three comparison cultivars.

Color	Cultivar			
Character	'Camarosa'	'Ventana'	'Palomar'	'Mojave'
Leaf color (CIELAB)				
Adaxial				
L*				
mean	37.1	40.0	35.2	38.0
range	34.8-41.3	33.2-39.2	33.7-37.0	35.8-42.3
a*				
mean	−13.1	−10.8	−8.9	−11.6
range	−11.5--16.8	−9.1--13.3	−7.0--11.9	−8.1--14.1
b*				
mean	16.6	15.5	11.3	15.6
range	15.3-17.7	12.8-19.5	9.1-12.3	11.4-21.5
Munsell	5 GY 5/6	2.5 GY 4/3	5 GY 4/3	5 GY 5/6
Abaxial				
L*mean	51.5	48.5	49.0	51.6
range	48.8-53.4	45.6-50.2	36.3-50.6	47.9-59.3
a*mean	−14.7	−12.3	−12.2	−14.1
range	−13.7--16.5	−11.3--13.3	−11.2--13.3	−13.0--14.9
b*mean	22.3	20.7	18.6	21.2
range	19.6-26.2	17.6-22.7	14.7-22.2	18.9-23.7
Munsell	7.5 GY 8/7	7.5 GY 8/7	7.5 GY 9/4	7.5 GY 9/4
Fruit color (CIELAB)				
External				
L*				
mean	36.5	34.4	33.7	31.7
range	33.2-40.0	31.7-36.3	28.9-36.5	28.8-34.6
a*				
mean	33.3	33.6	34.4	36.0
range	28.6-39.3	25.9-38.7	24.3-39.7	29.7-39.1
b*				
mean	17.9	15.8	15.4	15.0
range	10.9-26.2	10.4-20.9	11.5-23.6	10.5-19.2
Munsell	7.5 R 4/11	7.5 R 5/13	5 R 3/7	5 R 3/7
Internal				
L*				
mean	53.7	52.4	48.4	52.5
a*				
range	44.2-60.9	48.6-57.8	42.1-54.9	49.7-56.4
mean	29.6	28.8	24.7	23.2
range	24.8-33.8	23.9-33.9	21.1-29.0	17.3-40.0
b*				
mean	26.3	23.7	20.2	21.5
range	21.4-30.1	18.1-27.5	18.2-23.8	19.0-24.1
Munsell	7.5 R 5/13	5 R 5/13	7.5 R 6/12	5 R 6/11
Achene color Munsell	2.5 Y 7/10	10 Y 8/11	7.5 R 8/12	7.5 Y 8/12

TABLE 4

Flower and fruit characteristics for 'Mojave' and three comparison cultivars.

	Cultivar			
Character	'Camarosa'	'Nentana'	'Palomar'	'Mojave'
Petal number				
mean	5.7	6.2	5.7	5.6
range	5-8	5-8	5-6	5-7

TABLE 4-continued

Flower and fruit characteristics for 'Mojave' and three comparison cultivars.

	Cultivar			
Character	'Camarosa'	'Nentana'	'Palomar'	'Mojave'
Petal shape				
apex	truncate to slightly obtuse	truncate to slightly obtuse	truncate to slightly obtuse	truncate to slightly obtuse
base	attenuate	attenuate	attenuate	attenuate
margin	entire	entire	entire	entire
Petal length (mm)				
mean	14.2	15.1	18.3	15.5
range	13-16	14-17	15-21	14-16
Petal width (mm)				
mean	14.8	16.9	18.2	15.2
range	13-16	16-19	15-22	14-17
Flower position (relative to foliage)	most even some exposed	even to exposed	even to exposed	even to exposed
Calyx diam.(mm)				
mean	48.1	45.2	57.5	36.1
range	40-52	42-52	51-61	28-45
Corolla diam.(mm)				
mean	37.4	39.7	44.4	35.0
range	32-44	38-42	42-47	30-40
Sepal length (mm)				
mean	20.6	19.7	23.5	14.3
range	16-25	19-22	19-28	12-16
Sepal width (mm)				
mean	11.5	9.8	11.7	6.2
range	10-13	8-11	10-13	5-8
Sepal color (Munsell)	7.5 GY 5/7	2.5 GY 8/9	7.5 GY 7/9	5 GY 6/8
Pedicel length (mm)				
mean	229	259	183	238
range	220-240	230-290	150-210	190-290
Pedicel diameter (mm)				
mean	3.1	4.3	3.7	4.8
range	2-4	3-5	3-5	4-6
Pedicel color	2.5 GY 6/8	2.5 GY 9/8	5 GY 8/8	7.5 GY 8/7
Fruit shape				
Fruit length (mm)				
mean	48.7	50.5	49.9	50.1
range	43-53	45-60	43-55	45-55
Fruit width (mm)				
mean	40.7	45.2	44.4	44.4
range	37-51	41-53	38-55	40-52
Length/ width ratio	1.21	1.12	1.13	1.13
range	1.0-1.4	1.0-1.2	1.0-1.3	1.0-1.3
subjective	Obovate-flat	Medium conic	Short conic	Short-Medium conic
Primary/secondary fruit comparison				
size (subjective)	40-60%	50-60%	50-60%	50-60%
shape	similar	similar	similar	similar
shape, more conic		shape	shape	shape
Extent/size of hollow core	absent	Small	small-absent	small-absent
Calyx				
position	indented-neck	even-reflexed	even-indented	even-indented
size relative to fruit	equal or less than fruit diameter	equal or less than fruit diameter	equal or greater than fruit diameter	equal or greater than fruit diameter
Seed position	indented-extruded	even-extruded	even-indented	even-indented
Adherence of Calyx to Fruit	Weak	Inter-mediate	Weak	Weak

Flower and plant measurements obtained on Apr. 3, 2008; fruit measurements obtained between May 10-20, 2008.

TABLE 5

Performance of 'Mojave' and three comparison cultivars evaluated in Watsonville, CA between 2008-9. All plants for these trials were harvested from a commercial nursery near Macdoel, CA between October 15-16, and transplanted after 6-7 days to supplemental storage. Fruit harvest was initiated in early April and continued through the last week of August. (52" 2-row beds, 17,300 plants/acre).

Item	Yield (g/plant)	Appearance Score (5 = best)	Fruit Size (g/fruit)	Firmness
'Camarosa'	2,137	2.7	28.6	10.1
'Ventana'	2,616	3.0	33.3	9.8
'Palomar'	2,667	3.7	34.1	10.4
'Mojave'	2,271	3.8	36.1	9.5

What is claimed is:

1. A new and distinct cultivar of strawberry plant having the characteristics substantially as described and illustrated herein.

* * * * *

FIG. 1

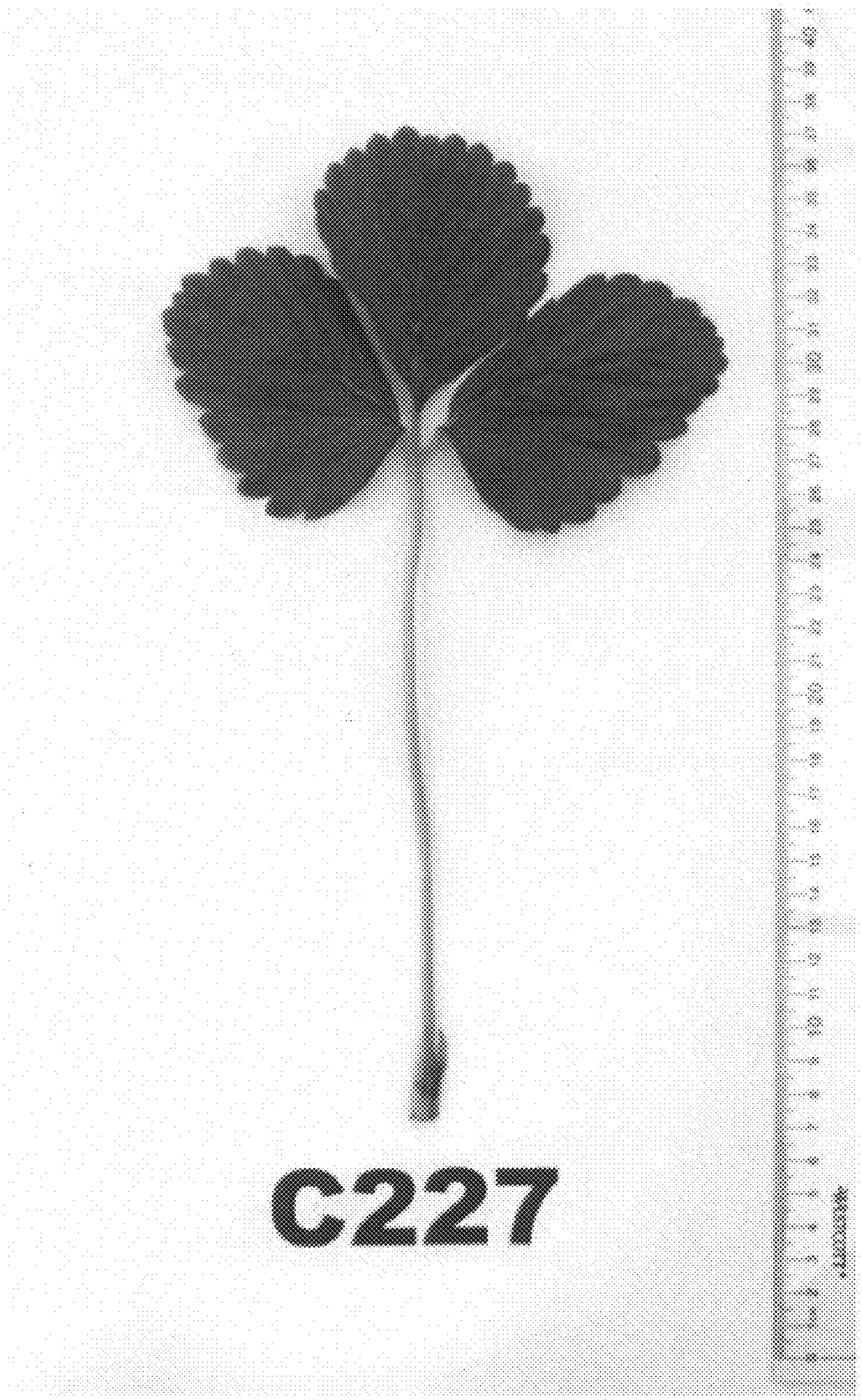

FIG. 2

FIG. 3

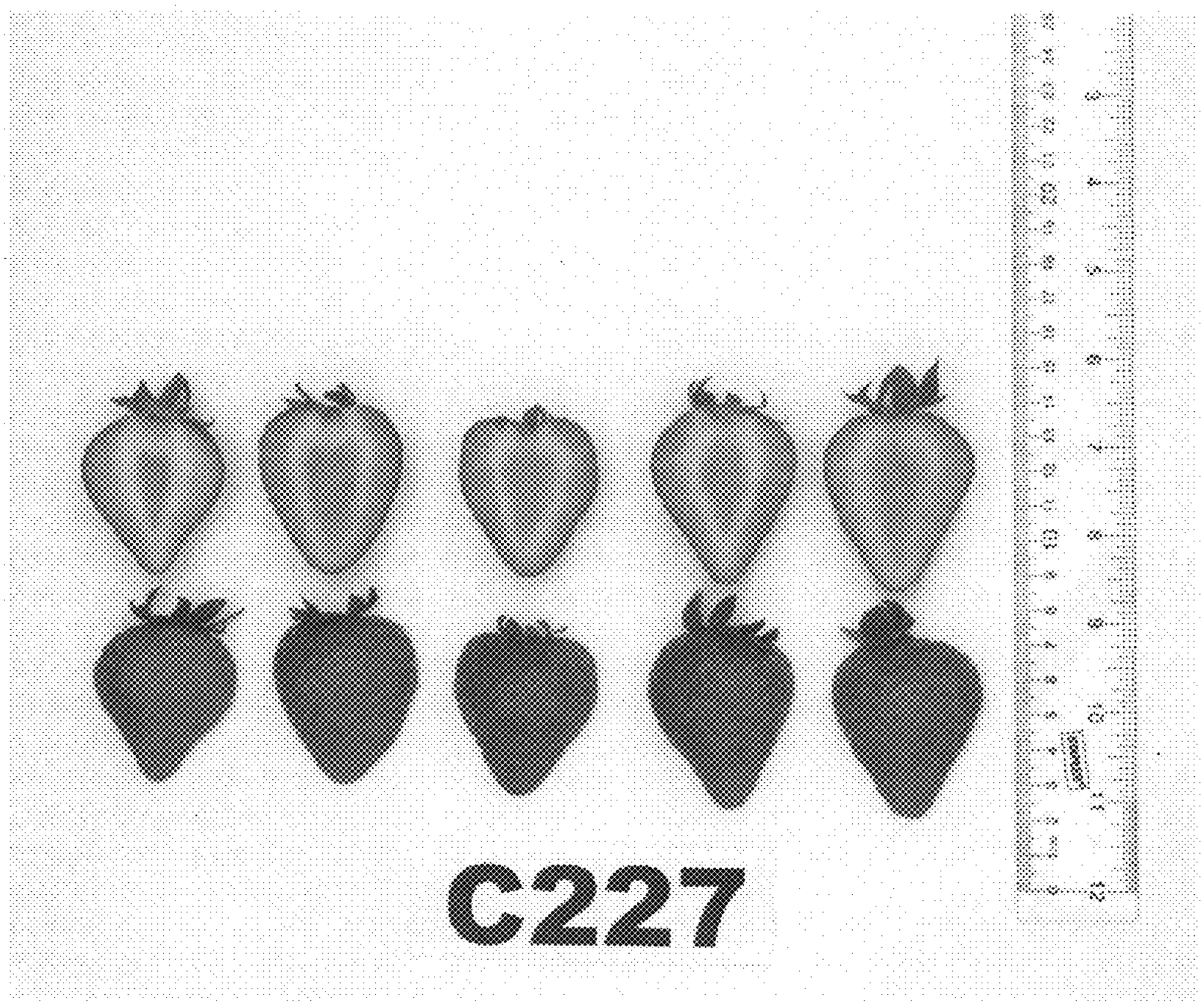

FIG. 4