



US00PP35090P2

(12) **United States Plant Patent**
Hardigan et al.

(10) **Patent No.:** **US PP35,090 P2**
(45) **Date of Patent:** **Apr. 11, 2023**

(54) **RED RASPBERRY PLANT NAMED**
'FINNBERRY'

(50) Latin Name: *Rubus idaeus* L.
Varietal Denomination: **Finnberry**

(71) Applicant: **The United States of America, as**
represented by the Secretary of
Agriculture, Washington, DC (US)

(72) Inventors: **Michael A. Hardigan**, Corvallis, OR
(US); **Chad E. Finn**, Corvallis, OR
(US)

(73) Assignee: **The United States of America, as**
represented by the Secretary of
Agriculture, Washington, DC (US)

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

(21) Appl. No.: **17/829,023**

(22) Filed: **May 31, 2022**

(51) **Int. Cl.**
A01H 5/08 (2018.01)
A01H 6/74 (2018.01)

(52) **U.S. Cl.**
USPC **Plt./204**
CPC *A01H 6/7499* (2018.05)

(58) **Field of Classification Search**
USPC Plt./204
CPC *A01H 6/7499; A01H 5/08*
See application file for complete search history.

Primary Examiner — Keith O. Robinson
(74) *Attorney, Agent, or Firm* — John Fado; Ariel
Atkinson

(57) **ABSTRACT**

A new and distinct primocane-fruiting red raspberry cultivar that originated from seed produced from a cross between the primocane-fruiting red raspberry plant 'Caroline' and the red raspberry plant ORUS 4099-1, the latter of which is a sibling of the recent cultivar 'Kokanee'. This new red raspberry cultivar can be distinguished by its high yields of bright colored, medium sized berries with low defects, excellent firmness and fruit quality, and a unique flavor that is both tangy and aromatic, with a good balance to tartness and sweetness. The berries are well suited for the fresh market, and, due to their ability to be picked at early/pink stages with good flavor and continue ripening in storage with respect to color, they may offer some additional benefit for packing/shipping as a fresh market variety.

6 Drawing Sheets

1

Latin name of the genus and species of the plant claimed: 'FINNBERRY' is a red raspberry plant that is *Rubus idaeus* L.

Variety denomination: The new red raspberry plant claimed is of the variety denominated 'Finnberry' *Rubus idaeus* L.

BACKGROUND OF THE NEW PLANT

The present invention relates to a new and distinct red raspberry cultivar designated 'Finnberry' and botanically known as *Rubus idaeus* L. This new primocane-fruiting (fall-bearing) red raspberry cultivar was discovered in Corvallis, Oreg. in August 2014, and is the result of a 2012 cross between the maternal red raspberry plant 'Caroline' (U.S. Plant Pat. No. 10,412) and the paternal red raspberry plant ORUS 4099-1 (unpatented). 'Caroline' was a primocane-fruiting type of red raspberry derived from a cross of the female red raspberry parent 'GEO-1' (unpatented) and male red raspberry parent 'Heritage' (unpatented). ORUS 4099-1 was a selection from a cross of the primocane-fruiting red raspberry plant 'Vintage' (U.S. Plant Pat. No. 24,198) and the red raspberry ORUS 1173-2 (unpatented) and is a sibling of red raspberry cultivar 'Kokanee' (U.S. Plant Pat. No. 28,666). 'Finnberry' shows superior yields and fruit quality to both its parents, combining increased firmness, drupelet coherence, and internal texture for a high-yielding, mid-to-late season variety of red raspberry. 'Finnberry' was recognized and selected for its ability to produce fruit with low defects that can be picked early, even when still pink or

2

light-colored, with excellent flavor and sweetness for the fresh market. The original seedling of the new cultivar was established in vitro from a root cutting and microcuttings have been taken and rooted from this sort of culture. The present invention has been found to be stable and reproduce true to type through successive asexual propagations.

SUMMARY OF THE NEW PLANT

The following are the most outstanding and distinguishing characteristics of this new cultivar when grown under normal horticultural practices in Oregon. The new cultivar possesses a primocane-fruiting habit, also known as fall bearing, with fruit ripening from mid-to-late August through Fall on first year canes. The new cultivar ripens one to two weeks later than 'Kokanee', one week later than 'Vintage', and at a similar time as 'Heritage'. The new cultivar produces canes that are more vigorous than 'Vintage', and at least as vigorous as 'Heritage', but are slightly less erect and more spreading than 'Heritage'. The new cultivar produces light-colored fruit of medium size with lower defects from UV or heat damage when compared to 'Kokanee', 'Heritage', or 'Vintage', and better firmness and coherence. The fruit can be picked at pre-ripe stages of development, even when light pink, with good flavor and still accumulate color in post-harvest storage. The new cultivar has shown fruit yields that are superior to other primocane-fruiting raspberry cultivars including 'Kokanee', 'Vintage', 'Heritage', and 'Polka' (unpatented) across multiple years and trial plantings. Thus, the cultivar appears to fit a different production

window from recent primocane-fruiting cultivar standards while offering improvements in fruit yields as well as fresh market quality and potential.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

This new red raspberry plant is illustrated by the accompanying photographs that show the plants, ripening fruit morphology, and harvested fruit; the colors shown are as true as can be reasonably obtained by conventional photographic procedures.

FIG. 1 shows an example of a fruiting cluster with ripe 'Finnberry' fruit.

FIG. 2 shows a close-up example of the morphology of 'Finnberry' fruit and how it appears on the plant during ripening.

FIG. 3 shows a clamshell of 'Finnberry' fruit (left) compared to a clamshell of 'Polka' fruit (right) after 14 days of refrigerated storage at ~4° C.

FIG. 4 shows a clamshell of freshly harvested 'Finnberry' fruit.

FIG. 5 shows a plot of entire 2-year-old 'Finnberry' plants during ripening season in late August.

FIG. 6 shows the morphology of a 'Finnberry' flower.

DETAILED DESCRIPTION OF THE NEW CULTIVAR

The following description of 'Finnberry' is based on observations taken from 2015 to 2021 growing seasons in trials in Corvallis and Aurora, Oreg. This description is in accordance with UPOV terminology. Color designations, color descriptions and other phenotypical descriptions may deviate from the stated values and descriptions depending upon variation in environmental, seasonal, climatic, and cultural conditions. 'Finnberry' has not been observed under all possible environmental conditions. Color terminology follows The Royal Horticultural Society Colour Chart. London (R.H.S.) (5th edition, 2007).

Table 1 shows plant characteristics of the new cultivar compared with plant characteristics of the red raspberry plant 'Kokanee'. Characteristics include plant size, plant height at first fruit (cm), plant diameter/density/vigor, and number of canes per hill.

TABLE 1

Characteristic	Finnberry	Kokanee
Plant size	Large	Large
Plant height at first fruit (cm)	121.0	119.2
Plant diameter/density/vigor	Thick/mid/high	Slender/mid-high/high
Number of canes per hill	40.2	100.1

Table 2 shows primocane characteristics of the new cultivar compared with primocane characteristics of the red raspberry plant 'Kokanee'. Characteristics include new cane habit, timing of young shoots emergence from soil, number of young shoots, very young shoots intensity of anthocyanin coloration, diameter at 1.2 m from base, cane cross-section, length at time of fruit formation, number of nodes, internode length—node 2 to 3 from base, internode length—midpoint, internode length—node 5 to 6 from terminus, cane color, pubescence on canes, percent of cane length flowering as primocane, primocane strength: full-grown after picking, and glaucosity of primocane full-grown after picking.

TABLE 2

Characteristic	Finnberry	Kokanee
New cane habit	Erect	Erect
5 Timing of young shoots emergence from soil	Mid-April	Mid-April
Number of young shoots	40	Many
Very young shoots intensity of anthocyanin coloration	Weak/Medium	Absent
10 Diameter at 1.2 m from base (cm)	0.81	0.79
Cane cross-section	Rounded	Rounded
Length at time of fruit formation (m)	1.86	1.94
Number of nodes	32.17	33.17
15 Internode length - node 2 to 3 from base (cm)	8.13	3.47
Internode length - midpoint	5.88	7.77
Internode length - node 5 to 6 from terminus	3.69	7.28
Cane color	RHS 59A	RHS N144D, some blush of 183D and glaucosity of N155A
20 Pubescence on canes	Absent	Absent
Percent of cane length flowering as primocane (%)	21.83	36.20
Primocane strength: full-grown after picking	Medium/Strong	Strong
25 Glaucosity of primocane full-grown after picking	Weak	Weak

Table 3 shows prickle characteristics of the new cultivar compared with prickle characteristics of the red raspberry plant 'Kokanee'. Prickly characteristics include presence of prickles on young shoots, prickle size, prickle length, prickle density, prickle texture, attitude of spine tips, and prickle color.

TABLE 3

Characteristic	Finnberry	Kokanee
Prickles on young shoots	Present	Present
Prickle size	Medium/Large	Medium
40 ^a Prickle length (cm)	0.26	0.16
^b Prickle density	Medium, ~250	Medium, 352
Prickle texture	Stiff	Soft, stout
Attitude of spine tips	Horizontal	Horizontal
Prickle color	RHS 164A	RHS N144D

^aLength of prickles 1 m from ground at end of growing season

^bNumber of prickles on 10 cm section of mature primocane taken at midpoint of cane (dense/medium/sparse/absent)

Table 4 shows primocane leaf characteristics of the new cultivar compared with primocane leaf characteristics of the red raspberry plant 'Kokanee'. Primocane leaf characteristics include: time of budbreak, petiole length (range), petiole length, petiole diameter, petiole color—upper surface, petiole color—lower surface, prickle distribution on petioles, rachis length, rachis color, stipule length, stipule orientation, leaf arrangement, number of leaves per node, entire leaf length, entire leaf width, number of leaflets per leaf, terminal leaflet length, terminal leaflet width, terminal leaflet shape, terminal leaflet tip/apex, terminal leaflet base, terminal leaflet cross section—plane, terminal leaflet shape of teeth, terminal leaflet margin, terminal leaflet petiolule length, terminal leaflet margin, terminal leaflet petiolule length, terminal leaflet petiolule width, distal lateral leaflet length, distal lateral leaflet width, distal lateral leaflet petiolule length, basal lateral leaflet length, basal lateral leaflet width, basal lateral leaflet petiolule length, leaflet color—upper

surface, leaflet color—lower surface, and glossiness. In addition to the information in the table, rugosity of the leaf for ‘Finnberry’ is strong.

TABLE 4

Characteristic	Finnberry	Kokanee
Petiole length (range) (cm)	5.7-7.9	2.92-3.86
Petiole length (cm)	6.92	3.37
Petiole diameter (cm)	0.28	0.19
Petiole color - upper surface	RHS 178B	RHS 144C, blush of 183D
Petiole color - lower surface	RHS 144C	RHS 144D
Prickle distribution on petioles	Sparse/Medium	Sparse
Rachis length (cm)	1.31	1.42
Rachis diameter (cm)	0.20	0.17
Rachis color	RHS 178B over 144C	RHS 144C
Stipule length (cm)	0.81	0.65
Stipule width (cm)	0.46	0.37
Stipule orientation	Erect	Erect
Leaf arrangement	Compound, alternate	Compound, alternate
Number of leaves per node	One	One
Entire leaf length (cm)	23.10	23.15
Entire leaf width (cm)	24.73	22.82
Number of leaflets per leaf	Usually five	Usually three; ranges one to five
Terminal leaflet length (cm)	10.77	13.17
Terminal leaflet width (cm)	6.57	7.73
Terminal leaflet shape	Ovate	Ovate
Terminal leaflet tip/apex	Broadly acuminate	Broadly acuminate
Terminal leaflet base	Rounded	Ovate
Terminal leaflet cross section - plane	Convex	Convex
Terminal leaflet shape of teeth	Broadly acuminate	Acute
Terminal leaflet margin	Doubly serrate	Serrate
Terminal leaflet petiolule length (cm)	1.86	1.64
Terminal leaflet petiolule width (cm)	0.17	0.19
Distal lateral leaflet length (cm)	8.75	9.82
Distal lateral leaflet width (cm)	4.48	4.77
Distal lateral leaflet petiolule length (cm)	1.21	-
Basal lateral leaflet length (cm)	10.98	11.78
Basal lateral leaflet width (cm)	6.52	7.23
Basal lateral leaflet petiolule length (cm)	7.75	-
Leaflet color - upper surface	RHS 146A	RHS 137A
Leaflet color - lower surface	RHS 198B	RHS 191B
Glossiness	Medium	Matte

Table 5 shows flower characteristics of the new cultivar compared with flower characteristics of the red raspberry plant ‘Kokanee’. Flower characteristics include timing of primocane flower bud burst, bud shape—top view, bud shape—side view, bud length, bud diameter, bud color, flower diameter—sepal, flower diameter—petal, diameter of calyx relative to corolla, flower depth (base to top of stigmas), number of nodes/lateral (all nodes are flowering nodes), number of nodes/lateral with >1 flower, number of buds, flowers, fruit per lateral, number of buds, flowers, fruits per node of lateral, petal number, petal length, petal width, petal shape, petal apex, petal base, petal margin, color petals, sepal number, sepal length, sepal width, sepal shape, sepal apex, sepal margin, color sepals—inner surface, color sepals—outer surface, pedicel length, pedicel diameter, pedicel texture, color pedicels, stamen number, filament color, anther length, anther width, anther color—fresh,

anther color—dry, pollen color, amount of pollen produced, pistil number, stigma color, stigma shape, style length, style color, and ovary color, as well as measurements related to flowering laterals including peduncle length, peduncle diameter, peduncle texture, and peduncle color.

TABLE 5

Characteristic	Finnberry	Kokanee
10 Timing of primocane flower bud burst	Late June-Mid-July	Late June-Mid-July
Bud shape - top view	Pentagonal	Pentagonal to rounded and undulate
Bud shape - side view	Deltoid	Deltoid
15 Bud length (cm)	0.101	0.085
Bud diameter (cm)	0.077	0.068
Bud color	RHS 144A	RHS 144B
Flower diameter - sepal (cm)	2.24	2.00
Flower diameter - petal (cm)	2.15	1.35
Diameter of calyx relative to corolla	1.00	0.15
20 Flower depth (base to top of stigmas)	0.74	0.71
Number of nodes/lateral (all nodes are flowering nodes)	9.00	3.67
Number of nodes/lateral with >1 flower	8.67	2.33
25 Number of buds, flowers, fruit/lateral	5.67	8.67
Number of buds, flowers, fruit/node	1.67	3.83
Petal number	5.00	5.83
Petal length (mm)	7.30	6.89
30 Petal width (mm)	3.20	3.64
Petal shape	Oblanceolate	Oblanceolate
Petal apex	Rounded	Rounded and undulate
Petal base	Cuneate	Cuneate
Petal margin	Entire	Entire
35 Color petals	RHS NN155B	RHS NN155B
Sepal number	5.00	5.83
Sepal length (mm)	8.80	9.31
Sepal width (mm)	4.65	4.69
Sepal shape	Deltoid	Ovoid
Sepal apex	Narrowly acuminate	Cuspidate
40 Sepal margin	Entire	Entire
Color sepals - inner surface	RHS 145B	RHS 145B
Color sepals - outer surface	RHS 144B	RHS 144B base, RHS 144D edges
Pedicel length (mm)	20.22	23.29
Pedicel diameter (mm)	1.05	0.93
45 Pedicel texture	Prickly, echinate	Sparsely prickly
Color pedicels	RHS 144B	RHS 144B
Stamen number	111.67	94.00
Filament color	RHS NN155C	RHS 196C
Anther length (mm)	0.58	0.62
Anther width (mm)	0.32	0.41
50 Anther color - fresh	RHS NN155A	RHS 157D
Anther color - dry	RHS 177B	RHS 158C
Pollen color	RHS 156C	RHS NN155D
Amount of pollen produce	Abundant	Abundant
Pistil number	95.83	92.00
Stigma color	RHS 155C	RHS 155C
55 Stigma shape	Oval	Frayed, ragged
Style length (mm)	2.83	3.24
Style color	RHS 157D	RHS 157C
Ovary color	RHS 145B	RHS 144C
Peduncle length (mm)	100.62	18.97
Peduncle diameter (mm)	2.10	1.33
60 Peduncle texture	Smooth	Sparsely prickly
Peduncle color	RHS 59A	RHS 144B

Table 6 shows fruit characteristics of the new cultivar compared with fruit characteristics of the red raspberry plant ‘Kokanee’. Fruit characteristics include length, width, length/width ratio, receptacle length, receptacle diameter,

drupelet length, drupelet width, number of drupelets per fruit, fruit weight, drupelet weight, individual seed weight, total seed weight per fruit, seed length, seed width, seed color, fruit glossiness, separation from receptacle, drupelet cohesion, firmness, flavor, fruit color, fruit color—immature, fruit color—maturing, fruit color—mature, titratable acidity, soluble solids, pH, harvest season, length of season, yield, and productivity. Fruit chemistry measurements were collected during the 2021 field season. In addition to the information in the table, the shape of ‘Finnberry’ fruit is blunt-conical/rounded.

TABLE 6

Characteristic	Finnberry	Kokanee
Length (mm)	23.45	22.50
Width (mm)	20.72	19.33
Length/width ratio	1.13	1.16
Receptacle length (mm)	17.08	12.19
Receptacle diameter (mm)	7.42	5.85
Drupelet length (mm)	4.73	3.30
Drupelet width (mm)	3.47	3.20
Number of drupelets per fruit	116	132
Weight (g)	3.90	3.35
Drupelet weight (mg)	34.60	25.98
Individual seed weight (mg)	1.52	1.27
Total seed weight per fruit (mg)	180.00	165.65
Seed length (mm)	3.27	2.30
Seed width (mm)	1.40	1.33
Seed color (dry)	RHS 165D	RHS 156A
Glossiness	Low/Medium	Medium
Separation from receptacle	Very easy	Very easy
Drupelet cohesion	Coherent	Coherent
Firmness	Firm	Firm
Flavor	Very good	Very good
Fruit color	Bright	Bright
Fruit color - immature	RHS 163B to RHS 163C	RHS 164C
Fruit color - maturing	RHS 34D	RHS 47A
Fruit color - mature	RHS 185A	RHS 53A
Titratable acidity (% as citric acid)	20.00	13.70
Soluble solids (%; in Brix)	14.27	13.96
pH	3.17	3.39
Harvest season	18 Aug-30 Sept	9 Aug-18 Sept
Length of season	Medium	Medium
Yield (kg/plant)	3.49	2.30
Productivity	High	Medium-high

No particular resistance or susceptibility to pests or disease have been observed in ‘Finnberry’ to date. ‘Finnberry’ has been shown to grow in plant hardiness zone 8a-8b and has not been thoroughly evaluated outside of that zone.

COMPARISON WITH PARENTAL AND COMMERCIAL VARIETIES

‘Finnberry’ differs from the female parent red raspberry plant ‘Caroline’ in that it produces significantly higher yields of fruit with superior fresh market quality including firmness and drupelet coherence. The ‘Finnberry’ fruit are larger than ‘Caroline’ and show easier separation for ease of picking. In trials in Aurora, Oreg., ‘Caroline’ was observed to produce fruit that were flavorful but more susceptible to crumbling, and weaker plants that showed some susceptibility to root rot (a symptom typically associated with the disease-causing pathogen *Phytophthora rubi*).

‘Finnberry’ differs from the male parent red raspberry plant ORUS 4099-1 in that it produces greater yields of fruit with improved quality for the fresh market. The fruit of ORUS 4099-1 were noted for becoming a bit dark and soft after picking, while ‘Finnberry’ fruit were lighter colored and less glossy but retained better firmness and quality after picking.

‘Finnberry’ differs from the primocane-fruiting red raspberry varieties ‘Kokanee’, ‘Heritage’, ‘Vintage’, and ‘Polka’ in that it has been consistently as high or higher yielding in trials in Aurora, Oreg., and is later-ripening than each variety except for ‘Heritage’, which ripens at a similar time in the mid-to-late season. ‘Finnberry’ produces bright colored fruit that retained a more favorable appearance and quality than ‘Kokanee’ and ‘Polka’ after 14 days in refrigerated storage in plastic clamshell packaging at 4° C. The ‘Finnberry’ fruit are larger than ‘Kokanee’, ‘Vintage’, and ‘Heritage’ and similar in size to ‘Polka’. The fruit flavor is described as tangy and slightly acidic, with a mild sweetness and good aroma, and ranked higher than ‘Kokanee’, ‘Heritage’, ‘Vintage’, and ‘Polka’ in a 2019 stakeholder survey of fruit samples conducted by Oregon State University’s department of Food Science. The fruit appear to have higher firmness and lower defects from heat and UV compared to ‘Kokanee’, ‘Heritage’ and ‘Vintage’.

We claim:

1. A new and distinct cultivar of primocane-fruiting red raspberry plant named ‘Finnberry’, substantially as illustrated and described, characterized by its high yields of medium-to-large sized berries with excellent fresh market eating quality, firmness, flavor, and low fruit defects, and the ability to be picked at early/pink stages with good flavor and firmness.

* * * * *



FIG. 1



FIG 2



FIG. 3



FIG. 4



FIG. 5



FIG. 6