



US00PP09622P

United States Patent [19]

Gruppe et al.

[11] Patent Number: Plant 9,622

[45] Date of Patent: Aug. 13, 1996

[54] CHERRY ROOTSTOCK GI 148/2 P.P. 8,954 10/1994 Gruppe et al. Plt./37

[75] Inventors: **Werner Gruppe,**
Linden/Grossen/Linden; **Hanna**
Schmidt, Ahrensburg, both of Germany

[73] Assignee: **Inter-Plant Patent Marketing, Inc.,**
Ontario, Canada

[21] Appl. No.: **485,402**

[22] Filed: **Jun. 7, 1995**

[51] Int. Cl.⁶ **A01H 5/00**

[52] U.S. Cl. **Plt./37**

[58] Field of Search **Plt./37**

[56] References Cited

U.S. PATENT DOCUMENTS

P.P. 8,852 8/1994 Gruppe et al. Plt./37

OTHER PUBLICATIONS

Perry, R. L., "Cherry Rootstocks", Rootstocks for Fruit Crops, 1987, John Wiley & Sons, pp. 251-254.

Primary Examiner—James R. Feyrer
Attorney, Agent, or Firm—Flynn, Thiel, Boutell & Tanis, P.C.

[57] ABSTRACT

The new and distinct cultivar of cherry rootstock, which has been given the designation GI 148/2 produces a tree which upon grafting produces a dwarf tree.

2 Drawing Sheets

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FIELD OF THE INVENTION

The present invention relates generally to cherry trees and more specifically to a new and distinct variety of cherry hybrid tree which is particularly useful as a rootstock.

BACKGROUND OF THE INVENTION

The use of cherry hybrid trees as rootstock is known in the art of producing cherry trees. One such variety is F12/1, a vegetatively propagated *P. avium*-selection. Root stock varieties GI 148/1 and 148/8 are described in U.S. Plant Pat. Nos. 8,852 and 8,954 respectively. The use of cherry hybrid varieties as rootstock produces a dwarf tree that comes into earlier and heavier bearing without sacrificing fruit size.

SUMMARY OF THE INVENTION

The cherry rootstock of this invention, which has been given the designation GI 148/2, produces a tree which upon grafting produces a dwarf tree. In the first years, until about the 6th year, it induces a growth reduction to 30-70% of F12/1, depending on the site etc. and later on to about 30% of F12/1. It induces flat angles, precocity and high yielding efficiency, good fruit size and no or very few suckers. Support may be helpful during the early years.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a branch and dormant lateral buds, bark and lenticels of GI 148/2.

FIG. 2 is a whole tree view of 148/2.

DETAILED DESCRIPTION OF THE INVENTION

The new and distinct variety of cherry hybrid tree of the present invention was bred by the inventors as a cross of *Prunus cerasus* cv. "Schattenmorelle" with *Prunus canescens* in Giessen, Germany. It has been successfully asexually propagated by softwood cuttings at the University of Giessen in Giessen, Germany, and has been observed to remain true to the description set forth herein.

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GI 148/2 used as a rootstock for sweet cherry trees induces dwarfing to a significant degree. In comparison with rootstock F12/1, GI 148/2 produces 31 percent of growth, as measured as the fresh weight of the upper tree parts of cv. "Hedelfinger" after 12 years in orchards near Giessen, Germany. Precocity, high production of fruit and yield efficiency, good fruit size and no or very few suckers are induced. GI 148/2 as a rootstock confers earlier and heavier bearing to the scion as compared to F12/1. In one trial, it induced a yield in the variety "Hedelfinger" in the 5th leaf of 6.2 kg/tree (cf. F12/1:0.2 kg/tree) and in the 7th leaf of 12.8 kg/tree (cf. F12/1:5.7 kg/tree). As a mean of seven years, 100-fruit-weight of "Hedelfinger" grafted on 148/2 was 740 grams, while 100-fruit-weight of "Hedelfinger" grafted on F12/1 was 735 grams.

GI 148/2 itself is of weak growth and has bushy, upright branches. It has demonstrated good winter-hardiness in Germany. After ten growing seasons near Giessen, Germany, GI 148/2 demonstrated a height of 2.15 meters and a width of 2.20 meters. GI 148/2 is tolerant to the virus PDV, tolerant to the virus PNRV, and medium sensitive to "Pfeffinger disease." It has a sufficient tolerance to water-logging.

The following varieties of sweet and sour cherries have been successfully grafted onto GI 148/2: Hedelfinger Riesenkirische, Büttners Rote Knorpel, Grosse Schwarze Knorpel, Van, Gold, Ulster, Bing, Early Burlat, Emperor Francis, Querfurter Königskirische, Napoleon, Ranier, Sam, Schmidt, Schneiders Späte Knorpel, Stella, Vega, Vic, Viva, Windsor, Hudson, Lambert, Montmorency, Meteor, Rubinweichsel, Morellenfeuer, North Star, Schattenmorelle, Rheinische Schattenmorelle, Ludwigs Frühe, Leitzkauer, Nabella, Successa, Schwäbische Weinweichsel, Abels Spaete, Alma, Bianca, Bigg, Charmes, Burlat, Castor, Compact Stella, Dolleseppler, Early Burlat, Early Rivers, Froschmaul, Grosse Schwarze Knorpel, Hardy Giant, Hedelfinger, Hedelfinger Hilltop, Koenigskirische, Kordia, Meckenheimer, Mercjant, Merton Glory, Napoleon, Oktavia, Regina, Sam, Schmidt, Schneiders Spate Knorpel, Souvenir de Charmes, Spaldomg, Stella, Ulster, Unterlaender, Valera, Valeska, Van, Werdersche Braune, Windsor, Kelleriis 16, Stevensbaer Viki. No graft incompatibility is presently known.

Ploidy of 148/2 is probably triploid ($2n=3\times$). The ploidy status of the parents has been investigated by isoenzyme analysis and is tetraploid ($2n=4\times$) for the mother plant=*Prunus cerasus*, "Schattenmorelle", and diploid ($2n=2\times$) for the father plant, *Prunus canescens*.

Leaves:

Overall shape.—ovate.

Apex shape.—Acute to slightly acuminate.

Base shape.—Rounded, slightly acuminate.

Leaf serration.—Doubly serrate leaf margin.

Veination.—Pinnate, 6–8 veins, mainly alternate.

Stipules.—Prominent (5 mm×3 mm), at base of petiole.

Glands.—Usually 2 attached to base of blade.

Pubescence.—Very slightly pubescent on adaxil surface (top), slightly pubescent on abaxil surface most along veins.

Color.—Light green.

Leaf dimensions at 5th and 9th leaf:

	5th leaf	9th leaf
Mean length of leaves	57 mm	35 mm
Mean width of leaves	31 mm	20 mm
Mean length of petioles	8 mm	8 mm

Branches:

Thickness of one year branch.—2.0 mm diameters.

Color of 2-year old branch.—greyed orange, Fan 4, 172-A (R.H.S. Color Chart)

Overall.—1-year old branches are slightly pubescent, often with one or two smaller rounded, 1.5 cm long leaves without petioles at first and second node at base of new shoot, buds alternate on branch with the exception of 2 opposite buds at the base of twig. Lenticels on 1-year old branches are light cream colored, somewhat raised, 0.5 mm diameter.

Branch dimensions (For a single GI 148/2 plant in the ungrafted condition after the 5th leaf; in brackets, comparable data for F12/1):

Mean length of 1-year-old branches.—9.0 cm (19.8 cm).

Mean length of 2-year-old branches.—24.4 cm (35.0 cm).

Mean length of 3-year-old branches.—43.4 cm (63.2 cm).

Mean diameter of 1-year-old branches.—7.4 mm (3.4 mm).

Mean diameter of 2-year-old branches.—2.0 mm (5.8 mm).

Mean diameter of 3-year-old branches.—5.2 mm (10.1 mm).

Mean no. of branches from 2-year-old branches.—0 (0.7 mm).

Mean no. of branches from 3-year-old branches.—4.8 (2.4).

Mean no. of nodes of 2-year-old branches.—11.0 (15.3).

Mean no. of nodes of 3-year-old branches.—22.4 (15.3).

Mean angle of 3-year-old branches.—59.0 (59.7).

Mean angle of 4-year-old branches.—52.0 (58.3).

Buds: Conical, somewhat rounded, adpressed, 2–3 mm long, overlapping bud scales, smooth, with prominent leaf scars.

Flowers:

Flowering.—Flowering started in first year.

Abundance.—Flowering became abundant in third year.

Petal color.—White.

Petal shape.—oblong.

Petal length/width ratio.—About 2:1.

Bloom: Time of bloom is late.

Overall vigor:

Ungrafted.—Low.

Suckers.—None.

Root system: A comparison of the root system of GI 148/2 grafted with "Hedelfinger" and F12/1 grafted with Hedelfinger is shown below in Table 1:

TABLE 1

	GI 148/2	F12/1
Fresh Matter (kg) 13.8 m ³ soil	23.8	103.9
Dry Matter (kg)/13.8 m ³ soil	14.0	51.9
Total length of roots (m)/13.8 m ³ soil	1816	1379
Dry Matter/rootlength (g)	7.7	37.6

GI 148/2 has a more dense root system than F12/1 and especially a much higher portion of the fine roots. Growth of one ungrafted clone, 60 kilometers south of Giessen, Germany after 5th and 9th leaf is shown in Table 2 below:

TABLE 2

	5th leaf	9th leaf
Height (cm)	155	215
Width (cm)	125	185
Depth (cm)		255
Fresh Weight Kg		10.6

Survey of growth data: In Table 3 the growth results after 12 twelve years of GI 148/2 and F12/1, both grafted grafted with Hedelfinger are shown in Table 3.

TABLE 3

	GI 148/2	F12/1
Height of Crown (m)	2.6	5.2
Width of Crown (m)	4.7	6.2
Stem Cross Sectional (cm ²)	245.9	503.4
Area of Variety		
Stem Cross Sectional	118.85	486.0
Area of Rootstock		
Fresh Weight of Plant	54.5	126.3
Parts Above Ground		
Weight in Percent	31.0	100.0

A Crown-silhouette comparison of GI 148/2 and F12/1 ($m^2 = \text{height} \times (\text{width} + \text{depth}) / 2$) is shown in Table 4.

TABLE 4

	GI 148/2	F12/1
After 4 years in orchard:	2.8	7.7
After 6 years in orchard:	6.3	14.3

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Enzyme polymorphism of GI 148/2: (Studied by horizontal starch gel electrophoresis of leaf tissue of 8 loci.) is shown in Table 5.

TABLE 5

	148/2
Aconitase-2	24
Alkoholdehydrogenase-1	112
Isocitratdehydrogenase-2	112
Leucinaminopeptisase-1	34
5-Phosphogluconat-Dehydrogenase-1	112
6-Phosphogluconat-Dehydrogenase-2	122

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TABLE 5-continued

	148/2
Phophoglucose-Isomerase-2	224
Phosphoglucomutase-2	25

What is claimed is:

- 10 1. A new and distinct variety of cherry hybrid tree as shown and described herein.

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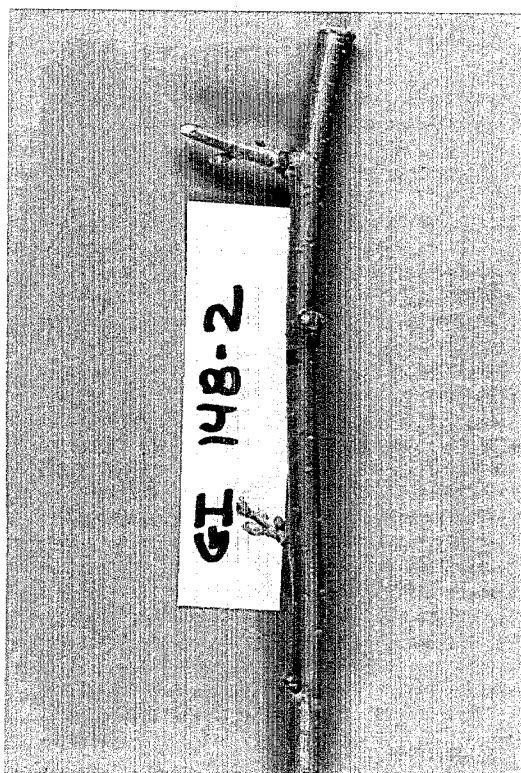


FIG. 1



FIG. 2