



US00PP32159P3

(12) **United States Plant Patent**  
**Takano**

(10) **Patent No.:** **US PP32,159 P3**

(45) **Date of Patent:** **Sep. 8, 2020**

(54) **APPLE TREE NAMED ‘TAKANO 7GO’**

(50) Latin Name: **Malus Mill.**  
Varietal Denomination: **TAKANO 7GO**

(71) Applicant: **Tsuyoshi Takano**, Oshu-shi (JP)

(72) Inventor: **Takao Takano**, Oshu (JP)

(73) Assignee: **Tsuyoshi Takano**, Oshu-shi (JP)

(\* ) 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.: **15/932,601**

(22) Filed: **Mar. 23, 2018**

(65) **Prior Publication Data**

US 2019/0150337 P1 May 16, 2019  
US 2020/0196501 P9 Jun. 18, 2020

(30) **Foreign Application Priority Data**

Nov. 11, 2017 (JP) ..... 32562

(51) **Int. Cl.**

**A01H 5/08** (2018.01)  
**A01H 6/74** (2018.01)

(52) **U.S. Cl.**

USPC ..... **Plt./161**  
CPC ..... **A01H 6/7418** (2018.05)

(58) **Field of Classification Search**

USPC ..... Plt./161  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP11,077 P 10/1999 Yu-Lin  
PP11,511 P 9/2000 Kudo

*Primary Examiner* — Susan McCormick Ewoldt

(74) *Attorney, Agent, or Firm* — Oblon, McClelland, Maier & Neustadt, L.L.P.

(57) **ABSTRACT**

A new and distinct variety of apple tree named ‘TAKANO 7GO’ having a longer common storage duration of about one month even at an average temperature of about 20-25° C., balanced sweetness and acidity of the fruit, higher firmness of the flesh, and earlier harvest time (for example, from late August to early September in Japan).

**6 Drawing Sheets**

**1**

The botanical name of the novel apple tree variety is *Malus Mill.*

The novel variety of the *Malus Mill* is hereinafter referred to by the variety denomination: ‘TAKANO 7GO’.

**CROSS-REFERENCE TO RELATED APPLICATIONS**

This application claims priority to Japanese Variety Registration Application No. 32562 filed Nov. 1, 2017, which is incorporated by reference herein as if set forth in its entirety.

**BACKGROUND OF THE INVENTION**

The present invention relates to a new and distinct variety of apple tree botanically classified as *Malus Mill.* and hereinafter referred to by the name ‘TAKANO 7GO’.

The new variety is a product of a planned breeding program conducted during a period from May 2006 to September 2017 by the inventor, Oshu-shi, Iwate, Japan, in which the *Malus Mill.* variety ‘Shinano Gold’ (female parent; Japanese Variety Registration No. 7328, registered Aug. 11, 1999) was crossed with the *Malus Mill.* variety ‘TAKANO 1GO’ (male parent) which is also known as the name ‘Beni Roman’ (Japanese Registered Trademark No. 5128504, registered Apr. 11, 2008) in Japan. The objective of the breeding program was to create new apple trees that produce fruits having long common storage duration and firm flesh, different from those of the parents and known similar varieties.

**2**

**SUMMARY OF THE INVENTION**

The new and distinct variety ‘TAKANO 7GO’ has a longer common storage duration of about one month even at an average temperature of about 20-25° C., balanced sweetness (about 14.5-15 (Brix %)) and acidity (about 0.33 g/100 ml) of the fruit, higher firmness of the flesh (about 15.3 lbs.), and earlier harvest time (for example, late August to early September in Japan), and, as described below, is distinct from: the known variety ‘Shinano Gold’ (female parent) that was produced by crossing the *Malus Mill* variety ‘Golden Delicious’ which is a classic American apple variety and is also well known in Japan with the known variety ‘Senshu’ (Japanese Variety Registration No. 42, registered Mar. 31, 1980), the known *Malus Mill.* variety ‘TAKANO 1GO’ (male parent, Japanese Variety Registration No. 20599, registered Mar. 15, 2011) that was produced by crossing the known *Malus Mill* variety ‘Shinano Red’ (Japanese Variety Registration No. 5867, registered Dec. 5, 1997) with the known *Malus Mill.* variety ‘Sansa’ (Japanese Variety Registration No. 1565, registered Mar. 5, 1988); and the *Malus Mill.* variety ‘Tsugaru’ well known in Japan.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The accompanying colored photographs (FIGS. 1-6) show typical flower, fruit, and leaf characteristics for the new *Malus Mill.* apple tree variety, ‘TAKANO 7GO’. Colors shown are as accurate as can be reasonably reproduced

by photographic means. In some cases, the color might differ slightly from the colors of 'RYOKU NH-13' described herein.

FIG. 1 shows a tree (about 9 years old) of 'TAKANO 7GO' in bloom.

FIG. 2 shows a close-up view of the flowers of 'TAKANO 7GO'.

FIG. 3 shows petals, pistil, stamens and sepal of the flower of 'TAKANO 7GO'.

FIG. 4 shows a tree, fruits, and leaves of 'TAKANO 7GO'.

FIG. 5 shows the shape and diameter of the whole fruit of 'TAKANO 7GO'.

FIG. 6 shows a longitudinal cross-sectional view of the fruit of 'TAKANO 7GO'.

#### DETAILED BOTANICAL DESCRIPTION

The new variety 'TAKANO 7GO' has characteristics as described below, compared with the parent varieties and similar varieties. (see TABLES 1, 2 and 3).

TABLE 1

Partial characteristics of 'TAKANO 7GO'	
Characteristic	State
Tree: type	ramified
Tree: habit	spreading
Fruit: height	medium, about 8 cm on average
Fruit: general shape	ovoid
Fruit: relative area of overcolor	very large
Fruit: hue of overcolor, with bloom removed	orange red (RHS, approximately N34A)
Fruit: intensity of stripes of overcolor	weak
Fruit: color of flesh	yellow white (RHS, approximately 158D)
Time of beginning of flowering	medium
Time of harvest	early

The variety 'Shinano Gold', a female parent, has the characteristics of that the skin color is yellow (RHS Yellow Group approximately 6C) when harvested, the sweetness of flesh is high (about 15.3 (Brix %)), the acidity of flesh is medium (about 0.45.g/100 ml), the firmness or food texture (i.e., mouthfeel) of flesh is firm (about 15.5 lbs.), and the time of harvest is late, specifically late October in Iwate, Japan.

The variety 'TAKANO 1GO', a male parent, has the characteristics that the skin color is red (RHS Red Group approximately 46B) when harvested, the color of flesh is yellow white (RHS Yellow-White Group approximately 158D), the acidity of flesh is about 0.50 g/100 ml, the firmness of flesh is about 16.0 lbs., the time of harvest is very early, specifically mid of August at Iwate, Japan, and the common storage duration is short (about 4-10 days in August at Iwate, Japan).

On the other hand, the new and distinct variety 'TAKANO 7GO' has the characteristics described in TABLE 1 above and TABLES 2 and 3 below, especially that the time of harvest is from late August to early September at Iwate, Japan and the common storage duration is long (about one month even in the period late August to early September at Iwate, Japan (average temperature about 20-25° C.)) substantially without making the flesh soft and thus very

superior to any known variety produced in Japan (normally up to about 10 days), that the skin color of the fruit is orange red (RHS Orange-Red Group approximately N34A) when harvested, and the color of the flesh is yellow white (RHS Yellow-White Group approximately 158D) and the firmness of the flesh is firm (about 15.3 lbs.), and that the sweetness of the fruit is about 14.5-15 (Brix %) and is higher than the sweetness of known fruits like 'Beni Roman' (i.e. the variety 'TAKANO 1GO') (about 13 (Brix %)) and 'Sansa' (about 13-14 (Brix %)), and the acidity of the flesh is medium (about 0.33 g/100 ml), while having balanced sweetness and acidity and higher firmness of the flesh. Furthermore, in the new and distinct variety 'TAKANO 7GO', the leaves are arranged alternatively on the stem with one leaf per node in a straight line.

TABLE 2

Comparison of characteristics between the new variety and similar varieties			
Characteristic	Varieties		
	TAKANO 7GO	Sansa (not patented)*1	Tsugaru (not patented)*1
Stripes of overcolor	weak	absent	—
Duration of common storage (at about 20-25° C.)	long, about 1 month	slightly short, 10 days or less	slightly short, 10 days or less
Fruit firmness of flesh	firm, about 15.3-16.0 lbs.	slightly firm, about 13.8 lbs	soft, about 13.0 lbs

\*1)'Sansa' and 'Tsugaru' are similar to 'TAKANO 7GO' in their harvest time.

The following detailed botanical description of 'TAKANO 7GO' apple tree is based on a survey (or observations) made during the period between August 2013 and September 2017 at Oshu-shi, Iwate, Japan. All colors are described according to The Royal Horticultural Society Colour Chart. It should be understood that the characteristics described will vary somewhat depending upon cultural practices and climate conditions and will also vary depending upon location and season. Quantified measurements are generally expressed as an average of measurements taken from individual trees of 'TAKANO 7GO' unless otherwise noted; however, the measurements of any individual plant or any group of plants of 'TAKANO 7GO' may vary from the stated average.

Classification:

*Botanical.*—*Malus* Mill.

Parentage:

*Female parent.*—*Malus* Mill. variety 'Shinano Gold' (Japanese Variety Registration No. 7328, registered Aug. 11, 1999).

*Male parent.*—*Malus* Mill. variety 'TAKANO 1GO' (male parent; Japanese Variety Registration No. 20599, registered Mar. 15, 2011).

Propagation: Typically by grafting on JM1 (Japanese Variety Registration No. 7443, registered Sep. 21, 1999) root-stock; and the good time of grafting is a period of mid to late March at Iwate, Japan.

Flowering-beginning time: Typically early May at Iwate, Japan.

Harvest time: Typically a period between late August and early September at Iwate, Japan.

Plant description: See TABLE 3 below indicating characteristics of ‘TAKANO 7GO’ compared with the similar variety ‘Sansa’ (Japanese Variety Registration No. 1565, registered Mar. 5, 1988).

TABLE 3

Characteristics of ‘TAKANO 7GO’ compared with ‘Sansa’		
Characteristic	‘TAKANO 7GO’	‘Sansa’
Tree: vigor	medium	medium
Tree: type	ramified	ramified
Only varieties with ramified tree type: Tree: habit	spreading	spreading
Tree: type of bearing	on spurs and long	on spurs and long
One-year-old shoot: thickness	medium, about 4.5 mm	medium, about 4.5 mm
One-year-old shoot: length of internode	short, about 2.7 cm	medium, about 3.3 cm
One-year-old shoot: color on sunny side	moderate brown (RHS Brown Group 200C)	light brown (RHS Grey-Brown Group N199C)
One-year-old shoot: pubescence (on distal half of shoot)	densely pubescent	medium
One-year-old shoot: number of lenticels	many (the number of lenticels, not determined.)	medium
Leaf blade: attitude in relation to shoot	upwards	upwards
Leaf blade: length	medium, about 9.5 cm	medium, about 9.8 cm
Leaf blade: width	narrow, about 5.8 cm	narrow, about 5.9 cm
Leaf blade: ratio length/width	large, about 1.63	large, about 1.66
Leaf blade: intensity of green color	medium	medium
Leaf blade: incisions of margin (upper half)	serrate type 1	bicrenate
Leaf blade: pubescence on lower side	densely pubescent	medium
Leaf blade: pubescence on upper side	absent	—
Petiole: length	medium, about 2.8 cm	long, >2.8 cm
Petiole: color	RHS Yellow-Green Group 146C	—
Petiole: diameter	about 2 mm on average	—
Petiole: extent of anthocyanin coloration from base	medium	medium
Flower: predominant color at balloon stage	strong pink (RHS Red Group 50C)	light pink (RHS Red Group 50D)
Flower: diameter with petals pressed into horizontal position	medium, about 5.5 cm on average	medium, about 5.8 cm on average
Flower: arrangement of petals	moderately overlapping	moderately overlapping
Flower: petal length	about 2.5-3.0 cm on average	—
Flower: petal width	about 1.7-2.1 cm on average	—
Flower: petal color on the upper side	predominantly White Group RHS N155B to N155D and partly Red-Purple Group RHS 65B to 65C	—
Flower: petal color on the lower side	predominantly RHS White Group N155B to N155D and partly Red-Purple Group RHS N74B to N74C	—
Flower: shape of petal apex	rounded	—
Flower: shape of petal base	rounded	—
Flower: petal texture	soft and fragile	—

TABLE 3-continued

Characteristics of ‘TAKANO 7GO’ compared with ‘Sansa’			
	Characteristic	‘TAKANO 7GO’	‘Sansa’
5	Flower: the average number of petals	5	5
	Flower: length of flower buds	about 1.5 cm on average	—
10	Flower: diameter of flower buds	about 1.3 cm on average	—
	Flower: color of flower buds	RHS Red-Purple Group 63A to 63B	—
	Flower: position of stigmata relative to anthers	same level	same level
15	Flower: fertility	cross-pollination	cross-pollination
	Anthers: color	RHS Yellow Group 10A	—
	Filaments: length	about 8-12 mm	—
	Filaments: color	Blue-Green RHS 115A to 115B	—
20	Pistil: number	one (1) (the number of stigmata, 5)	—
	Pistil: length	about 1.3 cm on average	—
	Pistil: color	Yellow Green Group RHS 152C	—
	Young fruit: extent of anthocyanin overcolor	medium	medium
25	Fruit: size	medium	medium
	Fruit: height	medium, about 8.0 cm	medium, about 8.0 cm
	Fruit: diameter	medium, about 8.0 cm	medium, about 7.8 cm
30	Fruit: ratio height/diameter	very small, 1.0	small, 1.03
	Fruit: general shape	ovoid	conic
	Fruit: ribbing	absent or weak	absent or weak
	Fruit: crowning at calyx end	absent or weak	absent or weak
35	Fruit: size of eye	small (actual size, not determined.)	small
	Fruit: length of sepal	medium	medium
	Fruit: bloom of skin	absent or weak	absent or weak
	Fruit: greasiness of skin	absent or weak	absent or weak
40	Fruit: surface texture of skin	smooth	medium
	Fruit: ground color	whitish green	whitish green
	Fruit: relative area of overcolor	very large	medium
	Fruit: hue of overcolor-with bloom removed	RHS Orange Red approximately N34A	RHS Red Group approximately 46B
45	Fruit: intensity of overcolor	medium	medium
	Fruit: pattern of overcolor	solid flush with weakly defined stripes	only solid flush
	Fruit: width of stripes	medium (about 1.5-2.0 mm on average)	narrow (or absent)
50	Fruit: intensity of overcolor	weak	absent
	Fruit: area of russet around stalk attachment	absent or small	medium
	Fruit: area of russet on cheeks	absent or small	medium
55	Fruit: area of russet around eye basin	absent or small	large
	Fruit: number of lenticels	many (about 5 per 1 cm <sup>2</sup> of equatorial portion)	medium
	Fruit: size of lenticels	large (about 0.3 mm on average)	medium
60	Fruit: scarfskin	absent	absent
	Fruit: length of stalk	short, about 1.8 cm	short, about 1.9 cm
	Fruit: thickness of stalk	medium, about 2.5 mm	medium, about 2.4 mm
65	Fruit: depth of stalk cavity	medium, about 1.3 cm	medium, about 1.3 cm

TABLE 3-continued

Characteristics of 'TAKANO 7GO' compared with 'Sansa'		
Characteristic	'TAKANO 7GO'	'Sansa'
Fruit: width of stalk cavity	medium, about 3.7 cm	medium, about 3.8 cm
Fruit: depth of eye basin	medium, about 1.0 cm	medium, about 1.0 cm
Fruit: width of eye basin	medium, about 3.6 cm	medium, about 3.6 cm
Fruit: firmness of flesh	firm, about 15.3 lbs.	medium, about 13.8 lbs.
Fruit: color of flesh	RHS Yellow-White Group approximately 158D	RHS White Group approximately 155D
Fruit: sweetness of flesh	medium, about 14.6 (Brix %)	medium, about 13-14 (Brix %)
Fruit: acidity of flesh	medium, about 0.33 (g/100 ml)	medium, about 0.41 (g/100 ml)
Fruit: water-core of flesh	absent to very slight	absent to very slight
Fruit: shape of core	flat round, 2.4 x 2.4 (cm)	flat round, 2.6 x 2.6 (cm)
Fruit: aperture of locules (in transverse section)	moderately open	moderately open
Fruit: productivity (kg/tree)	Productivity: about 40 kg — per tree	

TABLE 3-continued

Characteristics of 'TAKANO 7GO' compared with 'Sansa'		
Characteristic	'TAKANO 7GO'	'Sansa'
Time of beginning of flowering	medium	medium
Time of harvest	early	early
Duration of storage: common storage	long, about one month (August, Japan)	slightly short, 10 days or less (August, Japan)
Duration of storage: cold storage	long (about 3 months at 4° C.)	slightly short (about 20 days at 4° C.)
Resistance to: <i>Alternaria</i> blotch ( <i>Alternaria mali</i> Roberts)	strong	strong
Tolerance to winter hardiness	strong	strong
Tolerance to drought/heat	strong	weak

What is claimed is:

1. A new and distinct variety of *Malus* Mill. apple tree named 'TAKANO 7GO', as illustrated and described herein.

\* \* \* \* \*

Fig. 1

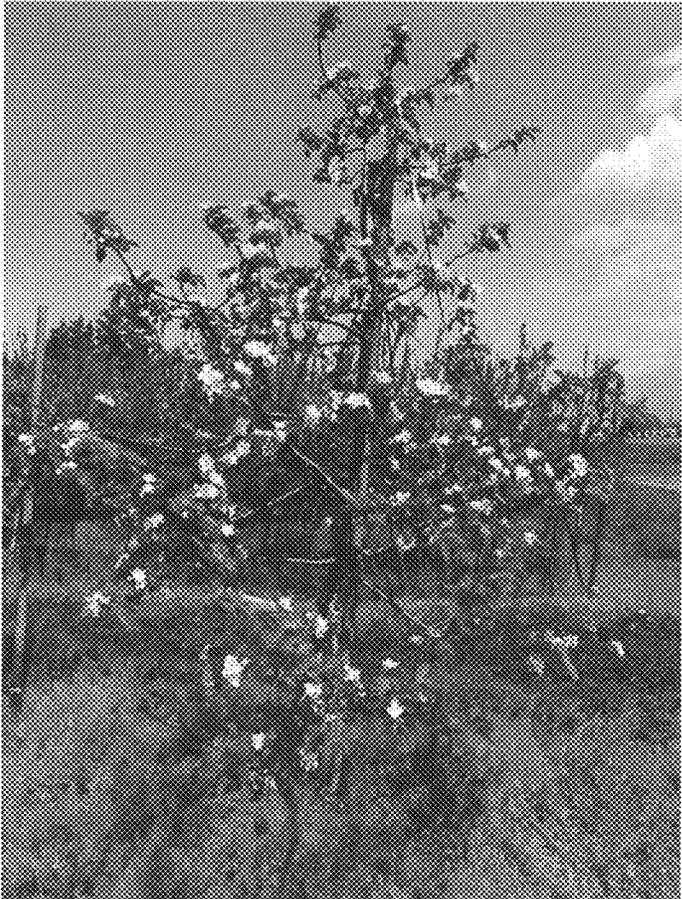


Fig. 2



Fig. 3



Fig. 4



Fig. 5

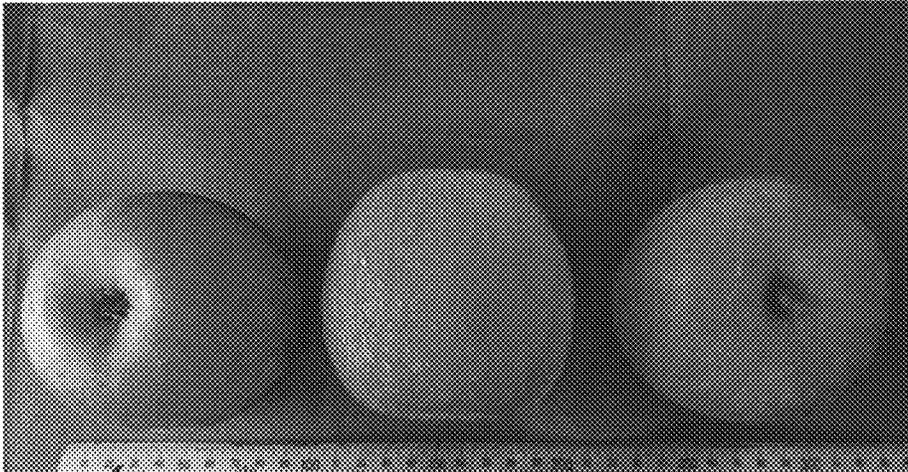


Fig. 6

