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(54) **TRIPLOID INTERSPECIFIC HYBRID
FLOWERING PEAR TREE NAMED ‘NCPX2’**

(50) Latin Name: *Pyrus x triploida*
Varietal Denomination: **NCPX2**

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patent is extended or adjusted under 35
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(51) **Int. Cl.**
A01H 5/00 (2018.01)
A01H 6/74 (2018.01)

(52) **U.S. Cl.**
USPC **Plt./177**

(58) **Field of Classification Search**
USPC **Plt./177**
See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

J Frank Schmidt & Song Co., Reference Guide, (p. 58; “Chastity
Pear™”) Jan. 2018, 2 pages.
Phillips, Whitney D. et al. “Fertility and Reproductive Pathways of
Triploid Flowering Pears (*Pyrus* sp.)”, HortScience, 51(8) 968-971
(2016).

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(57) **ABSTRACT**

‘NCPX2’ is a new triploid, interspecific hybrid flowering
pear with a broadly pyramidal habit, white flowers, multi-
coloured fall foliage, resistance to fire blight, and signifi-
cantly reduced fertility.

3 Drawing Sheets

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Latin name of the genus and species: The Latin name of
the novel plant variety disclosed herein is *Pyrus x triploida*.

Variety denomination: The inventive triploid, interspecific
hybrid of *Pyrus calleryana* (tetraploid) x *Pyrus* ‘Silver Ball’
(diploid hybrid) disclosed herein has been given the varietal
denomination ‘NCPX2’.

BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct hybrid
flowering pear cultivar hereinafter referred to by the cultivar
name ‘NCPX2’. This new flowering pear was developed
through a breeding program in Mills River, N.C. ‘NCPX2’
was selected from an F₁ population of seedlings grown from
a controlled cross of an induced tetraploid *Pyrus calleryana*
(H2002-031-010) (female parent; unpatented) x *Pyrus* ‘Sil-
ver Ball’ (diploid hybrid) (male parent; unpatented). The
first asexual propagation of ‘NCPX2’ was carried out in
August 2010 by budding in Mills River, N.C. and has been
asexually reproduced repeatedly by budding over a 5-year
period. ‘NCPX2’ propagates readily from budding using
chip budding in mid-summer. ‘NCPX2’ has been found to
retain its distinctive characteristics through successive
asexual propagations.

SUMMARY OF THE INVENTION

The following are the unique and distinguishing charac-
teristics of this new cultivar when grown under standard
horticultural practices in Mills River, N.C.

1. Triploid selection with greatly reduced fertility.
2. An upright, pyramidal form with white flowers.
3. Resistance to fire blight.
4. Showy fall foliage color.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

This new flowering pear is illustrated by the accompany-
ing photographs which show the plant’s form, foliage and

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inflorescences. The colors shown are as true as can be
reasonably obtained by conventional photographic proce-
dures. Colors in the photographs may differ slightly from the
color values cited in the detailed botanical description,
which accurately describe the colors of the new pear.

FIG. 1 is a photograph demonstrating the upright pyra-
midal form of an eight year old tree of ‘NCPX2’.

FIG. 2 is a photograph showing the white flowers from an
eight year old tree of ‘NCPX2’.

FIG. 3 is a photograph showing fall foliage colors of a
nine year old tree of ‘NCPX2’.

DETAILED BOTANICAL DESCRIPTION

The following is a detailed description of the botanical
characteristics of the new and distinct variety of interspecific
hybrid flowering pear known by the denomination
‘NCPX2’. The detailed description was taken on the original
nine-year-old tree growing in Mills River, N.C. All colors
cited herein refer to The Royal Horticultural Society Colour
Chart (The Royal Horticultural Society (R.H.S.), London,
2015, 6th Edition). Where specific dimensions, sizes, colors,
and other characteristics are given, it is to be understood that
such characteristics are approximations or averages set forth
as accurately as practicable.

TECHNICAL DESCRIPTION OF THE VARIETY

Classification:

Botanical name.—*Pyrus x triploida* ‘NCPX2’.

Common name.—Triploid hybrid flowering pear.

Parentage: F₁ hybrid of *Pyrus calleryana* H2002-031-010
(tetraploid) x *Pyrus* ‘Silver Ball’ (diploid interspecific
hybrid of uncertain parentage, possibly *P. fauriei* x *P.*
betulaefolia).

Plant description:

Growth habit.—Upright pyramidal. Height: 8 m after 9 years. Width: 6 m after 9 years.

Shoots and stems.—Branching habit: Upright spreading. Lateral branch length: 3 to 6 m. Diameter: 3 to 9 cm. Internode length: 2 to 5 cm. Color: Brown (N200B). Trunk texture: Smooth to rough. Trunk color: Brown (N200C to N200D).

Mature leaves.—Type: Simple. Persistence: Deciduous. Arrangement: Alternate. Shape: Ovate. Apex: Acuminate. Base: Rounded. Venation: Pinnate. Margin: Serrulate. Texture: Glabrous both upper and lower.

Emerging leaves.—Color: Upper surface: Yellow-Green (146A). Lower surface: Yellow-Green (146B).

Mature leaves during growing season.—Color: Upper: Green (137A). Lower: Yellow-Green (146B). Length of lamina: Avg. 6.1 cm (range 5.5 to 7.0 cm). Width: Avg. 4.6 cm (range 3.5 to 5.0 cm). Petiole: Length: Avg. 3.0 cm (range 2.5 to 4.0 cm). Width: 0.1 cm. Color: Yellow-Green (146D).

Mature leaves, fall color.—Variable. Including Brilliant Orange Yellow (21B), Vivid Red (46C), and Deep Red (53A).

Inflorescence.—Bud length: 0.5-0.6 cm. Bud diameter: 0.8-1.0 cm. Bud shape: Ovate. Bud color: Green-White (157C) with Red-Purple (63C) on tip.

Individual flowers.—Diameter: 1.5-2.0 cm. Depth: 0.6-0.8 cm. Stamen: Number: 19-22. Anther color: Red-Purple (63A). Filament color: Green-White (157D). Pistil: Number: 2. Stigma: Shape: Rounded. Color: Greyed-Green (193A). Style: Length: 0.5-0.6 cm. Color: Yellow-Green (144D). Ovary color: Green (138A). Petals: Arrangement: Star. Number: 5 petals. Shape: Elliptic. Margin: Entire. Tip: Obtuse. Length (at anthesis): 0.8-1.0 cm. Width (at anthesis): 0.7-0.9 cm. Color when opening: Green-White (157D). Color fully opened: White (NN155C).

Fruit.—Pome: 4 locules. Size: 0.5-1.0 in. diameter. Shape: Round to ovoid. Color: Gray orange to gray brown (including 177B, N199B, N199D). Lenticels: Many small, circular on surface. Calyx: Mostly deciduous. Length: 0.1-0.11 in. Diameter: 0.08-0.1 in. Pedicel: Length: 0.55-1 in. Diameter: 0.03-0.05 in. Color: Green (132B).

Disease and insect resistance: No significant disease or insect pests have been observed. ‘NCPX2’ was found to have a high level of resistance to fire blight (see data below).

Cold hardiness: At least USDA zone 5b; testing has not been completed in colder zones.

Nomenclature: To help clarify the nomenclature of *Pyrus* spp. hybrids, nothospecies *Pyrus* x *triploida* Ranney is proposed for the hybrid species name in accordance with Article H.3-5 (McNeill et al., 2012). The new hybrid species is described as follows: Nothospecies *Pyrus* x *triploida* Ranney, a triploid, interspecific hybrid between *Pyrus calleryana* Decne. and another *Pyrus* L. species or hybrid. Primary diagnostic characteristics are a 2C holoploid relative genome size of approximately 1.88 ± 0.12 (Standard Error) pg reflecting an intermediate triploid between tetraploid 2.63 ± 0.06 (SE) pg and diploid 1.25 ± 0.05 (SE) pg parents (Following methods of Phillips et al., 2016).

Typification: *Pyrus* x *triploida* Ranney, nothosp. nov.

Type: United States, N.C., Mills River, 2C relative genome size of 1.93 pg, 8 m tall, 6 m wide, upright pyramidal

form, NCSU H2008-049-145, 11 Nov. 2017, Ranney MCIL 2017-001 (holotype: NCSC, here designated; isotype NA).

MORPHOLOGICAL COMPARISONS WITH OTHER TAXA

A comparison of morphological characteristics between ‘NCPX2’ and other commercial flowering pear cultivars is presented in Table 1.

TABLE 1

Morphological comparison of ‘NCPX2’ with other commercial flowering pear cultivars					
Trait	Cultivars				
	<i>Pyrus calleryana</i> ‘Cleveland Select’ (unpatented)	<i>Pyrus pyrifolia</i> ‘Ohara Beni’ (unpatented)	<i>Pyrus</i> ‘NCPX1’ (U.S. Plant Pat. No. 26,539)	<i>Pyrus</i> ‘NCPX2’	<i>Pyrus</i> ‘Silver Ball’ (unpatented)
Tree growth habit	Upright pyramidal	Upright columnar.	Very narrow fastigate	Upright pyramidal	Compact, round, dwarf
Tree height (after 8 years)	8 m	8 m	8 m	8 m	4 m
Tree width (after 8 years)	6 m	5 m	2m	6 m	4 m
Flower bud color	White (N155A)	Red purple (53C to 63A)	Red purple (53C to 63A)	Green-white (157C) with Red-Purple (63C) on tip.	Green-White (157B)
Flower petal color when opening	White (N155A)	White (N155A) with some pink blush (63A, 58C, and 65A)	White (N155A) with some pink blush (63A, 58C, and 65A)	Green-White (157D)	Green white (157D)
Flower petal color when fully opened	White (N155A),	White (N155A),	White/pink (155B)	White (NN155C)	White (N155)
Flower diameter	1.0 to 2.0 cm	2.5 to 3.3 cm	3.1 to 3.6 cm	1.5-2.0 cm	1.0 to 2.5 cm

FIRE BLIGHT RESISTANCE

Disease resistance to fire blight was evaluated following the procedures of Bell et al. (2004). Briefly, a virulent strain of *Erwinia amylovora* (E2002a) was prepared from 24 hour old cultures grown on nutrient agar. Three actively growing shoots were inoculated in May 2012 by bisecting the youngest leaves with a pair of scissors that had been dipped into the inoculum prior to each cut. The disease lesion length and total length of the current season’s growth of the inoculated shoot were measured 40 days following inoculation. The severity of infection was expressed as the length of the fire blight lesion as a percentage of overall shoot length. ‘NCPX2’ was found to have a high level of resistance to fire blight with a mean lesion length of 0.8% following controlled inoculations (Table 2). No signs or symptoms of fire

blight have been observed on 'NCPX2' as the result of natural infection over the last 8 years.

TABLE 2

Cultivar	Disease severity - 2012 (% lesion length)	
	Range	Mean.
'Ohara Beni'	100-100	100
'Cleveland Select'	0-20	6.6
'NCPX1'	0-0	0.0
'NCPX2'	0-3	0.8

REPRODUCTIVE CHARACTERISTICS

Female fertility of selected triploid pears, including 'NCPX2' (H2008-049-145) was evaluated and published by Phillips et al. (2016) with a summary presented in Table 3. Female fertility was characterized by evaluating fruit set, seeds per fruit, seed germination, seedlings per flower, and percent relative fertility [(seedlings per flower for triploid/seedlings per flower for diploid control) \times 100], outdoors with favorable cross pollination conditions. Flow cytometry was used to determine relative genome sizes and ploidy levels. Relative fertility of 'NCPX2' was 0.86% of the most fertile diploid control, a reduction of 99.14%. Furthermore, the limited seedlings that did germinate from triploids maternal parents, including 'NCPX2', were determined to be primarily abnormal aneuploids with non-standard chromosome numbers.

TABLE 3

Selection	Ploidy (X)	Relative genome size		Fruit set (%)	Seeds/fruit	Germination (%)	Seedlings/flower	Relative fertility ^Z (%)
		size (pg)	set (%)					
'NCPX2' (H2008-049-145)	3	1.93 \pm 0.01	3.46 \pm 0.07	2.05 \pm 3.48	5.22 \pm 0.11	0.01 \pm 0.11	0.01	0.86

TABLE 3-continued

Ploidy, relative 2C genome size, and fertility characteristics for 'NCPX2' and selected diploids as published by Phillips et al. (2016).								
Selection	Ploidy (X)	Relative genome size		Fruit set (%)	Seeds/fruit	Germination (%)	Seedlings/flower	Relative fertility ^Z (%)
		size (pg)	set (%)					
Diploid 1	2	1.26 \pm 0.02	9.80 \pm 0.07	3.89 \pm 0.07	3.89 \pm 2.93	38.61 \pm 0.11	0.13 \pm 0.08	16.73
Diploid 2	2	1.22 \pm 0.01	11.06 \pm 0.11	3.24 \pm 0.51	3.24 \pm 0.51	25.45 \pm 0.49	0.13 \pm 0.35	16.3
Diploid 3	2	1.23 \pm 0.01	46.76 \pm 0.22	3.16 \pm 0.72	3.16 \pm 0.72	52.83 \pm 0.15	0.80 \pm 0.62	100.00

^ZCalculated as (seedlings/flower)/(0.80), where 0.80 is the number of seedlings per flower of the most fertile diploid control.

'NCPX2' is distinguished from other flowering pear cultivars by its unique combination of traits including a triploid cytotype with a 2C genome size of approximately 1.93 pg, an upright pyramidal form, white flower petals, high resistance to fire blight, and low female fertility.

CITATIONS

- Bell, A. C., T. G. Ranney, and T. A. Eaker. 2004. Resistance to fire blight among flowering pears and quince. *HortScience* 40(2):413-415.
- McNeill, J., F. R. Barrie, W. R. Buck, V. Demoulin, W. Greuter, D. L. Hawksworth, P. S. Herendeen, S. Knapp, K. Marhold, J. Prado, W. F. Rrud'homme Van Reine, G. F. Smith, J. H. Wiersema, and N. J. Turland. 2012. International code of botanical nomenclature for algae, fungi, and plants (Melbourne Code). Koltz Sci. Books, Oberreifenberg, Germany.
- Phillips, W. D., T. G. Ranney, D. H. Touchell, and T. A. Eaker. 2016. Fertility and reproductive pathways of triploid flowering pears (*Pyrus* sp.). *HortScience* 51(8):968-971.
- What is claimed is:
1. A new and distinct triploid, interspecific hybrid flowering pear tree named 'NCPX2' as illustrated and described herein.

* * * * *



Fig. 1



Fig. 2



Fig. 3