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(54) **AZALEA PLANT NAMED ‘NCRX5’**

(50) Latin Name: ***Rhododendron* hybrid**
Varietal Denomination: **NCRX5**

(71) Applicant: **North Carolina State University,**
Raleigh, NC (US)

(72) Inventors: **Thomas Green Ranney,** Arden, NC
(US); **Darren Touchell,** Raleigh, NC
(US); **Irene Palmer,** Raleigh, NC (US);
Andra Nus, Raleigh, NC (US); **Nathan**
P. Lynch, Raleigh, NC (US)

(73) Assignee: **North Carolina State University,**
Raleigh, NC (US)

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patent is extended or adjusted under 35
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(58) **Field of Classification Search**

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See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

<https://plantaddicts.com/perfecto-mundo-double-white-azalea>; May
18, 2021; 4 pages.*
https://www.google.com/search?q=Rhododendron+Perfecto+Mundo+Double+White&rlz=1C1GCEB_enUS773&biw=1536&bih=754&ei=dMwEYd6GF_Og5NoProqNkAQ&oq=Rhododendron+Perfecto+Mundo+Double+White&gs_lcp=Cgdn3Mtd216EANKBQhAEgExSgQIQRgBUNMjYJAtaAFwAHgAgAE7iAFxkgEBMpgB AKABAcABAQ&scient=gws-wiz&ved=0ahUKEwjekOvFt4zyAhVzEFkFHS5.*
FA0IQ4dUDCA4&uact=5; Jul. 31, 2021; 1page.*

* cited by examiner

Primary Examiner — Kent L Bell

(74) *Attorney, Agent, or Firm* — Cassandra Bright

(57) **ABSTRACT**

A new and distinct cultivar of *Rhododendron* plant named
‘NCRX5’ having a profusion of large, double white flowers
with a yellow-green blotch, cold-hardiness in USDA Zone
6b, consistent reblooming in Fall, dense habit, and a tet-
raploid cytotype. The new cultivar is a *Rhododendron*,
suitable for ornamental garden purposes.

2 Drawing Sheets

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Latin name of the genus and species: The Latin name of
the novel plant variety disclosed herein is *Rhododendron*
hybrid.

Variety denomination: ‘NCRX5’.

The inventive hybrid was selected from oryzalin-treated
seedlings derived from a controlled cross between evergreen
azaleas *Rhododendron* ‘Girard’s Pleasant White’ (un-
patented) and *Rhododendron* ‘Mootum’ (patented: U.S.
Plant Pat. No. 18,416; Autumn Moonlight®). Prior to the
designation of the varietal denomination, ‘NCRX5’ was
referred to by its experimental code: H2009-235-008.
‘NCRX5’ is a stable tetraploid cytotype.

BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct hybrid
evergreen azalea cultivar hereinafter referred to by the
cultivar name ‘NCRX5’. This hybrid azalea was developed
via a controlled breeding program in Mills River, N.C.
‘NCRX5’ was selected for its prolific, large, double white
flowers, moderate and dense growth habit, and consistent
fall reblooming. ‘NCRX5’ was obtained from the controlled,
hand pollination of emasculated, female *Rhododendron*
‘Girard’s Pleasant White’ (unpatented) and pollen parent
Rhododendron ‘Mootum’ (patented: U.S. Plant Pat. No.
18,416; Autumn Moonlight®). Seedlings from these con-
trolled pollinations were then treated with a mitotic inhibitor

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(oryzalin) to develop a population of stable tetraploid aza-
leas. ‘NCRX5’ was selected after 8 years in field and
container trials at a research center in Mills River, N.C.
Container trials were conducted using pine bark media
supplemented with 1.04 kg·m⁻³ dolomitic lime, 0.74 kg·m⁻³
granulated and top-dressed with 5- to 6-month slow-release
fertilizer. Full-sun field trials were conducted in plastic-
covered, bark-amended clay soils with minimum winter
temperatures of -2° F. (-19° C.) and maximum summer
temperatures 98° F. (37° C.). The first asexual propagation
of ‘NCRX5’ occurred in 2011 by rooting stem cuttings at a
research nursery in Mills River, N.C. ‘NCRX5’ roots readily
from firm softwood cuttings treated with a basal dip of
3,000-5,000 ppm indole-butyric acid (potassium salt) in
water. ‘NCRX5’ has been found to retain its distinctive
characteristics through successive asexual propagations over
10 years.

Genome size and ploidy level were determined via flow
cytometry, following the methods described in Jones et al.,
2007, using the internal standard *Pisum sativum* ‘Ctirad’ and
DAPI (4’, 6-Diamidino2-phenylindole) fluorochrome.
‘NCRX5’ was found to have a genome size of approximately
2.6 pg indicating a tetraploid cytotype. This is approxi-
mately two times the size of diploid cytotypes. Ploidy levels
and relative genome sizes of diverse species, hybrids, and
cultivars of *Rhododendron*. Journal of the American *Rho-*

dodendron Society 61(4):220-227. Jones, J. R., T. G. Ranney, N. P. Lynch, and S. L. Krebs. 2007.

SUMMARY OF THE INVENTION

The following are the unique combination of characteristics of this new cultivar when grown under standard horticultural practices at a research nursery in Mills River, N.C.

1. Profusion of large, double, white flowers with a yellow-green blotch.
2. Cold hardy to USDA Zone 6b.
3. Dense, compact habit.
4. Consistent reblooming in fall.
5. Tetraploid cytotype.

TABLE 1

COMPARISON WITH PARENTS		
Plant	Flower Color and Type	Characteristics
FEMALE: <i>Rhododendron</i> 'Girard's Pleasant White' (unpatented)	White Single	Hardiness: USDA Zone 5 Mature Height × Width: 60 cm × 60-90 cm Ploidy: Diploid. Petal number: 5
MALE: <i>Rhododendron</i> 'Mootum' (U.S. Plant Pat. No.18,416)	White Double	Hardiness: USDA Zone 7 Mature Height × Width: 150 cm × 120 cm Ploidy: Diploid. Flower size: 6.35 cm -7 cm. Petal Number: 10-15.
<i>Rhododendron</i> 'NCRX5'	White, double flowers with a yellow-green blotch.	Hardiness: USDA Zone 6B Mature Height × Width: 75 cm-100 cm × 100 cm-120 cm. Ploidy: Tetraploid. Flower size: 7 cm -9 cm. Petal number: 10-12.

TABLE 2

COMPARISON WITH COMMERCIAL CONTROLS			
Plant	Flower Color and Type	Habit	Additional characters
<i>Rhododendron</i> 'Robleg' (U.S. Plant Pat. No. 15,227)	White, single flowers with a yellow-green blotch.	Mid-sized/large: 120 cm-150 cm × 20 cm-120 cm.	Hardy to Zone 7 Diploid
<i>Rhododendron</i> 'Robley' (U.S. Plant Pat. No. 25,046)	White (RHS White Group 155B-D), single flowers lacking yellow-green blotch.	Compact: 75 cm × 90 cm.	Hardy to Zone 7 Diploid
<i>Rhododendron</i> 'NCRX5'	White, double flowers with a yellow-green blotch.	Mid-sized: 75 cm to 100 cm-120 cm.	Hardy to Zone 6b Tetraploid

BRIEF DESCRIPTION OF THE DRAWINGS

'NCRX5' is illustrated by the accompanying photographs, which show the plant's form, foliage, and inflorescences. The colors shown are as true as can be reasonably obtained by conventional photographic procedures. Colors in the photographs may differ slightly from the color values cited in the detailed botanical description, which accurately describe the new hybrid *Rhododendron*.

FIG. 1: Image showing dense plant habit and form and floriferousness of a 3-year-old container-grown plant in Grand Haven, Mich., in 2020.

FIG. 2: Image showing fully expanded trusses with large, double white flowers on a 2-year-old container plant grown in Grand Haven, Mich., in 2020.

DETAILED BOTANICAL DESCRIPTION

The following is a detailed description of the botanical characteristics of the new and distinct hybrid evergreen azalea known by the denomination 'NCRX5'. The detailed description was taken on a 3-year-old container-grown plant in Mills River, N.C., in 2020. Data was supplemented by observations/measurements taken on a 5-year-old individual located in field trials in Mills River, N.C., as well as information provided from cooperators in Grand Haven, Mich. All colors cited herein refer to The Royal Horticultural Society Colour Chart (The Royal Horticultural Society (R.H.S.), London, 2015 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 is practicable.

Plant:

Plant type.—Evergreen flowering shrub.

Growth habit/form.—Globose.

Height at maturity.—75 cm-100 cm.

Width at maturity.—100 cm-120 cm.

Roots.—Fibrous. Tan, not accurately measured with R.H.S. chart.

Growth rate.—Moderate.

Shoots and branches:

Shoots (softwood new growth).—Shape: Rounded. Color: RHS Yellow-Green Group 147D. Texture: Pubescent. Pubescence color: RHS Greyed-Orange Group 147D. Shoot diameter: Approximately 2-3 mm. Shoot length: Variable, ranging from approximately 12 cm-20 cm. Internode length: Approximately 3 cm-5 cm.

Shoots (prior year's woody shoots).—Shape: Rounded. Color: Greyed-Orange Group 164B with small exfoliating streaks and sections (RHS Greyed-Orange Group 165A and 165B). Stem diameter: About 2 mm-5 mm. Stem length: Variable, ranging from about 6-20 cm. Stem aspect: 0-90°. Texture: Pubescent.

Branches.—Shape: Rounded. Color: RHS Greyed-Orange Group 166A with exfoliating sections (RHS Greyed-Orange Group 165B). Texture: Gently exfoliating. Branch diameter: Variable, ranging from about 5-10 mm. Branch length: Variable, ranging from about 10 cm to 30 cm. Branching: Freely branched. Number of lateral branches: Approximately 30-50.

Foliage:

Type.—Evergreen.

Arrangement.—Alternate.

Division.—Simple.

Shape.—Elliptic to obelliptic.

Apex.—Mucronate.

Base.—Cuneate.

Margin.—Entire, ciliate in some instances.

Venation.—Reticulate.

Leaf internode length.—Approximately 3 mm-8 mm.

Immature leaf.—

- Adaxial (upper) surface.*—
Color.—RHS Yellow-Green Group 146B.
Surface.—Lightly pubescent.
Pubescence color.—RHS White Group NN155B.
- Abaxial (lower) surface.*—
Color.—RHS Yellow-Green Group 146D.
Surface.—Pubescent along midrib.
Pubescence.—RHS White Group NN155B.
Mature leaf.—
Length.—Approximately 2.5-4 cm.
Width.—Approximately 1-2 cm.
Color.—
- Adaxial (upper) surface.*—RHS Green Group NN137A.
Abaxial (lower) surface.—RHS Green Group 138B.
Surface.—Both sides are lightly pubescent.
Pubescence color.—RHS Greyed-Orange Group 167C. Fall/winter color Adaxial side.—RHS Yellow-Green Group 146A. Abaxial side.—RHS Yellow-Green Group 146D.
- Petiole:
Shape.—Lunate.
Length.—Approximately 6-10 mm.
Width.—Approximately 1-2 mm.
Color.—
Adaxial side.—RHS Yellow-Green Group 144C.
Abaxial side.—RHS Yellow-Green Group 144B.
Surface.—Both sides are pubescent.
Pubescence color.—RHS Greyed-Orange Group 167C.
- Flower:
Type.—Congested terminal raceme (truss).
Flowering season.—Mid-Spring (Mid-April to June). Consistently reblooms in Early Fall (Late September to late October).
Flowering habit.—Free-flowering.
Flowers per truss.—3-5.
Consistency in display.—Blooms reliably in the Spring and consistently reblooms in the Fall.
Lastingness of flowers.—Each flower lasts approximately 3-7 days.
Fragrance.—None.
Self-cleaning or persistent.—Persistent.
- Truss bud:
Length.—About 10 mm-16 mm.
Diameter.—About 6 mm-10 mm.
Bud scales.—Number: Variable: 3-7; 4 is average. Length: Approximately 10 mm-18 mm. Width: Approximately 5 mm-11 mm. Color prior opening: RHS Yellow-Green Group 146B to RHS Green-White Group 157B. Color after flowers emerge: Bud scales fade to RHS Yellow-White Group 158A Texture: Adaxial side: Smooth. Abaxial side: Pubescent at tip. Color: RHS Greyed-Orange Group 165B.
- Emerging flowers prior to opening:
Shape.—Elliptic, acuminate.
Length.—2-3 cm.
Diameter.—13.5 mm-19 mm.
Color.—RHS White Group NN155 B and NN155C fading to RHS Yellow-Green 144C at base.
- Perianth:
Diameter at anthesis.—7 cm-9 cm.
Depth.—3.5 cm-5 cm.
Organization.—Petals and petaloids are arranged in two whorls.

- Aspect.*—Facing upwards and outwards.
Shape.—Broadly funnel-shaped.
Attachment.—Pedicellate.
- Petals:
Length.—Outer whorl: 6.5 cm-8.5 cm. Inner whorl/Petaloids: 3.5 cm-5.5 cm.
Width.—Outer whorl: 3 cm-4 cm. Inner whorl/Petaloids: 1.5 cm-3.5 cm.
Shape.—Obovate.
Apex.—Obtuse.
Base.—Acuminate
Margin.—Undulate.
Fused or unfused.—Fused at the midpoint.
Number.—10-12.
Color.—Color is consistent from opening to anthesis and between petals and petaloids. Adaxial (upper) surface: RHS White Group NN155 B, NN155C, NN155D. Blotch: RHS Yellow-Green 150C, sometimes RHS Yellow-Green 145C. Surface: Smooth, silky. Abaxial (lower) surface: RHS White Group 155B, 155C, 155D. Surface: Smooth, silky.
- Calyx/receptacle:
Shape.—Star-shaped, single-whorl of persistent sepals.
Sepals.—Number: 5. Length: 6 mm-9 mm. Width: 2 mm-4 mm. Shape: Lanceolate. Apex: Acuminate. Margin: Entire, ciliate. Color: RHS Yellow-Green Group 148C. Surface: Pubescent. Pubescence color: RHS Greyed-Orange Group 165C.
- Pedicels:
Shape.—Rounded.
Length.—Approximately 5 mm-15 mm.
Diameter.—Approximately 2 mm-5 mm.
Color.—RHS Yellow-Green Group N148C.
Surface.—Pubescent.
Color.—RHS Green Group 143C.
- Reproductive organs:
Reproductive organs.—Reproductive characters, especially anther length, stamen number, and anther dimensions can be highly variable. Some flowers exhibit stunted styles, filaments, and/or anthers.
- Gynoecium:
Pistil number.—0-1.
Pistil length.—4 cm-5.5 cm.
Pistil diameter.—0.5 mm-0.7 mm.
Stigma shape.—Orbicular to elliptic; flat.
Stigma length.—1 mm-2 mm.
Stigma width.—1 mm-2 mm.
Stigma color.—RHS Yellow-Green Group 151D.
Style color.—RHS White Group NN155C.
Ovary shape.—Dome-shaped.
Ovary length.—Approximately 5 mm-6 mm.
Ovary diameter.—Approximately 3 mm-4 mm.
Ovary color.—RHS Yellow-Green Group 147B (under pubescence).
Surface.—Pubescent.
Color.—RHS White Group 155A.
- Androecium:
Stamen number.—0-7.
Anther shape.—Ovoid with two apical pores.
Anther attachment.—Dorsifixed. Production of fully formed filaments and anthers is rare.
- Other characteristics:
 Propagation: Roots readily (>90%) from firm, terminal, softwood stem cuttings taken in mid-summer. 'NCRX5' roots well when the bottom 2 cm of the stems are treated for 5 seconds with 3,000-5,000 ppm of potassium salt indole-3-butyric acid (KIBA) dissolved in water and placed under intermittent mist for 8-10 weeks until roots form.

Fruit/seed:

Fruit type.—Capsule.

Fruit texture.—Pubescent.

Fruit length.—Approximately 5-6 mm.

Fruit diameter.—Approximately 3-4 mm.

Fruit color.—Immature: RHS Yellow-Green Group 147B. Mature: RHS Greyed-Orange Group N167A.

Seed number.—Seed is rarely produced.

Seed length.—Approximately 1 mm.

Seed diameter.—Approximately 0.5 mm.

Seed color.—RHS Greyed-Orange Group 164A.

What is claimed is:

1. A new and distinct cultivar of *Rhododendron* plant
10 named 'NCRX5' as herein illustrated and described.

* * * * *



FIG. 1



FIG. 2