

# ‘White Rock’ and ‘White County’ Peaches

John R. Clark<sup>1</sup> and James N. Moore<sup>2</sup>

Department of Horticulture, University of Arkansas, Fayetteville, AR 72701

Penelope Perkins-Veazie<sup>3</sup>

U.S. Department of Agriculture, Agricultural Research Service, South Central Agricultural Research Center, Lane, OK 74555

Additional index words. *Prunus persica*, fruit breeding, bacterial spot, *Xanthomonas campestris* pv. *pruni*

‘White Rock’ and ‘White County’ are the second and third white-flesh peach releases from the University of Arkansas peach [*Prunus persica* (L.) Batsch] breeding program. ‘White River’ was released in 2002 (Clark and Moore, 2003). The program began in the 1960s (Clark et al., 1999) and included an objective to develop adapted white-flesh peach cultivars for

on-farm, local, and shipping sales.

‘White Rock’ is an early midseason maturity clingstone with nonmelting flesh that is low-acid in flavor, and very firm when ripe and overripe. ‘White County’ is a midseason freestone with low-acid flavor and firm fruit. These cultivars have moderate to good resistance to bacterial spot [caused by *Xanthomonas campestris* pv. *pruni* (Smith) Dye] and should provide high-quality, low-acid options for

growers in areas where bacterial spot disease is a concern. These cultivars also expand options for growers in the middle to the upper-southern U.S. and other areas of the world with similar climatic conditions.

The names selected continue a series of white-flesh peaches named for noteworthy geographic locations in Arkansas. ‘White Rock’ is named for White Rock Mountain in Franklin County, Ark., and ‘White County’ for the county by that name in east-central Arkansas.

## Origin

‘White Rock’ resulted from a cross of Ark. 371 × Ark. 367 (Fig. 1), and ‘White County’ resulted from a cross of Ark. 392 × Ark. 433N (Fig. 2) made at the University of Arkansas Fruit Substation, Clarksville in March 1993. Seedlings were field-planted in Spring 1994 and the original seedling trees of each cultivar were selected in 1997 by J.N.M. and J.R.C. ‘White Rock’ was tested as Ark. 658 and ‘White County’ as Ark. 678.

Primary testing of these selections and comparison cultivars was at the Fruit Substation [west-central Arkansas, lat. 35°31'58"N and long. 93°24'12"W; U.S. Dept. of Agriculture (USDA) hardiness zone 7a; soil type Linker fine sandy loam (Typic Hapludult)]. They were also tested at the Southwest Arkansas Research and Extension Center, Hope [southwest Arkansas, lat. 33°42'30" and long. 93°33'0"; USDA hardiness zone 8a, soil type Bowie fine sandy loam (Fragic Palendult)]. In all testing, trees were either open-center trained and spaced 5.5 m between trees and rows, or trained to a perpendicular-V system with trees spaced 1.9 m and rows spaced 5.5 m. Trees were dormant

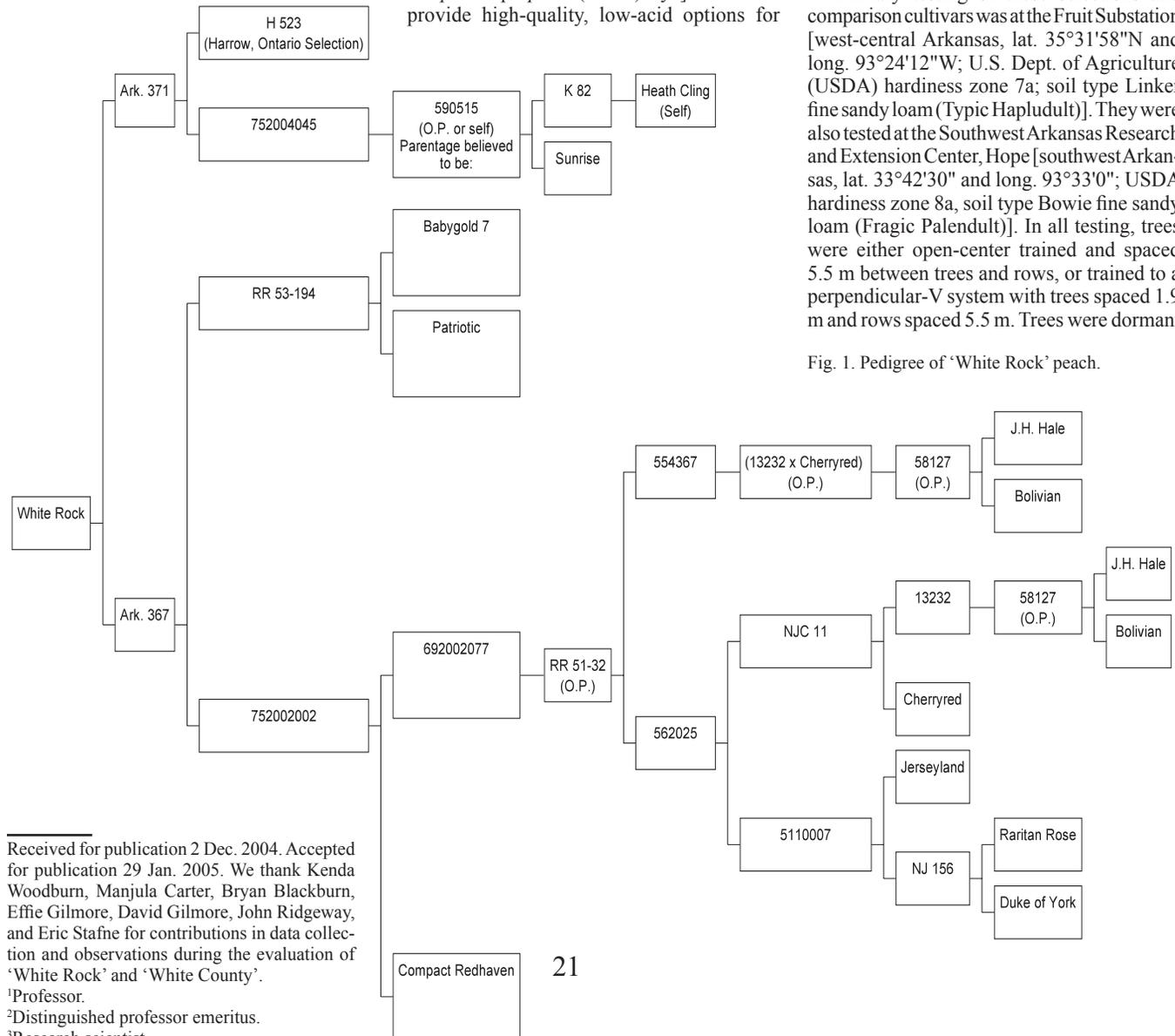


Fig. 1. Pedigree of ‘White Rock’ peach.

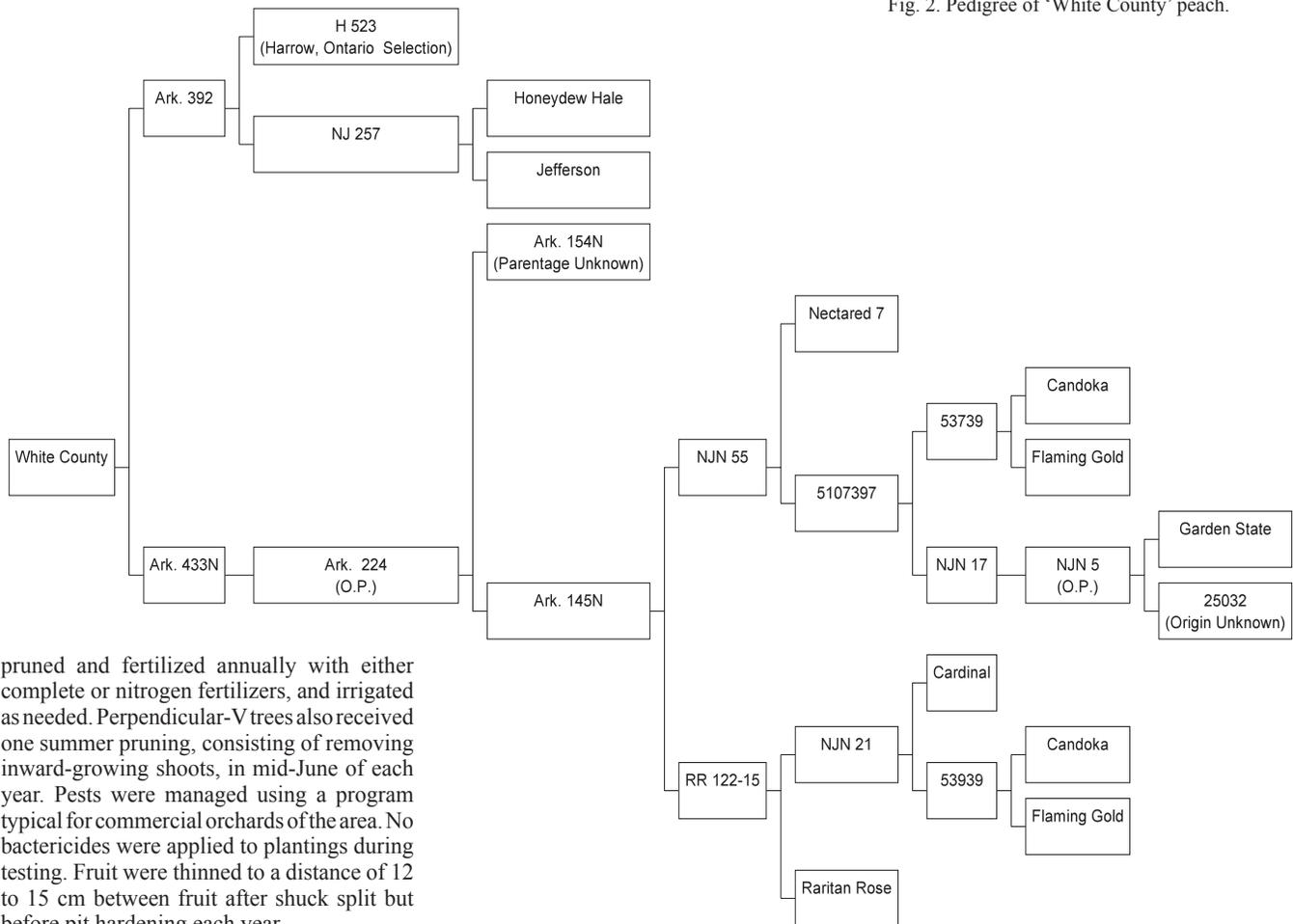
Received for publication 2 Dec. 2004. Accepted for publication 29 Jan. 2005. We thank Kenda Woodburn, Manjula Carter, Bryan Blackburn, Effie Gilmore, David Gilmore, John Ridgeway, and Eric Stafne for contributions in data collection and observations during the evaluation of ‘White Rock’ and ‘White County’.

<sup>1</sup>Professor.

<sup>2</sup>Distinguished professor emeritus.

<sup>3</sup>Research scientist.

Fig. 2. Pedigree of 'White County' peach.



pruned and fertilized annually with either complete or nitrogen fertilizers, and irrigated as needed. Perpendicular-V trees also received one summer pruning, consisting of removing inward-growing shoots, in mid-June of each year. Pests were managed using a program typical for commercial orchards of the area. No bactericides were applied to plantings during testing. Fruit were thinned to a distance of 12 to 15 cm between fruit after shuck split but before pit hardening each year.

A trial consisting of open-center-trained, two-tree observational plots of 'White Rock' and 'White County' and comparison cultivar 'Redhaven' (Okie, 1998) on 'Lovell' rootstock was maintained at Clarksville and data were collected from these trees or the original selection trees from 1998 through 2003. Dates for 10% and full bloom (90% of flowers open) and first harvest were recorded, along with ratings of bloom amount (intensity) on a 1 to 5 scale, with heaviest bloom = 5 rating. Fruit ratings in the orchard at first harvest were taken from 1998–2003 for shape, firmness, skin color, flesh color, finish, and flavor. Trees were rated for vigor, crop, and health, with an emphasis on bacterial spot severity on leaves or fruit. Rating scale for these fruit and tree variables was 1 to 10, with 10 = most desirable. An exception was a rating of 7 to 8 being most desirable for vigor and a rating of 10 indicated excessive vigor. Additionally, a five-fruit sample was collected each year from 1998–2003 and average fruit weight and soluble solids using a bench refractometer (Abbe model, Fisher Scientific, Pittsburg, Pa.) were determined. Also from this sample, split pit percentage was recorded and percent blush on fruit skin was estimated. From this same five-fruit sample, fruit diameter and length were measured along with color. Color coordinates ( $L^*$ ,  $a^*$  and  $b^*$ ) for fruit skin (blush and ground color) and flesh color were measured with a chromameter (CR-200 with an 8 mm aperture, Minolta, Inc., Ramsey, N.J.), and used to determine chroma  $C^*$  (McGuire,

1992). Fruit skin and flesh colors were also assigned Royal Horticultural Society (RHS) *Colour Chart* designations (Royal Horticultural Society, 1966).

A replicated trial of perpendicular-V-trained trees of 'White Rock' and 'White County' and standard cultivars Carolina Belle and Summer Pearl on 'Lovell' rootstock was established at Clarksville in 1999. An additional trial of the newly released cultivars and 'White River', 'Nectar', and 'Winblo' (Okie, 1998) was established in 2000 and perpendicular-V trained. Data collected on these plantings were full bloom and first harvest date, yield, average fruit weight, and rating for bacterial spot

incidence on fruit and leaves. Data were collected in 2001–04 for both plantings. Bacterial spot ratings in this planting were based on a 6-point scale, with 0 = no bacterial spot and 5 = severe bacterial spot infection with a rating of 3 to 4 commercially acceptable. A replicated trial at Hope, also trained to a perpendicular-V, including 'White Rock' and 'White County' on 'Lovell' rootstock was established in 2000 and data were collected in 2001–04 for full bloom, yield, fruit weight, and peach scab (caused by *Cladosporium carpophilum* Thuem.) presence. In each planting, four single-tree replications arranged in a randomized complete block design were utilized, and data for each year were

Table 1. Fruit and plant characteristics of three white-flesh peach cultivars and 'Redhaven' (yellow-flesh) peach from two-tree observational plots, University of Arkansas Fruit Substation, Clarksville, 1998–2003. Data for fruit weight, soluble solids, firmness, split pits, and percent blush based on a five-fruit sample collected each year at first harvest date. Data are mean values  $\pm$  the standard deviation.

Characteristic	White Rock	White County	White River	Redhaven
<b>Fruit</b>				
First harvest date	25 June $\pm$ 2	14 July $\pm$ 3	20 July $\pm$ 4	30 June $\pm$ 5
Days after full bloom	90 $\pm$ 2	110 $\pm$ 3	122 $\pm$ 4	99 $\pm$ 5
Fruit weight (g)	141.5 $\pm$ 37	257.7 $\pm$ 63	252.3 $\pm$ 43	147.1 $\pm$ 20
Soluble solids %	12.2 $\pm$ 2.1	13.9 $\pm$ 1.8	13.2 $\pm$ 1.0	12.3 $\pm$ 2.6
Firmness rating <sup>z</sup>	8.7 $\pm$ 0.5	9.0 $\pm$ 1.1	7.5 $\pm$ 0.5	---
Split pits %	0 $\pm$ 0	0 $\pm$ 0	0 $\pm$ 0	5 $\pm$ 10.0
Percent blush	72 $\pm$ 9	83 $\pm$ 11	72 $\pm$ 11	79 $\pm$ 17
<b>Plant</b>				
10% bloom date	20 Mar. $\pm$ 5	20 Mar. $\pm$ 5	20 Mar. $\pm$ 7	16 Mar. $\pm$ 7
Full bloom date	27 Mar. $\pm$ 3	26 Mar. $\pm$ 3	26 Mar. $\pm$ 5	23 Mar. $\pm$ 7
Bloom amount rating <sup>y</sup>	2.8 $\pm$ 0.8	3.0 $\pm$ 0.6	3.5 $\pm$ 0.8	2.8 $\pm$ 0.8

<sup>z</sup>Firmness rating based on a 1 to 10 scale, with 10 being very firm.

<sup>y</sup>Based on observation of mature trees at full bloom, using a scale of 1 to 5, with 5 = very heavy bloom.