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Evaluation of Nectarine Cultivars in Northern and Southern Mississippi

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Nectarines, like peaches, belong to the Rosaceae family. In fact, the nectarine is a peach with recessive genes that result in fuzzless fruit (11). According to Jen-Chi Wen et al. (3), most aspects of nectarine trees, leaves, and flowers are indistinguishable from those of peach; however, researchers have noted differences between peaches and nectarines that extend beyond the lack of fuzz. These differences include fruit size, shape, firmness, external color, aroma, flavor, and disease resistance. Information on the performance of nectarine cultivars in Mississippi was nonexistent until Matta et al. (6) reported the performance of nectarine cultivars in Northern Mississippi. Prospects for nectarine production in Mississippi appear viable. Breeding programs at the University of Florida (7), by USDA at Byron, Georgia (5), and at Clemson University, South Carolina (1) are developing new nectarine cultivars for growers. With development of new more desirable cultivars, interest in nectarine production in Mississippi has prompted growers to seek information on adapted cultivars. Inquiries concerning performance and adaptability of nectarine cultivars prompted establishment of nectarine cultivar evaluations. This bulletin presents results of nectarine cultivars evaluated from 1984 through 1992 in northern Mississippi and from 1984 through 1995 in southern Mississippi. Results are reported for each location.

Methods and Materials

Cultivars Tested

Nectarine cultivars were evaluated over a 9-year period at the MAFES Pontotoc Ridge-Flatwoods Branch Experiment Station, Pontotoc, MS, and over a 7-year period at Alcorn State University, Lorman, MS. Both stations evaluated 'Redgold,' 'Stark Sunglo,' 'Fantasia,' 'Durbin,' and 'Early King.' 'Karla Rosa,' 'Carolina Red,'

and 'Earliscarlet' were evaluated at Lorman but not at Pontotoc. Other cultivars evaluated at Pontotoc but not Lorman were 'Harko,' 'Mericrest,' 'Nectared,' 'Stark Redgold,' 'Hardired,' 'Francesco,' 'Stark Crimson Gold,' 'Garden State,' 'Early Sun Grand,' 'Red Chief,' 'Nectared,' 'Tiger,' 'Firebright,' 'Lafayette,' 'Flavortop,' and 'Stark Early Bird.'

Pontotoc

Twenty-one nectarine cultivars were evaluated from 1984 through 1992 at the Pontotoc Branch (34° 09'N and 81° 00'W). Trees were spaced 14 x 12 feet (4.3 x 3.7 meters). Trees of 3/4-inch (1.9-cm) caliper were planted February 15, 1984. Nine cultivars were on 'Halford' rootstock and the remaining cultivars were on 'Lovell' rootstock ([Table 1](#)). Soil was Atwood Silt Loam with a pH of 6.0. Trees were trained to a 8-foot x 4-foot (2.4 x 1.2-m) maintained hedgerow.

Lorman

Nine nectarine cultivars were evaluated from 1984 through 1995 at Alcorn State University (31° 49' N and 91° 04' W). Trees were spaced 14 feet x 12 feet (4.3 x 3.7 m). Trees of 3/4-inch (1.9-cm) caliper were planted February 5, 1989. All nine cultivars were on Lovell rootstock ([Table 5](#)). Soil was Memphis Clay Loam with a pH of 6.5. Trees were trained to the palmatte system.

Experimental Design

The experimental design at each location was a completely randomized design with four single tree replications. Yields of cultivars were subjected to analysis of variance and yield means were separated by Duncan's Multiple Range Test.

Cultural Practices

At both locations, the sod-strip method of culture was maintained using herbicide under tree rows (1.2-m band) with a mowed grass strip between rows.

In 1985, trees were fertilized with 1.75 ounces (50 grams) of ammonium nitrate on April 15. In subsequent years (1986-1989), trees received split application of ammonium nitrate at the rate of 3.5 ounces (100 g) per tree on March 19 and August 3, respectively. Current spray schedule recommendations provided by the Mississippi Cooperative Extension Service were followed for control of diseases and insects. The trees were drip irrigated as needed.

Fruit were thinned by hand to a distance of approximately 6 inches (15 cm) apart. Fruit thinning was conducted when fruit were approximately 15 mm in diameter, about 24 days after bloom. Fruit from each cultivar were harvested when maturity was indicated by changes in skin color. Therefore, a given tree was multiple harvested when fruit were fully matured. Harvest date was defined as the number of days required to harvest all fruit from a given tree. To avoid picking soft fruit, fruit were not allowed to become over-ripe.

Data Collected

Observations recorded at both locations were identical each year. They included yearly production (expressed as pounds per tree), cumulative yield, full bloom date, and harvest date. Trees were considered in full bloom when 90 percent of the flowers were fully opened. In addition, fruit characteristics, which included flesh color, skin color, and stone freeness, were recorded.

Results and Discussion

Pontotoc Flesh color was yellow, except 'Redchief' and 'Lafayette,' which had white flesh ([Table 1](#)). Skin color ranged from yellow red for 'Stark Redgold' to vivid red for 'Stark Sunglo.' All cultivars had freestone fruit with the exception of 'Harko,' 'Early Sun Grant,' and 'Nectared,' which had semi-clingstone fruit. Full bloom generally occurred from late February through late March, depending on cultivars and year ([Table 2](#)). 'Early King' and 'Flavortop/H' bloomed earlier than the other cultivars. 'Lafayette' and 'Nectared #4' were late blooming. The first production year was 1987 and all trees flowered profusely. However, on March 31, 1987, the orchard temperature dropped to 24°F (-4.5°C) and destroyed a potential commercial crop of all cultivars which were post-bloom. On April 10, 1989, the orchard temperature dropped to 24°F (-4.5°C), and again a potential commercial crop of all cultivars was destroyed. Fruit was harvested in 1988, 1990, 1991, and 1992 when no major freeze damage occurred. Harvest period ranged between May 22 through July 23, depending on cultivar and year ([Table 3](#)). 'Early King' was the earliest-maturing cultivar, followed by 'Durbin,' 'Stark Crimson Gold,' and 'Stark Early Bird,' which matured in late May to early June and mid-June. Late-maturing cultivars were 'Redchief,' 'Garden State,' 'Francesco,' and 'Stark Redgold,' which matured in mid- to late July.

Fruit yield varied depending on year and cultivar ([Table 4](#)). 'Harko,' 'Redgold,' 'Stark Sunglo,' and 'Hardired' yielded more than 200 pounds (90.0 kg) per tree cumulative yield and were considered good producers. 'Mericrest,' 'Nectared #6,' and 'Durbin' yielded 191.5 pounds (87.0 kg), 190.8 pounds (86.7 kg), and 182.5 pounds (82.9 kg) cumulative yield, respectively. 'Early Sun Grand,' 'Stark Early Bird,' 'Lafayette,' and 'Early King' were extremely low producers with cumulative yield between 10.9 pounds (4.9 kg) to 86.2 pounds (39.2 kg).

Nectarine yields in Alabama ranged from a low of 10 pounds (4.5 kg) per tree to a high of 105.5 pounds (48.0 kg) per tree based on a 4-year average (2). In this study, the lowest 4-year average was 10.9 pounds (4.9 kg) per tree for 'Early King;' the highest was 99.5 pounds (45.2 kg) per tree for 'Harko.' In Alabama, 'Stark Crimson Gold,' 'Stark Redgold,' 'Stark Sunglo,' and 'Flavortop' yielded 69.9 pounds (31.7 kg), 66.1 pounds (30.0 kg), 32.4 pounds (14.7 kg), and 29.9 pounds (13.6 kg) per tree (5), respectively. In Mississippi, 'Flavortop' outyielded 'Flavortop' in Alabama by 9 pounds (4.1 kg) per tree; 'Stark Sunglo' out-yielded 'Stark Sunglo' in Alabama by 23 pounds (10.5 kg) per tree. However, 'Stark Crimson Gold' and 'Stark Red Gold' in Alabama outyielded 'Stark Crimson Gold' and 'Stark Red Gold' in Mississippi by 46 pounds (20.9 kg) to 29 pounds (13.7 kg) per tree, respectively. Yields in Alabama tended to be slightly higher for all cultivars over a 4-year period and averaged 49 pounds (22.3 kg) compared to 42 pounds (19.1 kg) per tree in Mississippi.

Comparing nectarine yields to peach yields in Mississippi, peaches averaged 18.5 pounds (8.4 kg) per tree per year (4) and nectarines averaged 10.5 pounds (4.8 kg) per tree per year. Thus, peaches were almost twice as productive as nectarines.

In this study, current spray schedule recommendations for peaches provided by the Mississippi Cooperative Extension Service were followed for disease and insect control. Neither disease nor insect susceptibility were monitored or quantified. It is reported that lack of pubescence predisposes the nectarine fruit to be more susceptible to brown rot disease and insect attack and severely limits production areas (9). However, disease or insect pressure did not seem any greater for nectarines than for peaches grown in an adjacent orchard.

Lorman

Flesh color was yellow on all cultivars except 'Karla Rosa,' which had white flesh ([Table 5](#)). Skin color ranged from red for most cultivars to bright red with yellow for 'Fantasia.' All cultivars had freestone fruit with the exception of 'Karla Rosa' and 'Sunfre,' which had clingstone fruit.

Full bloom generally occurred from mid-February through early March, depending on cultivar and year ([Table 6](#)). 'Karla Rosa' and 'Early King' bloomed earlier than the other cultivars. 'Durbin' and 'Sunfre' were late blooming.

Fruit was harvested in 1992, 1993, 1994, and 1995 when no major freeze damage occurred. Harvest period ranged between May 27 through early July, depending on cultivar and year ([Table 7](#)). 'Early King' was the earliest-maturing cultivar followed by 'Karla Rosa,' 'Sunfre,' 'Carolina Red,' and 'Durbin,' which matured in late May to early June. Late-maturing cultivars were 'Red Gold,' 'Stark Sunglo,' and 'Fantasia.'

Fruit yield varied depending on year and cultivar ([Table 8](#)). 'Karla Rosa' and 'Sunfre' yielded more than 70 pounds per tree cumulative yield and were considered the top producers. 'Carolina Red,' 'Earliscarlet,' and 'Durbin' produced between 33 to 40 pounds cumulative yield. 'Red Gold,' 'Stark Sunglo,' and 'Fantasia' were extremely low producers with cumulative yield between 14.9 pounds to 8.8 pounds.

Nectarine yields in northern Mississippi (Pontotoc) ranged from a low of 10.9 pounds (4.9 kg) per tree for 'Early King' to a high of 99.5 pounds (45.2 kg) per tree for 'Harko' based on a 4-year average. At Lorman, the lowest 4-year average was 2.2 pounds per tree for 'Fantasia' and a high of 22.6 pounds per tree for 'Karla Rosa.' Although not statistically compared, yields at Pontotoc appear higher for all cultivars over a 4-year period and averaged 42 pounds per tree compared to 9.4 pounds per tree at Lorman. Low yields in southern Mississippi may be the result of insufficient and erratic flowering attributed to insufficient chilling during winter months. 'Karla Rosa' and 'Sunfre' performed well because they are considered to have a low chilling requirement (700 and 525 hours chilling) compared to the remaining cultivars, which have a high chilling requirement (over 800 hours). Also, early blooming of cultivars subjected the flowers to spring freezes, more freeze damage, and thus low crop yield.

Conclusion

Results illustrate harvest yield of nectarines in northern and southern Mississippi. Based on cumulative yield, 'Harko,' 'Redgold,' 'Stark Sunglo,' and 'Hardired' are recommended for northern Mississippi. 'Karla Rosa,' 'Sunfre,' and 'Carolina Red' are recommended for southern Mississippi.

Nectarines, as indicated by bloom period, were very susceptible to late spring freezes. Bloom period at Alcorn was approximately 2 weeks earlier than at Pontotoc and perhaps rendered buds more susceptible to freeze injury. As would be expected, because of higher day/night temperatures at Lorman and earlier bloom, cultivars matured earlier in South Mississippi.

On the basis of yield data and other performance characteristics presented in this bulletin, the potential for nectarine production in Northern Mississippi appears highly promising. However, freezes during the bloom period limit nectarine yields. Low nectarine yields in southern Mississippi indicate that the chilling requirement of cultivars is an important factor. Continued research is needed to compare yields of cultivars with a low chilling versus those with high chilling requirement. In addition, the amount of crop loss due to late spring freezes must be determined.

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Citations

1. Cain, D. W. 1986. Performance of selected peach and nectarine cultivars in South Carolina. Proceedings of the 45th Annual Convention, National Peach Council, pp. 55-58.
2. Dozier, W. A., J. W. Knowles, and H. W. Ivey. 1985. Peach and nectarine varietal performance in the wiregrass area of Alabama. Alabama Agri. Expt. Sta. Bull. 570.
3. Len-Chi Wen, K. E. Koch, and W. B. Sherman. 1995. Comparing fruit and tree characteristics of two peaches and their nectarine mutants. J. Amer. Soc. Hort. Sci. 120:1-3.
4. Layne, E. C. 1986. Canada's peach and nectarine breeding programs. Proceedings of the 45th Annual Convention, National Peach Council, pp. 47-52.

5. Matta, F. B., Max L. Allison, Juan Silva, and J. P. Overcash. 1986. Evaluation of peach cultivars for northern Mississippi, 1973-1986. Mississippi Agr. and Forestry Expt. Sta. Bull. 948.
6. Matta, Frank B., R. C. Sloan, Jr., and O. P. Vadhwa. 1994. Performance of nectarine cultivars in northern Mississippi. Fruit Varieties J. 48:235-240.
7. Okie, W. R. 1986. USDA peach and nectarine breeding at Byron, Georgia. Proceedings of the 45th Annual Convention, National Peach Council, pp. 43-46.
8. Overcash, J. P. 1966. Peach variety evaluation in Mississippi. Mississippi Agricultural and Forestry Expt. Sta. Bull. 721.
9. Sherman, W. B. , J. Rodriguez, A., and B. L. Topp. 1992. Peaches and nectarines developed but not released by the University of Florida. Fruit Var. J. 46:124-127.
10. Weinberger, J. H. 1975. Growing nectarines. Agriculture Information Bulletin 379. Agri. Res. Service, United States Department of Agri. Washington. DC.
11. Westwood, N. W., Temperate-zone pomology. 1993. Third Edition. Timber Press, Inc., Portland, OR.

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