

The Plum Industry in the Southeastern United States

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The plum-growing industry in the southeastern United States is small and fragmented. Its current lack of significance is underscored by the fact that the publication "Agricultural Statistics" fails to list plum production in any southern state. The most recent figures published by the Bureau of the Census of the Commerce Department report the agricultural census of 1974. For their purposes, only units having \$2,500 or more in sales are considered to be farms. The 1974 on-farm plum production report for the Southeastern Region (16 states from Delaware to Oklahoma and Texas) indicated 891 acres of plums (521 a bearing) producing 1,447,400 lb or 34,460 bu of fruit. The states with the greatest acreage were Texas (299 a) and Georgia (126 a). In 1974, acreage and bearing tree totals were 66 and 53%, respectively, of their 1969 levels. On the other hand, the number of non-bearing trees had risen 140%. Thus, the overall tree population decline was to 73% of the 1969 level. I feel that these declines were merely secular and reflected the rationalization of agriculture which was occurring during the period toward more specialized and extensive units. The publication of the 1979 census figures is being anticipated with great interest.

When speaking of the plum industry of the deep South, one is speaking of an industry based primarily on the Japanese plum, *Prunus salicina* Lindl. crossed with other diploid plum species. In a very true sense, all efforts to breed plums adapted to the states athwart the Atlantic and Gulf Coasts are exercises in maximizing the amounts of fruit quality from *P. salicina* which can be incorporated into

native plum backgrounds. The importance of the native genes cannot be understated. Almost without exception, the high-quality commercial plums of the West Coast succumb to bacterial canker (*Pseudomonas syringae* van Hall) and bacterial spot (*Xanthomonas pruni* (E. F. Sm.) Dows.) when planted in our southland. If the southern plum industry is to develop further, new cultivars must be bred which embody the best of both worlds.

The plum season in the Mid-south in most years lasts from mid-May into July. I shall give here short descriptions of the 6 major cultivars which are the backbone of production. Several others will also be mentioned.

Six Weeks is thought to be a hybrid of *P. salicina* cv. Abundance X *P. angustifolia* Marsh., the Chickasaw plum which is the most common hedgerow plum of the deep South. Six Weeks resulted from a purposeful hybridization made by J. S. Kerr of Texas. It was listed in his catalog as early as 1901 and has persisted since. The fruits are fair-sized if thinned, oblong, and yellow tinged red, but going over to a bright cherry-red when overripe. Six Weeks is our earliest cropper, entering the "green-plum" market in mid-May. The early cropping is very desirable, but, on the other hand, Six Weeks splits badly on both fruit and tree trunk.

Bruce is a hybrid of *P. salicina*, *P. munsoniana* Wight & Hedr., and possibly *P. angustifolia* var. *varians* Wight & Hedr. that constitutes the greatest share of the early or green-plum crop in the South. The green-plums are a series of late-May and early-June maturing plums which combine Japanese and native germplasm. They are ge-

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netically red plums which are harvested when only the first trace of red color is visible along the suture. These plums turn red on the shelf. Bruce is highly favored by growers because it produces masses of bloom over an extended period, and thus tends to be a sure cropper, if only on rebloom after frosts. Bruce is reputed to be self-unfruitful, but I have seen it set heavy crops at times and places where little or no other pollen appeared to be available. Most commercial plum jelly produced in our region is made from Bruce.

The primary plum in the season about a week after Bruce is Methley. Receiving the best attributes from both sides of its pedigree, *P. salicina* X *P. cerasifera* Ehrh., Methley combines fruit quality and self-fertility, albeit at the expense of fruit size. Growers regard it as a universal pollinator. Indeed, Methley does shed copious quantities of strong pollen over an extended period of nearly a week. Methley is relatively long-lived and resistant to the complex of diseases endemic to the southeastern United States, with the exception of black knot, *Apiosporina morbosa* (Schw.) Theiss. & Spd.

In our plum industry, the strong appearance of Methley signals the end of the green-plum season and the start of demand for dessert types. Methley provides dessert-quality fruit for a short period, but the seasonal flow soon produces a demand for increased fruit size. Southern growers meet this demand mainly with three cultivars which are harvested over the second half of June.

Morris was developed at Texas A & M by J. B. Storey and H. H. Bowen from a self-pollinated seedling of Methley. It matures about a week later than its parent, is larger, and somewhat less flavorful. The worth or disadvantage of the latter attribute is often debated without resolution. Its color is a deep reddish-violet. Mor-

ris has a chilling requirement of 750 hours that seems to be more strictly adhered to than in most plums.

Since Santa Rosa, the most widely grown diploid plum cultivar of this country, is so susceptible to bacterial canker, it has been tried and discarded many times in the Southeast. The only "California" plum grown to any extent is the Frontier plum of J. Weinberger. Without completely delving into its pedigree, it can be pointed out that Frontier is derived from *P. salicina*, but also has small leanings of *P. americana* Marsh. and *P. simonii* Carr. Its maturity is quite variable, being nearly as early as Morris in some years and quite late in June in others. Frontier is apparently the most attractive plum we grow. Most customers will choose it from a roadside market display, forsaking all competition. Thus I assume that large, round, bluish-purple plums should be the prototype for future breeders to emulate.

The third current version of a full-season plum in the Southeast is Ozark Premier, bred and developed by P. H. Shepard of Missouri from a Burbank X Methley cross. It is a large, round, magenta plum in the late June season. The tree of Ozark Premier is low and spreading, making it very popular with growers, particularly those with customer-pick operations. The overall disease-resistance of Ozark Premier is marginal, so it may be expected to be replaced, probably by one or more of its own offsprings.

The active plum breeding program at Auburn University headed by J. D. Norton has released two disease-resistant cultivars which extend the southern plum season into July. The cultivar names, Crimson and Purple, are quite indicative of their appearances, and Crimson in particular is beginning to find a niche for itself. Dr. Norton has also released a dooryard plum, Homeside, and the first of the Ozark Premier offsprings to come on line

as a commercial plum in the South, AU Producer.

My own breeding program for USDA at the Byron Fruit and Tree Nut Lab is designed to be regional in scope. I expect to make my first release (a robust-growing, disease-resistant, high-yielding entrant) into the green-plum market later this year.

W. B. Sherman at Gainesville is investigating low-chill plums for Florida and similar locations.

In summation, future breeding trends seem to be the gathering together of three major attributes which at present exist, but, unfortunately, in separate material. We want good, strong, robust trees. We require resistance to bacterial spot on leaf, twig,

and fruit; bacterial canker and black knot; as well as whatever resistance or tolerance to the phony peach rickettsia-like bacterium (RLB) and the related plum leaf scald that can be accumulated. Thirdly, we must demand high fruit quality, adequate fruit size, and, at least eventually, that all cultivars be bluish-purple skinned and yellow or amber fleshed. I have not said anything about rootstocks because that is a subject in itself. We currently grow our trees on peach seedlings and suffer all the insults of peach short-life. But I tell you this, when it all comes together, the South is going to become a plum garden. We have the land, the climate, the water. Now we need the plums.

Pecan Cultivar Review—Southeast¹

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The Southeast is a major pecan producing region in the United States. However, due to humid nature of the region, production of high quality nuts is impeded by severe fungal diseases on many cultivars. This disease problem greatly reduces the number of cultivars acceptable for the Southeast. The Southeast has a definite need for more cultivars which produce high yields consistently, come into bearing at an early age, resist the major pecan diseases, are suitable for high density plantings, and have high nut quality (19, 38). According to Madden, it is 5 to 8 years after a cross is made until the hybrid seedlings produce their first nuts (13). This fact emphasizes the importance of long term support in breeding programs.

Grower demand for improved cultivars suitable for high density plant-

ing has increased because of the need to obtain an earlier return on the investment. The desired tree qualities are numerous interior lateral branches, resistance to diseases, vigorous wide-angle branches, late spring bloom, early and uniform nut maturity, and production of good yields after pruning (2, 22, 34, 46). Pecan trees grown in the Southeast appear to be more vigorous but branch less than trees grown in the Southwest (28). Thus, high density plantings may be more difficult to maintain in the Southeast.

Most of the older standard cultivars are not precocious, have little lateral branching and produce most of the crop on the periphery of the tree. Exterior pruning normally results in severe loss of yield for a number of years (16). Currently, mechanical pruning is the only recourse commer-

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