

PEACH VARIETY TESTS

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It is the purpose of this paper to discuss tests and observations since 1949 and to point out the trend of present research work. Much progress has been made in the development of varieties adapted to northwestern Florida but no new varieties have been found that are adapted to central and southern Florida. Presently available, adapted varieties for the peninsular areas were listed and described as far back as the 1905 proceedings of the Florida State Horticultural Society. Since they lacked size, color, firmness, flavor and other attributes expected in today's commercial varieties, it could not be expected that a large peach industry could develop based on these old varieties. The lack of variety change in the last fifty years is surprising, in a crop and an area so subject to change. However, improvement requires hybridizing with high quality varieties and this is not easily done in Florida.

In order to discuss the present procedure for selecting adapted peach varieties, it is essential to explain something about the chilling requirement of peaches. Weinberger (6,7) has contributed greatly to our understanding of this problem. Most common commercial varieties grown in Georgia require 750 or more hours at or below 45° F. during the period November 1 to February 15 to break buds and fruit well. Most peach varieties are very critical in their requirement for proper chilling and no sprays have yet been found that satisfactorily reduce this need. Fortunately there are varieties climatically adapted even to extreme southern Florida which can serve as breeding parents.

Quality and chilling needs of hybrids are usually intermediate between the parents with considerable segregation in these characters in the second generation. Crosses of low chilling and high chilling parents are difficult to make in central Florida because flowering the two types together at one location is practically impossible under normal conditions. High chill-

ing varieties fail to bloom in Florida, or furnish pollen too late for use on local adapted varieties. We are greatly indebted to J. H. Weinberger, formerly of the U.S.D.A. Horticultural Laboratory at Fort Valley, Georgia, for initial hybrids of varieties grown in Florida and other low-chilling selections with high quality commercial varieties. In the future, it may also be possible to make use of recent findings (3) that pollen can be kept viable as long as a year in a home freezer.

In Florida, chilling hours below 45° F. normally may be about 650 for northwestern areas to less than 50 for southern areas. Because of this extreme range, a different measure of chilling appears desirable for Florida conditions. Present observations indicate that the December-January mean temperature can be used very satisfactorily, so it has been used in this discussion to indicate range of adaptation. Typical December-January means range from 52° for far northwestern Florida, 58° for the Gainesville area to 68° for southern Florida.

Varieties that seemed to have some promise have been tested since 1949 but this variety testing program is now being changed to one of breeding. Data obtained from variety tests through the 1954 season are given in Table 1. Classification of varieties by chilling need is somewhat tentative, but is as accurate as present data will permit. The same may be said for ripening dates.

Further notes on promising new selections and old varieties of possible value for breeding are given below:

Red Ceylon—The only variety suited to extreme southern Florida; actual chilling need is not definitely known, but apparently lowest of any peach in Florida. Pollen was sent by Dr. R. Bruce Ledin of the Homestead Station to Dr. Weinberger in 1952 and several F₁ seedlings of Southland x Red Ceylon obtained. Six F₁ selections from this cross are being grown at Gainesville for fruiting tests and as large an F₂ population as possible will be grown for desirable segregates.

Jewel—Most important commercial variety for central Florida. Sweet, but lacking acidity, has considerable astringency in skin. Usually pointed at tips, flesh soft, only light blush, small size, usually averaging 1½" or less in diameter. Earliness and low chilling requirement are its principal characters of value.

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TABLE I - VARIETIES TESTED 1949 - 1954

Variety	Where Observed	Dec.-Jan. Mean Temp. Needed	Flesh	Size	Approx. Ripening Season	Remarks
Red Ceylon	H	62-68°	WF	Small	June	See text.
Angel	G	60-62	WF	Small	June 20	Skin bitter - no special merit.
Jewel	LOQJ	"	WF	Small	May 15 - 25	See text.
Hall's Yellow	G	58-60	YF	Small	July 10 - 20	Unattractive - no blush - too late.
Waldo	GOQJ	"	WF	Small	June 1	Light blush - similar to Jewel.
Dorothy N	G	"	YF	Small	July 15	Unattractive - no blush - too late.
Lutichau	G	54-56	WF	Small	June 20	Poor fruiting at Gainesville.
Panamint	G	"	YF	Small	June 15	Nectarine - see text.
Ventura	G	"	YF	---	---	See text.
Babcock	J	52-54	WF	Small	June 15	Fair color - no special merit.
Bobolink	G	52-54	---	---	---	No fruiting at Gainesville.
Burbank Elberta	MQJ	"	YF	Small	June 20	Others better for area.
Gold Dust	G	"	Y F	Medium	May 27 - June 1	See text.
Good Cheer	MQJ	"	WF	Medium	June 12 - 17	Probably higher chilling.
Maygold	GMQJ	"	YC	Medium	May 15 - 25	See text.
Welba	G	"	WF	---	---	No fruiting at Gainesville.
Meadow Lark	GMQJ	"	YF	Small	June 1 - 5	Others better for area.
Robin	GMQJ	"	WC	Medium	May 15 - 25	See text.
Silver Lode	G	"	---	---	---	Nectarine - no fruiting at Gainesville.
Springtime	QJ	"	---	---	---	See text.
Sunhigh	MQ	"	YF	Large	June 12 - 20	See text.

Abbreviations:

H - Homestead	W - White flesh
G - Gainesville	Y - Yellow
M - Monticello	F - Freestone
Q - Quincy	C - Clingstone
J - Jay	
L - Leesburg	

Early ripening is due mostly to very early bloom rather than to particularly rapid fruit development, however. Compared to good market varieties, it lacks size, flavor, color, shape and carrying quality. Several F_1 seedlings of Southland x Jewel were observed at Fort Valley, Georgia in 1953. Almost all showed the characteristic skin astringency of Jewel in varying degrees. Seeds were obtained of one of the best seedlings and an F_2 population is being grown at Gainesville.

Panamint—Patented variety of nectarine from breeding work of H. C. Swim, Armstrong Nurseries, Ontario, California. Tested at Gainesville, has been delayed all years, but less than other Armstrong low-chilling releases. May be worth further tests in west Florida. In general, varieties obtained to date that were bred for southern California conditions still have much too high a chilling requirement for the Gainesville area, and have even been delayed slightly some years in northwestern Florida. This is not surprising in view of the December-January means of 52 to 54° F. for southern California areas where most of the selections originated.

Ventura—Another southern California variety delayed rather badly at Gainesville in 1953-54. Listed by Lesley (4) as one of their lowest chilling and earliest ripening releases.

May be worth testing at Quincy; however, excellent varieties are already available for its season in that area.

Maygold—Originated by J. H. Weinberger, U.S.D.A., Fort Valley, Georgia, named and released in 1953. This came from a cross between Sunhigh and Southland. It appears to need about 650 hours chilling. It showed slight delay at Quincy in 1953-54 with December-January mean of 55° F. but fruited well. Good to excellent quality, with attractive blush and yellow skin color, firm but melting flesh, should stand handling well. It is not suitable for areas from Quincy east or south. It has been delayed all years at Gainesville and even at Monticello has not fruited satisfactorily. Several other selections from the Fort Valley Station are being tested in the northwestern area and look promising for that section, but need further evaluation.

Gold Dust—Patented variety introduced by Striblings Nurseries, Merced, California in 1950. Firm-fleshed, high quality. Not sufficiently tested, but looked quite promising at Quincy in 1954.

Robin—Originated in Ontario, California by W. E. Lammerts. Patented by Armstrong Nurseries, introduced in 1944, cross between Babcock and Mayflower. Delayed at Quincy

in 1954, but fruited well. Not suitable for areas east of Quincy or for peninsular Florida.

Springtime—New patented variety from Armstrong Nurseries, Ontario, California, originated by H. C. Swim, introduced in 1953. (Seedling of Lukens Honey x July Elberta) crossed with Robin. Not sufficiently tested in Florida, but may be suited to area from Quincy west. Described by originator as ripening two weeks ahead of Robin.

Sunhigh—Originated at New Jersey Agricultural Experiment Station, introduced in 1938. Excellent quality, firm. Delayed some at Quincy in 1954, but fruited well. Suggested only for area from Quincy west.

It is apparent by now that several high quality peaches give promise for areas from Quincy west, at least for local markets. It is anticipated that some or all of them would be delayed in bloom in exceptionally warm winters in that area. It is probably desirable to search further for good commercial types of slightly lower chilling. However, most of those mentioned fruited well after the near-normal winter of 1952-53 at Quincy and Jay and the slightly warmer than average 1953-54 season. In the 1953-54 season, some of the same varieties in an area further north flowered and ripened a week to 10 days earlier. This would indicate some caution at present in growing such varieties in Florida extensively for northern markets.

The greater present need for variety improvement is for areas east of Quincy and for peninsular Florida. Firm, yellow flesh types, ripening in May and June, of good color, shape and size are needed. In addition to material mentioned under descriptions of Red Ceylon and Jewel, about 90 F_2 seedlings are being grown at Gainesville from crosses made by J. H. Weinberger between Southland and a low-chilling Hawaiian seedling. This was a yellow x white flesh cross and segregation in the F_2 population is nearly the expected one-quarter yellow flesh type. Selection for fruiting and chilling will be made in the next two years. The F_1 seedlings of this cross, observed in 1953 at Fort Valley, were in general larger fruited, more promising, and lacked the skin astringency of Southland by Jewel F_1 seedlings.

Along with variety improvement, nematode-resistant stocks and methods for their propagation are being studied. On sandy soils, there is an acute need for better rootstocks than gen-

erally available in the past. Certain cultural practices such as mulching and use of resistant cover crops are helpful to some extent (1, 5), but still not completely satisfactory. Resistant plums for rootstocks such as Marianna are unsatisfactory because of incompatibility and short life, most trees failing by the third year. Native plum stocks give even shorter-lived trees, a majority dying before the end of the second year. Apricot, which is nearly immune to nematodes, has not been considered entirely satisfactory in other areas (2) but some trees have been budded on it for test under local conditions. In our 1954 nursery, the most resistant and promising materials are S-37 seedlings from Stribling's Nursery, Merced, California and progeny of seeds introduced from Okinawa. The latter has also been outstanding for rust resistance so far. It should be sufficiently low-chilling to fruit at Gainesville since the December-January mean temperature at Okinawa is nearly identical to that of central Florida. Stribling's S-37 selection and its seedlings appear to have too high chilling requirements to fruit well in Florida, but it has been found possible to propagate selected seedlings readily from cuttings under mist. Propagation of clonal material will also permit testing, more widely than could otherwise be done, for resistance in various areas to different types of nematodes.

SUMMARY

Several promising new peaches of high quality have fruited well in northwestern Florida from Quincy west, during the last two seasons. Adaptations of other varieties which have been tested since 1949 are given. Breeding for new varieties for other areas of Florida has been begun and progress to date is described.

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