Effects of Mild Winters on Peach Varieties in Mississippi

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After a peach tree loses its leaves in the fall, it must have a certain amount of exposure to cold weather before it will begin normal growth the following spring. When peach or other trees have not had sufficient exposure to cold weather to satisfy their chilling requirement, they will not grow normally even though weather is suitable for growth. This condition is called prolonged dormancy. The abnormally slow growth following the mild winter of 1949-50 can be seen in figure 1. The leaf formation of this tree is 6 to 8 weeks later than in normal years.

The problem of prolonged dormancy of peaches is one which occurs quite regularly in the extreme southern portion of Mississippi. In general, the nearer the orchard is to the Gulf Coast of Mississippi, the more likely the occurrence of this problem. This is true because the winter temperatures are highest near the Gulf and generally lowest in the extreme northern part of the state. Following the mild winters of 1948-49 and 1949-50, there was considerable evidence of prolonged dormancy of peaches both for fruit and leaf development at State College. Mild disturbances were observed as far north as Tupelo but no trouble was observed from this problem at Holly Springs for either year. The Delta area of Mississippi had sufficient cold weather during 1949-50 to prevent serious losses from this problem. The commercial peach growing areas near Meridian and Crystal Springs have failed to produce a satisfactory crop during the past two years because of this prolonged dormancy problem.

Peach growers have known for a long time that varieties reacted differently following a mild winter. Some varieties were affected more than others. This difference can be seen in figures 1 and 2. The Redhaven variety has a high chilling or cold requirement while the Southland has a low chilling requirement.

Dr. John H. Weinberger of the Horticultural Field Laboratory at Fort Valley, Ga., and others have worked on this problem by testing the reaction of trees and parts of trees following various cold treatments. By bringing peach twigs into the greenhouse after a certain number of hours of exposure to normal winter cold below 45 degrees F., Dr. Weinberger has determined the varietal requirements reported

in table 3. It is evident that the chilling requirement is often greater for leaves than it is for flower buds.

Hiley is a variety which has been known for a long time to escape this problem more frequently than many other varieties. It only requires 750 hours of temperatures below 45 degrees F. before February 15 to satisfy the "rest period" requirement or break the dormancy. During a normal winter, the "rest period" of most peaches would be completed by February 15. Mayflower has a very high chilling requirement and has had the prolonged dormancy problem more frequently than most varieties.

Following the mild winter of 1949-50, some varieties produced leaves which were nearly normal on May 18, 1950, as can be seen in tables 1 and 2. Figure 1 shows a very delayed type of foliage while another variety shown in figure 2 has nearly normal foliage. The age of tree does not seem to greatly influence the prolonged dormancy problem. Four-year-old Sullivan Early Elberta trees suffered from acute prolonged dormancy at Crystal Springs, Mississippi. In an orchard of Sullivan Early Elberta in which there were plots receiving either nitrogen, phosphorus or potash and all combinations of these fertilizers, there were no observable differences in the response to the prolonged dormancy problem at Crystal Springs following the mild winter of 1949-50.

Table 1. Effects of mild winter of 1949-50 on production of leaves by one-year-old trees of peach varieties at Crystal Springs and Newton, Mississippi.

	Percent of full leaf May 18, 1950 (Average for 12 trees)		
Variety	Crystal Springs	Newton	Ave.
Sunhigh	78	78	78
Dixigem	65	65	65
Triogem	65	59	62
Early Halehaven	57	65	61
Georgia Belle	54	63	59
Halehaven	54	61	58
Sullivan Early Elberta	51	51	51
Fireglow	49	52	51
Dixired	48	44	46
Elberta	44	45	45
Erly-Red-Fre	42	46	44
Redhaven	37	32	35

Table 2. Percent of full leaves formed by one-year-old trees of several peach varieties on May 18, 1950 at Crystal Springs and Newton, Mississippi, following the mild winter. Average for three trees at each location.

Variety	Newton	Crystal Springs	Ave.
O'Boy	80	80	80
Southland	77	83	80
Hiley	67	80	74
Newday	73		73
Sungold	70	73	72
Hale Harrison Brilliant	50	90	70
Afterglow	60	60	60
Burbank July Elberta		60	60
Prairie Daybreak	47	70	59
Starking Delicious	57	57	57
Golden Jubilee	53	60	57
Raritan Rose	57	53	55
Missouri	60	47	54
Prairie Rose		50	50
Prairie Sunrise	43	57	50
Ozark	50	40	45
Dixigold	50	40	45
Ambergem	37	50	44
Fairhaven	43	40	42
Prairie Dawn		40	40
Polly	43	35	39
Halberta Giant	30	43	37
Mayflower	33	30	32
Fisher	40	20	30
Rio Oso Gem		30	30

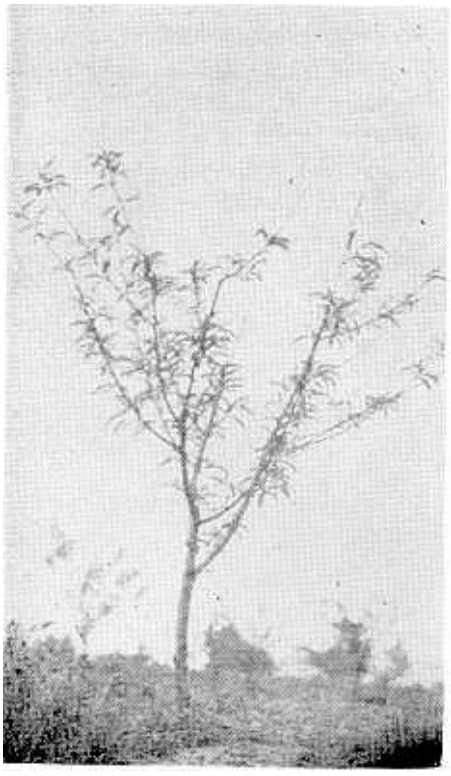

Figure 1. A one-year-old Redhaven peach tree suffering from prolonged dormancy. May 18, 1950 at Crystal Springs, Mississippi.

Figure 2. A one-year-old tree of Southland variety which has a low chilling requirement and had normal foliage on May 18, 1950 at Crystal Springs, Mississippi.

Following mild winters such as 1948-49 and 1949-50 fruit buds will bloom irregularly, if at all, and often they may "set" and begin to grow and if leaves do not develop at the same time the peaches may fall off. Even though prolonged dormancy may result in development of leaves late in the spring, the trees make good growth provided ample fertility is available and they are protected from insects and diseases and severe competition from grasses.

Figure 3 shows the development of the Redhaven peach tree which was suffering from acute prolonged dormancy on May 18. In most cases, the low vigor of commercial orchards following a mild winter is due to lack of proper fertilization or poor care rather than the after-effects of the prolonged dormancy.

Since peach growers in the southern third of Mississippi are often faced with the problem of prolonged dormancy, they can increase their

Table 3. The February 15 chilling requirement of peach varieties, calculated by Dr. J. H. Weinberger, U.S.D.A., Fort Valley, Georgia.

Variety	Hours required at 45° F. or below	
	Flower Buds	Leaf Buds
Afterglow	750	750
Burbank July Elberta	750	750
Dixigem	850	950
Dixigold	850	950
Dixired	950	1050
Early Halehaven	850	1050
Elberta	850	950
Erly-Red-Fre	850	1150
Fireglow	750	850
Fisher	950	1050
Georgia Belle	850	950
Golden Jubilee	850	850
Halberta Giant	850	850
Halehaven	850	950
Hiley	750	750
Mayflower	1150	1250
Newday	750	750
Raritan Rose	950	1150
Redhaven	850	950
Rio Oso Gem	850	950
Southland	750	750
Sullivan Early Elberta	850	950
Sunhigh	750	750
Triogem	850	950

Figure 3. The same tree as in Figure 1. August 29, 1950

chances of getting a peach crop every year by including some of the varieties which have a low chilling requirement. See table 3. Since it is not known how well some of these varieties are otherwise adapted to growing conditions in South Mississippi, their use is recommended only on a limited scale. Some of these varieties are: Afterglow, July Elberta, Hiley, Newday, Southland, and Sunhigh. They all require 750 hours of temperatures of 45 degrees F. or below before February 15 for normal fruit and leaf development. All of these varieties are included in the peach varietal orchards at the Truck Crops Branch Experiment Station at Crystal Springs and the Coastal Plain Branch Experiment Station at Newton. In a few years results from these experiments will indicate their general adaptation.

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Blueberry Variety Trials at Blacksburg, Virginia

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In the spring of 1946 a small planting of the highbush blueberry varieties was made at the Virginia Agricultural Experiment Station at Blacksburg. In view of the promising showing made by several of the varieties under soil conditions that vary widely from those generally recommended for blueberries, a short account of the cultural methods followed and the varietal response may be of interest to others interested in blueberries.

The site selected is a ravine bed on the Horticultural Farm about five miles south of Blacksburg. The soil of this site is deep, more fertile than adjoining areas of upland soil and has good moisture holding ability. It is of a clay loam nature and general farm crops have made good growth on it. Tests made on this