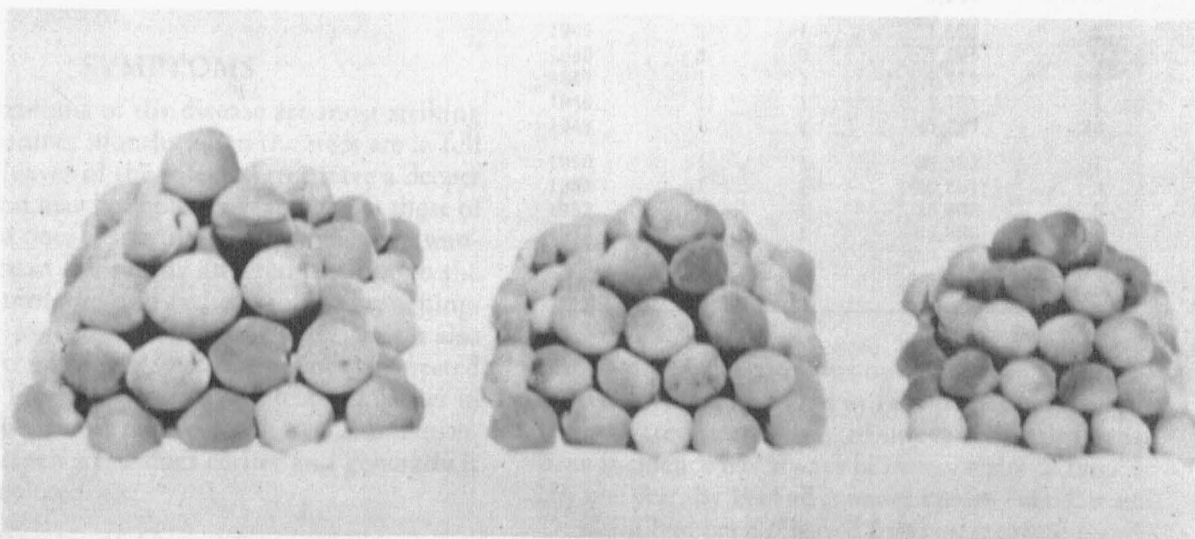


# The Phony Peach Virus

D. F. MILLIKAN



UNIVERSITY OF MISSOURI      COLLEGE OF AGRICULTURE  
AGRICULTURAL EXPERIMENT STATION

J. H. LONGWELL, *Director*

BULLETIN 661

COLUMBIA, MISSOURI

SEPTEMBER, 1955

### The Cover Page

**Top:** Phony diseased trees are dwarfed and retain their leaves longer in the fall. Healthy tree at left.

**Bottom:** Left, 50 Elberta peaches from healthy tree. Center, 50 Elberta peaches from tree infected 2 years. Right, 50 Elberta peaches from tree infected 4 years.

*Photos*—Courtesy R. N. Dopson, Phony Peach and Peach Mosaic Survey.

# The Phony Peach Virus

D. F. MILLIKAN

The most serious virus disease affecting the stone fruits in Missouri is known as the phony disease or phony peach disease. It was observed as early as 1885 by Samuel Rumph (3) in Georgia who regarded it as a curiosity. The dwarfed appearance of the infected trees seemed to offer commercial possibilities and the numbers were increased. By 1920 the seriousness of the disease was recognized and described by Neal (6). However, it was not until 1928 (1) that the disease was experimentally demonstrated to be caused by a virus. The manner of spread remained unknown until 1949 when Turner (7) showed that the disease could be transmitted by four species of leaf hoppers.

Annual surveys have been made in Missouri since 1930 but it was not until two years later that the disease was positively identified by Williams (5). Although the disease does not seem to spread very rapidly in our peach growing area, at least three of the insect vectors are present.

## SYMPTOMS

The symptoms of the disease are most striking during the summer months when the trees are in full foliage. The leaves of the infected tree have a deeper green color and may be somewhat larger than those of the unaffected ones. Particularly striking is the dwarfed appearance of the phony affected tree due to the shortened internodes and rather profuse branching. This is most noticeable in the young trees but it also shows up in the bearing trees. Leaves of the affected tree hang on longer in the fall and leaf out earlier in the spring. The fruit is reduced both in size and quantity but will ripen a few days earlier and generally is more highly colored.

## Results of Annual Surveys

Since 1930 annual Federal and State surveys have been made in the peach growing area of southeastern Missouri. The results of these surveys are listed in Table 1.

As indicated in Table 1, the greatest incidence of

TABLE 1 -- TWENTY-FIVE YEARS OF PHONY PEACH SURVEY

Year	Number counties		Number trees	
	Inspected	With Phony Peach	Inspected	Diseased
1930	6	0	*	0
1931	34	0	*	0
1932	15	2	*	20
1933	13	4	*	31
1934	3	3	*	3
1935	35	5	*	38
1936	37	14	363,625	219
1937	44	6	126,370	68
1938	48	1	92,269	2
1939	14	3	42,888	11
1940	18	1	44,568	1
1941	7	4	45,093	28
1942	4	2	14,020	20
1943	4	2	2,788	14
1944	4	1	2,256	4
1945	2	1	1,621	1
1946	3	0	1,395	0
1947	1	1	1,713	1
1948	1	1	1,431	1
1949	1	1	43,227	28
1950	1	1	36,733	1
1951	1	1	36,251	3
1952	1	1	38,605	5
1953	1	1	35,026	11
1954	1	1	30,628	6

\* -- Not available

phony peach infection was noted in 1936 when 219 diseased trees were found in 14 counties. Sixty-eight infected trees were reported in 1937, but since that time incidence has always been less than 30 trees in any one year. By 1944 all counties except Pemiscot and Dunklin had been released from quarantine on the basis that no disease had been found in them for three years. Pemiscot was released in 1946 leaving only Dunklin under quarantine. Emphasis since 1949 has shifted from the southern part of Dunklin county composed of home orchards to the commercial acreages around Campbell.

## PLUM SURVEY

The importance of *Prunus* species other than peach as possible reservoirs for the virus has been pointed out by Hutchins and Rue (4). Many of these *Prunus* species are only mildly affected with the disease and the symptoms produced by the disease are so slight that they can be detected only with great difficulty if at all. Fortunately, Hutchins in 1933 (2) described a chemical test on root tissue that has become very useful. This test is a staining procedure in which the diseased tissue stains with intense purplish spots. Disease-free roots do not show these spots but remain free from color or show faintly purplish tint. This test is used to screen various plum thickets adjoining peach orchards to detect the disease that is not easily detected by the eye. Skilled Federal workers have surveyed several plum thickets in Missouri since 1951 and the results are listed in Table 2.

Results from the chemical tests to date indicate that wild *Prunus* apparently are not a factor involved

TABLE 2 -- CHEMICAL TEST FOR PHONY PEACH  
IN WILD PLUM

County	Year	Location	
		No. thickets tested	No. thickets diseased
Dunklin	1951	limited	0
Dunklin	1952	5	0
Butler	1953	4	0
Carter	1953	2	0
Dunklin	1953	4	0
Ripley	1953	3	0
Dunklin	1954	4	0

in the spread of the phony peach virus in Missouri. Since there are several thickets growing adjacent to many of the peach orchards this finding by the Federal workers is of considerable importance.

## SUMMARY

Twenty-five years of survey for and eradication of the phony peach virus in Missouri indicate that the disease can be economically controlled. The importance of eradication cannot be over-emphasized as at least three of the known vectors are present in the state. Success of this program is demonstrated by the low annual incidence of infection as well as the removal of all counties from quarantine except Dunklin.

## LITERATURE CITED

1. Hutchins, L. M. 1929. Phony disease of peach. *Phytopathology* (Abs.) 19: 107.
2. Hutchins, L. M. 1933. Identification and control of the phony disease of the peach. *Ga. Off. State Ento. Bul.* 78, 55 pp., illus.
3. Hutchins, L. M., L. C. Cochran and William F. Turner. 1951. Phony pp. 17-25 illus., in virus diseases and other disorders with virus-like symptoms of stone fruits in North America. U.S.D.A. Agriculture Handbook 10.
4. Hutchins, L. M. and J. L. Rue. 1949. Natural spread of phony disease to apricot and plum. *Phytopathology* 39: 661-667.
5. Millikan, D. F. and Julius R. Anderson. 1954. The phony peach virus in Missouri. *Plant Dis. Rptr.* 38: 834-835.
6. Neal, D. C. 1920. Phony peaches: a disease occurring in middle Georgia. *Phytopathology* 10: (106-110), illus.
6. Turner, W. F. 1949. Insect vectors of phony disease. *Science* 109: 87-88.