THE EFFECT OF GRAPEVINES ON TREES

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On March 20, 1938, the author was called upon to determine the cause of the death of trees in a bend of Black Bear Creek northeast of Lela, Oklahoma. About four or five acres of timber had died two or three years previously, according to the owner, and he had suspected salt water from oil wells as the cause.

Examination, however, showed no evidence of salt water having killed the trees. The dead trees all had or had had large grapevines on them as did also many of the living trees around the border of the dead tree area. Increment borings were made from the dead trees with grapevines in them and from live trees without grapevines and also from live trees with grapevines. The annual rings in the outside inch of each core were counted. This gave the number of years that it had taken to add the last inch to the radius of the tree.

These ring counts disclosed that during the latter part of the lifetime of the dead trees they had grown very slowly, as compared with the live trees of the same locality. They also showed that live trees with large grapevines on them were growing more slowly than similar trees in the same area with no vines on them. The following table shows the number of years required for the respective trees to add the last inch or two inches of growth to their radius:

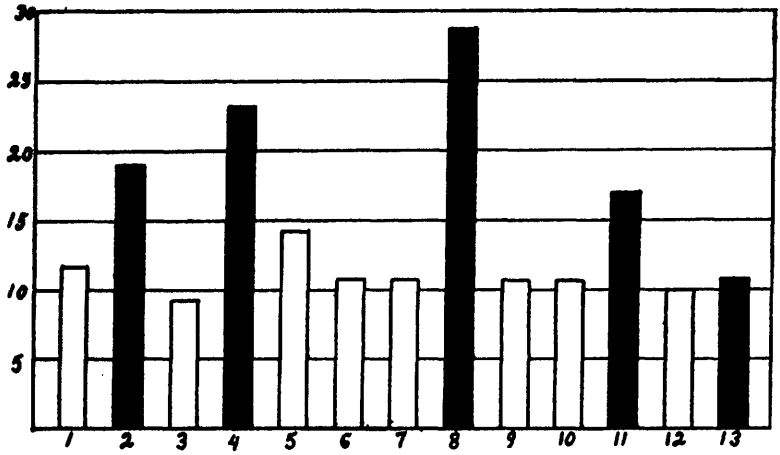
TABLE 1.

Data on tree borings

No.	Name of tree	State	Vine	No. of rings in first inch	No. of rings in first two inches
1.	Hackberry	Live	No	12	21
2.	Hackberry	Dead	Yes	19	30
3.	American Elm	Live	No	9	14
4.	American Elm	Dead	Yes	23	34
5.	Hackberry	Live	Yes	14	26
6.	Hackberry	Live	No	11	19
7.	Hackberry	Live	No	11	16
8.	Hackberry	Dead	Yes	28	38
9.	American Elm	Live	No	11	15
10.	American Elm	Live	Small one	11	19
11.	Hackberry	Dead	Yes	18	30
12.	Hackberry	Live	No	10	16
13.	Hackberry	Dead	Yes	11	22

The graph (Fig. 1) shows the number of annual rings in the last inch of radial growth of the several trees. The shaded columns represent dead trees and the unshaded, live trees. The numbers at the bottom of the graph refer to the corresponding number in the legend.

FIGURE 1.



1. Live hackberry with no vine. 2. Dead hackberry with large vine. 3. Live American elm with no vine. 4. Dead American elm with vine. 5. Live hackberry with medium vine. 6. Live hackberry with no vine. 7. Live hackberry with no vine. 8. Dead hackberry with vine. 9. Live American elm with no vine. 10. Live American elm with small vine. 11. Dead hackberry with vine. 12. Live hackberry with no vine. 13. Dead hackberry with vine.

The dead trees had been more or less retarded in their growth for a number of years previous to their death while the live trees with large grapevines showed similar suppression. The live trees without grapevines showed no suppression, nor did the live trees which had only small vines in them.

CONCLUSION

As the trees reached maturity and ceased or slowed-up height growth, the grapevines continued to grow and spread out over the tree tops, shutting off the light from the leaves of the trees below. The trees were thus not able to synthesize food as rapidly as before, so that growth was reduced to a very slow rate. This condition, followed by the drought years of 1934, '35, and '36, was more than the trees could withstand; hence they perished.