

Vermont Sugarbush Health Survey 1977-1985

Department of Forests, Parks and Recreation

How The Survey Was Done

In the summer of 1985, a statewide sugarbush survey was conducted to determine if changes in tree condition have occurred since 1977, when a similar survey was done. A total of 54 sugarbushes were examined. Of these, 25 were considered to have been in good or excellent condition overall in 1977, and 20 were considered to have been in fair or poor condition. An additional 9 sugarbushes were known to have been completely defoliated by forest tent caterpillar, at least once, since 1977. Only non-defoliated sugarbushes are included in the results below.

In each sugarbush sampled, all of the trees on five 1/5-acre plots were rated for overall crown condition, specific damage symptoms, tapping history and rate of growth. Trees were rated healthy if they had green foliage, normal-sized leaves and less than 10% dead branches. Stumps from recently cut trees in the sample plots were accounted for in the results. Other information taken included recent history (such as grazing, defoliation, cutting and tapping) and site (such as slope and elevation.) Detailed information about the soil was also gathered with the cooperation of the University of Vermont and the Soil Conservation Service. Individual reports summarizing the condition of each sugarbush have been prepared and sent to the sugarbush owners. The data summarized below concerns only dominant and codominant sugar maples. These trees receive adequate sunlight and don't suffer from competition with neighboring trees.

Survey Results: Changes in Tree Health Between 1977 and 1985

Statewide, the average condition of sugarbushes, based on the percent of trees which were healthy, did not change between 1977 and 1985. This is true whether the sugarbushes were rated as being generally healthy or unhealthy in 1977. There were more sugarbushes where the percentage of healthy trees significantly improved between 1977 and 1985 than declined, as indicated in the table below.

	<u>Number of Sugarbushes Which:</u>		
	<u>Declined</u>	<u>Stayed the Same</u>	<u>Improved</u>
Sugarbushes Rated Good or Excellent in 1977	5	14	6
Sugarbushes Rated Fair or Poor in 1977	3	9	8

Survey Results: Factors Associated with Healthy Sugarbushes

In general, healthier sugarbushes were less disturbed by woods roads. They were on less acidic soils, on slopes more likely to be facing east than west, had faster growing trees, and trees more likely to heal tapholes quickly. Sugarbushes which improved since 1977 had fewer trees with logging injuries and stem rot. Sugarbush health was generally unrelated to elevation or location in the state.

Interpreting the Results: A Caution

It makes sense to be cautious before drawing sweeping conclusions from this survey for the following reasons:

- Sugarbushes are not representative of the maple woodlands in the state. They are disturbed often by thinning and sap collecting operations, they are more likely to be on south facing slopes, trees are less crowded, and there are few tree species other than sugar maple. To get a better indication of the overall health of the state's hardwood forestland, a statewide hardwood health survey was initiated in 1986.
- The eight years covered by this survey are short in the life of a sugarbush. Trends which showed up between 1977 and 1985 may or may not be consistent eight or sixteen years from now.
- No one factor is responsible for the condition of the sugarbushes surveyed. Trees are variously overtapped, grazed, injured by logging, overcrowded, growing on unfertile sites, exposed to chemical contaminants, attacked by natural pests or affected by unfavorable weather. It is difficult to determine the effect of any single factor when so many other influences are involved.

Recommendations for Maintaining Healthy Trees in a Sugarbush

General recommendations that can be based on results of this survey are: (1) limit the number of woods roads; (2) avoid tree injuries as much as possible, especially during the spring by careful felling, thinning, and hauling; (3) make periodic light thinnings to improve tree growth and to avoid the amount of disturbance associated with a sudden heavy thinning. To minimize damage and remove the poorer condition trees, they should be marked when leaves are on but logged during the winter.

Since a variety of factors influence tree health, a site visit by a forester may be advisable for problem sugarbushes not included in this survey. A soil analysis may also be helpful. More research is needed into the benefits of liming and fertilization at different rates, but for extremely acid soils (pH less than 4.5), liming could be the single most beneficial approach to improving soil condition.

For More Information Contact:

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