USDA FOREST SERVICE RESEARCH NOTE NE-126
1971

N
E

FOREST SERVICE, U. S. DEPT. OF AGRICULTURE, 6816 MARKET STREET, UPPER DARBY, PA.

TAPPING NEAR OLD TAPHOLES IN SUGAR MAPLE TREES

Abstract.—A study of sugar maple tapping indicated that sugar producers can drill a new taphole within 1 inch of an old taphole in a horizontal direction and obtain normal sap and sap-sugar yields.

When a taphole is drilled into a sugar maple tree, the wood tissues above and below the taphole become stained. This stained wood is usually about as wide as the taphole. If a sugarmaker taps into stained wood, his sap yields are reduced. For this reason, producers seldom tap close to old tapholes.

Sugarmakers usually drill a new taphole at least 4 to 6 inches from an old taphole, horizontally around the tree. But as tapping is continued year after year, it may become difficult to find untapped wood 4 to 6 inches away from older tapholes.

How close to an old taphole can a sugarmaker tap? In a study in Vermont, we found that sugarmakers can get the same yield of sap from new tapholes 1 inch from older tapholes as they can from new tapholes 6 inches from older tapholes.

Methods

During the 1967 sugaring season, 15 trees having similar sap-yield patterns were selected for study. In late February, before the tapping season, two new tapholes were drilled into each tree to a depth of 3 inches, excluding the bark. The first new taphole was drilled 1 inch from a 1-year-old taphole. The second new taphole was drilled 6 inches from the old taphole, but on the other side of it (fig. 1).

Figure 1.— The taphole on the left (spout attached) is 1 inch from the older taphole (tip of pencil); the taphole on the right is 6 inches from the old taphole.

A paraformaldehyde sanitation pellet was placed in each new taphole. The purpose of the pellet is to keep the woody sap-producing tissue from clogging, thus prolonging the sap season and increasing yields.

Results

Yields from the tapholes 1 inch from older tapholes averaged 15.9 gallons, while yields from tapholes 6 inches from older tapholes averaged 15.1 gallons. The sap-sugar concentration differences between the 1- and 6-inch tapholes averaged only 0.1 percent. These data were analyzed using a pairing design with a t-test, and the sap yields were not statistically different at the 95-percent probability level (table 1).

Recommendations

When tapping, it is possible to tap within 1 inch of an older taphole without influencing the sap-volume and sap-sugar yields. To avoid overtapping, the following number of tapholes per tree should be used:[1]

[1]Willits, C. O. MAPLE SIRUP PRODUCERS MANUAL. USDA Agr. Handb. 134, 112 pp., illus., revised 1965.

Table 1.—*Summary of total seasonal sap and sap-sugar yields for new tapholes 1 and 6 inches from older tapholes*

Tree number	Sap yields		Sap-sugar yields	
	Distance from old taphole: 1 inch	6 inches	Distance from old taphole: 1 inch	6 inches
	Liters	*Liters*	*Percent*	*Percent*
1	50.7	40.1	3.0	4.0
2	32.6	13.2	4.0	4.0
3	29.0	35.1	3.5	3.4
4	89.3	89.0	3.2	3.2
5	72.6	65.4	4.0	4.3
6	64.6	86.6	3.2	3.0
7	47.4	46.5	2.4	2.4
8	71.5	52.5	4.8	3.4
9	29.5	28.4	4.0	4.0
10	89.2	78.8	3.0	3.0
11	72.8	69.4	3.2	3.0
12	49.4	62.5	3.2	3.2
13	60.8	40.8	3.4	3.7
14	89.5	92.9	3.0	2.8
15	55.9	56.8	2.8	2.8
Average	60.3	57.2	3.4	3.3

Tree diameter (inches)	*Tapholes per tree (number)*
<10	0
10-14	1
15-19	2
20-24	3
25+	4

Using this taphole guide, producers tapping previously untapped sugarbushes could systematically tap the tree from year to year and avoid tapping near old tapholes. However, many older sugarbushes have been overtapped. This creates problems in using the taphole guide and drilling new tapholes 4 to 6 inches from old tapholes.

We do not suggest that producers start tapping 1 inch from older tapholes, because problems in taphole healing may develop. But if it is impossible to leave 4 to 6 inches between the new and old tapholes, the new one can be as close as 1 inch from the old taphole without a reduction in sap and sugar yields.

— H. CLAY SMITH
Research Forester
Northeastern Forest Experiment Station
Forest Service, U. S. Dep. Agriculture
Burlington, Vermont

MANUSCRIPT RECEIVED FOR PUBLICATION 25 AUG. 1970.