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Timing of tapping

Spout selection and timing of tapping and its impact on production

By ADAM WILD

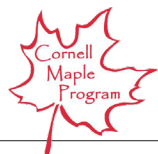
*Co-Director Cornell Maple Program,
Director Uihlein Maple Research Forest*

LAKE PLACID, N.Y.—In recent years, research at Cornell University's Uihlein Maple Research Forest has looked at ways to maximize maple sap production through tapping practices such as spout selection, re-tapping and timing of tapping.

In the two previous maple seasons I tried re-tapping practices by drilling a new taphole above the initial tap hole in the later part of the season.

See **TAPPING PG. 10** ►

SAP YIELDS FROM TREES tapped with various tapping practices at Cornell University's Uihlein Maple Research Forest during the 2021 maple season. If tapping early on older, uncleaned tubing, check valve spouts provided better yields than tapping early with regular polycarbonate spouts, or even waiting to tap just before the season. Check valve spouts had equal production as relocating a regular polycarbonate spout to a new taphole later in the season but the additional labor costs and wounding to the tree negate the increase in production from re-tapping.



CORNELL CORNER

TAPPING:

Continued from PG. 1

In these past studies, re-tapping into a new tap hole was shown not be beneficial once labor and material costs were accounted for (Wild 2020).

In the past work, trees that were tapped just at the start of the maple season were shown to have the best yield over re-tapping or trees tapped at least a month out from the initiation of sap flow.

This was all tested-on tubing used for at least four seasons without any cleaning.

Although waiting to tap had the best return on investment, this is not feasible in larger sap collection systems where tapping must commence well before the start of sap flow.

In my conclusion to this research, I proposed that for operations that want to tap early on older tubing, check valve spouts would presumably slow microbial plugging on tap holes opened for an extended time.

However, this was mentioned as a possibility and had not been tested.

During the sap season of 2021 I tested check valve spouts against timing of tapping and re-tapping practices in a small replication at the Cornell Uihlein Maple Research Forest.

Four total treatments were tested in the spring 2021 sap season.

Treatment one was tapped on January 28 (considered early tapping for Lake Placid) with a new polycarbonate spout.

On April 6 the spout was pulled from the original tap hole and placed into a new tap hole 8 inches above the original tap hole.

The original tap hole was plugged off to prevent vacuum leaks as this was a known



RESEARCH COLLECTION CANISTERS at the Cornell Uihlein Maple Research Forest in Lake Placid, N.Y. Cornell researcher Adam Wild experimented with the best results of tapping timing this past season.

issue and while relocating the tap it was observed to be a significant vacuum leak prior to being plugged.

Treatment two was also tapped early on January 28 with the use of a new polycarbonate check valve spout.

The tap remained in the tap hole till the end of the season.

Treatment three was considered a control and tapped on (January 28) with a new regular polycarbonate spout and left in place till the end of sap season.

The final treatment was not tapped till March 1, designated as right before the sap season typically begins within the Uihlein Forest (high elevation forest in Northern NY).

Five trees were tapped per treatment with

all five trees flowing into one collection vessel under vacuum.

Each treatment was replicated twice. Sap volume was measured during each sap flow event.

Sap Data was collected from March 12-April 12 during the 2021 sap season.

By the end of the season, trees tapped early with check valve spouts produced the same amount of sap (18.9 gallons/tap) as the trees that had the spout relocated to a new tap hole near the end of the season (18.5 gallons/tap).

When I waited to tap on March 1 the trees only produced 16.5 gallons of sap per tap during the 2021 season.

Not surprising, trees tapped early in the season with a regular polycarbonate spout had

the lowest production with 15 gallons/tap (figure 1).

It is important to note that this was tested on older tubing without any cleaning or sterilization.

Results will be different on new or cleaned tubing.

This research was also performed during the short 2021 maple season that saw higher temperatures than average allowing more microbial activity although the shorter season was not conducive for re-tapping.

Even though re-tapping produced similar yields as check valve spouts, re-tapping requires additional labor costs that are higher than the added costs for check valve spouts.

In addition, van den Berg et al. (2021) found re-tapping to produce more than twice the amount of non-conductive wood.

Because of the additional wound formation within the tree, it is recommended to avoid re-tapping or rejuvenating a tap hole when long-term tap is of interest, especially in areas with slow tree growth.

Results could be different in areas with a longer growing season.

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Cited Literature:

Van den Berg, A.K., Perkins, T.D., Bosley, W.T., Haynes, B.M., and Iselhardt, M.L. 2021. Wound response to taphole rejuvenation practices. The Maple Syrup Digest 60(2): 9-17.

Wild, A.D. 2021. Increasing Syrup Production by Re-tapping During the Sap Season. The Maple Syrup Digest December 2020: 8-14.

Email: adw94@cornell.edu

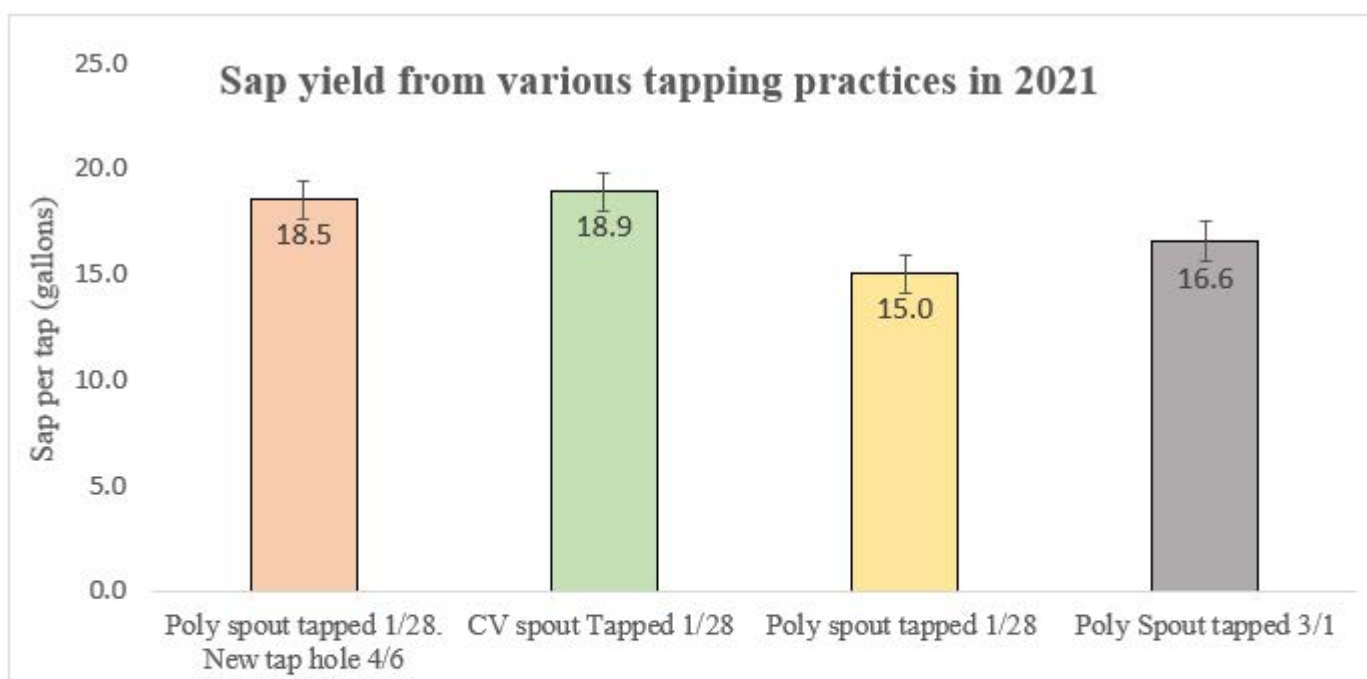


Figure 1: Sap yields from trees tapped with various tapping practices at Cornell University's Uihlein Maple Research Forest during the 2021 maple season. If tapping early on older, uncleaned tubing, check valve spouts provided better yields than tapping early with regular polycarbonate spouts, or even waiting to tap just before the season. Check valve spouts had equal production as relocating a regular polycarbonate spout to a new taphole later in the season but the additional labor costs and wounding to the tree negate the increase in production from re-tapping.