2019 Cornell Maple Program Research on 5/16" Maple Tubing

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During the 2019 maple season the Cornell Maple Program conducted replicated trials on 5/16" and 3/16" tubing looking at a variety of tubing options for taphole sanitation and tapping. This report will focus on the 5/16" results.

This year the first sap yield measurements were taken on February 8 and the last on April 10. The treatments used as checks are old spouts and drops where the drop has been used for 7 years and the spout has been in use for 4 years. They have been vacuumed dry at the end of each season when the taps are pulled but receive no other cleaning. The second check for standard comparison is completely new laterals, drops and spouts for a completely new system.

This year the old system yielded 26.9 gallons of sap per tap while the all new system yielded 43.9 gallons of sap per tap representing an increase of 63.1% or 17 more gallons of sap per tap.

A treatment was included in this year's study where the spout and drop were removed from the sugarbush before the season and submersed in a bleach solution of one tablespoon of 5.25% sodium hypochlorite in chlorine bleach per gallon of water for 30 minutes followed by through rinse with potable water. The drops were then reconnected to the lateral line that has been in the sugarbush for a number of years with a quick connect fitting.

This year the bleach-sanitized spouts and drops yielded 41.9 gallons of sap per tap, 55.7% or 15 gallons more sap per tap than the old spout and drop and two gallons of sap less than the all new system.

A fourth system was tested where a new spout and drop were placed on old lateral lines. In this treatment sap yield for the season was 42.4 gallons of sap per tap, 57.6% or 15.5 more gallons of sap than the old spouts and drops, 1.5 gallons of sap per tap less than all new.

The last treatment on 5/16" tubing

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was a re-tap treatment installed with all new tubing laterals, drops and spouts. A second new spout and short drop and T added into the first drop. It was added in line of the same expected partition zone of the first tap, meaning it is directly above or below the original tap. In this treatment, rather than waiting until the first tap stopped running to conduct the re-tap, it was added after the temperature had gone above 50 degrees F 4 or 5 times. In this case the second tap was added on March 27 (see photo). The reasoning is that by going directly above or below the first tap it would not be adding significantly to the partitioning in the tree so it would not be reducing the future opportunity for tapping into clean white wood in future years.

The re-tap treatment yielded 52.2 gallons of sap per tap, 94.5% or 25.4 more gallons of sap per tap than old spouts and drops and 8.5 more gallons that the all new system treatment.

The 2018 tests where re-tapping was installed after the prior treatment had dried up gave a total sap yield of 49.7 gallons of sap per tap 22.2 before the re-tap and 27.5 after the re-tap, again the taps were designed to fall in the same column but the late season weather was much more friendly to re-tapping than in 2019. More variations on this re-tapping idea will be looked at in future years. Results of the tests using 3/16" tubing will be available soon.