Cleaning Tubing Systems


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Taphole drying is one of the most significant limiting factors in yield for maple syrup producers. As soon as a hole is drilled in a tree it begins to heal, partly through the tree's own growth processes, but also due to external factors. Microbial contamination is known to be a significant contributor to taphole drying, which is why taps with tubing run longer than those with taps and buckets; a closed system is better at preventing airborne microbes from getting into the hole and helping to seal it off.

However, some of those microbes do make their way into tubing systems, and they can contaminate tapholes when a backflow of sap—due to leaks, the pulsing of a vacuum pump, or just the normal freeze-thaw cycle—carries some of those microbes back into the hole. Check valve adapters prevent sap from flowing backward into tapholes, and they've proven to be effective at extending the season for producers. Replacing worn droplines on a regular basis also helps slow taphole healing, since tubing develops microscopic scratches as it ages, which are perfect for harboring microbes. As the part of the system nearest to the tapholes, droplines are the most likely origin for contaminated sap returning to the taphole.

To combat taphole contamination and promote better sap quality, many sugar makers clean their tubing annually. Following the last run of the season, sap residue remains in the lines, providing bacteria and yeast with an ideal environment for growth. Pipeline cleaning should be done as soon as possible after the end of the season to be most effective. There are several commonly practiced methods for doing so, and while no particular method has been found to be definitively more effective than others, research on this topic is ongoing.

First, and simplest, there are producers who don't clean their tubing. They pull and cap taps at the end of the season, and the following season they let the first run of sap flow out onto the ground to rinse contaminants from the system. Some claim that any sap that remains in the tubing during the year ferments and acts as a sort of cleaning agent.

Some sugar makers leave their vacuum pumps running while pulling taps, allowing the system to suck air in through each dropline before capping it, thus drying the tubing.

Others rinse their system with water, using a pump that forces water through the tubing or relying on their vacuum system. Simply pouring water into the tubing isn't enough; the turbulence caused by a mechanical system is necessary to loosen the filmy residue of bacteria that forms in tubing.

Still others flush debris out of the system first with water or air, and then use a chemical to clean or sanitize tubing. Chemicals break down as they work, so a thorough prerinse with fresh water helps ensure effectiveness. A diluted chlorine bleach solution (one part unscented household chlorine bleach to 20 parts water) is the most commonly used chemical sanitizer. It's allowed to sit in the system for a few days before flushing out with clean water. If not rinsed properly afterward, though, remaining traces will impart an off-flavor to the following year's syrup and can attract rodents that will chew through tubing. Food-grade hydrogen peroxide is also often used, and does not pose either of those problems. Producers who use any chemical treatments usually let the first sap of the following season run out onto the ground to flush the lines and avoid any potential contamination of syrup.

Acid cleaners, such as those used to clean evaporators and other equipment, should not be used to clean tubing. Similarly, household and industrial cleansers should not be used to clean tubing. Even food-grade isopropyl alcohol is not currently permitted for cleaning maple tubing in the U.S. F

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