How often should you replace droplines?

BY TIMOTHY PERKINS

Several studies have demonstrated the benefits of improved spout and dropline sanitation on yield. Annual spout replacement, the use of check-valve adapters or spouts, and periodic replacement of droplines all result in reduced microbial levels within the tubing, better sap volumes produced in the latter half of each season, and increased total sap yields. While higher sap production can mean higher profits, the costs of labor and equipment will vary depending not only on the additional sap gained but also on the cost of implementing each improvement.

Several studies by the UVM Proctor Maple Research Center, the Cornell Maple Program, and Centre Aces in addition to extensive producer experience, all indicate that replacing droplines along with spouts generally results in the highest levels of sap production. Replacing droplines cost is very high, and although sap gains are high, the costs can outweigh the benefit, resulting in a net economic loss for the producer.

However, not replacing droplines often enough can mean a loss of potential sap, and thus a loss of potential income. While seemingly simple, several interesting factors are involved, including how much more sap is gained by replacing droplines, how much sap is produced over the next few seasons if droplines are not replaced, what is the cost (both materials and labor) of replacing droplines, and how much is the sap worth to the producer. Thus the question of how often droplines should be replaced is not always straight-forward.

Using the results of previous research, we constructed a Microsoft Excel-based tool to help maple producers determine the effects of various replacement strategies on sap yields and net profits. This tool is titled “Economics of Replacement” and is available for download in the “Recent Publications” section of our website at http://www.uvm.edu/imap. Users need to have Excel on their computer in order to use this spreadsheet.

Although this paper doesn’t explain the full working of the tool, there is some documentation within the spreadsheet itself and further papers are cited if further background information is desired. Producers can alter the input variables, but cannot view or change the assumptions that the model is based upon.

While this tool will allow users to examine several possible strategies, this paper focuses mainly on dropline replacement in tubing systems in which check-valve spouts or adapters are NOT being used.

Using this tool we can through a large number of possible scenarios using a wide range of reasonable input variables for tubing systems on vacuum. The results are shown in Figure 1, which depicts the average annual net profit (over a 5-year time span) for dropline replacement intervals from 1 year (replacement of drops every year) to 5 years.

In general, although sap yields are high, due to the cost, net profits are lower if droplines are replaced every year. If we are getting the highest sap yields with frequent dropline replacement, why would we not get the highest economic returns? This is the result of two factors. The first is that dropline replacement is costly.

Although there is a good result in sap yield when replacing drops annually, the cost of doing so is close to, or sometimes more than the additional profit realized by the increased sap yield. The second reason is that since the droplines are only 1 year old when replaced, the potential increase in sap (the difference between what you get in yield minus what you might have expected if you had not replaced the droplines) is higher. After only one season of use, the droplines are somewhat contaminated, but yields will not drop by more than about 14-17%. Therefore you cannot expect to gain...

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