

Introduction

Several studies have indicated microorganisms as one cause of premature stoppage of sap flow in tapped sugar maples (*Acer saccharum* Marsh.) (1,2,3). It is also well documented that heavily contaminated maple sap produces syrup of dark amber color grade (4,5). Microorganisms alter the sap bio-

designed to remove any microorganisms strongly adhering to the tubing walls. Dilution platings were performed on this solution as above.

Sap Control:

Dilution platings were performed on the collected sap samples in the same manner as was done with the flushing and swabbing of tubing samples.

Tubing Control:

A 10 cm section of new, unused tubing served as the tubing control. The section was flushed and swabbed to determine if any microbial contamination was present.

Identification of bacterial isolates to the specie level was attempted using appropriate morphological and biochemical identification techniques (12).

The ability of an organism to adhere was assessed by comparing the microorganism count (CFU/ml), as well as the number of isolates found in the sap control, to the microorganism count and number of isolates found in the flushing and swabbing of tubing samples.

Results and Discussion:

The section of new tubing that served as a control yielded neither bacteria nor yeast from both the flushing and swabbing techniques. This indicates that new tubing, as we previously found for used, bleach-cleaned, and stored tubing (8), should not contaminate sap too early in the season with viable microorganisms.

Of the 115 microbial isolates from all tubing systems and sap controls, 59.2% were fluorescent pseudomonads,