Cream Separator Experiments

9/10/2021

Cold run 3.5 oz (58g) commercial pectin dissolved in water.

Motor on separator is a Sich 100: 11,000 rpm, 4 cm bowl on separator 5,400xg, cost $318. Cream, a lighter liquid comes off the upper port while heavier milk comes off a lower port. This was proved in an initial experiment using milk spiked with heavy cream

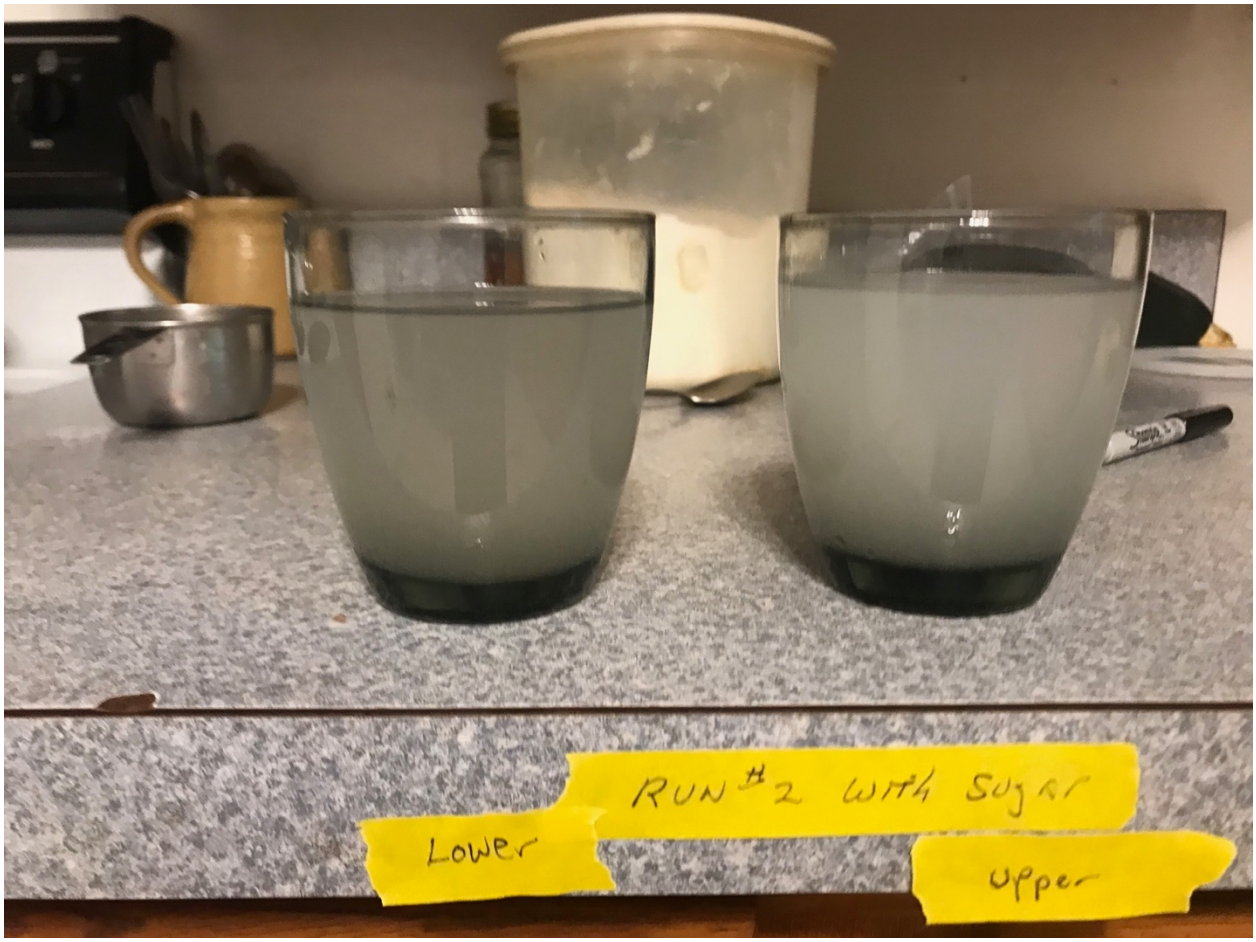
Observations – Pectin began to gel. Sure jell has pectin, dextrose, fumaric acid, and sodium citrate. To gel pectin needs sugar (dextrose) in an acid environment. All provided in the box.

A separation occurred: more transparent, clear liquid came through the lower port, a milky liquid came through the upper port.

Analysis: The pectin with the dextrose and in an acidic environment began to gel. In that process it captured water in the gelling matrix, became lighter and floated to the top of the cream separator.

"Jelllyfish" experiment – One cup of sugar was added to the reconstituted liquid to examine how sugar, such as would be in concentrating sap, supported the gelling process. Gel formed on the sides of the pan but floating "jellyfish" could not be seen.

Analysis: In addition to learning more about pectin these experiments that a separation could be obtained in a solution containing pectin. And, that that separation could occur in a centrifuge priced within the range to make it practical for sugarhouse use. The cream separator costs approximately $300. Separation occurred with high concentrations of pectin. Questioned raised were:
1. would separation occur in solutions with a low concentration of pectin, such as in walnut sap.
2. can the. cream separator reduce the concentrations of pectin enough to make RO treatment of the sap practical?



Visual separation of pectin solution that occurred using a cream separator. The upper port yielded a much cloudier solution, presumed to contain more pectin, than the lower port.