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Honey Refractometer Use and Calibration

A refractometer measures the degree that light, passing through a solution, is bent. The amount of bending of the light depends on the concentration of water in the honey being measured. Two things are critical for accurate measurement of water content of honey:

- The measurements must be made with the honey and instrument at room temperature.
- The instrument must be calibrated. Calibration should be done once or twice each season or if the temperature in the honey room changes more than 5 degrees.

To calibrate the refractometer use the reference solution supplied with the instrument. If the solution is not available use glycerin, 99.5% anhydrous, available at drug stores in the skin care section.

1. Lift the clear plastic panel free and apply 2 or three drops of reference solution to the angled glass portion of the instrument using a Q-tip or cotton-tipped applicator.
2. Allow the liquid to spread and cover the glass area. Avoid air bubbles. Close the clear panel.
3. Hold the refractometer towards a bright light and look through the eyepiece. If necessary, turn the eyepiece to bring the blue and white areas into focus. Note the location of the line separating the blue and white portions of the display. The line should be just below the 73 on the central Brix scale
4. If the line is above or below 73 use the small screwdriver to turn the adjustment screw on top of the instrument. Moving the screw clockwise will lower the line; counterclockwise movement will raise the line. Make small changes and check after each change until the line is just below the 73.
5. Your instrument is now calibrated and ready to use.
6. Clean the flip panel and glass using a moistened soft lint free cloth.
7. If the temperature is more than 5 degrees different from when the instrument was calibrated, then calibration should be repeated. Make sure that the instrument, the reference solution and the honey are all at the same temperature.

Some helpful hints:

1. Use a ***thin film*** of honey on the instrument. A Q-tip or finger can be used to spread the sample over the glass.
2. Hold the instrument towards a bright light for easier reading of the result.
3. The water content is the right hand column of the display.
4. Honey containing more that 17.1% water is at greater risk of fermentation. US Grade A or B honey can have up to 18.6% water. US Grade C honey can have up to 20% water.
5. Recalibrate if the temperature is more than 5 degrees different than when calibration was last done.
6. Alternative calibration: Olive oil is defined by UN FAO to have refractive index of 1.4677 to 1.4705. That equals 71 to 72 degrees Brix. You could also calibrate using olive oil to 71.5 and be close. Make sure you are using fresh oil.