Maturity

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Most pears reach optimum harvest maturity for storage while they are still green and hard. Therefore, pear maturity is primarily determined by firmness. Some pears destined for immediate sale might be left on the tree for several days longer, as they soften and begin to turn yellow.

Fruit firmness testing is currently the main method used to determine pear maturity. Checking firmness involves sampling a number of pears in the orchard. Sample 10 pears for every acre, assuming that the block is uniform. Firmness is measured at two opposite sides on the equator of each pear after removing the peel, using a **penetrometer** with an 8-mm (5/16-in.) diameter tip (Figure 1).

Figure 1. Measuring pear firmness using a penetrometer.

Soluble solids concentration (SSC, °Brix) is another method of identifying maturity. SSC is affected by several factors, such as crop load, rainfall and temperatures prior to harvest, and location on the tree (exposure to more sunlight on the tree exterior usually causes pears to mature earlier). Generally, a minimum of 10% SSC at harvest is required to obtain the best pear quality.

The **starch iodine test** can also be used as an index for pear maturity. For example, Bartlett pears are ready to harvest when 60% of the maximum starch content remains. However, this does not appear to be an accurate measure for maturity of the new pear cultivars.

Days from bloom to harvest is often used as a guideline for predicting pear maturation.

New methods for measuring pear maturity are currently being evaluated in pear-growing regions. **Optical density**, measured using a multiple wavelength light transmittance meter, is a method used in California for specific cultivars. A **non-destructive DA meter** can rapidly measure chlorophyll content using near-infrared spectrometry. However, its success for predicting maturity varies, depending on the cultivar.

Table 1. Sensory texture attributes and their definitions.

Attribute	Definition
Crispness	Amount and pitch of sound generated when the sample is first bitten with the front teeth
Firmness	Force required to bite into the sample
Initial juiciness	Amount of juice released from the sample in the first three chews, when chewing with the back teeth
Crunchiness	Amount of noise generated when chewing with the back teeth
Ease of breakdown	Amount of chewing required to break down the flexh so that it can be swallowed
Sustained juiciness	Amount of juice released from the sample during prolonged chewing
Pulpiness	Amount of wet, web-like material that develops during chewing
Mealiness	Degreee to which the flesh breaks down to a fine lumpy mass
Flouriness	Degree to which the flesh breaks down to very fine dry particles