

Optimizing Your Harvest

Determining the best time to harvest is a critical decision for every fruit grower. Here are some helpful hints for deciding what time is the right time.

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APPLES should be harvested when mature. Sounds easy enough, right? Well what exactly are the best methods for determining apple maturity? Personal experience is the key to this decision, but there are a few tools growers can use to reliably determine maturity and when to harvest, according to Dr. Desmond Layne, assistant professor of pomology and Extension tree fruit specialist at Clemson University, SC.

Starch Test. This test is probably the best way to determine apple maturity because it tells you how much starch has actually been broken down, says Layne. Simply cut the fruit in half along its length, and then dip it into an iodine solution; the iodine will bind to the starch.

Brix Or Percent Of Soluble Solids. With a few drops of juice from a sample, the concentration of dissolved solids can easily be determined

by a refractometer — as fruit matures, the reading increases. Keep in mind that the position of the fruit on the tree affects the sugar content. Full-sun exposed fruits will have higher soluble solids than those located lower or on the interior of the tree.

Puncture Pressure. Use a penetrometer to determine the firmness of the fruit. The flesh will become softer as fruit becomes riper. Since larger apples tend to be softer than smaller apples, measure apples with a

relatively uniform size. Remove a quarter-size disk of skin before punching the flesh with a penetrometer, says Layne. Also, be sure to test each apple on both the blush and non-blush side for an average of both readings.

Growth Regulators. There are also chemicals that growers can use to aid in the harvesting process. Promalin (benzylaminopurine + gibberellic acid, Valent BioSciences), which is used a lot in Delicious apples, says Layne, improves the shape of the apple and can increase its weight, while ReTain (aminoethoxyvinylglycine or AVG, Valent BioSciences) helps to reduce preharvest drop. This is especially important for a variety like Gala, for example, which has a tendency to drop off the tree when it reaches optimal maturity, Layne says. ReTain also helps delay the ripening process so the fruit can be harvested uniformly, will be firmer when picked, and won't break down as readily in CA storage.

Criteria To Keep In Mind

- If the temperature has been hot and dry, it's possible that the harvest date may be advanced a few days earlier. Cool and cloudy weather may delay harvest.

- Geographic location also affects harvest date. "In South Carolina, we'll pick apples beginning in the end of July; however, in Northern states, harvesting typically does not begin until September," Layne says.

- Since fruit ripens at different stages depending on its position on



Use a penetrometer to determine apple maturity. The device works on the principle that as the flesh ripens, the fruit will become softer.

the tree, fruit on the outside will be bigger and ripen sooner than fruit on the interior and lower portion of the tree.

Although these methods are useful and most are relatively accurate on their own, a grower would be wise to evaluate the maturity of different cultivars and use a range of methods rather than having one standard test, according to Layne. "A Gala, for exam-

ple, is not going to be nearly as hard as some other varieties," he says. "So if puncture pressure were the only criteria you used, you might pick some fruit that were green, while others could be overripe." ●



"Those fruits that are least mature would have the most black staining," says Layne of the starch test. "Those that are ripe would have the least black staining, meaning they have less starch and the iodine has nothing to bind to."

Product Suppliers

IF YOU are interested in purchasing tools used to determine fruit maturity, contact the following companies:

- **Spectrum Technologies** for refractometers, 800-248-8873, www.specmeters.com
- **Forestry Suppliers** for refractometers, 601-354-3565, www.forestry-suppliers.com
- **H F Hauff Co.** for refractometers, 509-248-0318
- **OESCO** for refractometers and penetrometers, 413-369-4335, www.oescinc.com
- **Michigan Orchard Supply** for refractometers and penetrometers, 800-637-6426
- **Wagner Instruments** for penetrometers, 800-345-4188, www.wagnerforce.com
- **Valent BioSciences** manufactures ReTain and Promalin, 800-682-5368, www.valent.com