Assessing apple cultivar characteristics for hard cider production

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Several mesoclimates in Western Washington are similar to the regions in Europe where fermented apple cider is produced. For cider making purposes, apples are classified primarily by the levels of tannins, sugars (brix) and pH in their juice. Juice analysis enables us to categorize each apple variety by standards established at the Long Ashton Research Station in Bristol, UK, and include 4 basic categories; bittersweet: bittersharp, sharp and sweet. To evaluate apple juice characteristics and qualities in our region, two orchard blocks were established at the Washington State University Mount Vernon NWREC. The first study was planted in 1994 and consisted of six varieties with five trees per variety in a non-replicated plot; fourteen varieties were added and one removed in 1999-2002, and 7 varieties were added in 2005 so the planting now includes 25 varieties. The second block was planted in 2004 and consists of 36 varieties planted in single tree plots. In 2008 juice samples were taken from 34 varietals from both test blocks. The juice samples were analyzed for brix, pH, titratable acids (TA) and % tannins. Tannins were ascertained by the Association of Analytical Chemists (AOAC) titration method. Brix readings were taken with a refractmeter and pH was taken with a pH meter. Values for percent tannins ranged from a high of 0.41% (Vilberie) and 0.34% (Kermerrien) to a low of 0.06% (Redstreak) and 0.05% (Granniwinkle). Brix ranged from 18.0 in Golden Russet to 10.4 in Breakwell seedling while pH ranged from a high of 4.47 in Dabinett to a low of 3.35 in Bramley's seedling. Knowing the characteristics of apple varietals is critical for a cider making. The amount of tannin in a cider affects the flavor, the mouth feel, and complexity of the fermented cider product. In addition, balancing juice pH is important in making a stable and drinkable product. A good drinkable cider normally has a juice pH between 3.3 and 3.8 provided that good fermentation practices are employed. If the pH is below 3.3; (characteristic of many sharps and dessert apples), the product will be too tart to drink when the juice is fermented. A juice pH above 3.8 (most bittersweets), makes the product susceptible to contamination from microorganisms. Knowing the juice characteristics of each variety can help a grower decide what to plant for blending purposes.