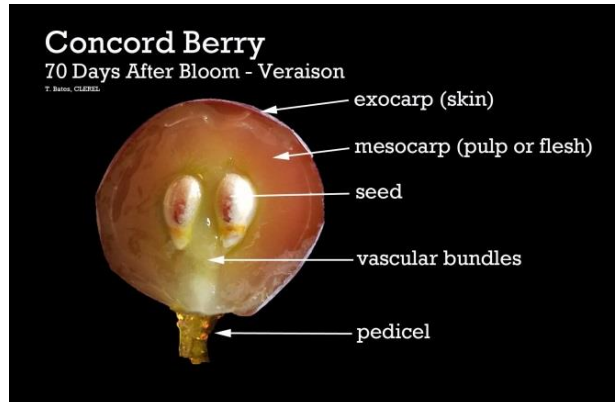


70 Days Post-Bloom in Concord Vineyards

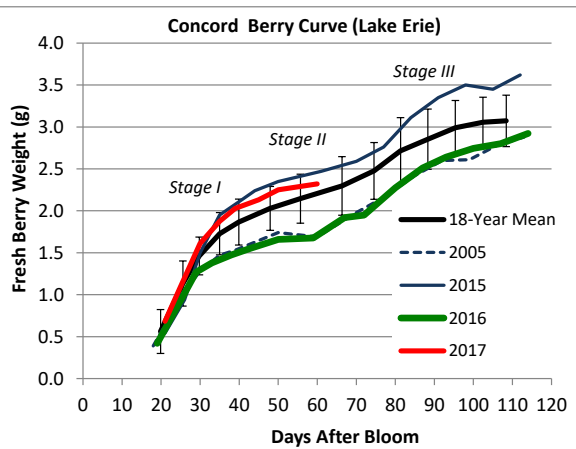
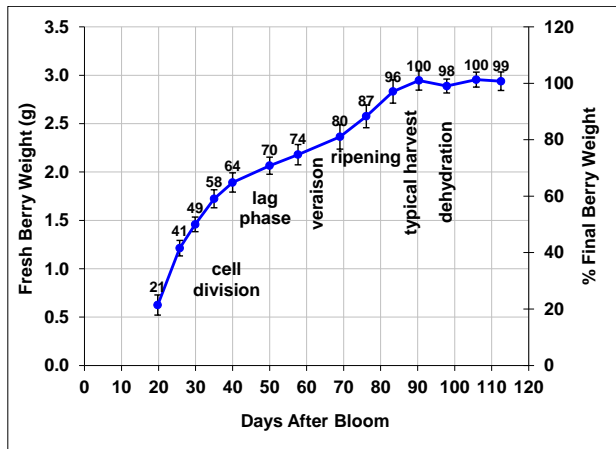
Terry Bates

8/18/2017

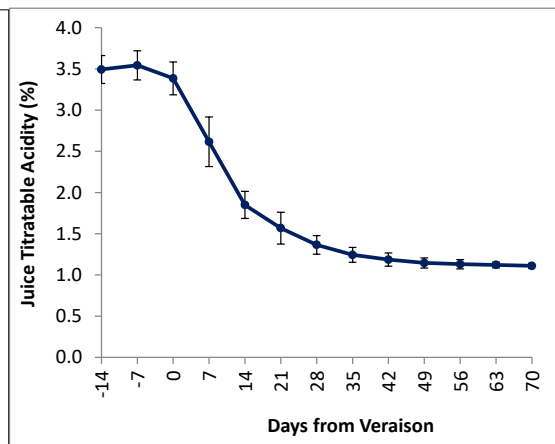
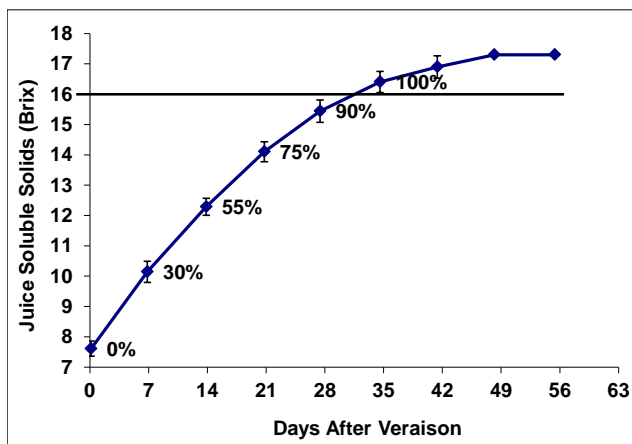


Concord Fresh Berry Weight Development: Beginning of Stage III. During stage III, the cells walls of the mesocarp change physically and chemically to soften and accumulate water and sugar. The seeds turn brown from tannin accumulation and harden through desiccation and become ready for dispersal. Veraison also triggers the accumulation of anthocyanins (purple pigments) in the grape skins (exocarp).

In Stage III of berry development from veraison to harvest, the seeds finish maturing and the fruit ripens to attract animal feeding for seed dispersal. Just before veraison, the berries are hard and green with relatively high organic acid (30 g/L) and low sugar concentrations (7.5 °Brix). Over a four to five week period from veraison to harvest, Concord fruit will become soft and dark purple with relatively low organic acid (10 g/L) and high sugar concentrations (16 °Brix). In Lake Erie Concord, veraison occurs 69 days after bloom, on average. Veraison may start a few days earlier in warm, dry years with moderate vine water stress and lower berry weight and it may be delayed in cool, wet seasons with high vine water status and larger berries. Veraison marks a physiological change in the fruit characterized by a rapid increase in water and sugar accumulation in the mesocarp (flesh) and anthocyanin accumulation in the exocarp (skin). There is also a degradation of organic acids and chlorophyll and the fruit will become soft as the cells walls of the mesocarp change and weaken.



Concord fresh berry weight curve indicating the percent of final weight (left). At veraison, Concord berries reach approximately 80% of their final weight. Much of the weight gain after veraison is a function of water and sugar influx to the berry from the phloem. The 2017 berry curve (right) is still running above the long term mean but has tapered through lag phase because of the dry weather conditions and large crop size.



Typical ripening concentration curves of juice soluble solids (left) and juice titratable acidity (right) in Lake Erie Concord. Desired fruit chemistry for producing single strength juice is 16 °Brix (+/- 0.5) and 1.0-1.1% titratable acidity at approximately 30-40 days post-veraison. Environmental conditions (precipitation, sunlight, temperature) as well as viticulture management (crop load) can influence berry weight and the rate of sugar accumulation.