



Phenotyping Protocol

Peach Chilling Injury

An ideal peach fruit at consumption is juicy and flavorful, with unblemished flesh color. At harvest, many peaches have excellent quality; however, unless correct practices are followed in postharvest cold storage, fruit can develop chilling injury, resulting in mealy texture (Figure 1) and brown flesh. The fruit can also lose all flavor or develop 'off flavors'.

Unfortunately, these chilling injury symptoms only become noticeable once the refrigerated peach ripens and are not detected until consumption. This leads to consumer dissatisfaction, reduced consumption and market loss.

RosBREED's Peach Chilling Injury-Cold Storage Qualitative and Quantitative Detection Protocol

Developed by Carlos Crisosto (Univ. of Calif. - Davis) to predict chilling injury susceptibility on peaches exposed to typical cold storage temperatures. Some peaches turn brown, and lose their juiciness and flavor very quickly - others do not. Fortunately, peach germplasm less susceptible to chilling injury exists, and breeders are now utilizing the protocol to phenotype their program material. Further, they can validate current RosBREED chilling injury candidate genes and develop the necessary reliable and fast DNA tests to predict chilling injury in their parents and selections.

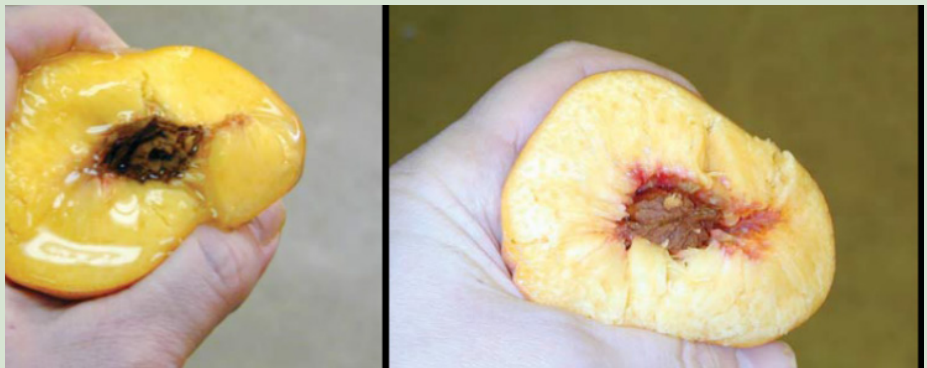


Figure 1. A good peach (left) produces juice when squeezed, but a mealy peach (right) is dry.

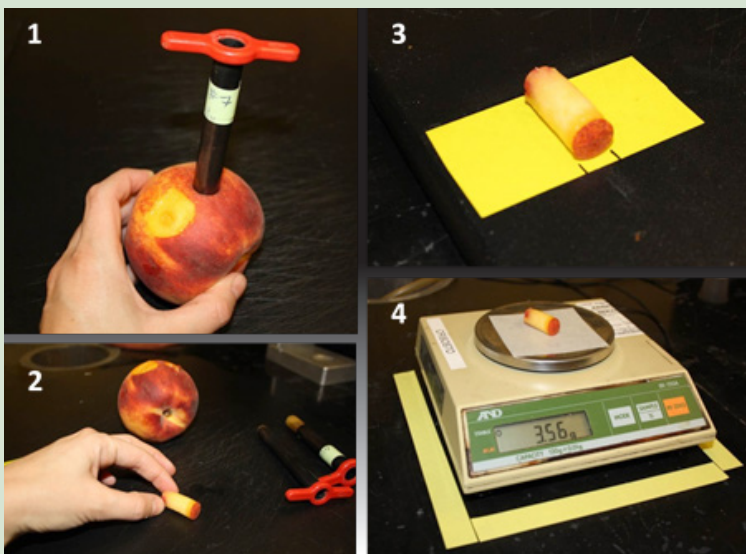


Figure 2. The RosBREED peach mealiness phenotyping protocol measures quantitatively the expressible juice in peaches and shows the effect chilling injury can have on the fruit.

Four RosBREED peach breeding teams are involved in this collaborative effort:

Ksenija Gasic (Clemson Univ.)

John Clark (Univ. of Arkansas)

Dave Byrne (Texas A&M Univ.)

Tom Gradziel (Univ. of Calif. - Davis)

Each team was trained in the use of RosBREED's Peach Chilling Injury-Cold Storage Qualitative and Quantitative Detection Protocol and used it to screen at least 100 peach individuals in the 2015 season. The target outcomes: Identification of major loci controlling susceptibility to chilling injury and predictive DNA tests.

Consistent delivery of juicy, flavorful peaches can drive customer satisfaction, increase return purchases and encourage overall consumption!

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