

DNA TESTS FOR PEACH



Fruit Blush Coverage Ppe-Blush

Fruit external appearance sparks consumer interest and initial fresh fruit purchase. Blush, the eye-catching overcolor found on many types of fruit, is an important consideration when developing new peach cultivars. In addition to appearance, the anthocyanin compounds which create the red color are sources of flavor and phytonutrients. High blush is a desirable attribute for peaches destined for the produce aisle, but results in undesirable browning during the canning process for processing.

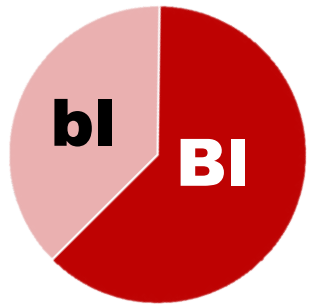
Genetics of the Trait

During the final swell of peach fruit development, different levels of red skin pigmentation emerge over the fruits background color. Up to 70% of the variation of this trait is explained by a single major genomic region that regulates the anthocyanin pathway, MYB10. The Ppe-Blush DNA test which predicts the degree of blush accumulation, was developed by targeting this key factor in the activation of anthocyanin biosynthesis.

Alleles Available

Two functional alleles are known within RosBREED's U.S. cultivars and breeding germplasm: "Bl" for high blush (rare in processing germplasm) and "bl" for low blush (rare in fresh-market germplasm, although heterozygotes are common).

Ppe-Blush allele frequencies in U.S. cultivars and selections



Genotype	Example Cultivar	Trait Level
Bl Bl	Redhaven	High blush
Bl bl	Yumyeong	Medium blush
bl bl	Halford	Low blush

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When to Assay

Ppe-Blush has a range of breeding uses, such as:

- *Cross choices*, to help choose parent combinations that will result in all seedlings with high blush or all seedlings with low blush.
- *Seedling selection*, to discard unwanted blush types before field planting in mixed families.

Predictive Capacity

This DNA test is highly predictive, accounting for the majority of the genetic contributions to blush levels in U.S. breeding germplasm. In other words, although cultural practices and the growing environment can significantly affect blush development, what is heritable is associated with Ppe-Blush alleles. By targeting and selecting specific allelic combinations, you can directly focus on high or low blush according to your breeding objectives. The breeding utility of Ppe-Blush has been confirmed by RosBREED across four U.S. peach breeding programs, evidenced by its rapid deployment in two of the four programs already. Confirm the effects in your own germplasm before widespread use.

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Technical Details

Ppe-Blush is a simple PCR-based DNA test consisting of two multiplexed SSR markers that can be used on a range of genotyping platforms. For more details on this DNA test, other peach tests, or tests for other rosaceous crops, visit www.rosbreed.org/breeding/dna-testing.

RosBREED

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