

DNA TESTS FOR PEACH



Yellow vs. White Flesh Color CCD4-SSR

Flesh color is one of the few traits that differentiates peach (and nectarine) fruit in the marketplace. Flesh color contributes to overall aesthetics and may be a deciding factor when considering a seedling's potential as a new cultivar. Yellow flesh color predominates in the processing industry, while both yellow and white flesh fresh-market cultivars are common.

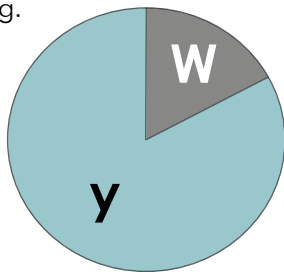
Genetics of the Trait

Yellow and white flesh are juxtaposed flesh types. White flesh is dominant. One copy of the white flesh allele results in white-fleshed fruit. Although a quantitative range of yellowness exists in commercial germplasm, a single genomic region, the Y locus, is responsible for the major distinction of white and yellow. The CCD4-SSR* DNA test was designed to readily reveal the genetic information of this locus for routine flesh color prediction in peach and nectarine breeding.

Alleles Available

The two known alleles for CCD4-SSR have been labeled as "W" for the dominant white flesh allele and "y" for the recessive yellow flesh allele. Although heterozygotes will have the white flesh phenotype, they have the genetic potential to produce both white- and yellow-flesh offspring.

CCD4-SSR allele frequencies in U.S. cultivars and selections



Genotype	Example Cultivar	Trait Level
y y	Redhaven	Yellow Flesh
W y	China Pearl	White Flesh
W W	Yumyeong	White Flesh

*CCD4-SSR was developed by researchers at the University of California, Davis

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When to Assay

CCD4-SSR can provide useful information at various stages of breeding:

- Cross choices, to help choose parents that will result in progenies enriched with your desired flesh color.
- Seedling sorting, to organize your field plots by flesh color.
- Seedling selection, to cull an undesired flesh color.

Predictive Capacity

This DNA test is associated definitively to the causal alleles common in U.S. breeding germplasm. Therefore, no recombination is possible to cause false associations. Presence of the white allele will always be linked to the white phenotype. This test has worked across all improved U.S. breeding germplasm in the RosBREED project. Confirm the effects in your own germplasm before widespread application.



Technical Details

CCD4-SSR is a simple PCR-based DNA test consisting of a single SSR primer pair that can be used on a wide range of genotyping platforms. The DNA test outcomes are easy to score and interpret. For more details on this test, other peach tests, or DNA tests for other rosaceous crops, visit www.rosbreed.org/breeding/dna-testing.

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31 DEC 2017**