Fruit Maturity Season Timing
G4Mat-array

To peach growers, one of the most important characteristics of a particular cultivar is its maturity time, with the most successful new cultivars filling gaps in the harvest season. Therefore, breeders must consider the season of maturity when planning crosses, selecting seedlings, and advancing elite cultivar.

Genetics of the Trait

The peach harvest season can last for months, with almost 100 days between the earliest and latest cultivars in some locations. A particular genomic region, G4Mat, was found to account for up to 80% of observed phenotypic variation for maturity season timing, from which the G4Mat-array DNA test was developed.

Alleles Available

Six distinct alleles are known from RosBREED's large set of U.S. cultivars and breeding germplasm. These alleles are labeled as: VE ("very early"), E ("early"), M ("mid"), L ("late"), VL ("very late"), and XL ("extra late"). Most common are VE, M, and VL.

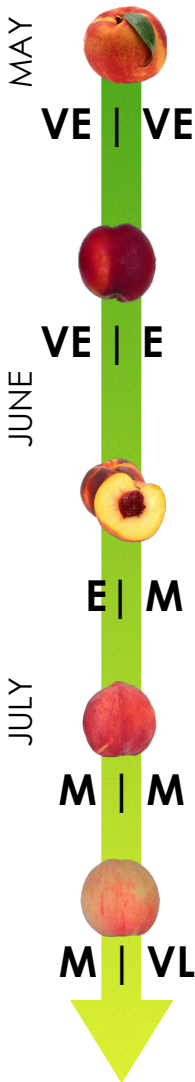G4Mat-array allele frequencies in U.S. cultivars &selections
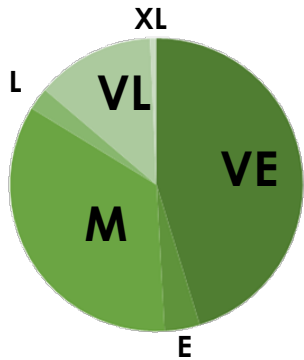
Genotype	Example Cultivar	Maturity Timing (approximate)
VE	VE	Westbrook	mid-June
VE	M	Redhaven	mid-July
M|M	Dr. Davis	mid-July
M	VL	Elberta	early August

DNA TESTS FOR PEACH

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MAY

VE | VE

VE | E

JUNE

E | M

JULY

M | M

M | VL

When to Assay

G4Mat-array has a range of breeding uses, such as:

- Cross choices, to help pick combinations of parents that will produce progeny in specific harvest windows.

- Seedling sorting, to enable planting of groups of seedlings ordered by predicted harvest date.

- Seedling selection, to discard unwanted types and field- plant only those seedlings expected to fruit within a specific harvest window.

Predictive Capacity

This DNA test explains almost all of the genetic effects on maturity season timing in U.S. breeding germplasm. By targeting and selecting specific allelic combinations, you can directly focus on one or more desired harvest windows. The predictive power of G4Mat-array was confirmed in the RosBREED project on four U.S. peach breeding programs. Confirm the effects in your own germplasm before widespread use.

Technical Details

G4Mat-array relies on SNP array genotyping with a custom 24-SNP mini-array or 9K array. Four adjacent SNPs define the locus. For more details on this test, other peach tests, or DNA tests for other rosaceous crops, visit www.rosbreed.org/breeding/dna-testing.

RosBREED

Combining disease resistance with horticultural quality in new rosaceous cultivars

Look For Updates:
31 DEC 2017