www.breedingvalue.eu

Practice Abstract

Optimised Field Trial Design for Berry Crop Phenotyping

Field trials are the foundation of robust phenotyping. A well-structured experimental design is essential to ensure reliable data collection and statistically sound results. A standardised trial layout was developed for strawberry, raspberry, and blueberry, aiming to maximise phenotyping efficiency while using minimal field space. Typically, a randomised complete block design (RCBD) with three replications is used. The crop-specific layout, including plant numbers and configurations, is described in detail in Table 1.

For blueberry, due to the time required for plants to reach productive maturity, trials can also be conducted in established commercial production fields using single plots without replication. Plant numbers vary depending on the cultivation system nd planting density. However, data can be normalised per plant or per area unit to ensure comparability.

This design supports the evaluation of agronomic traits, yield components, and pathogen response. It is also suitable for multi-location trials to assess genotype performance across environments and explore genotype × environment interactions.

Yield data collection involves sorting harvested fruit into marketable and discarded categories. To assess fruit size, 15–20 individual fruits for strawberry, 20 for raspberry, and 30 for blueberry are weighed at each harvest.

This protocol enables consistent and repeatable data collection for both research and applied breeding purposes.

Species	Experimental design	Replications	Minimum plant number
Strawberry	RCBD	3	8-10
Raspberry	RCBD	3	3-4
Blueberry	RCBD	3	3
	Single plot	1	

The BreedingValue project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000747.