Science Societies

A breakthrough for blueberry breeding with near-infrared spectroscopy

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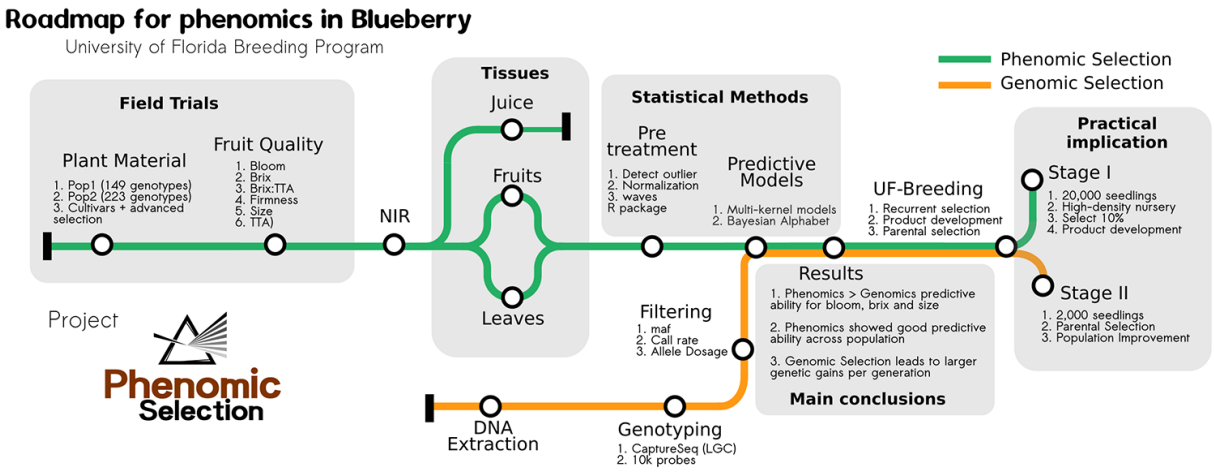


Highbush blueberries, a North American blueberry species. Photo by Mark Ehlenfeldt, USDA-ARS.

Blueberries are renowned for their health benefits and growing market demand. However, developing new cultivars that meet consumer expectations is time intensive and costly. A recent study in *The Plant Phenome Journal* explores the use of near-infrared spectroscopy (NIRS) to enhance blueberry breeding by enabling early selection of desirable traits such as sweetness, firmness, and size.

Researchers from the University of Florida assessed 372 blueberry genotypes over two years using NIRS to predict fruit quality traits, comparing phenomic (NIRS-based) and genomic selection methods. The team found that NIRS and genomic methods performed similarly for predicting traits like sweetness and acidity with NIRS offering a cost-effective alternative. The NIRS data collected from fruits proved more accurate than from leaves or juice though leaves offer the advantage of earlier testing at the seedling stage. The researchers conclude that by integrating NIRS into breeding pipelines, genetic gains can be accelerated while reducing costs.

This innovative approach offers a pathway to more sustainable and efficient blueberry breeding, setting the stage for wider application in other fruit crops. The findings hold promise to deliver better cultivars that meet global market needs faster and at lower costs.



Description of the roadmap of the study of phenomics in blueberry performed by the University of Florida blueberry breeding team. Image by Felipe Ferraro.

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Adunola, P., Tavares Flores, E., Azevedo, C., Casorzo, G., Ghimire, L., Ferrão, L. F. V., & Munoz, P. R. (2024). Phenomic-assisted selection: assessment of the potential of near-infrared spectroscopy for blueberry breeding. *The Plant Phenome Journal, 7*, e70010. https://doi.org/10.1002/ppj2.70010

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