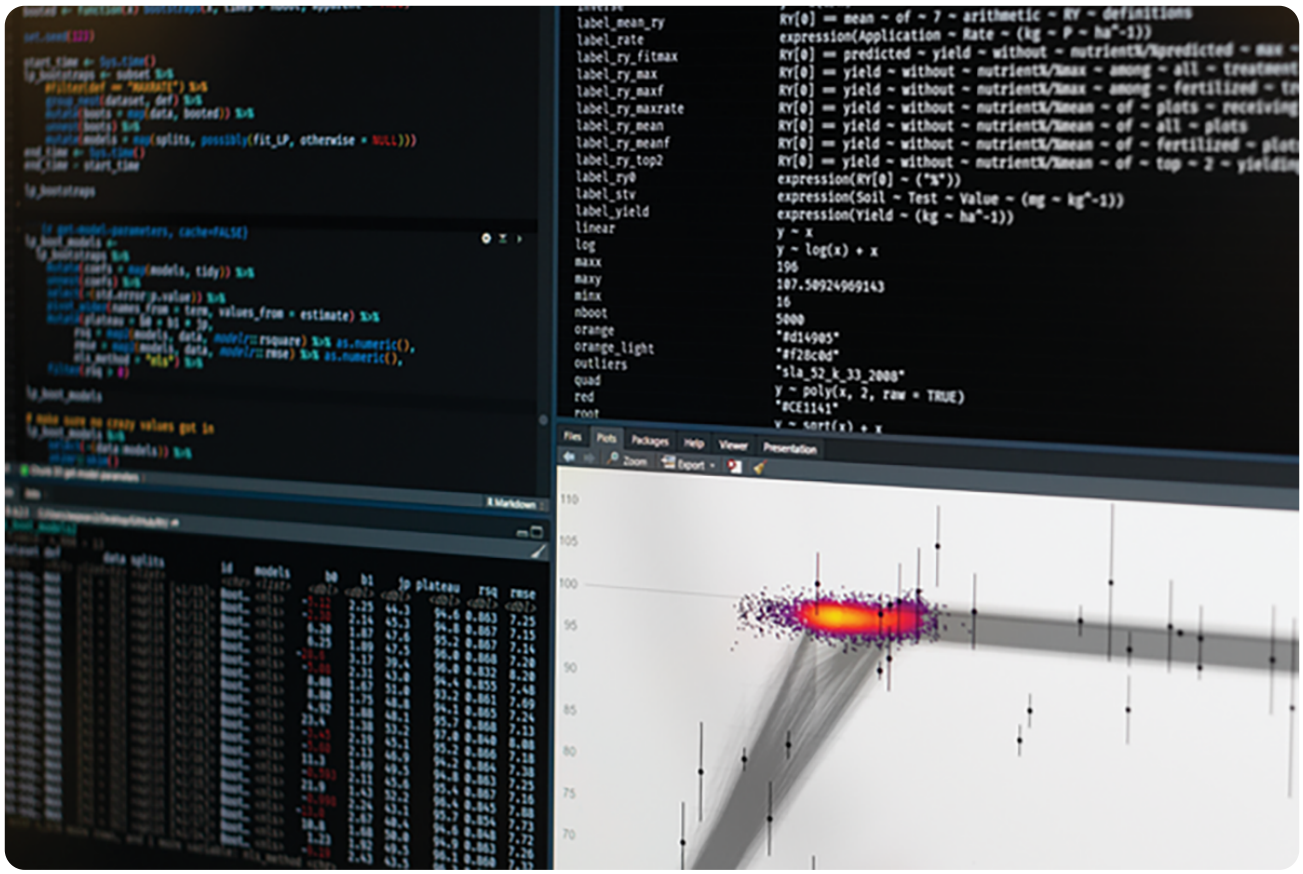
Science Societies

# Relative yield defined for the fertilizer recommendation support tool

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*Programming workspace showing the uncertainty in soil test correlation and the critical soil test value associated with different relative yield definitions. Photo by Austin Pearce.*

The **Fertilizer Recommendation Support Tool** (FRST) aims to provide soil test correlation results from user-selected datasets of fertilizer rate trials in the FRST national database. Relative yield (RY) is used as a crop response variable, increasing as soil test concentrations increase. At least nine methods exist in published literature for calculating RY, but unknown is whether the choice of method could significantly affect key outcomes, such as critical soil test values, around which fertilizer recommendations can be made.

Researchers recently compared soil test correlation outcomes with a linear-plateau model across five different phosphorus and potassium soil test correlation datasets using six methods of calculating RY. The team found that the critical soil test value did not vary significantly by RY method and decided that RY in the FRST would be based on the numerically highest treatment yield means. The definition represents maximal yield response, is compatible with a range of studies, can provide intuitive data interpretations, and opens possibilities for other correlation methods.

This study highlights the importance of (i) checking the impact of decisions made at the beginning of the soil test correlation analysis and (ii) recognizing uncertainty around critical values.

**Dig deeper**

Pearce, A.W., Slaton, N.A., Lyons, S.E., Bolster, C.H., Bruulsema, T.W., Grove, J.H., … & Spargo, J.T. (2022). Defining relative yield for soil test correlation and calibration trials in the Fertilizer Recommendation Support Tool. *Soil Science Society of America Journal*. **https://doi.org/10.1002/saj2.20450**

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