

# Statistical analysis can estimate crop performance

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Scientists at Rothamsted Research, United Kingdom, in collaboration with the International Center for Agriculture Research in the Dry Areas (ICARDA), Syria have developed a method of accounting for spatial trend in single crop field trials. Spatial trend refers to the variations in crop yield and other characteristics observed when repeating this single crop field trial.

Usually plant breeders will grow several replicate plots to assess the breed line in different environments and then compare the results to commercial or standard varieties of the crop. When resources or seed are scarce, breeders will grow only a single plot of a test line alongside a number of other standard varieties acting as check plots.

"The results have shown that adjustment for spatial trend within the trials is possible and gives improved accuracy on the estimates of line performance," says Sue Welham, one of the authors of the study.

A crop developed by Dr. Miloudi Nachit at ICARDA was used to illustrate spatial trend in this particular experimental design. The teams then used simulations to further demonstrate the dramatic increase in precision in estimating the performance of a line while adjusting for spatial trend. However, these measurements are not without their flaws.

According to Welham, "One drawback to the use of spatial adjustment is the possible subjectivity and difficulty in the choice of a model."

**More information:** [www.agronomy.org/publications/...  
abstracts/102/6/1542](http://www.agronomy.org/publications/...abstracts/102/6/1542)

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