

IMPLEMENTING ON-FARM RESEARCH: IT'S EASIER THAN YOU THINK?

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Overview

Agricultural production advances occur incessantly. Constant development and marketing of a myriad of crop genetics, equipment, fertilizers, pesticides, and management practices require evaluation via research to enable the wise adoption of beneficial products and practices. Research conducted on farmer's fields by farmers themselves or in cooperation with industry or university partners is a useful approach to comparing the new to the old and facilitate decisions to embrace change. Field-scale research is more realistic and believable to farmers and the agricultural industry thus encourages the adoption of proven products and practices. Better yet, a well-designed field-scale research study is superior to traditional small plot research in detecting grain yield differences!

On-farm research is most applicable to fairly simple agronomic questions with six or fewer treatments due to field area limitations arising from the large treatment plot sizes dictated by commercial planters, applicators, and combines. Randomization and replication (at least three per treatment and preferably four or more) are necessary to reduce the probability of introducing systematic bias into the results and allow statistical analysis. Statistics enable the researcher to distinguish between random variation and true treatment effects.

Precision agriculture technologies have made it easier than ever to conduct research at the field scale. Aerial photography, digital soil maps, and GPS allow candidate fields for research to be evaluated remotely for suitability and proper experimental design. The plot layout and treatment applications can be designated with prescription maps and verified with as-applied maps to minimize errors. Guidance systems allow the application of all replications of one treatment to be applied without flagging or cleaning out the fertilizer tank or planter box. A properly calibrated yield monitor can be utilized to accurately measure yield and quantify the treatment effects and without slowing harvest. In some situations GIS software can be used to evaluate treatment effects within soil types or management zones and increase the amount and applicability of the information obtained from the research.

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