

Using precision technology to conduct on-farm research trials for data-intensive farm management

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Background

In 2015, the Illinois Nutrient Loss Reduction Strategy (INLRS) was developed to guide state efforts in improving water quality at home and downstream by reducing nitrogen and phosphorus levels in our lakes, streams, and rivers. Fertilizer management is a significant concern to researchers and farmers, but the lack of sufficient and reliable data has posed a challenge in the past. Data-Intensive Farm Management (DIFM) is a \$4 million research project funded by the USDA National Institute of Food and Agriculture, tackling this issue by the use of precision technology, readily available in today’s farm equipment.

Trial implementation: What is DIFM doing different?

Historically, generating the data needed to accurately predict optimal management decisions was both labor-intensive and expensive. As a result, studies in the past were often short-term and data was limited to just a few small strip-trial plots, conducted in a similar geographic location. DIFM’s approach allows farmers to conduct their own field experiments on their farms by utilizing the precision technology readily available in their modern equipment. With DIFM’s method, all experimental protocols are programmed into the farm machinery, requiring little effort on behalf of the farmer. Through the use of DIFM software, Certified Crop Advisors

(CCAs) and farmers work closely together to easily create the on-farm field trials, collect and evaluate the data, and make optimal fertilizer management decisions based on the analyzed data and field characteristics for that specific field.

Summary

DIFM’s revolutionary approach provides farmers and CCAs a hands-on decision-making tool, with the overall goal to increase farmer profits and reduce nutrient runoff through optimal management practices (Figures 28 & 29).

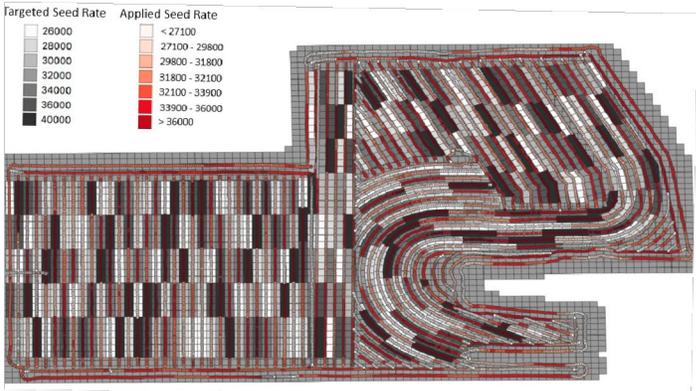


Figure 29. A variable seed rate trial planted in an Illinois field in Spring 2019.



Figure 28. A randomized nitrogen fertilizer trial designed by Data-Intensive Farm Management

