On-Farm Precision Experiment (OFPE)

https://sites.google.com/site/ofpeframework/

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MSU Development Team

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Primary Cooperators:

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Core Producer Cooperators



OFPE premise for fertilizer prescription



Applied fertilizer (lbs per acre)

OFPE premise for fertilizer prescription

Scientific challenge: Find models of fertilization and other constraints on erop quality/quantity that allow us to identify the application rate that produces maximum profit.



Applied fertilizer (lbs per acre)

Defining and using the model







Step 1: Select/calibrate the model for a field Step 2: Use the calibrated model to generate fertilizer prescriptions for maximum profit

OFPE calibration example: On-farm experimentation and a hypothesis-based empirical model



Nitrogen fertilizer rate (lbs/acre)

Three topdress (after planting) nitrogen fertilizer strategies were compared to determine which would maximize net return in the field in 2016. Only fertilizer costs are included in the net return for this analysis.

Base price for WW = \$3.32/bu N-fertilizer cost \$0.34/lb



Net return (\$/field) for each nitrogen addition strategy

37% increase in net return for the full field using the site-specific optimized fertilizer rates over uniform standard rate.

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Net return (\$/acre)

Net return (\$/acre)

Net return (\$/acre)

OFPE data and workflow management



OFPE producer's use case



On Farm Precision Experiment Framework



