

MSU AGRICULTURE INNOVATION DAY

FOCUS ON PRECISION

TECHNOLOGY THAT PAYS

Remote Sensing to Develop a Prescription Map

Improve profits and decrease
environmental risk

Corn Belt Perspective

70 million acres of corn across 10 mid-western states

Yield Stability Zones	Subfield %	N Fertilizer Efficiency (%)	Yield Bu/ac	Average \$ Profit
High and Stable	46	78	200	170
Low and Stable	26	47	130	-56
Unstable	28	58	145	1

Analysis was based on corn price of \$3.8/bu
and total cost of \$550 /ac.



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When uniform fertilizer rates are applied across the field, much of the fertilizer applied to **constantly low-yielding** areas will go unused and be lost to the environment. Average **cost per acre is \$56**.

Farmers can pinpoint consistently high and low producing areas of a field with remote sensing coupled with this data set.

Matching N-fertilizer rates to crop yield stability can **reduce N loss and increase profits**.

Loss of nitrogen on consistently low yielding areas cost **\$485 billion in wasted fertilizer** and **6.8 million metric ton of greenhouse gas emissions annually**.



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Michigan Highlights

The analysis for Michigan was performed on a total of 115 acres samples

Farmers in Michigan can pinpoint consistently high and low producing areas of a field with remote sensing coupled with this data set.

Michigan Farmers, save on average 23% of fertilizer corresponding to 3582 lb (on a 100-acre field) \$716, and **0.5 Million ton of greenhouse gas** emitted in the atmosphere.



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Yield Stability Zones	Subfield %	N Fertilizer Efficiency (%)	Yield Bu/ac	Average \$ Profit
High and Stable	38	82	186	157
Low and Stable	24	59	128	-63
Unstable	38	74	142	-10



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