

Ag Simulations for the Mendota Lake Watershed +

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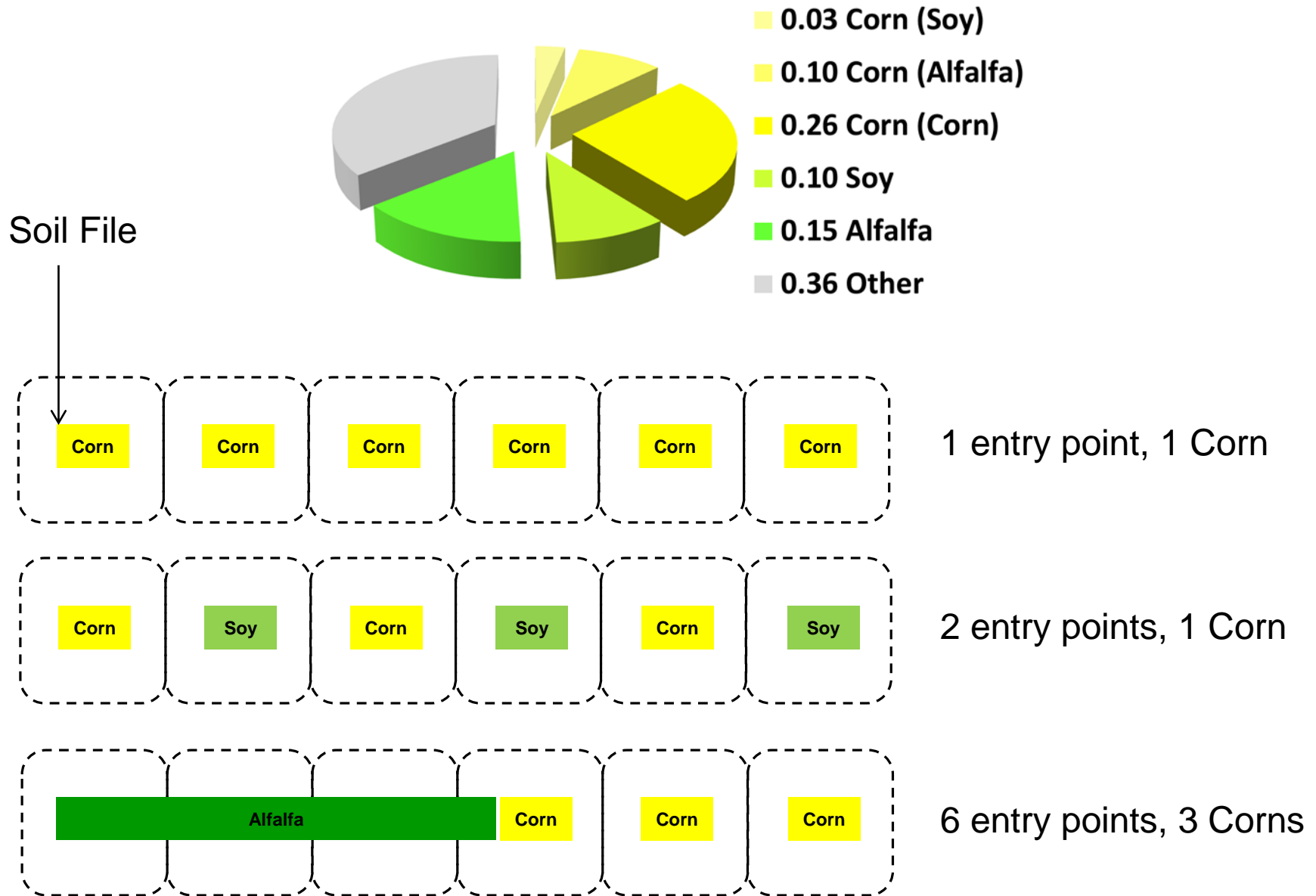
CNH-Lakes Workshop

Madison, WA

General goals and accomplishments

Simulations of crop yield in response to fertilizer application, focus on corn and nitrogen	(- manure)100%
Preparation of outputs for SDP work	100%
Greenhouse gases partial balance if needed	100%
Combination of outputs with PIHM to produce surface and surface nitrogen loads to the lake	50%
Phosphorus, we advanced, and realized the basic lack of knowledge in this area (I am exaggerating)	-25%

Simulations – Land use in Mendota



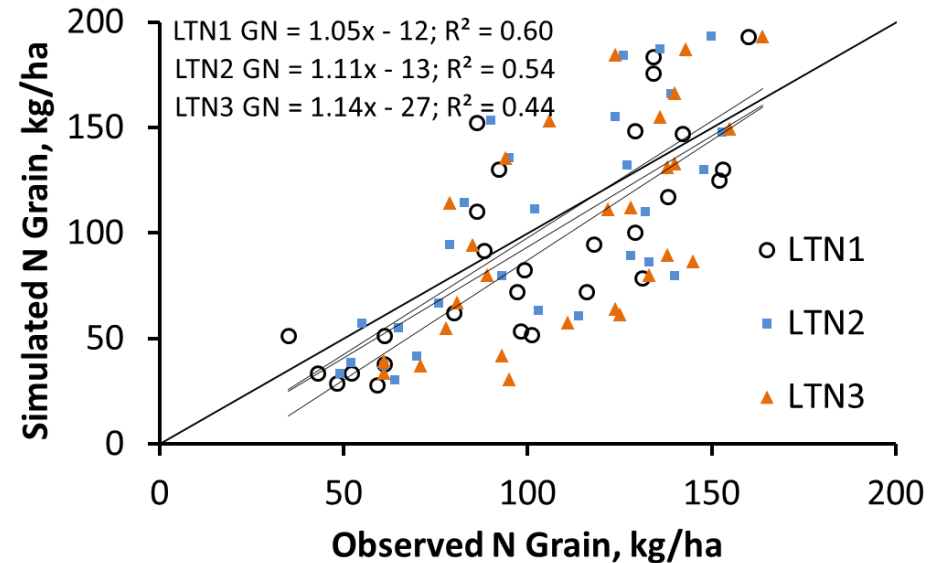
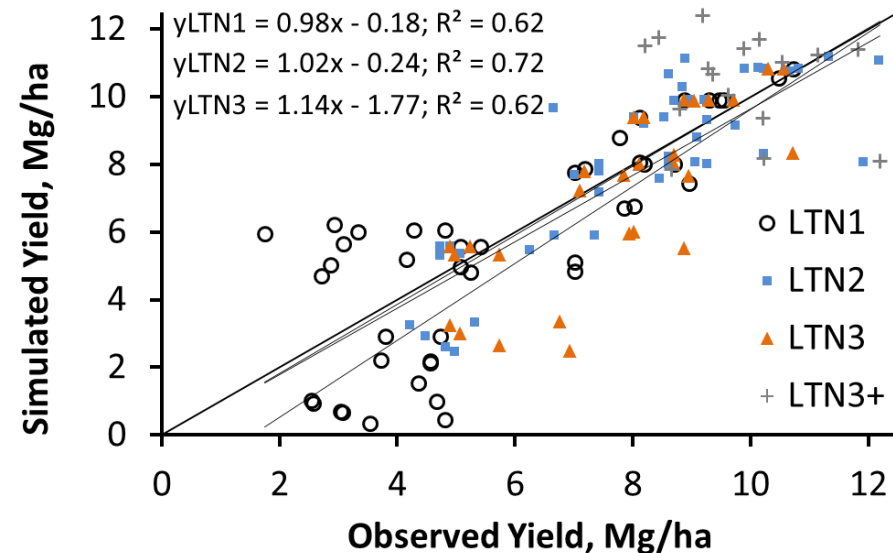
Opportunistic evaluation of Cycles

Experiment established in 1958 at Arlington, WI (Univ. of Wisconsin)

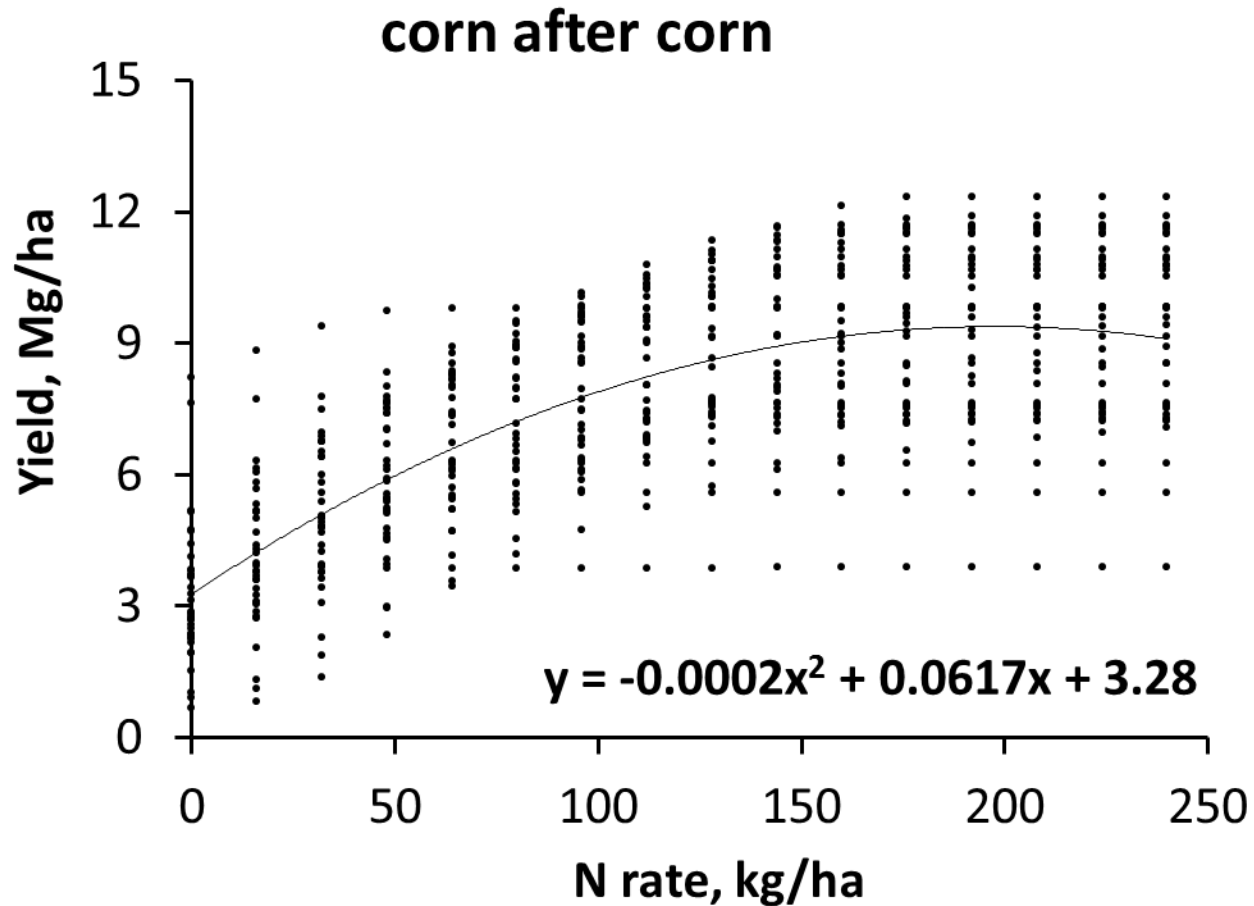
Continuous corn

LTN1 / LTN2 / LTN3 different background N management
x N rate

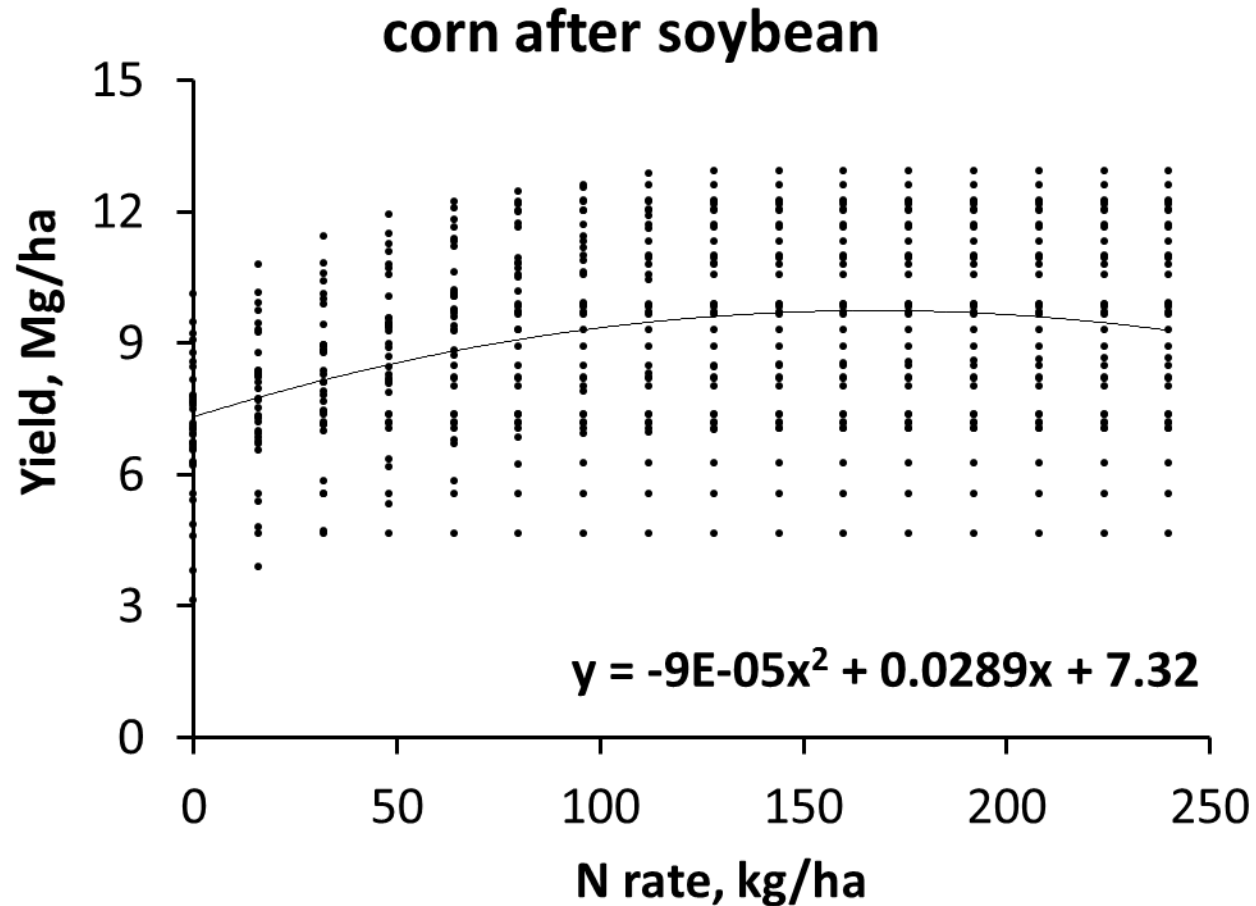
(Soil organic carbon very well simulated)



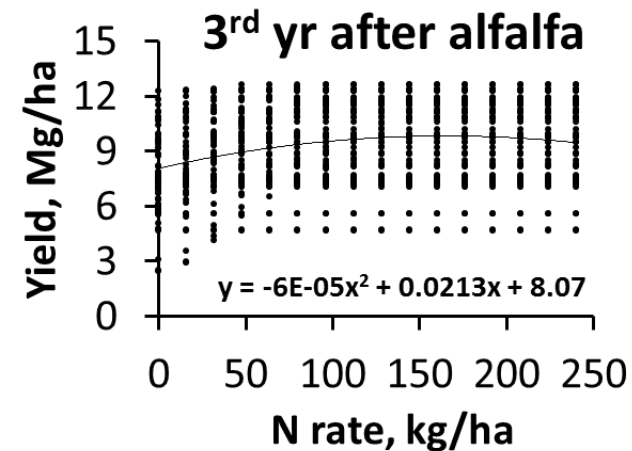
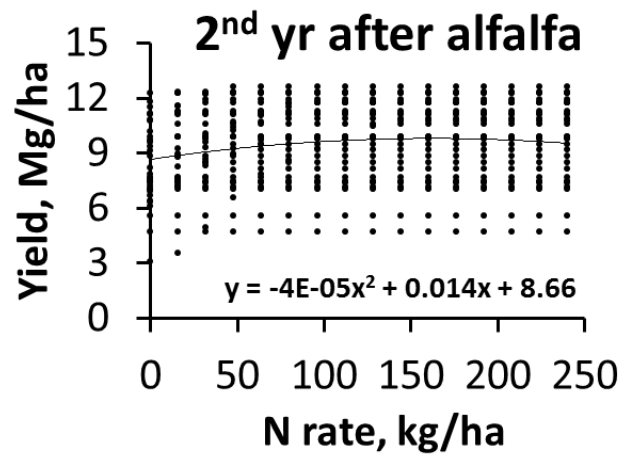
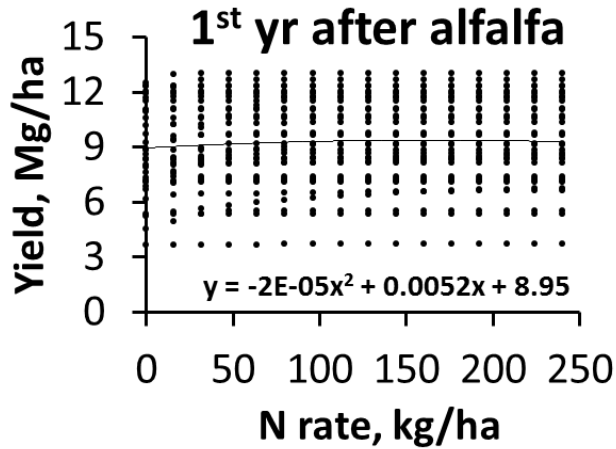
Simulated grain yield response



Simulated grain yield response



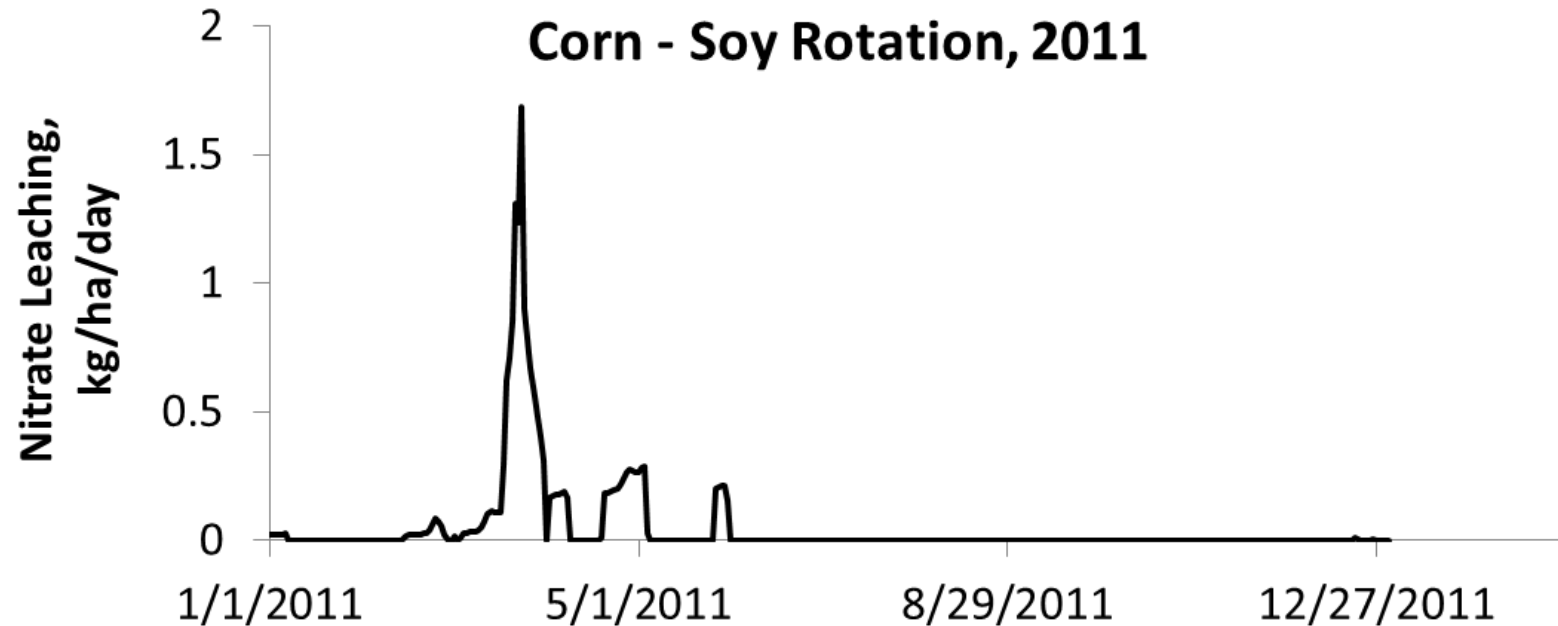
Simulated grain yield response



Response seems to be too subdued



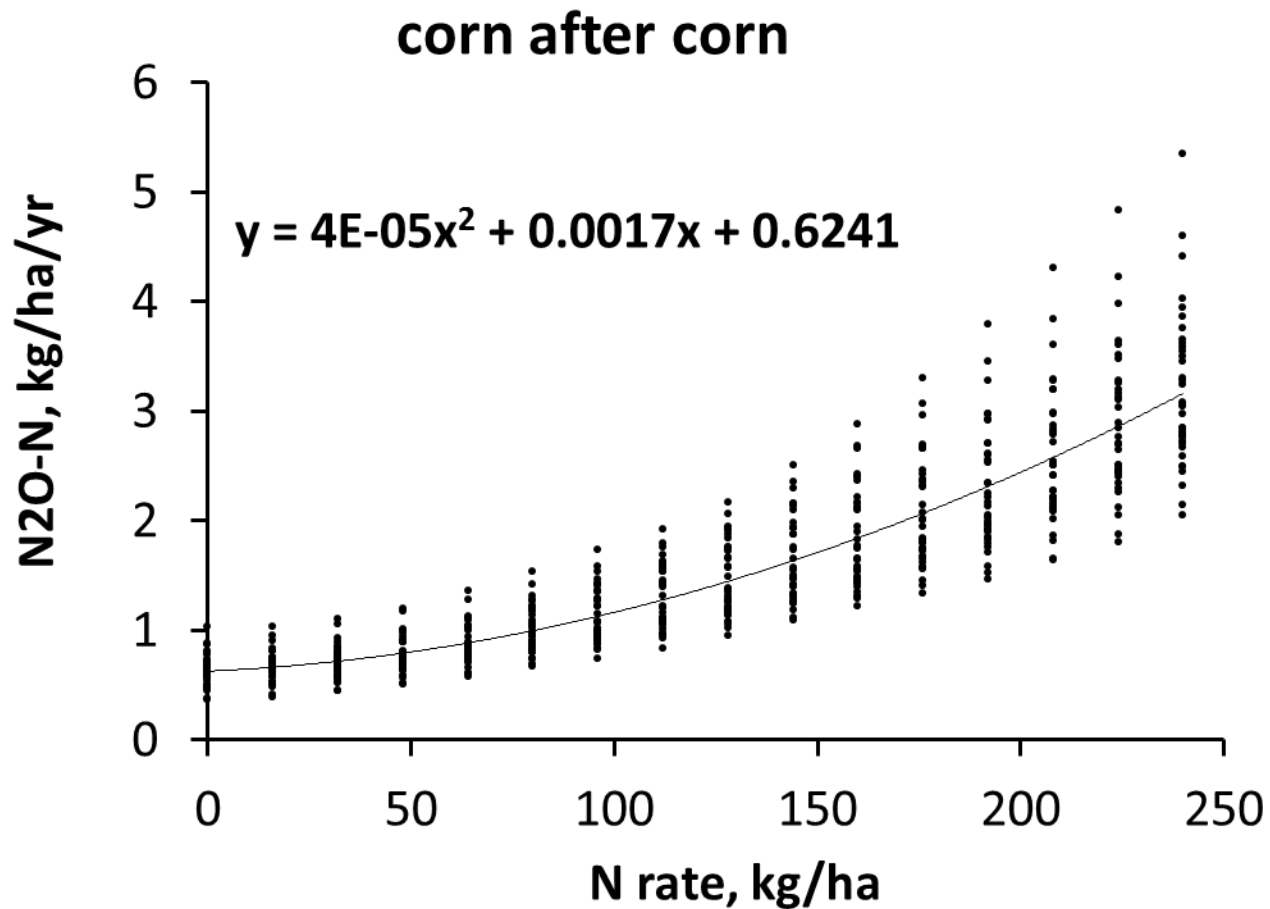
Simulated Nitrate Leaching

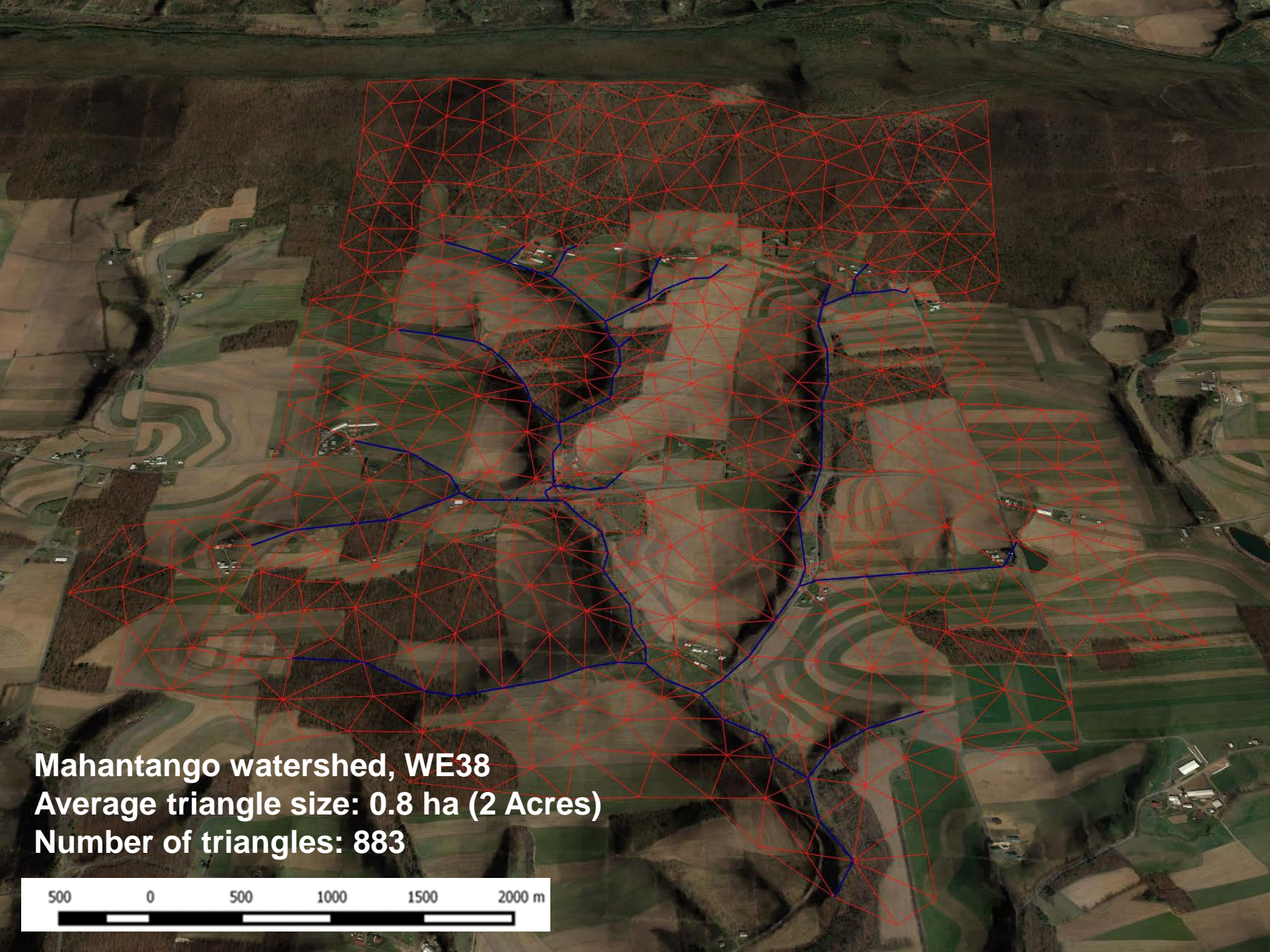


Cycles contribution
(18 kg/ha of NO₃
leached in 2011)

PIHM contribution needed for
baseline recharge

Nitrous Oxide emissions

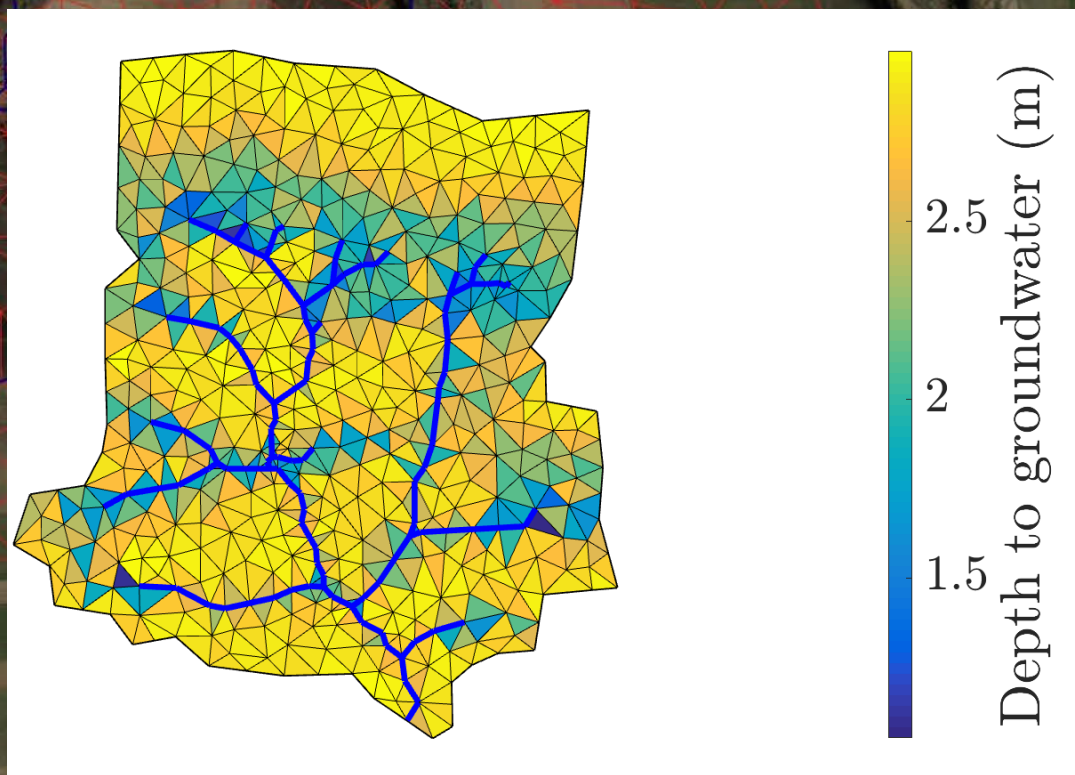
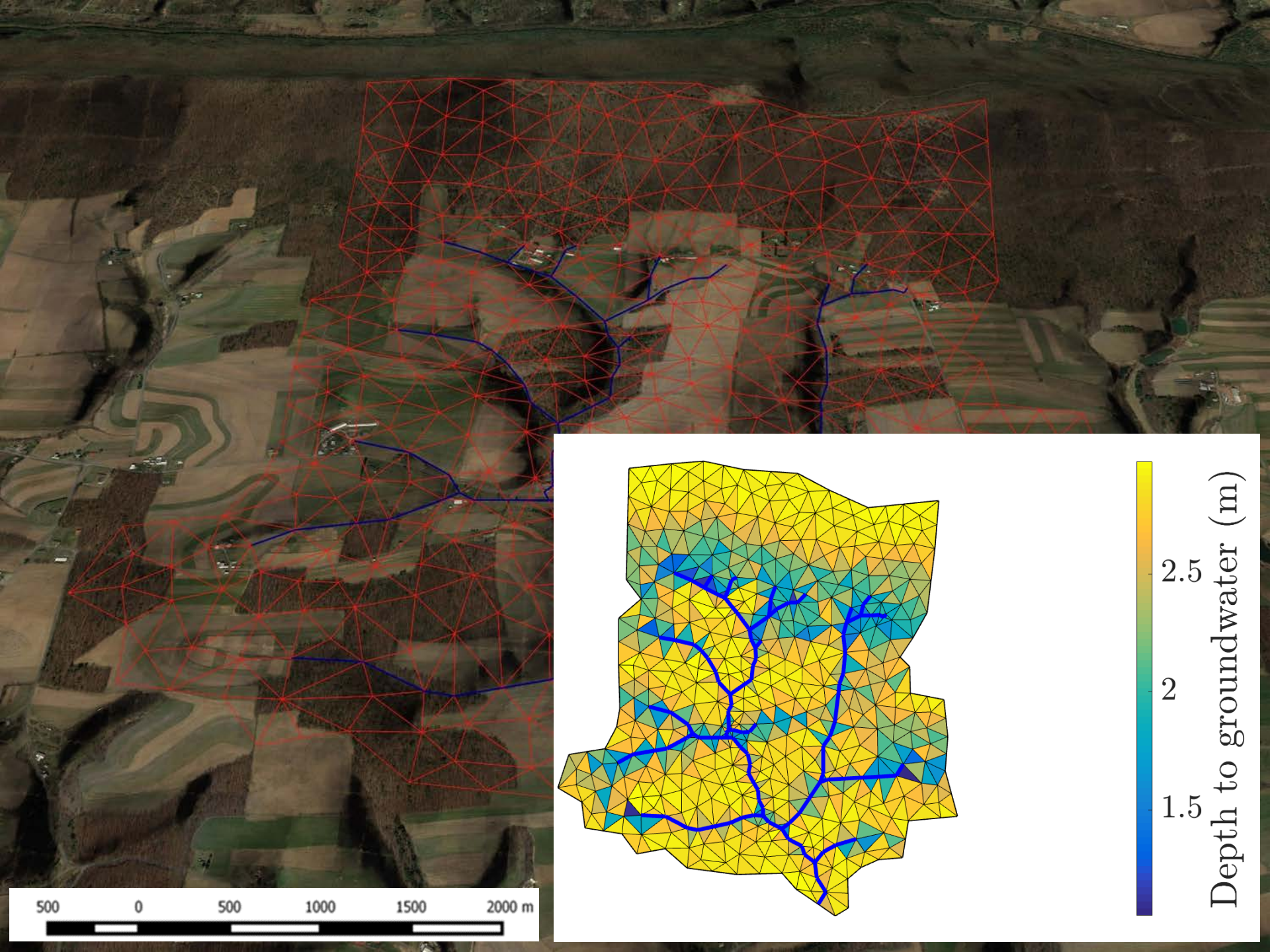




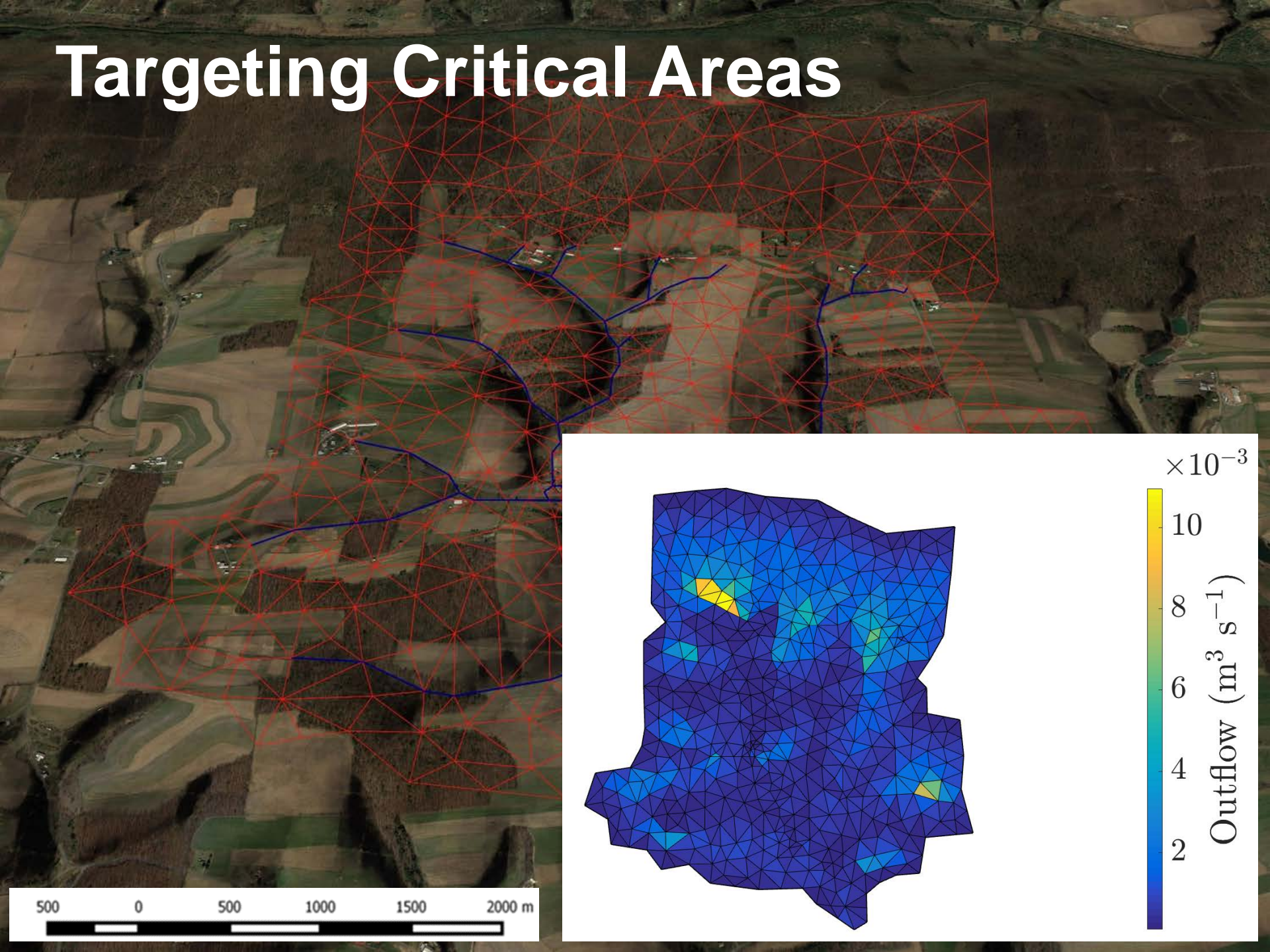
Mahantango watershed, WE38
Average triangle size: 0.8 ha (2 Acres)
Number of triangles: 883

500 0 500 1000 1500 2000 m

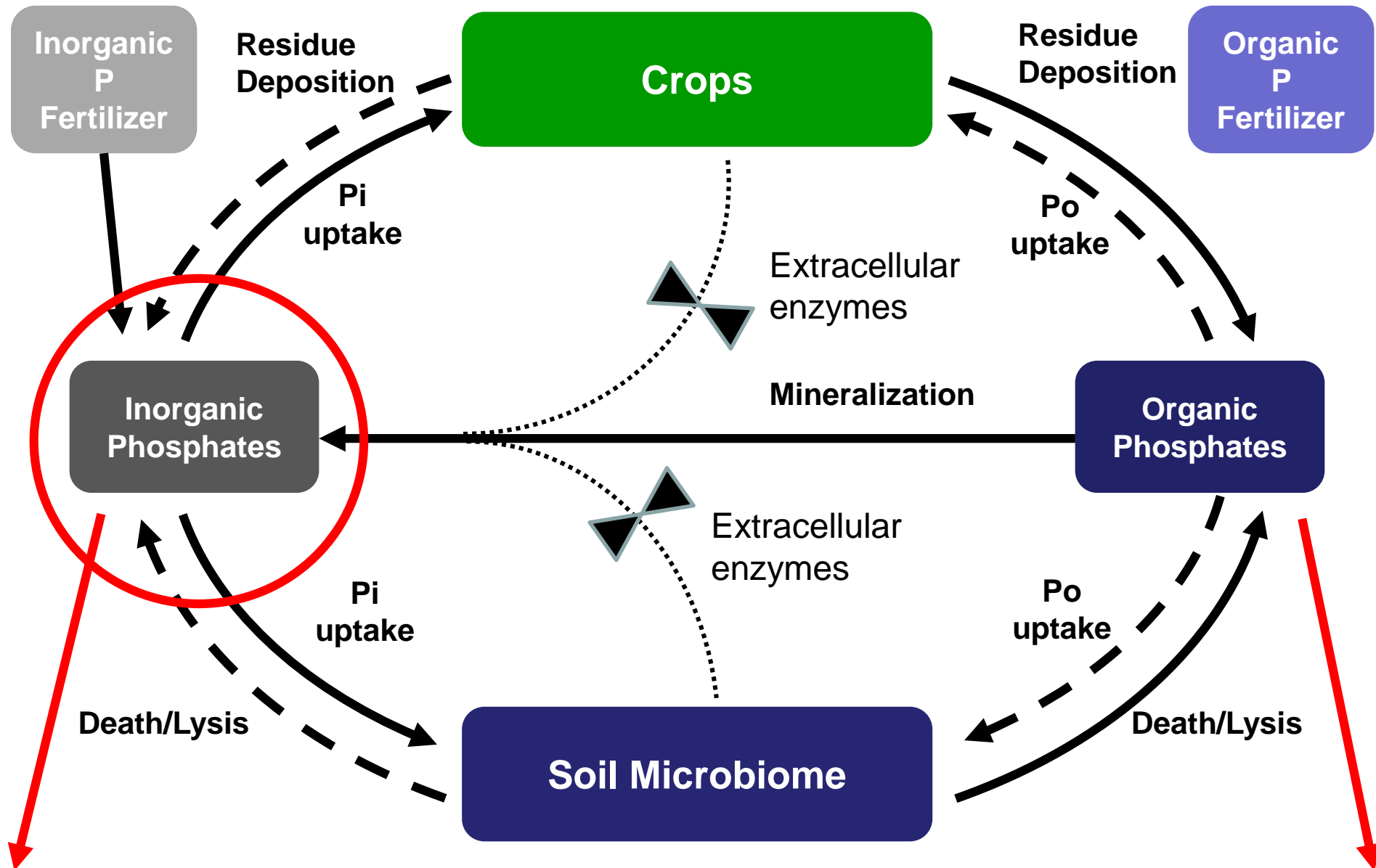




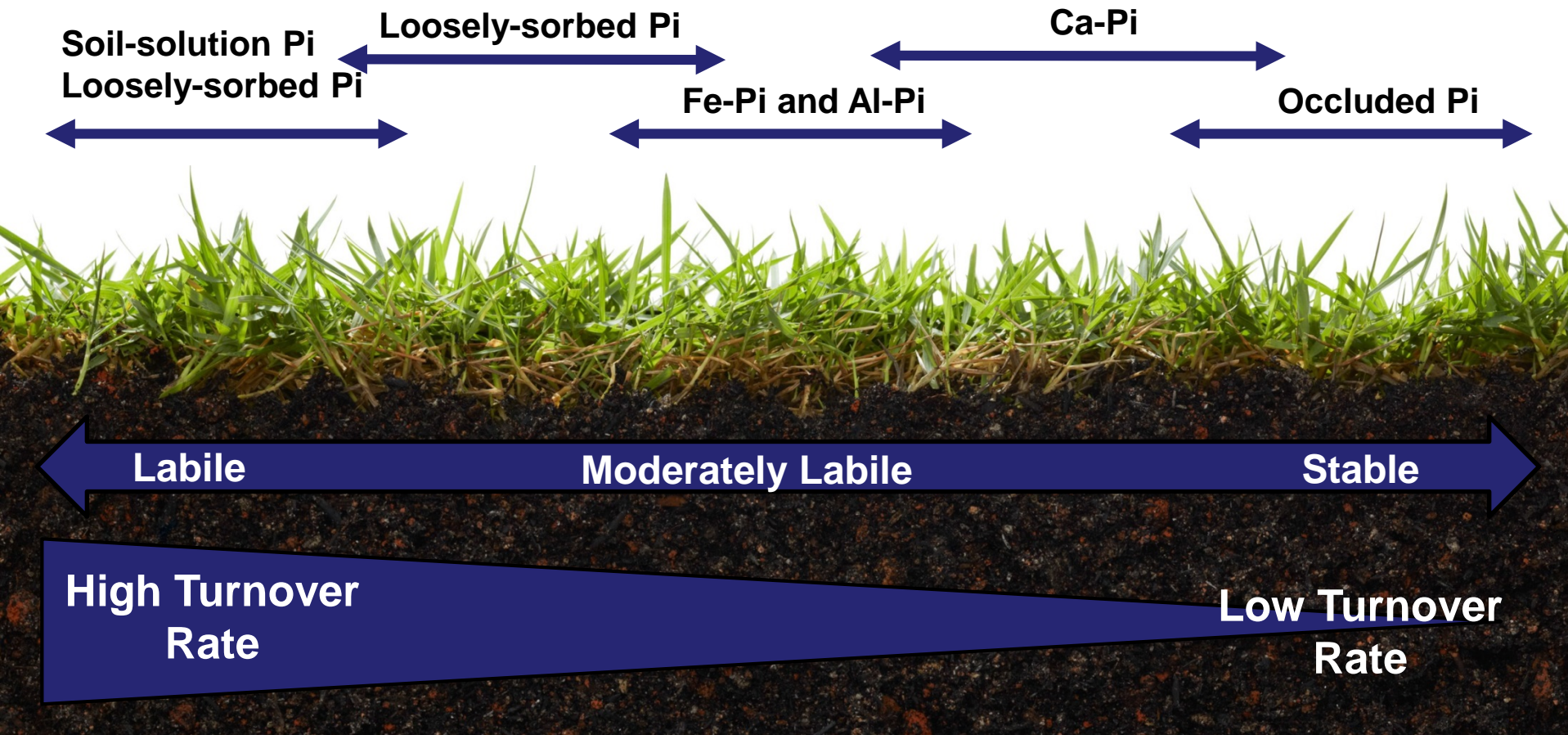
Targeting Critical Areas



A word about P



One more word about P



Final Remarks

- 1. Solve manure application rate and add manure scenario(s) to simulations portfolio**
- 2. Integrate simulations with PIHM to calculate nitrate yield to the lake**
- 3. P: work in progress**
- 4. Cycles – SDP – Cycles/PIHM circuit**



Questions?