Integrated Landscape Management

Pathway to Reduce Biomass Access Costs and Balance Logistics and Sustainability Outcomes in Agricultural Fields

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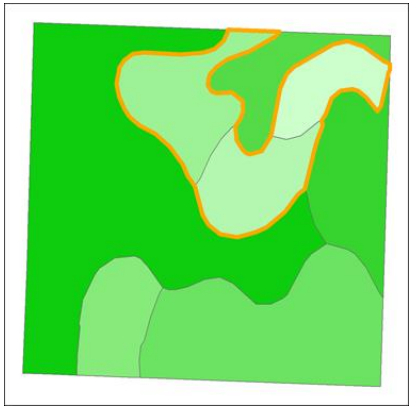
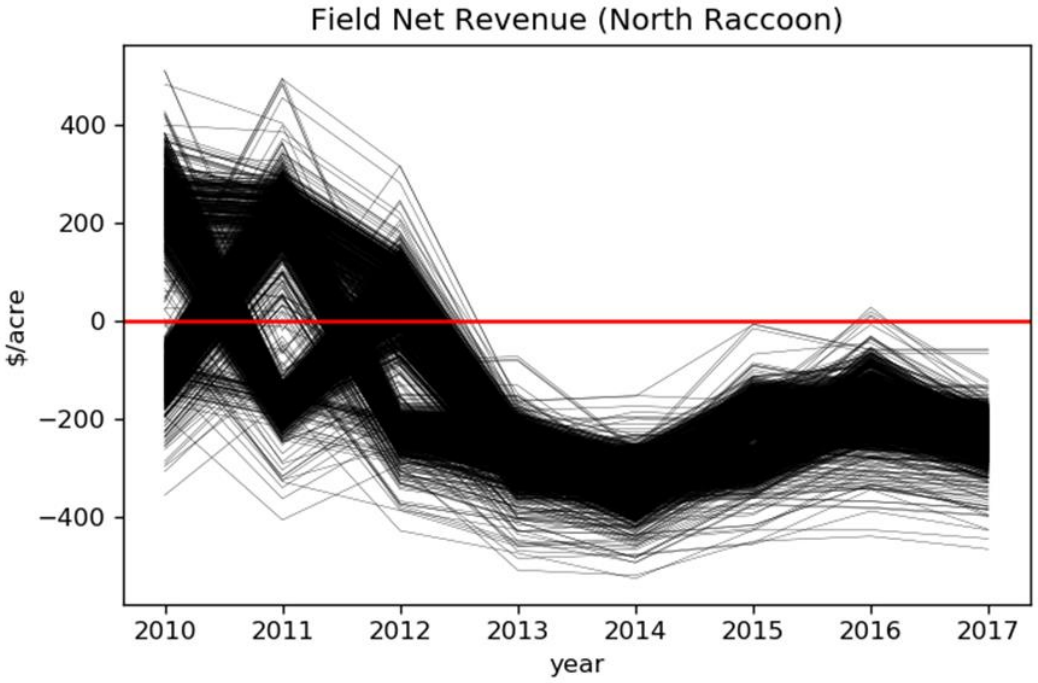
INTEGRATED LANDSCAPE MANAGEMENT





- Agricultural producers and land managers are potential major suppliers of biomass materials for energy conversion.
- The **diverse** agricultural landscape represents a significant opportunity to source biomass feedstocks from excess crop residues and cultivated perennial energy crops such as *Panicum virgatum* (switchgrass) and *Miscanthus x giganteus* (miscanthus).

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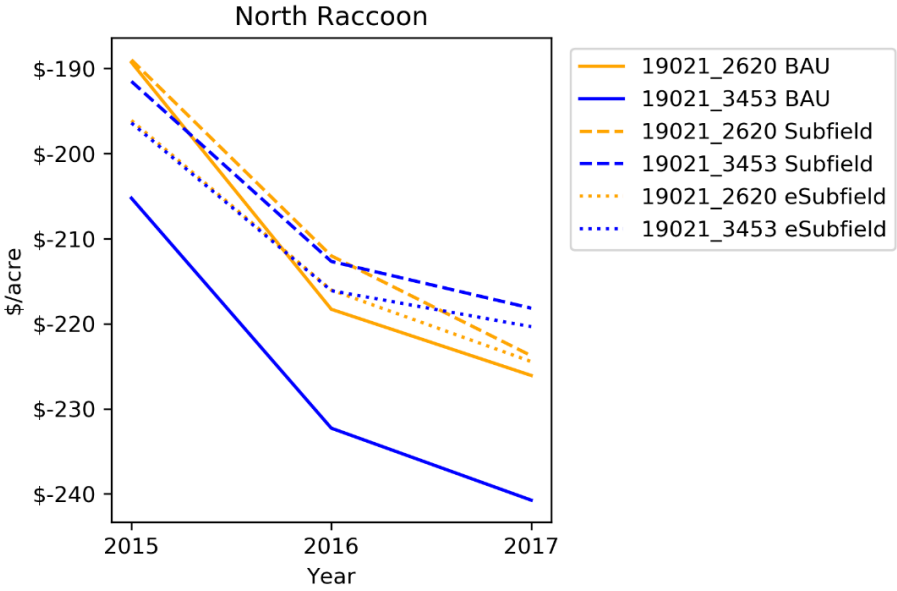
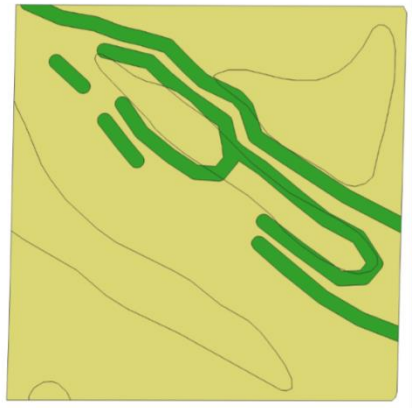
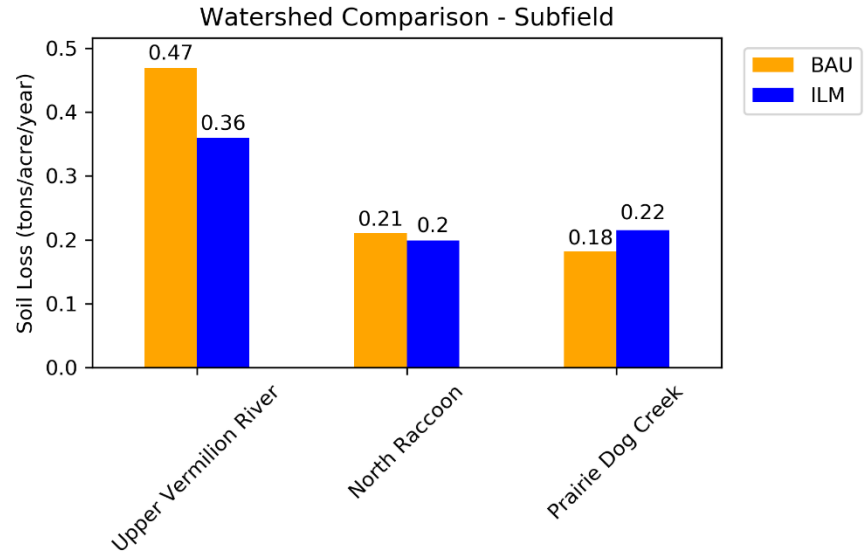
- Apply appropriate ILM designs with reduced biomass feedstock production costs and model economic and sustainability outcomes.
- ILM designs include low-yielding subfields, high-slope areas (prairie strips), and annual energy crops (biomass sorghum) integrated with suitable crop rotation patterns.







INTEGRATED LANDSCAPE MANAGEMENT

- Developed modelling and simulation capabilities to measure field operation efficiency to account for Integrated Landscape Management impacts on biomass harvest and logistics costs and grower field operations efficiencies.

$$FE = \frac{T_{work}}{T_{work} + T_{breaks}}$$

Empirical switchgrass harvesting data

Griffel, L.M., Vazhnik, V., Hartley, D.S., Hansen, J.K., & Roni, M.D. (2019) Field boundary shape descriptors of agricultural fields as predictors for perennial grass harvesting field efficiency: empirical proof. Submitted *Computers and Electronics in Agriculture*

Questions?