

Sustainable Land Mgt. Cmte.

9/17/2021



Charge components

1. Develop plan for evaluating/inventorying existing sustainable land management practices on the South Farms on non-research land, and for increasing the sustainability of SF land mgt. practices.
2. Update Agronomy Handbook with relevant, sustainable BMPs
3. Work with interested tenants on University-owned land to showcase the recommended sustainable land management practices in the updated Agronomy Handbook.

Plan requested by Dec. 1, 2021. *Madhu's clarification:*

I think a comprehensive plan to address all three issues and what it would take to implement that plan would be great. To the extent it is possible to get started on item 1 on the south farms this fall that will be great too.

Name	Affiliation	Priority practices
Adam Davis	Crop Sciences, Dept. Head	winter cover crops; limited soil disturbance; cropping system diversification; organic soil amendments; crop-livestock integration
Morgan White	F&S, Assoc. Dir. Sust, iCAP	edge of field water solutions (e.g., woodchip bioreactors)
Allen Parrish	Crop Sciences, REC Dir.	water use and crop rotation practices that balance sust. & productivity
Dennis Bowman	Illinois Extension, outgoing Asst. Dean ANR	year-round soil surface protection with residue and living cover
Andrew Margenot	Crop Sciences, Asst. Prof.	soil conservation (reduced till/covers), soil/landscape-based land-use, hedgerows
Ximing Cai	CEE, Prof.; iSEE Assoc. Dir. For campus sust.	landscape-based targeting of suitable practices; e.g. wet spots into agroforestry; effective fertilizer use plans
Emily Heaton	Crop Sciences, Prof.	site-specific record keeping that helps clarify how practices relate to productivity, profitability and environmental perf. at field and subfield
Megan Matthews	CEE, Asst. Prof.	site-specific records, compost, cover crops
Jonathon Mosley	AnSci, Dir. Farms & RECs	use of soil organic amendments (livestock waste, green manures) to reduce synthetic N dependence

Name	Priority Practices
	Evaluation of impacts of our practices, both on south farms and core campus, on environmental outcomes
	Integrated weed management: physical, chemical, biological, cultural (e.g. Harvest weed seed control, crop rotation, allelopathy, etc.)
	Track metrics of soil quality (soil C, aggregation, nutrient loss)
	Andrew: EM survey instrument can measure soil carbon more precisely, since it's calibrated for soil moisture: build 3D model for depth and texture; would take a while to do 3200 acres (@5 mph); can be run any time of year; could be driven by a student; the tough part is a calibration (need Giddings core for a small scale set of readings; 200 pt calibration)

Facility	Existing Practices
JM, AnSci, near dairy	130 ac cover crop, vertical tillage [Jonathon has field names]
Allen P	SSC grant to do cover crops: seed, head spreader; need some research to look at how cover crops are affecting yield
Allen P	<p>Soil is sampled for pH regularly; add non-destructive EC measurements from planter bar (Precision Planter makes one: AP will find out cost, on order of \$35-60K); could potentially have this info across the fields;</p> <p>Andrew: EM survey instrument can measure soil carbon more precisely, since it's calibrated for soil moisture: build 3D model for depth and texture; would take a while to do 3200 acres (@5 mph); can be run any time of year; could be driven by a student; the tough part is a calibration (need Giddings core for a small scale set of readings; 200 pt calibration)</p>

Next steps

- **Inventory/Evaluation** [AP, JM, MM]

- Structure for an inventory of existing practices
- Develop communication plan beyond South Farms (audience: on-campus comm): what's happening, what we need to do more
- Consider levels of priority and attainability for BMPs
- Identify barriers to adoption of better practices; what are the limitations?
- What have other LGUs done?

- **Overall plan** [AD, Morgan]

- Do we have in-house resources to do this?
- How would practices be extended from South Farms to the rest of the UIUC leased lands? What would it take, budget-wise, to do this?

Agronomy Handbook BMP chapter [Marty, Eliana Brown] potentially look beyond UIUC

- Main sections
- Which items do we have in-house knowledge for?

- Ximing:
 - there may be some iSEE support (postdoc, student) for this activity
 - What have our peers in other LGUs done on their farms?
 - As another output of work, could we share what we would do in the future on UIUC leased lands, and what the budget would be?