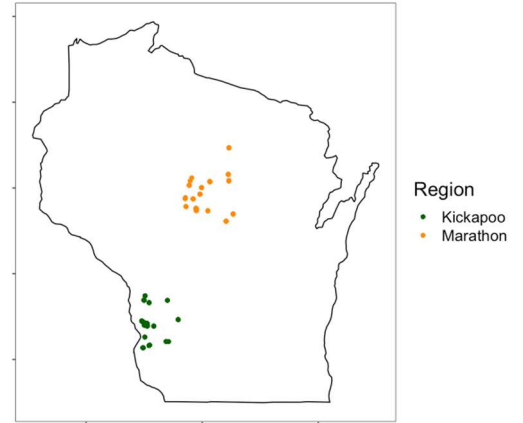


Soil Health and Pasture Management- 2021 Report

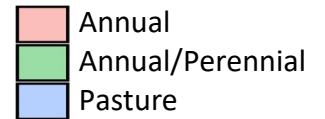
Overview: In 2021, 32 farms in Marathon and Kickapoo regions participated in an on-farm soil health survey, where 96 pastures were measured for biological soil health. Pastures varied in soil types, land history and management. The objectives were to benchmark soil health on pastures and evaluate what soil and management factors are most influential to soil health indicators.



Thank you to the participants in this Soil Health and Pasture Management study! On-farm research would not be possible without this collaboration.

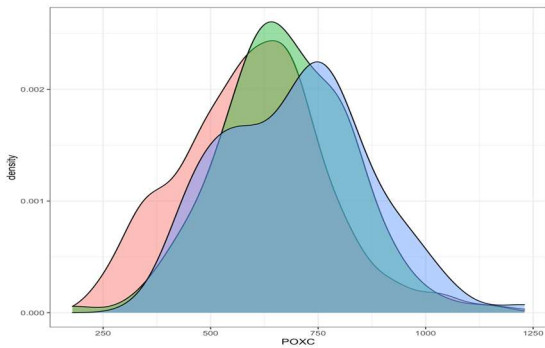
Survey work in Wisconsin shows that shifting agricultural systems to incorporate soil health principles can increase biological soil health.

The graphs compare the distribution of values by system: annual rotations, annual/perennial (alfalfa) rotations, and pastures. On average, systems with greater perenniality and carbon inputs had higher soil health.



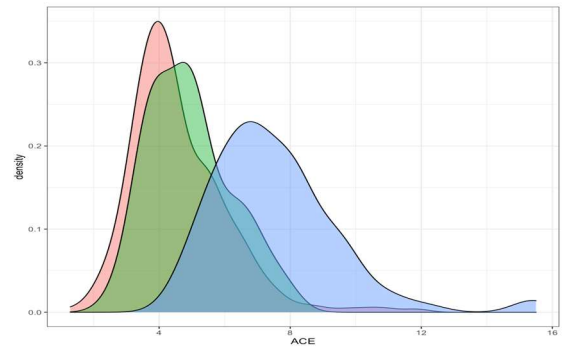
Permanganate Oxidizable Carbon (POXC):

Also known as “active carbon,” this measurement represents the fraction of soil organic carbon that is readily available for decomposition. It is more associated with C stabilization.



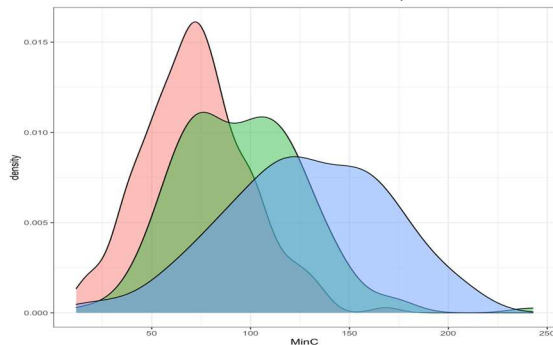
Autoclaved-Citrate Extractable Protein (ACE):

ACE represents the pool of organic nitrogen in the soil. Greater ACE can indicate greater nitrogen cycling and the quality of soil organic matter.



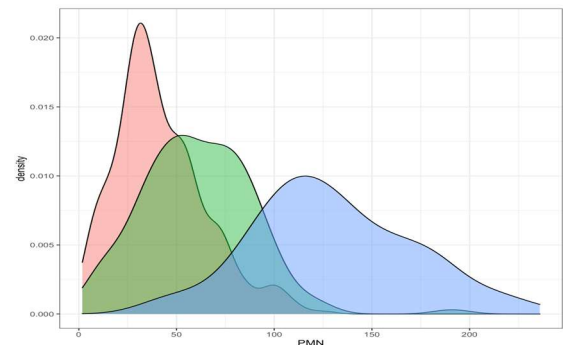
Mineralizable Carbon (minC):

Also known as soil respiration or CO₂ burst, this is a measurement of soil microbial activity. It is associated with the cycling and mineralization of nutrients into a plant available form.



Potentially mineralizable nitrogen (PMN):

The amount of organic N that is converted into ammonium (a plant available form of N) through microbial activity. This method uses a 7-day anaerobic incubation.

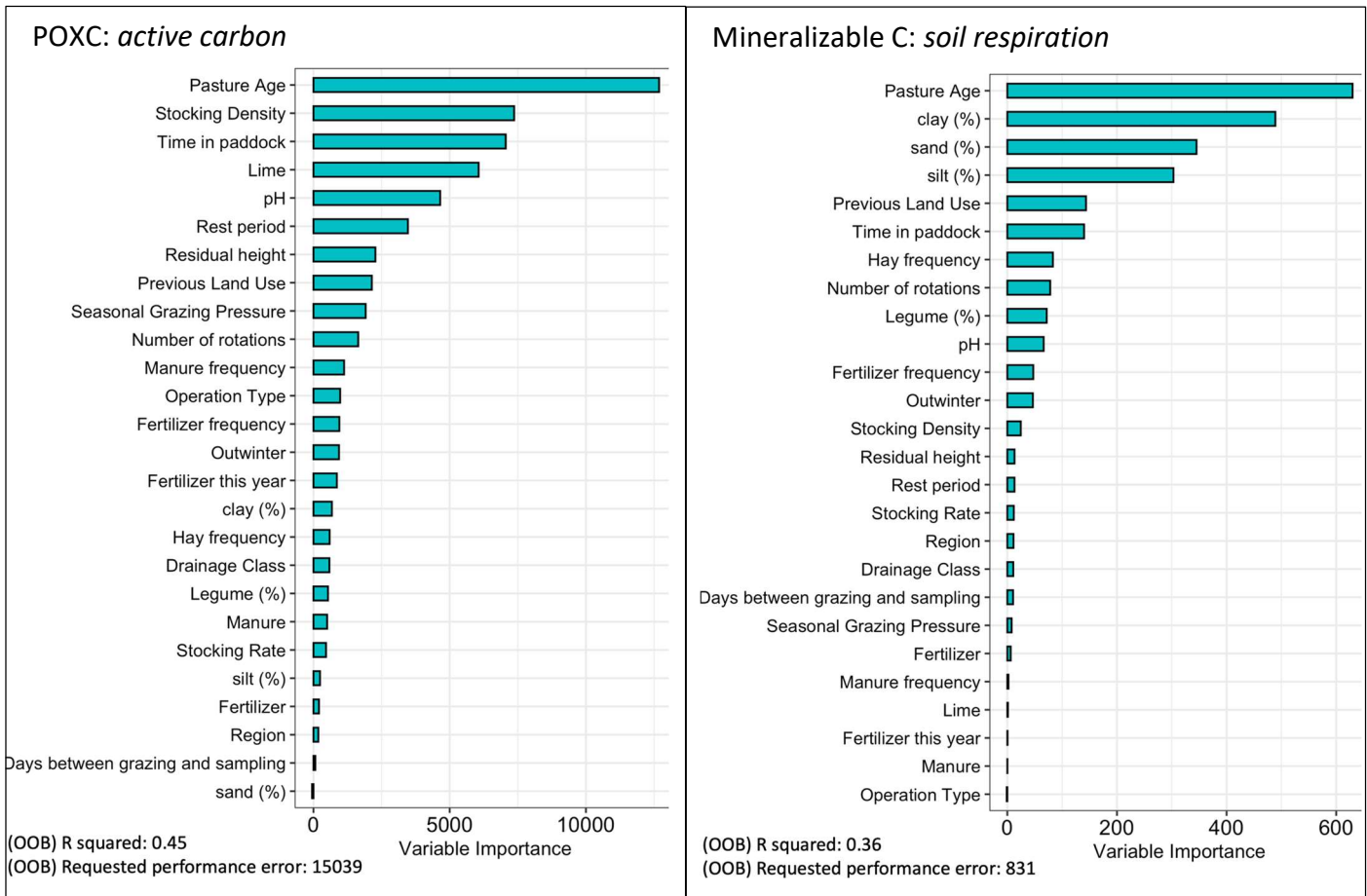


*Cropping system data courtesy of Discovery Farms, Greg Richardson, Lindsay Malone

Please reach out to Abigail Augarten, abigail.augarten@wisc.edu or 914-844-2146, for more information

Variables of importance in rotationally grazed pastures

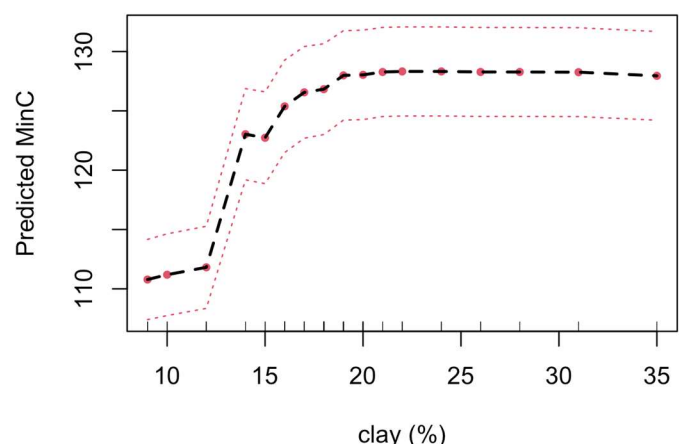
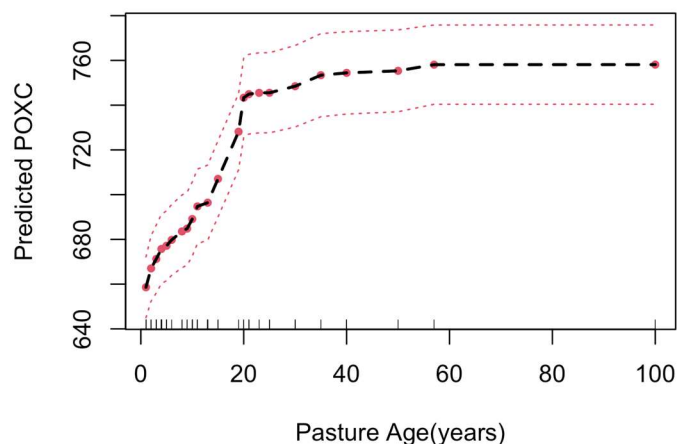
For each indicator, soil properties, land use factors and management practices were ranked by how influential they were to soil health measurements.



Models were used to visualize trends of a single variable, while holding all other variables constant. In the graphs below, predicted soil health values are shown as pasture age and clay content vary.

Increasing **pasture age** is associated with higher soil health, but may have diminishing returns

Higher **clay content** and lower sand content corresponds to higher soil health



Please reach out to Abigail Augarten, abigail.augarten@wisc.edu or 914-844-2146, for more information