



Metrics Committee – October 2021





Agenda

- Energy Use Metric update – overview of data resources
- Discussion of Biodiversity metrics



Field to Market®

Energy Use Metric: Updated Data Available

- Application Energy
 - BTUs per pound of fertilizers (Argonne GREET model)
 - BTUs per ton of lime (Argonne GREET model)
 - BTUs per application for crop protectants (Audsley, 2009; *USDA average application rates/acre by crop*)
 - BTUs per field pass (based on gallons/acre assumption)
- Irrigation Energy
 - Engineering equations based on 1992 ASABE monograph
- Management Energy
 - Calculated by CSU/NRCS
- Manure Loading Energy
 - BTUs per application pass
 - *Density of manure types based on literature*
- Post-Harvest Energy
 - *Information for various drying systems from 2005 Extension report*
- Seed Energy
 - *Based on National Indicators Report (2016)*
- Transportation Energy
 - Truck miles per gallon assumption
 - Truck haul capacity



Biodiversity Metrics

- Field to Market's Habitat Potential Index was among the first attempts at a field or farm level metric of Biodiversity
- Other programs have since developed approaches
 - The Sustainability Consortium accepts three Biodiversity metrics for their on-farm biodiversity KPI – Field to Market, SISC and Cool Farm Tool.
 - SAI Platform is also going down the route of accepting existing outcomes-based metrics for their Farm Sustainability Assessment.
 - Current alignment agreement with SAI FSA requires use of the Biodiversity metric
- Science Based Targets Network is establishing criteria for corporate Biodiversity commitments





Biodiversity

- Habitat Potential Index (HPI) measures **farm's potential to provide wildlife habitat**
- Data required:
 - Land cover type, crops grown, management practices, conservation practices, uses of non-cropped land types, conversion between land types in the past five years.





Biodiversity – Habitat Potential Index

- Results are presented as a score from 0-100 for each individual land type and for the farm as a whole.
- Considers quantity and quality of land cover
- Factoring intensification, degradation, and restoration
- Factors in land use change

Define Relevant Land Cover and Quantify Acreages
(Structural Score)



Assess Existing and Planned Land Cover Management
(Management Score)



Compute Aggregated Conservation Index



Pest management discussions

- A Pest Management Sub-committee explored options in 2020-2021 on whether to add a new metric specific to pesticide use
- Ultimate decision was not to add a new metric but to consider pest management in the other metrics
 - Biodiversity is a key environmental outcome related to pest management
- Explored a range of quantitative and qualitative options
- Full report is available on Member Portal





Cool Farm Tool

- Data Inputs: Similar to HPI – land areas and types, basic information on management, crop protection, conservation practices
 - Biome specific – available for temperate forests and Mediterranean systems
 - Scope is more limited but account for more specific actions that support biodiversity than the HPI does.
- Results: Presented by species group (e.g. amphibians, birds, etc); uses an index approach calculating the percentage of possible actions that are taken to provide habitat
- <https://coolfarmtool.org/coolfarmtool/biodiversity/>
- Primary source of scientific background:
<https://www.conservationevidence.com/>



Stewardship Index for Specialty Crops

- Complete metric survey is online.
- Measures habitat, similar to HPI but does not account for the ecoregion of a farm
- Simply how many out of the available practices are being used?

Habitat and Biodiversity

This metric was developed to measure on farm habitat and biodiversity. Biodiversity is the variety and health of organisms at all levels, from microbes to mammals. Habitats are the environments that support these various organisms. Increased biodiversity and habitat is generally associated with greater ecosystem health, so growers can use this metric as a tool to track continual improvement of ecosystem health on their farm over time.

This metric documents and tracks the extent of on farm habitat and practices associated with positive biodiversity results.



Alternative approaches

- Bird Friendliness Index – presentation at meeting on Nov 10th from Audubon on this tool
- NRCS Resource Stewardship has a Habitat Health objective – use region and species specific Wildlife Habitat Evaluation Guides in the conservation planning process
 - E.g. Monarchs in the Southern Great Plains
- What other tools and approaches should we be aware of?
- Ideas for guest speakers?
 - [Douglas Landis \(msu.edu\)](http://msu.edu)?



Meeting notes – Energy Use

- Energy use: Discussion around the source of information for the energy required to produce fertilizer. FTM team will look into the feasibility of modifying the metric to account for the different locations of production of fertilizer
 - Current assumption is to use a global average
 - Can we calculate different energy requirement to producer fertilizer in different regions of the world?
 - Based on current data entries can we then determine the country of origin for the fertilizer product applied to a specific field?
 - Recommendation to focus on N fertilizers as these require the most energy to produce
 - We welcome specific recommendations to literature or data resources to help in this research effort.



Meeting Notes - Biodiversity

- Reviewed the existing biodiversity tools in use in US agriculture sustainability efforts
- No additional tools were identified by the group as something we should consider in our revision
- Next call (Nov 10) will include a presentation of a science-based bird friendliness index by Audubon as an example of a species specific approach
- FTM projects to pilot the full-farm HPI are still in the planning stages and we hope to have user feedback in the next 6 months