
COMET Webinar – February 28, 2018

Question and Answer Session

QUESTION: Is it possible in COMET to input multiple farm entities under one user (i.e. multiple farms operations under one ag cooperative)?

RESPONSE: *It is advisable to create different projects for every farming or ranching operation. COMET-Farm is capable of running many individual fields for a single operation and evaluating the carbon sequestration and GHG emissions of the entire operation but mixing farms/ranches is not advised unless they are under one entity. The tool is intended to evaluate all GHG emissions and carbon sequestration within the farm gate and allow for management change analysis – the analysis would become much more complex if multiple operations are included in a single COMET-Farm scenario.*

QUESTION: Does COMET work for land uses like wetlands, bushlands or forests?

RESPONSE: *The primary focus of COMET is working lands agriculture which does include forests, silvopasture, wind breaks, other agroforestry and farm woodlots. COMET-Farm does not include peat soils or hydric soils that are often present in wetlands – these soils have a complex carbon cycle and often serve as a source of emissions. Wetlands have emissions of methane from decomposing organic material and carbon sequestration through perennial biomass – this complexity is difficult to capture in the COMET tools.*

QUESTION: Have you used COMET-Farm and COMET-Planner on the same property and if so, how did the GHG reductions vary among the 2 tools?

RESPONSE: *Yes, the demonstration in the webinar presentation compares the two results and generally speaking, COMET-Planner's results for NRCS conservation practices with atmospheric benefits are smaller than the COMET-Farm results because COMET-Farm results are site- and soil-specific while COMET-Planner results are more generalized and thus more conservative. COMET-Planner is intended to help conservation planners make quick field-level evaluations while COMET-Farm can help conservation planners make thorough evaluations of site-specific practices and their impacts on the farm/ranch soils and weather/climate.*

QUESTION: Does COMET-Farm work for organic farms?

RESPONSE: *The COMET tools are agnostic to the grower's enterprise, whether conventional, biodynamic, organic, or operated under some other management. The tools are designed to help growers across the farming spectrum evaluate the carbon sequestration and greenhouse gas emissions of their practices and the associated conservation benefits. The tools serve as a non-biased calculator that evaluates the emission fluxes between soils, biomass and the atmosphere.*

That being said, lifecycle analyses are not a component of the COMET tools; embodied emissions in synthetic fertilizer or tractor fuel are not integrated into the 'inside the farm gate' calculations. The COMET team recognizes that many products on the farm/ranch include "embodied emissions" but we do not include these emissions in the farm/ranch inventory because they are not directly controlled or managed by the farmer or rancher. There is also the risk for double-counting—for example, if a fertilizer manufacturer develops a GHG inventory or is a regulated facility and the farmer/rancher includes embodied fertilizer emissions in their inventory, the emissions would be double-counted.

QUESTION: What if it is a conservation area, like a national park with no crops?

RESPONSE: *Active management of all lands can help enhance carbon sequestration within the ecological system if the system has potential to uptake carbon and hasn't reached saturation (dynamic equilibrium). Even national parks and grasslands have the potential to manage for carbon and ensure that overgrazing is not degrading the conservation area or park's landscape. The COMET tools can be used to help assess the GHG and carbon sequestration balance of grassland and forest management practices within national parks. Steady-state management on healthy soils will not result in large carbon sequestration fluxes but increased carbon stocks in healthy soils can enhance the water holding capacity of those soils.*

QUESTION: Realizing everything is "site-specific", what two or three things are a farm land manager most likely to be able to do to increase carbon in soil?

RESPONSE: *The first thing to do is develop a conservation plan that emphasizes management for soil health and increasing soil organic carbon stocks. The conservation plan should include all of the practices a producer could implement to increase carbon in soil. Here is a [link](#) to a recent USDA Blog post about a ranching family that has begun managing for carbon within their operation and they produce wool for a large clothing company. The family's journey started with developing a conservation plan for the ranch.*

QUESTION: Will any classroom training be provided on this approach?

RESPONSE: *Regularly scheduled COMET training sessions are available and advertised on the COMET website. In addition, many YouTube videos are available to help users navigate the COMET tools. If you have interest in a custom training opportunity, please reach out to Matthew Stermer at matthew.stermer@colostate.edu.*

QUESTION: COMET (Planner or Farm) seems limited to modelling small areas at a time. Can COMET be used to model carbon sequestration at the hydrologic unit scale?

RESPONSE: *The COMET tools are intended to help conservation planners assess scenarios within the farm gate. The tools have been used to assess farming enterprises with more than 10,000 acres all the way down to operations with a few acres. The team at Colorado State University that collaborates with NRCS to develop COMET is able to do larger-scale carbon sequestration modeling – they actually conduct such analyses for the entire United States and submit this information to the United Nations as a component of the [U.S. Inventory of GHG Emissions and Sinks](#). Please reach out to Matthew Stermer at matthew.stermer@colostate.edu for more information.*

QUESTION: Can COMET model the use of slow release nitrogen fertilizers?

RESPONSE: *Yes, several types of nitrogen fertilizer management, including slow release fertilizers, are included in the COMET-Farm tool. The COMET team tries to integrate the best research into the tools. There are several slow release and proprietary coatings that we are unable to model appropriately due to the lack of available published peer-reviewed literature.*

QUESTION: Are there plans to include forested land in the COMET tool?

RESPONSE: *Yes, we are working with the Forest Service on a COMET-Forestry module. The primary focus will be private lands forestry.*

QUESTION: Is there a plan to integrate any financial analysis into COMET?

RESPONSE: *There are no plans at this time to include economics or financial analyses into the COMET tools.*

QUESTION: Is there a standard (number) threshold for GHG emissions to designate a resource concern using COMET-Planner?

RESPONSE: *There is no resource concern de minimus for GHG emissions and carbon sequestration in COMET.*

QUESTION: Is COMET-water quality the replacement for RUSLE 2?

RESPONSE: *No. The COMET-water quality tool is being developed for external users to estimate the water quality impacts of conservation activities on private lands. There are no plans for NRCS employees to replace existing conservation planning tools with COMET-water quality.*

QUESTION: Will the COMET Water Quality component address pesticides?

RESPONSE: *The initial version of COMET-water quality will estimate edge-of-field sediment and nutrient (nitrogen and phosphorous) losses.*

QUESTION: Will the water quality tool be a supplement to the Water Quality Index tool?

RESPONSE: *COMET-water quality is a more robust tool that runs the APEX model. The Water Quality Index, developed by NRCS, is a simpler conservation planning tool that is a good option for users looking for a simplified, easier-to-use tool.*

QUESTION: Has the DNDC model been used at all? Has DAYCENT results been compared to DNDC results for verification?

RESPONSE: *The DNDC model, the DayCent model, and IPCC emission factors are all used to inform the quantification methodologies used by COMET-Farm. COMET-Farm relies solely on the USDA document [Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory](#) for all quantification methods. There are a number of references to the DNDC model within Chapter 3 of this document.*

QUESTION: What crops are being included for CA?

RESPONSE: *Several specialty crops have been developed for COMET-Farm in addition to a number of row and grain crops, they include:*

- *Almonds*
- *Strawberries*
- *Walnuts*
- *Pistachios*
- *Tomatoes*
- *Grapes (table and wine)*
- *Lettuce*
- *Broccoli*
- *Cauliflower*
- *Citrus*

These crops are available for analysis in COMET-Farm and are available for producers in other states (i.e. citrus in Florida).

QUESTION: What is the best way to use COMET for forestry practices? How does COMET incorporate conversion of cropland to forest cover through practices like CRP tree planting?

RESPONSE: *Users could use the agroforestry module and input management practices into the tool using the “I want to enter in my own information” option. These methods would not compare the conversion of cropland in the tool, but a user could run the scenario in the cropland module and compare the report from the agroforestry module.*

QUESTION: I am not an NRCS employee so I am not as not versed in this topic. How will COMET affect farm and field policy as we move forward?

RESPONSE: *The COMET tools are designed to provide carbon sequestration, greenhouse gas and (soon) water quality information to producers and other interested stakeholders. Land managers can use this information to help guide their land management decisions. NRCS believes that providing tools like COMET can lead to additional adoption of conservation practices on working lands.*

QUESTION: Does COMET integrate field physiography and field management in water quality and carbon?

RESPONSE: *Yes, field-specific attributes are included in both tools.*