

Outcomes Estimation Tools Training Webinar Series

Featuring:

CarbOn Management &
Emissions Tool (COMET) Kit

May 1, 2024

Noon to 1:30 pm eastern

Michelle Perez, PhD
Water Initiative
Director

Aysha Tapp Ross
Water & Soil
Health Scientist



American Farmland Trust

Agenda



- Welcome, Poll (10 min)
- COMET-Farm presentation (20 min)
- COMET-Farm demonstration (25 min)
- Q&A (10 min)
- COMET-Planner presentation (10 min)
- COMET-Planner demonstration (5 min)
- Q&A (10 min)



Zoom Webinar Reminders

- Use Q&A Box - last 15 minutes (Vote up!)
- Use Zoom Direct Message feature to Aysha if having technical difficulties
- Email with resources to follow each webinar
- Recordings posted on the webinar series site the following Monday
- **Evaluation survey in the Chat Box**
 - **Complete to be entered to win a \$25 gift card!!**



Time for 3 polls!

Tools in 2023 Trainings*

[May 3: Webinar Launch & PCOC](#) (recording)

[June 7: Model My Watershed](#) (recording)

[July 12: Nutrient Tracking Tool \(NTT\)](#) (recording)

[August 2: NRCS Cover Crop Economics Tool \(economic\)](#) (recording)

[September 6: FieldPrint Platform](#) (recording)

[October 4: EPA PLET \(water quality\)](#) (recording)

[November 1: PTMApp Web Tool \(water quality\)](#) (recording)

[December 6: AFT Retrospective-Soil Health Economic Calculator \(R-SHEC\) Tool](#) (recording)

Tools in 2024 Trainings*

[January 10: SIPES Method/SIDMA Tool](#) (recording)

[February 7: Fast-GHG \(climate\)](#) (recording)

[March 6: Cool Farm Tool \(climate\)](#) (recording)

[April 3: Critical Source Area Identification and Management](#) (recording) ←

May 1: COMET-Farm & COMET-Planner (climate)

June 5: CAST Tool (water quality)

July 10: NEW!! Agriculture Conservation Planning Framework (ACPF) ←

August 7: TBD

September 4: AFT Predictive-Soil Health Economic Calculator (P-SHEC) Tool



An aerial photograph showing a winding river or stream cutting through a landscape of agricultural fields. The fields are in various stages of growth, with some appearing golden-brown and others green. The river is a dark, narrow channel that meanders through the terrain.

COMET-Farm & COMET-Planner

*Tools for Conservation Planning and
Greenhouse Gas Mitigation in Agriculture
and Forestry*

Cooperative Agreement COMET-Team

*Natural Resource Ecology Laboratory
Colorado State University
Fort Collins, CO*

*U.S. Department of Agriculture
Natural Resources Conservation Services
Agriculture Resource Service
USDA Office of Chief Economist*





Haley Giuliano (née Nagle)

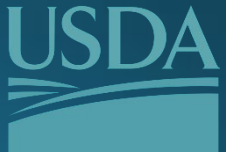
Outreach & Education Specialist for
COMET-Team at Colorado State University
(formerly)



UNIVERSITY OF
GEORGIA



COLORADO STATE
UNIVERSITY





Andie Conlon

*Outreach Specialist for COMET-Team at
Colorado State University*





Agenda

- **Introductions**
- **COMET-Tools Overview**
- **COMET-Tools and project outcomes**
- **Methods, system boundaries, and limitations**
- **COMET-Farm Demo + Q&A**
- **COMET-Planner Demo +Q&A**



A brief history of the COMET-Tools

The COMET-Tools were developed at the Natural Resource Ecology Laboratory located at Colorado State University. The COMET-Tools were developed in collaboration and funding support from the NRCS and the Climate Change Program Office at USDA.

COMET VR
2006

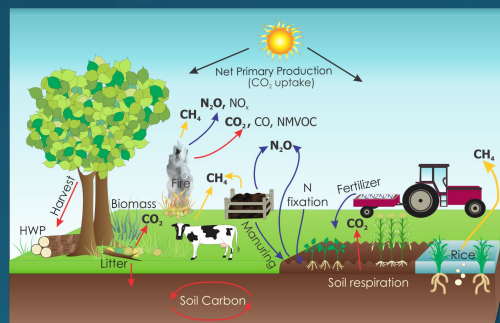
INITIAL
COMET FARM
2012-15

FIRST TOOLS
ON EXCEL

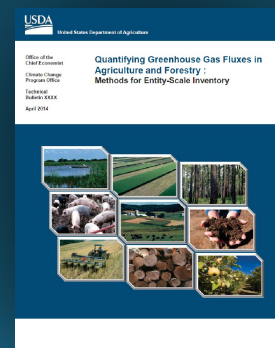
IPCC METHODS
DEVELOPED
1997

VOLUNTARY
GREENHOUSE GAS
REPORTING ACT OF 1992

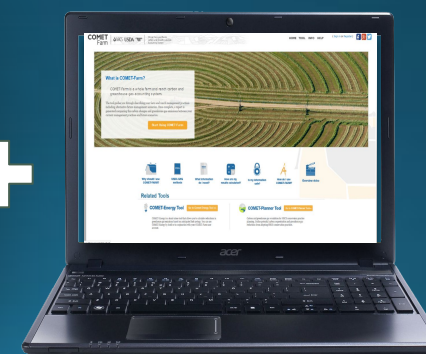
FROM SEEDS TO FLOWER



+



+



=



COMET-Tools Feature Snapshot

	COMET-Farm	COMET-Planner
Scale & Specificity	Field-level with potential for project scale (depending on project size, this can be done in- or out of tool)	Regional/county-level
Outcomes	<p>Soil carbon and greenhouse gas emissions (carbon dioxide, methane¹, and nitrous oxide) in tonnes of CO₂e per year) per scenario per field.</p> <p>Outcomes can be summed on project level.</p>	<p>Soil carbon and greenhouse gas emission reductions (tonnes of CO₂e per year) relative to a <i>fixed</i> baseline over given acreage of practice application.</p> <p>Outcomes summed on project level.</p>
Conservation Practices	<p>Changes in management related to planting, harvest, tillage, fertilizer application, manure application, irrigation, liming, and burning</p> <p>Quick add practices: Tillage and/or fertilizer reduction, and conversion to herbaceous cover(s)</p>	Up to 34 NRCS Conservation Practice Standards with varying implementation methods, regionally dependent.

1- Methane estimated in cropland, pasture, rangeland, orchard/vineyard accounting is only relative to biomass burning; methane estimates for rice will be included in the new interface summer 2024

COMET-Tools Feature Snapshot Continued...

	COMET-Farm	COMET-Planner
Land uses & production systems	Cropland, pasture, rangeland, orchard/vineyard; animal agriculture; agroforestry; forestry	Croplands, grazing lands, herbaceous cover (i.e. field border), disturbed lands, riparian, agroforestry
States & Territories	Contiguous US (No HI, AK, US territories due to interest, funding, and/or soil data) ²	All US States (limited in HI & AK) ³
Time, Data, & Skills required for outcomes	<p>Time investment: High⁴ Dependent on project size and complexity</p> <p>Data requirements: High⁴ Specific field/site locations; general historic management, detailed baseline/current land management; detailed scenario management</p> <p>Skill requirements: Low to Medium</p>	<p>Time investment: Low 4 quick steps</p> <p>Data requirements: Low location (county/state), conservation practice standard and implementation, acres to apply practice</p> <p>Skill requirements: Low</p>

2- Select US Territories coming soon to COMET-Farm. These will not be available until after the 2024 new interface redesign is complete.

3- COMET-Planner Global is available for select conservation practices applied outside of CONUS + HI

4- The new COMET-Farm interface (summer 2024) will reduce the data and time requirements

5- The new COMET-Farm interface (summer 2024) will not require the addition of scenarios to generate a report.

Who is using the COMET Tools?

COMET-Farm:

6,000+ registered users
(since 2015)

COMET-Planner:

53,000+ sessions (since 2017)

JUN. 2021 VOL. 4



Shelburne Farms: Giving People Hope to Inspire Action

The year is 1972, ten years after Rachel Carson's Silent Spring debated inspiring a new found resurgence in conservation, and the six Webb siblings shared the dream of providing an educational resource to shift the mindset of people's relationship with nature. As means of preventing the family farm from falling into the same development trajectory as much of the Burlington area had with a population boom, the Webb siblings embarked on a non-profit journey, with no idea it would blossom into the learning hub it is today. From a rugged, back-to-nature summer camp with a handful of children, to a center for teachers, students, families, and the community members, Shelburne Farms has grown to inspire and cultivate learning for a sustainable future.

(Above) Climate Resiliency Fellows at Shelburne Farms on Climate Day (Pre-COVID-19)

(Below) Marshall Webb, Carbon Drawdown Coordinator. Highly recommends the Leap Year batch of three.

With a focus on sustainability and education about practices that maintain and improve the integrity of the land since the farm began as a nonprofit, Shelburne Farms established a goal of reaching carbon negative by the end of this decade. To achieve this goal, they have integrated rotational grazing, composting, protected forests, and incorporating biochar. In an effort to track their progress towards this goal, Marshall Webb embarked on a new journey: using COMET-Farm to not only estimate their current greenhouse gas emissions, but model new scenarios to transform applicable practices to help achieve their goal. After entering management details for nearly 300 parcels into COMET-Farm, Marshall and team discovered not only are they well on their way to reaching their goal through the tool estimations, but have garnered new ideas for means of reducing carbon emissions on the land.

As trainings following a global Farm's mission as b significantly change

Shelburne Farms

USDA NCRS

Organization

DEC. 2020 VOL. 2

COMET-FARM TEAM SPOTLIGHT



Sobha Ariappillil Velayudhan
As a research associate with substantial programming experience, Sobha serves as an essential member of the team working to develop the necessary code to support the platform and implement new COMET features such as the Animal Ag multi-year accounting.



Hailey Nagle
With extensive education knowledge, Hailey works to create COMET help tools to enhance the user experience with the COMET-Tools. Hailey's inaugural task with the COMET-Team was to develop the help-desk ticketing system found in the **Need Help?** widget in COMET-Farm.

A WORD FROM COMET-USERS



American Farmland Trust used the COMET-Farm Tool to analyze the greenhouse gas reduction benefits associated with nine 'soil health successful' farmers in California, Illinois, Ohio, and New York. AFT produced a two-page, easy-to-read, and compelling **Soil Health Economic and Environmental Case Studies** featuring farmers who are demonstrating that soil health practices are great for the environment and the bottom line! To be considered a 'soil health successful farmer,' AFT identified producers with four or more years of successful implementation of one or more soil health practices. For the seven row-crop farmers AFT worked with, most had adopted a combination of no-till or strip till, cover crops, and nutrient management. For the two almond growers, the soil health practices were conservation cover, nutrient management, mulching, and composting. AFT used COMET-Farm to compare each farmer's annual management activities on a representative field before implementation of the practices with the changes they made during adoption and use of the soil health practices. Since AFT was conducting a retrospective analysis, the COMET-Farm staff offered AFT the use of a relatively new feature—to export the data and GHG analysis into a spreadsheet. In Excel, AFT did further analysis to estimate the percent change in GHG emissions due to the implemented practices. AFT could not have completed these GHG analysis, and review services provided by the Nagle, and Matt Stermer.

Farmland Trust

COMET QUARTERLY

DEC. 2021 VOL. 5

COMET QUARTERLY

COMET-Farm Newsletter



COMET QUARTERLY
By: Hailey Nagle, Outreach & Education Specialist

What's Inside

- USDA Secretary Tom Vilsack Announcement at CSU
- COMET-Farm Enhancements
- Upcoming Open Trainings
- In the News



Click to learn how to add buffers in COMET-Farm

COMET QUARTERLY

Who is using the COMET-Tools & How?

Carbon Cycle Institute



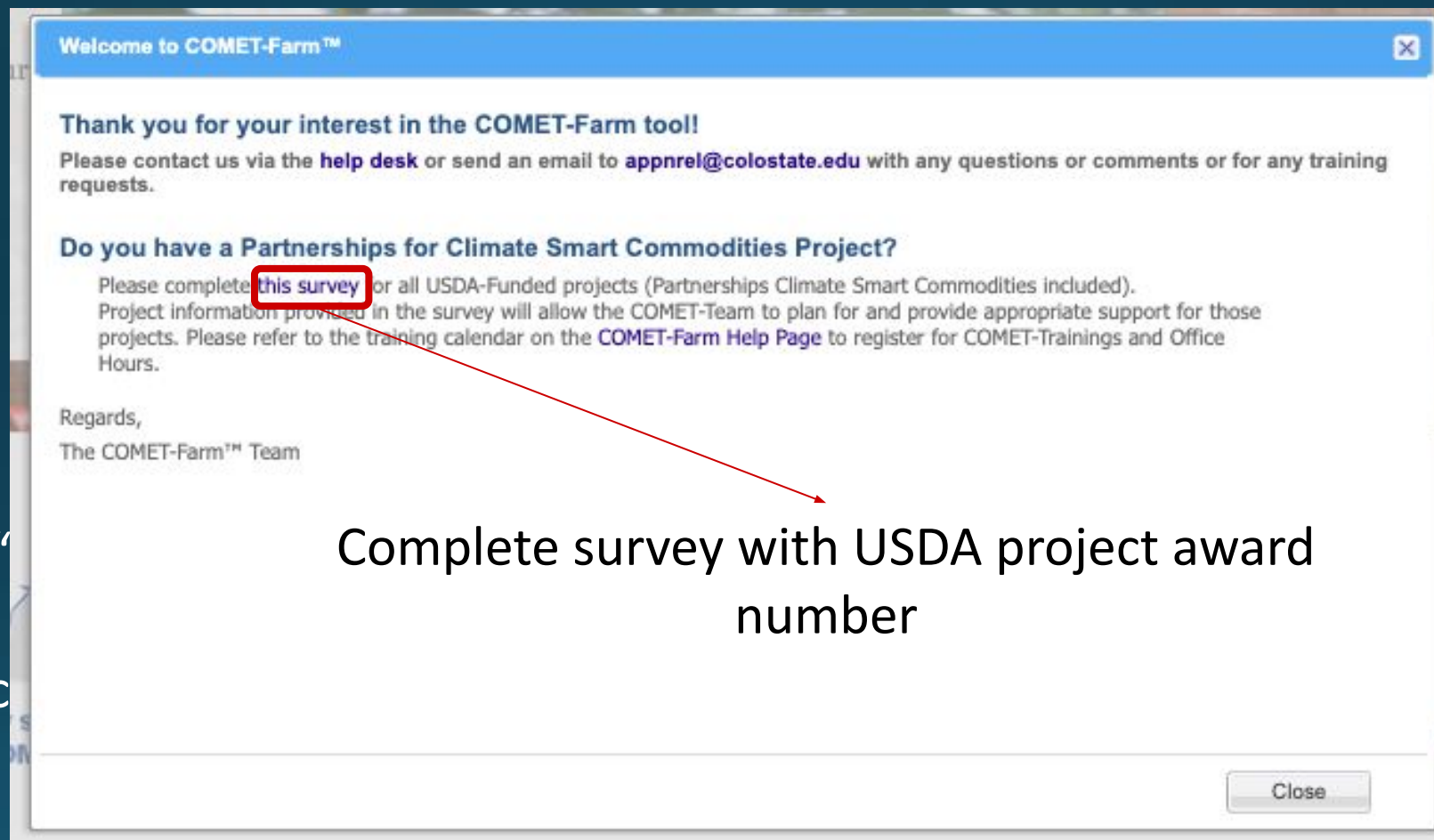
IOWA STATE UNIVERSITY
Extension and Outreach



COMET-Tools Strengths & Limitations...

Strengths	Limitations
Underlying peer reviewed methods: <i>Quantifying Greenhouse Gas Fluxes: Methods for Entity-Scale Inventory</i>	Process for adding NRCS Conservation Practice Standards (COMET-Planner)
Official GHG Accounting tool of the USDA	Crops available for assessment require DayCent parameterizations (COMET-Farm)
Coverage in most of the United States (both tools)	
User-friendly interface (soon to be even better...)	Current data requirements of ~23 years of baseline management (COMET-Farm)
Saving projects (COMET-Farm) & Downloadable reports (both tools)	
Flexibility in scale & management: Users can create multiple projects with 1-50 fields (COMET-Farm)	Updating the COMET-Farm UI to reflect the practice and methods takes time
Time & required data: 4 clicks to generate report (COMET-Planner)	
Trainings & support (both tools)	

COMET-Tools & Partnerships for Climate Smart Commodities



Current Calculation Methods

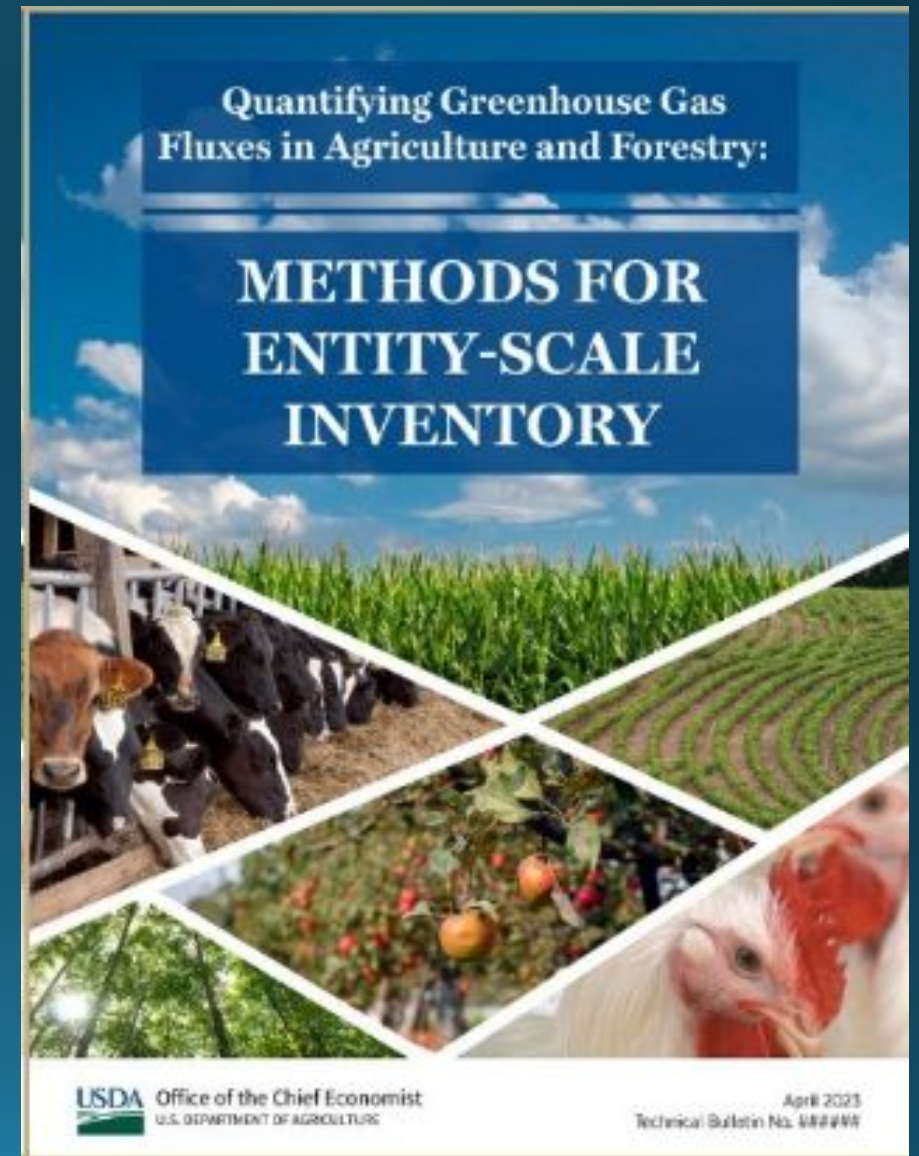
- Implements the peer-reviewed, USDA-sanctioned entity-level inventory methods.
 - **Soil-related GHG emissions:** DayCent dynamic model, also used in the U.S. National Greenhouse Gas Inventory.
 - **Livestock-related GHG emissions:** statistical models based on USDA and university research, largely consistent with models used in the U.S. National Inventory. (COMET-Farm, only)
 - **Energy-related GHG emissions:** based on the models used in the USDA/NRCS Energy Tool along with supplemental peer-reviewed research results.

Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry : Methods for Entity-Scale Inventory

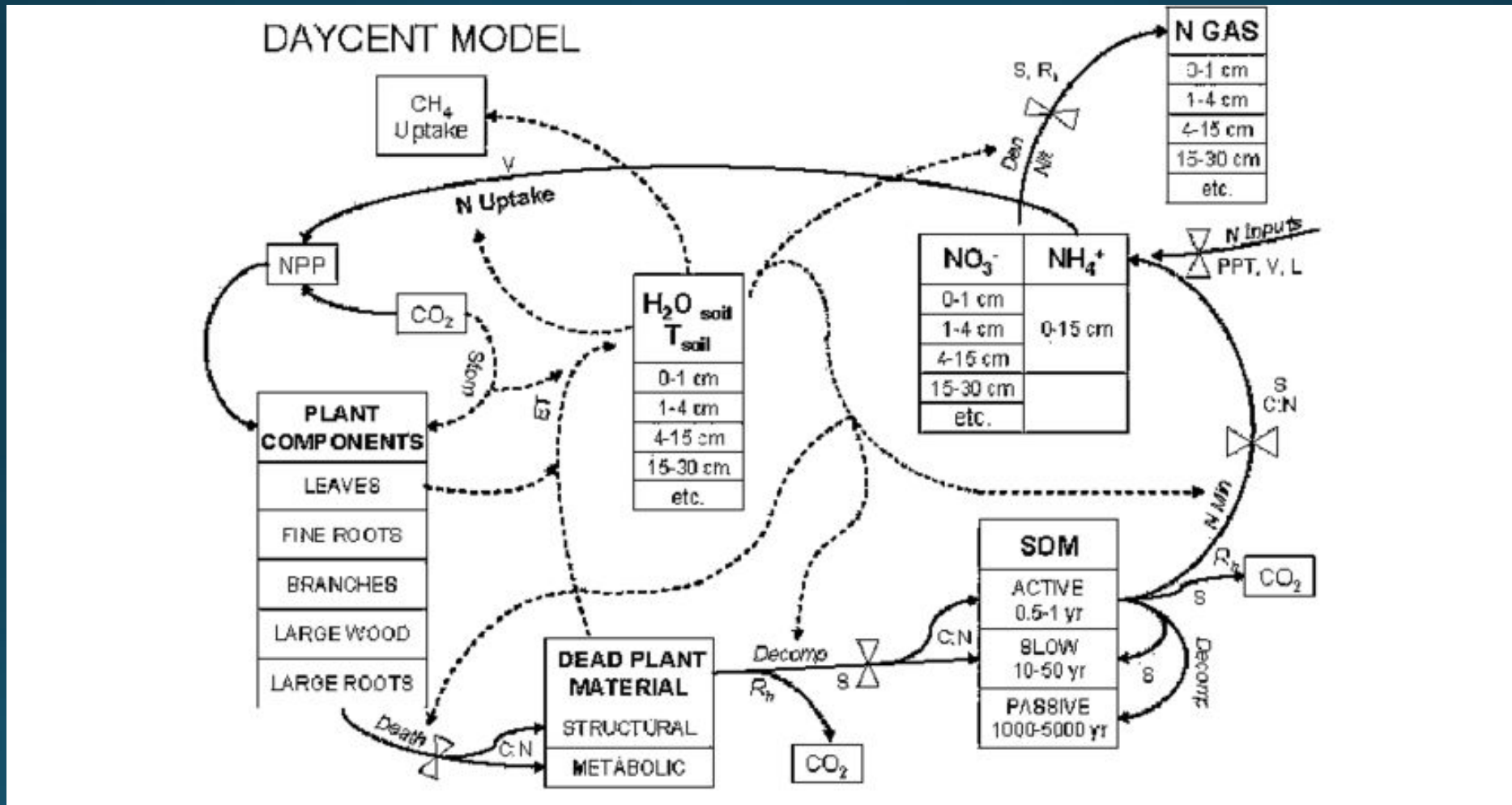


2024 Methods Update and Interface Change

- Cropland- *Biochar, Flooded-Rice, Tillage, Flexible/Reduced Baseline requirements*
- Animal Agriculture- *Most methods updated, New categories (ex: horses)*
- Agroforestry- *Updated method for estimating biomass C from dbh*
- Forestry- *Updated interface*
- COMET-Energy- *Updated eGrid data*



COMET-Farm – DayCent Model



COMET-Farm and COMET-Planner Overview:

COMET-Farm™



Cropland Baseline Scenario
(Current Management)

Change in Management



Compare Benefits on the Same Balance Sheet

COMET-Planner™



Business as Usual

Conservation Practice

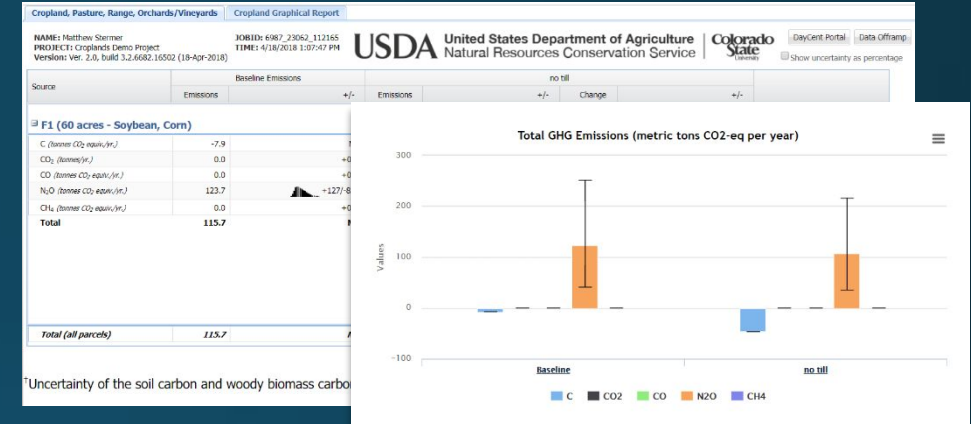
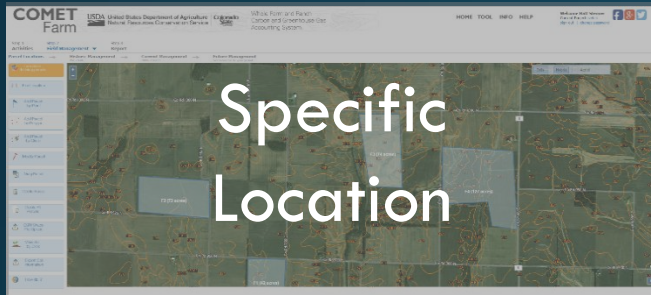


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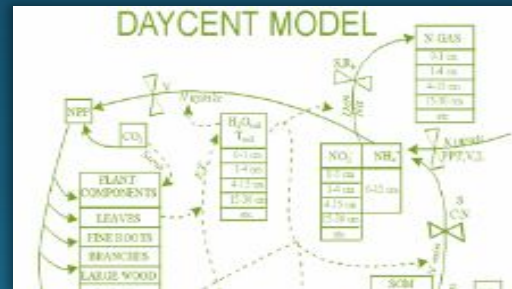
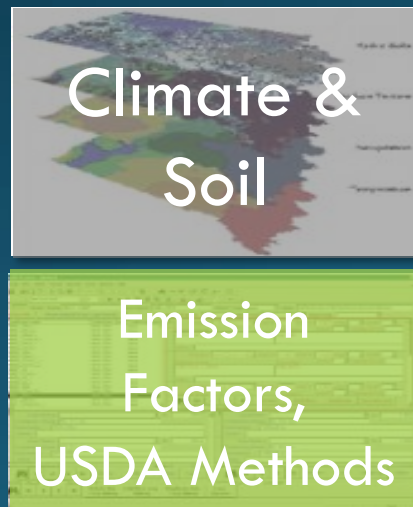
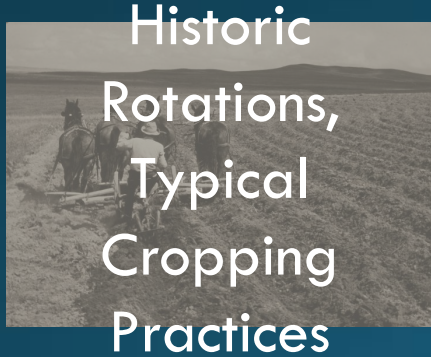
Practice Benefit

COMET-Farm - How it works

User Interface



Analysis Platform



Current COMET-Farm – Data Requirements (GUI/API)

Required:

- Exact field boundaries
- General historic management (pre-2000)
- Baseline management (2000-2023)⁶
 - Crop type
 - Planting date
- Scenario management (10 years after baseline)

Recommended ⁷:

- Grazing events
- Tillage Implements
- Fertilizer (N content)
- Organic amendments (C:N Ratio)
- Irrigation
- Liming events
- Burning events

6- COMET allows change in baseline end year only

7- These managements are recommended, where applicable

SUMMER 2024 COMET-Farm – Data Requirements (GUI/API)

Required:

- Exact field boundaries
- General historic management (pre-baseline)
- **Baseline management 5 year minimum**⁸
 - Crop type
 - Planting date

Recommended⁷:

- Grazing events
- Tillage Implements (more options and calculator)
- Fertilizer (N content)
- Organic amendments (C:N Ratio)
- **Biochar**
- Irrigation
- Liming events
- Burning events

7- These managements are recommended, where applicable

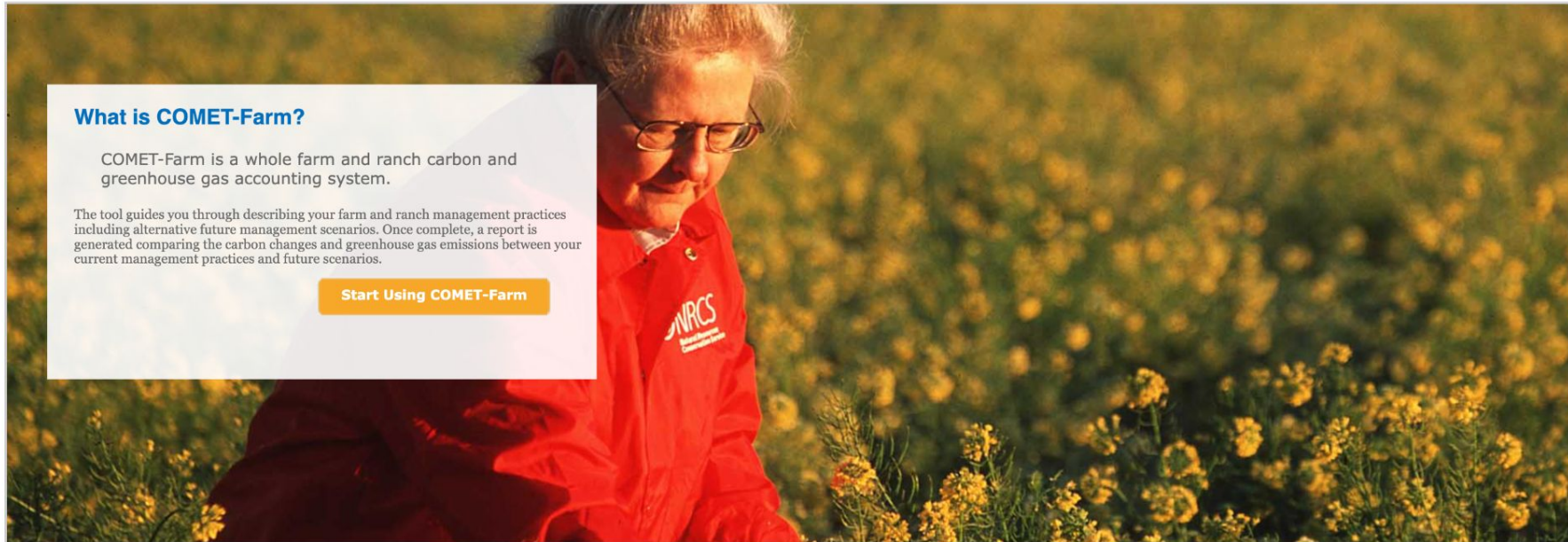
8- COMET will allow for up to 20 year baseline period

COMET-Farm System Boundaries

- Each accounting activity is independent of each other
- Include the GHG emissions and carbon sequestration occurring onsite for the source category and management practice(s)
- Physical boundaries: within the bounds of an *entity*
 - Field boundaries, head of livestock, etc.
 - Should be subdivided if using different category of land use
- Not a life cycle analysis tool



COMET-Farm - Home Page



What is COMET-Farm?

COMET-Farm is a whole farm and ranch carbon and greenhouse gas accounting system.

The tool guides you through describing your farm and ranch management practices including alternative future management scenarios. Once complete, a report is generated comparing the carbon changes and greenhouse gas emissions between your current management practices and future scenarios.

[Start Using COMET-Farm](#)



COMET-Quarterly Newsletter



Upcoming Trainings



Why should I use COMET-Farm?



USDA GHG methods



What information do I need?



How are my results calculated?



Is my information safe?



Overview video



How do I use COMET-Farm?

Related Tools

[Need Help?](#)

COMET-Farm - Registering/signing in

The screenshot shows the top navigation bar with logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The main heading reads "Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System." with links for "(Sign in or Register)" and a Facebook icon. Navigation links "HOME TOOL INFO" are also present.

The main content area is split into two columns. The left column contains a "Sign in..." form with fields for "Username or Email" and "Password", a "Sign In" button, and a link for "Reset password or Unlock account". A link for "Not Registered?... Register" is located at the top right of the form.

The right column features the heading "or Continue without Registration..." followed by a paragraph explaining that users can continue without registration, but their information will not be stored permanently. A "Continue Without Registration" button is positioned below the text.

At the bottom right, there is a "Need Help?" button with a question mark icon and a "Privacy - Terms" link.

COMET-Farm - Project Repository

The screenshot shows the COMET-Farm Project Repository interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The user is logged in as Haley Nagle. The main content area is titled 'Step 1 Activities' and is divided into three sections: 'Select a Project', 'Selected Activities for the Current Project', and 'What activities do I select?'. The 'Select a Project' section lists various existing projects with their access and report dates. The 'Selected Activities' section shows a list of activity categories with checkboxes and help icons. The 'What activities do I select?' section provides instructions on how to choose activities and explains the difference between a project and a demo project. A 'Need Help?' button is located at the bottom right.

COMET Farm | **USDA** United States Department of Agriculture Natural Resources Conservation Service | **Colorado State University** | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. | Welcome Haley Nagle | sign out | change password | [f](#) [t](#) [i](#)

HOME TOOL INFO HELP

Step 1
Activities ▾

Select a Project [Create Demo Project]
Existing Projects

- Agroforestry Demo Project Accessed: January 18 2024
- Agustin Anaerobic Lagoon Accessed: January 16 2024 Report: October 13 2022
- Allee Curriculum Demo Accessed: September 6 2023 Report: September 6 2023
- Allee Demo CFP Accessed: May 9 2023 Report: February 8 2022
- Anaerobic lagoon size Accessed: October 18 2022
- Anaerobic lagoon test Accessed: December 8 2022 Report: June 8 2022
- Andie Accessed: April 11 2023 Report: April 11 2023
- Andie practice Accessed: April 13 2023
- Andy JohnDeere Accessed: December 13 2023 Report: December 13 2023
- Andy Johndeere 2 Accessed: December 19 2023
- Andy JohnDeere 3 Accessed: December 19 2023 Report: January 3 2024
- animal ag 10.17 Accessed: September 11 2023
- Animal ag 10.143 Accessed: October 17 2022
- Animal Ag 10.14 Accessed: October 17 2022
- Animal Ag 10.142 Accessed: October 17 2022

[Create New Project](#) [Export Projects](#)

Selected Activities for the Current Project:
Animal Ag Demo Project

- All Categories - Full Accounting
- Cropland, Pasture, Range, Orchards/Vineyards
- Animal Agriculture
- Agroforestry
- Forestry
- Water Quality ^{DEV}

[Define Activities >>](#)

What activities do I select?
Choose the management activities you want to investigate. Click on the help box next to the activity names to learn more about the activities.

What is a Project?
A project is a set of cropland, livestock, forestry, agroforestry and energy management practices that are unique to a single user. A user may have up to five hundred projects at a time.

What is a Demo Project?
Create a project that has existing data already. This is designed to help you navigate through COMET-Farm.

[Need Help?](#)

- 500 project max per account

- Project in *COMET-Farm* is a collection of separate accounting activities or a single accounting activity

COMET-Farm - Adding/creating a new project

The screenshot shows the COMET-Farm web interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The main header includes the text 'Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.' and a user welcome message for Haley Nagle with links for sign out and change password. Navigation links for HOME, TOOL, INFO, and HELP are also present.

The main content area is titled 'Step 1 Activities'. On the left, there is a 'Select a Project' section with a list of existing projects and a 'Create Demo Project' link. At the bottom of this list are 'Create New Project' and 'Export Projects' buttons.

The 'Selected Activities for the Current Project' section shows 'Animal Ag Demo Project' selected. A 'New Project' dialog box is open, prompting the user to enter a name for the new project. The name 'AFT Sample Project' is entered in the text field. There are 'Cancel' and 'Create' buttons in the dialog box. Below the dialog box is a 'Define Activities >>' button.

On the right side of the dialog box, there are three informational sections: 'What activities do I select?', 'What is a Project?', and 'What is a Demo Project?'. A 'Need Help?' button is located at the bottom right of the page.

COMET Farm [Create Demo Project]
Existing Projects

- Swine 2 Accessed: May 8 2023
- Swine 3 Accessed: March 23 2023
- Team ag inc Accessed: November 1 2022
- Tony Animal Accessed: June 14 2023
- Tony Test Accessed: September 20 2023 Report: September 20 2023
- Trevor animal test Accessed: December 14 2023
- trevor test Accessed: November 27 2023
- UCANR Sample
- Washington Sample Accessed: April 18 2023 Report: April 18 2023
- Waterquality Demo Project Accessed: February 24 2023 Report: January 24 2023
- Wisconsin CFP Accessed: January 25 2022
- Wisconsin Demo Accessed: November 17 2022 Report: November 17 2022
- Wisconsin Project Accessed: September 28 2022 Report: September 28 2022
- WORK Accessed: May 31 2023
- Zach OV Test Accessed: June 27 2023

Create New Project **Export Projects**

Selected Activities for the Current Project:
Animal Ag Demo Project

All Categories - Full Accounting

New Project

Please enter a **name for your new project**:

AFT Sample Project

Cancel **Create**

Define Activities >>

What activities do I select?
Choose the management activities you want to investigate. Click on the help box (?) next to the activity names to learn more about the activities.

What is a Project?
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What is a Demo Project?
Create a project that has existing data already. This is designed to help you navigate through COMET-Farm.

Need Help?

COMET-Farm - Selecting an accounting activity

COMET Farm

USDA

United States Department of Agriculture
Natural Resources Conservation Service

Colorado State University

Whole Farm and Ranch
Carbon and Greenhouse Gas
Accounting System.

Welcome Haley Nagle
sign out | change password

f t i

HOME TOOL INFO HELP

Step 1
Activities

Select a Project [Create Demo Project]
Existing Projects

- Swine 2 Accessed: May 8 2023
- Swine 3 Accessed: Mar 23 2023
- Team ag inc Accessed: Nov 1 2022
- Tony Animal Accessed: Jun 14 2023
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- WORK Accessed: May 31 2023
- Zach OV Test Accessed: Jun 27 2023
- ▶ **AFT Sample Project** Accessed: Apr 16 2024 Report: Apr 16 2024

[delete] [rename]

Create New Project

Export Projects

Selected Activities for the Current Project:
AFT Sample Project

- All Categories - Full Accounting
- Cropland, Pasture, Range, Orchards/Vineyards
- Animal Agriculture
- Agroforestry
- Forestry
- Water Quality

Define Activities >>

What activities do I select?

Choose the management activities you want to investigate. Click on the help box next to the activity names to learn more about the activities.

What is a Project?

A project is a set of cropland, livestock, forestry, agroforestry and energy management practices that are unique to a single user. A user may have up to five hundred projects at a time.

What is a Demo Project?

Create a project that has existing data already. This is designed to help you navigate through COMET-Farm.

Need Help?

- Return to projects later
- Export COMET projects to others OR import other COMET projects

COMET-Farm - Locating field/project location

The screenshot displays the COMET-Farm web application interface. At the top, the header includes the COMET Farm logo, USDA and Colorado State University logos, and the text "Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System." A user profile for Haley Nagle is visible, along with social media icons and a "Need Help?" button.

The main navigation bar shows the current step: "Step 2 Field Management". Below this, a breadcrumb trail indicates the workflow: "Parcel Locations" (active), "Historic Management", "Baseline Management", and "Scenario Management".

A sidebar on the left contains a list of actions for parcel management, including "Find Location", "Add Parcel by Point", "Add Parcel by Polygon", "Add Parcel by Circle", "Modify Parcel", "Drag Parcel", "Delete Parcel", "Delete All Parcels", "ESRI Shape File Upload", "View Soil by Click", "Export Soil Information", and "How do I?".

The central map area shows a satellite view of the United States. A search modal titled "Search For Your Parcel" is open, containing the question "Where are your parcels located?", a text input field with the value "80521", and two buttons: "No Thanks, I'll Navigate Myself" and "Go to Location".

- Current COMET-Farm can assess most areas within contiguous US.

Limitations based on soil data availability and soil type

COMET-Farm - Defining field boundaries

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University

Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.

Welcome Haley Nagle
Current Project: AFT Sample Project
sign out | change password

HOME TOOL INFO HELP

Step 1 Activities | Step 2 **Field Management** | Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → Baseline Management (2000-2023) → Scenario Management (Scenarios for 10 year period)

I am done defining parcels

- Find Location
- Add Parcel by Point
- Add Parcel by Polygon
- Add Parcel by Circle
- Modify Parcel
- Drag Parcel
- Delete Parcel
- Delete All Parcels
- ESRI Shape File Upload
- View Soil by Click
- Export Soil Information
- How do I?

Soils Hybrid Road Aerial

Field 1 (16 acres)

Need Help?

- Define fields by drawing polygon, circle, drop a point, or upload .shp field
- Max ~50 fields per project*
- Max 1200 acres per field*
- Export soil data

COMET-Farm - Entering historic management per field

The screenshot shows the 'Historic Management' step of the COMET Farm application. At the top, there are logos for COMET Farm, USDA, and Colorado State University, along with the text 'Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.' and a user welcome message for Haley Nagle. Navigation links include HOME, TOOL, INFO, and HELP. The main navigation bar shows 'Step 1 Activities', 'Step 2 Field Management' (selected), and 'Step 3 Report'. Below this, a breadcrumb trail reads: 'Parcel Locations' → 'Historic Management (Pre-2000)' → 'Baseline Management (2000-2023)' → 'Scenario Management (Scenarios for 10 year period)'. On the left, a map shows 'Field 1 (16 acres)' highlighted in blue. Below the map are three colored boxes: green for 'Data complete', blue for 'Data incomplete', and a blue box with a white border for 'Selected'. The main content area asks: 'For parcel Field 1 (selected at left) what was its historic management?'. It includes a dropdown for 'Pre-1980 Management' set to 'Irrigation (Pre 1980s)', a red warning icon, and a 'Pre-1980 Management Is Required' message. Below this is a question: 'Was this parcel enrolled in Conservation Reserve Program(CRP) at anytime before 2000?' with radio buttons for 'No' (selected) and 'Yes'. A list of management options is shown, with 'Irrigated: Annual Crops in Rotation' checked. At the bottom of the list are 'Irrigated: Annual Crops with Hay/Pasture in Rotation', 'Irrigated: Continuous Hay', 'Irrigated: Orchard or Vineyard', 'Non-Irrigated: Annual Crops in Rotation', 'Non-Irrigated: Continuous Hay', 'Non-Irrigated: Fallow-Grain', 'Non-Irrigated: Livestock Grazing', and 'Non-Irrigated: Orchard or Vineyard'. Navigation buttons include '<< Back', 'Next >>', and a 'Need Help?' button at the bottom right.

- Copy historic management to other fields
- Modify baseline end year

COMET-Farm - Entering baseline management via "Drag & Drop"

United States Department of Agriculture
Natural Resources Conservation Service

Whole Farm and Ranch
Carbon and Greenhouse Gas
Accounting System.

Welcome Haley Nagle
Current Project: AFT Sample Project
[sign out](#) | [change password](#)

[HOME](#) [TOOL](#) [INFO](#) [HELP](#)

Step 1
Activities
Step 2
Field Management
Step 3
Report

Parcel Locations
Historic Management
Pre-2000
Baseline Management
2000-2023
Scenario Management
Scenarios for 10 year period

Select a parcel: Field 1

■
Data complete

■
Data incomplete

■
Selected

Parcel Management Summary

[Drag and Drop Crop Rotation](#)

DEV [Auto-Generate Baseline](#)

- 2000 Undefined
- 2001 Undefined
- 2002 Undefined
- 2003 Undefined
- 2004 Undefined
- 2005 Undefined
- 2006 Undefined
- 2007 Undefined

Tillage, Implements, Manure/Compost & Planting | Irrigation | Fertilizer Application | Liming | Burning

For Parcel Field 1 in 2000 what crop did you plant, when did you plant, and when did you harvest?

What type of crop?:
 Annual Crop/Hay/Grass

Crop: Select a Crop...

Planting Date:

Create crop rotation?

Would you like to create a crop rotation as a template for your current management?

Data for this page will be filled in with defaults based on your location and the crops you choose.

Please note that more crops can be found in the dropdowns on the Crop and Planting Date panel.

Yes, add crop rotation
No Thanks, Continue >>

Harvest Table

Harvest Date	Grain / Fruit / Seed / Root / Tuber?	Yield (bu/ac)	Straw / Stover / Hay / Residue Removal (% dry matter)	Delete
No data to display				

Grazing Table

[Add New Grazing Period](#)

Start Dates	End Dates	Rest Period (days)	Daily Utilization %	Delete
-------------	-----------	--------------------	---------------------	--------

[Need Help?](#)

COMET-Farm - Entering baseline management via "Drag & Drop"

The screenshot displays the 'Create Crop Template' window in the COMET Farm application. On the left, a sidebar shows 'Step 2 Field Management' and a map of 'Field 1 (16 acres)'. The main area features a grid of crop icons for selection. A 'Crop Rotation for Field 1' table is open, showing the following data:

Crop	Irri?	Tillage	
Corn	<input checked="" type="checkbox"/>	Intensive	<input checked="" type="checkbox"/>
Soybean	<input checked="" type="checkbox"/>	Intensive	<input checked="" type="checkbox"/>

At the bottom of the crop selection grid, there are 'Cancel' and 'Create Rotation' buttons. The sidebar also includes a 'Parcel Management Summary' section with a 'Drag and Drop Crop Rotation' button and a list of years from 2000 to 2007, each with an 'Undefined' status.

COMET-Farm - Entering & editing baseline management manually

Crop type*

Planting date**

Harvest details

Grazing details

COMET Farm USDA United States Department of Agriculture Natural Resources Conservation Service Colorado State University Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. HOME TOOL INFO HELP Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Step 1 Activities Step 2 Field Management Step 3 Report

Parcel Locations Historic Management Pre-2000 Baseline Management 2000-2023 Scenario Management Scenarios for 10 year period

Select a parcel: Field 1

Field 1 (16 acres)

Data complete Data incomplete Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn
2001 Undefined
2002 Undefined
2003 Undefined
2004 Undefined
2005 Undefined
2006 Undefined
2007 Undefined
2008 Undefined
2009 Undefined
2010 Undefined
2011 Undefined
2012 Undefined
2013 Undefined
2014 Undefined
2015 Undefined
2016 Undefined
2017 Undefined
2018 Undefined

Tillage, Implements, Manure/Compost & Planting Application Liming

Crop and Planting Date Irrigation Fertilizer Application Burning

For Parcel Field 1 in 2000 what crop did you plant, when did you plant, and when did you harvest?

What type of crop?:
 Annual Crop/Hay/Grass
 Seasonal Cover Crop
 Orchard/Vineyard Crop

Crop: Corn
Planting Date: 05/06/2000

Harvest Table

Add New Harvest

Harvest Date	Grain / Fruit / Seed / Root / Tuber?	Yield (bu/ac)	Straw / Stover / Hay / Residue Removal (% dry matter)	Delete
10/14/2000	<input checked="" type="checkbox"/>	0	0	X

Grazing Table

Add New Grazing Period

Start Dates	End Dates	Rest Period (days)	Daily Utilization %	Delete
No data to display				

<< Back Save Next >> Skip Ahead >>

Need Help?

*Required (fallow is an option;
grass is a "crop")**Required depending on crop
type

COMET-Farm - Entering & editing baseline management manually

Tillage

Planting
implements

Herbicides*

COMET Farm USDA United States Department of Agriculture Natural Resources Conservation Service Colorado State University Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. HOME TOOL INFO HELP Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Step 1 Activities Step 2 Field Management Step 3 Report

Parcel Locations → Historic Management → Baseline Management → Scenario Management

Select a parcel: Field 1

Field 1 (16 acres)

Data complete Data incomplete Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn
2001 Undefined
2002 Undefined
2003 Undefined
2004 Undefined
2005 Undefined
2006 Undefined
2007 Undefined
2008 Undefined
2009 Undefined
2010 Undefined
2011 Undefined
2012 Undefined
2013 Undefined
2014 Undefined
2015 Undefined
2016 Undefined
2017 Undefined
2018 Undefined

Tillage, Implements, Manure/Compost Application, Liming

Crop and Planting Date Irrigation Fertilizer Application Burning

For Parcel Field 1 in 2000 what were the tillage practices?

Implement Table

Add New Tillage Application Practice

Date Applied	Implement Pass	Delete
5/5/2000	Intensive Tillage	X

Intensive Tillage
Reduced Tillage
Mulch Tillage
Ridge Tillage
Strip Tillage
No Tillage
Growing Season Cultivation
Mow
Crimn

<< Back Save Next >> Skip Ahead >>

Need Help?

*Herbicides *only* entered if used for a kill off event. An herbicide event will result in all above ground biomass death within the defined field boundary.

COMET-Farm - Entering & editing baseline management manually

Irrigation details

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → Baseline Management (2000-2023) → Scenario Management (Scenarios for 10 year period)

Select a parcel: Field 1

Field 1 (16 acres)

Data complete | Data incomplete | Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn
2001 Undefined
2002 Undefined
2003 Undefined
2004 Undefined
2005 Undefined
2006 Undefined
2007 Undefined
2008 Undefined
2009 Undefined
2010 Undefined
2011 Undefined
2012 Undefined
2013 Undefined
2014 Undefined
2015 Undefined
2016 Undefined
2017 Undefined
2018 Undefined

Tillage, Implements, Manure/Compost Application | Crop and Planting Date | Irrigation | Fertilizer Application | Liming | Burning

For Parcel Field 1 in 2000 what were the irrigation practices?

Irrigation Table

Irrigation Start Date	Irrigation End Date	Auto-Irrigate?	Field Available Water Holding Capacity (%)	Irrigation Amount (inches per application)	Days Between Irrigations	Delete
5/5/2000	10/5/2000	<input type="checkbox"/>		1	6	X

Add New Irrigation Application Practice

<< Back | Save | Next >> | Skip Ahead >>

Need Help?

COMET-Farm - Entering & editing baseline management manually

Manure and/or compost details

The screenshot shows the 'COMET Farm' web application interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The main header includes the text 'Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.' and navigation links for HOME, TOOL, INFO, and HELP. A user welcome message for 'Haley Nagle' is also present.

The interface is divided into three steps: Step 1 (Activities), Step 2 (Field Management), and Step 3 (Report). The current step is Step 2, 'Field Management', which is further divided into 'Parcel Locations', 'Historic Management', 'Baseline Management', and 'Scenario Management'. The 'Baseline Management' section is active, showing a timeline of agricultural practices from 2000 to 2023. The current focus is on 'Manure/Compost Application' for 'Field 1' in 2000.

On the left sidebar, there is a map of 'Field 1 (16 acres)' and a 'Parcel Management Summary' section with buttons for 'Drag and Drop Crop Rotation' and 'Auto-Generate Baseline'. Below this is a list of years from 2000 to 2018, with '2000 Corn' selected.

The main content area displays a 'Manure Table' for 'Field 1 in 2000'. The table has columns for 'Date Applied', 'Manure Type', 'Amount Applied', 'Moisture (%)', 'Total Nitrogen (%)', 'C/N Ratio', and 'Delete'. The first row shows an application on 1/1/2000 of 'Farmyard Manure, Solid' with an amount of 8.00 tons/acre, 45% moisture, 1.20% total nitrogen, and a C/N ratio of 11.7. A dropdown menu is open over the 'Manure Type' column, listing various options such as 'Chicken - Broiler (litter), Solid', 'Chicken - Broiler Slurry', 'Chicken - Layer Slurry', 'Chicken - Layer, Solid', 'Compost or Composted Manure, Solid', 'Dairy Manure, Solid', 'Dairy Slurry', and 'Farmyard Manure, Solid'. The 'Total N Applied (lbs/acre)' is shown as 192.0.

At the bottom of the interface, there are navigation buttons: '<< Back', 'Save', 'Next >>', and 'Skip Ahead >>'. A 'Need Help?' button is located in the bottom right corner.

COMET-Farm - Entering & editing baseline management manually

Fertilizer details

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System

HOME TOOL INFO HELP | Welcome Haley Nagle | Current Project: AFT Sample Project | sign out | change password

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management → Baseline Management → Scenario Management

Select a parcel: Field 1

Field 1 (16 acres)

Parcel Management Summary

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn

2001 Undefined

2002 Undefined

2003 Undefined

2004 Undefined

2005 Undefined

2006 Undefined

2007 Undefined

2008 Undefined

2009 Undefined

2010 Undefined

2011 Undefined

2012 Undefined

2013 Undefined

2014 Undefined

2015 Undefined

2016 Undefined

2017 Undefined

2018 Undefined

Tillage, Implements, Manure/Compost Application, Liming, Crop and Planting Date, Irrigation, Fertilizer Application, Burning

For Parcel Field 1 in 2000 what were the fertilizer application practices?

Fertilizer Table

Total N Applied(lbs/acre):193.0

Date Applied	Fertilizer Type	Total Fertilizer Applied (lbs Fertilizer/acre)	Total N Applied (lbs N/acre)	Ammonium % (l)	Delete
05/05/2000	Ammonium Nitrate (34-0-0)	2.94	1	50	X

Ammonium Nitrate (34-0-0)

Ammonium Nitrate Phosphate (23-23-00)

Ammonium Nitrate Phosphate (27-14-00)

Ammonium Phosphate Sulphate (16-20-00)

Ammonium Polyphosphate Solution (10-34-00)

Ammonium Sulphate (21-00-00)

Ammonium Thiosulphate Solution (12-00-00)

Anhydrous Ammonia (gas) (82-00-00)

<< Back | Save | Next >> | Skip Ahead >>

Need Help?

COMET-Farm - Entering & editing baseline management manually

Total Nutrient Addition Calculator

The screenshot shows the COMET Farm web application interface. The user is logged in as Haley Nagle. The interface is in the 'Baseline Management' step for 'Field 1' in 2000. A dialog box titled 'Nutrient Additions for Corn in 2000' is open, showing a table of fertilizer applications. The table has columns for 'Application Start Date', 'Fertilizer or Organic Manure Type', and 'Total N/ Applied/ (lbs N/Acre)'. The total nitrogen applied is 193.0 lbs N/Acre.

Application Start Date	Fertilizer or Organic Manure Type	Total N/ Applied/ (lbs N/Acre)
Total=193.0		
05/05/2000	Ammonium Nitrate	1.0
05/05/2000	Farmyard Manure, Solid	192.0

COMET-Farm - Entering & editing baseline management manually

Liming Details

The screenshot displays the 'COMET Farm' web interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The user is logged in as 'Haley Nagle' on the 'AFT Sample Project'. The navigation bar shows 'Step 2 Field Management' is active, with sub-steps for 'Parcel Locations', 'Historic Management', 'Baseline Management', and 'Scenario Management'. The main content area is titled 'Liming' and asks 'For Parcel Field 1 in 2000 what were the liming practices?'. It features a 'Select a parcel:' dropdown set to 'Field 1', a map of 'Field 1 (16 acres)', and a table for entering liming data. The table has columns for 'Liming Date', 'Liming Material', and 'Amount Applied (tons/acre)'. A dropdown menu for 'Liming Material' is open, showing options: 'None', 'Crushed Limestone', 'Calcitic Limestone', and 'Dolomitic Limestone'. The current date is '02/01/2000' and the amount applied is '0'. On the left, there is a 'Parcel Management Summary' section with a list of years from 2000 to 2018, each with a crop type (e.g., '2000 Corn', '2001 Undefined'). At the bottom, there are navigation buttons: '<< Back', 'Save', 'Next >>', and 'Skip Ahead >>'. A 'Need Help?' button is in the bottom right corner.

COMET-Farm - Entering & editing baseline management manually


Burn event Details

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. | HOME TOOL INFO HELP | Welcome Haley Nagle | Current Project: AFT Sample Project | sign out | change password

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → Baseline Management (2000-2023) → Scenario Management (Scenarios for 10 year period)

Select a parcel: Field 1



Field 1 (16 acres)

Data complete (green) | Data incomplete (light blue) | Selected (dark blue)

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

- 2000 Corn
- 2001 Undefined
- 2002 Undefined
- 2003 Undefined
- 2004 Undefined
- 2005 Undefined
- 2006 Undefined
- 2007 Undefined
- 2008 Undefined
- 2009 Undefined
- 2010 Undefined
- 2011 Undefined
- 2012 Undefined
- 2013 Undefined
- 2014 Undefined
- 2015 Undefined
- 2016 Undefined
- 2017 Undefined
- 2018 Undefined

Tillage, Implements, Manure/Compost & Planting Application | Liming

Crop and Planting Date | Irrigation | Fertilizer Application | Burning

For Parcel Field 1 in 2000 did you burn crop residue (not including orchards and vineyards)?

No burning (selected)
 No burning
 Yes, before planting
 Yes, after harvesting

<< Back | Save | Next >> | Skip Ahead >>

Need Help?

COMET-Farm - Entering & editing baseline management manually

Adding
more crops
(max 3/yr)

COMET Farm USDA United States Department of Agriculture Natural Resources Conservation Service Colorado State University Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. HOME TOOL INFO HELP Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Step 1 Activities Step 2 **Field Management** Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → **Baseline Management** (2000-2023) → Scenario Management (Scenarios for 10 year period)

Select a parcel: Field 1 ▾

Field 1 (16 acres)

Data complete Data incomplete Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn
2001 Undefined
2002 Undefined
2003 Undefined
2004 Undefined
2005 Undefined
2006 Undefined
2007 Undefined
2008 Undefined
2009 Undefined
2010 Undefined
2011 Undefined
2012 Undefined
2013 Undefined
2014 Undefined
2015 Undefined
2016 Undefined
2017 Undefined
2018 Undefined

Tillage, Implements, Manure/Compost & Planting Application Liming
Crop and Planting Date Irrigation Fertilizer Application Burning

For Parcel Field 1 in 2000 did you burn crop residue (not including orchards and vineyards)?
No burning ▾

Add Additional Crop?
Would you like to add an additional crop for the same year?
If you have a second crop that spans between calendar years (i.e. **winter wheat**), add it as an additional crop this year and set its harvest date to be in the following year.
Yes, add additional crop for the same year. No Thanks, Continue >>

<< Back Save Next >> Skip Ahead >>

Need Help?

COMET-Farm - Copying Crop/year management

Copying crop/year management from one field to another

The screenshot shows the 'COMET Farm' web application interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The main header includes the text 'Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.' and navigation links for HOME, TOOL, INFO, and HELP. A user greeting 'Welcome Haley Nagle' is visible in the top right corner.

The interface is divided into three main steps: Step 1 (Activities), Step 2 (Field Management), and Step 3 (Report). Under Step 2, there are four sub-sections: Parcel Locations, Historic Management (Pre-2000), Baseline Management (2000-2023), and Scenario Management (Scenarios for 10 year period). The 'Baseline Management' section is currently active, showing a timeline for 'Field 1 (16 acres)' with various management activities like Tillage, Irrigation, and Burning.

A prominent blue banner asks 'Copy Crop?' and provides instructions: 'Management for parcel Field 1 for 2000 is complete. If you would like to copy the management details to other parcels and/or years, select those parcel-years and click the Copy button.' To the right of this banner are two radio button options: 'Crop-Year to be copied' (selected) and 'Crop-Year has data'.

Below the instructions is a table for selecting years to copy. The table has columns for each year from 2000 to 2023. The 'Field 1' row shows that years 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, and 2023 are selected with blue checkmarks. The 'No, thanks>>' and 'Copy & Continue >>' buttons are located below the table.

At the bottom of the interface, there is a list of years from 2004 to 2017, each followed by the text 'Undefined'. A 'Need Help?' button is located in the bottom right corner.

COMET-Farm - Completing full baseline management

All years and fields must have at least one crop in every year before moving to scenario management.

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. | HOME TOOL INFO HELP | Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management → **Baseline Management** → Scenario Management

Select a parcel: Field 1

Field 1 (16 acres)

Data complete | Data incomplete | Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

Auto-Generate Baseline

2000 Corn
2001 Soybean
2002 Corn
2003 Soybean
2004 Corn
2005 Soybean
2006 Corn
2007 Soybean
2008 Corn
2009 Soybean
2010 Corn
2011 Soybean
2012 Corn
2013 Soybean
2014 Corn
2015 Soybean
2016 Corn
2017 Soybean
2018 Corn

Tillage, Implements, Manure/Compost & Planting | Irrigation | Fertilizer Application | Liming | Burning

Crop and Planting Date

For Parcel Field 1 in 2000 what crop did you plant, when did you plant, and when did you harvest?

What type of crop?:
 Annual Crop/Hay/Grass
 Seasonal Cover Crop
 Orchard/Vineyard Crop

Crop: Corn
Planting Date: 05/09/2000

Harvest Table

Harvest Date	Grain / Fruit / Seed / Root / Tuber?	Yield (bu/ac)	Straw / Stover / Hay / Residue Removal (% dry matter)	Delete
10/26/2000	<input checked="" type="checkbox"/>	51	0	X

Grazing Table

Start Dates	End Dates	Rest Period (days)	Daily Utilization %	Delete
No data to display				

<< Back | Save | Next >> | Skip Ahead >>

Need Help?

COMET-Farm - Continue to scenario management

USDA United States Department of Agriculture
Natural Resources Conservation Service

Colorado State University

Whole Farm and Ranch
Carbon and Greenhouse Gas
Accounting System.

HOME TOOL INFO HELP

Welcome Haley Nagle
Current Project: AFT Sample Project
[sign out](#) | [change password](#)

Step 1 Activities Step 2 **Field Management** Step 3 Report

Parcel Locations **Historic Management** Baseline Management Scenario Management

Select a parcel: Field 1

Field 1 (16 acres)

Data complete Data incomplete Selected

Parcel Management Summary

[Drag and Drop Crop Rotation](#)

[Auto-Generate Baseline](#)

- 2000 Corn
- 2001 Soybean
- 2002 Corn
- 2003 Soybean
- 2004 Corn
- 2005 Soybean
- 2006 Corn
- 2007 Soybean
- 2008 Corn
- 2009 Soybean
- 2010 Corn
- 2011 Soybean
- 2012 Corn
- 2013 Soybean
- 2014 Corn
- 2015 Soybean
- 2016 Corn
- 2017 Soybean

Tillage, Implements, Manure/Compost & Planting Application Liming

Crop and Planting Date Irrigation Fertilizer Application Burning

For Parcel Field 1 in 2000 what crop did you plant, when did you plant, and when did you harvest?

What type of crop?:

Annual Crop/Hay/Grass Seasonal Cover Crop Orchard/Vineyard Crop

Crop:

Planting Date:

Harvest Table			
Harvest Date	Grain / Fruit / Seed / Root / Tuber?	Yield (bu/ac)	Straw / Stov Hay / Resid Removal (% dry mat)
10/26/2000	✓	51	0

[Continue to future management](#)

All current management (2000-present) is defined for all parcels. You will now be taken to the Future Management page where you will define management scenarios to compare against your current management.

[Keep editing >>](#) [Continue to Future Management >>](#)

Grazing Table				
Start Dates	End Dates	Rest Period (days)	Daily Utilization %	Delete
No data to display				

[Save](#) [Next >>](#) [Skip Ahead >>](#)

[Need Help?](#)

COMET-Farm - Start management scenarios

Use the “copy” option to save time and copy *all* management from selected scenario to new scenario.

Any copied management can be modified.

COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. | HOME TOOL INFO HELP | Welcome Haley Nagle | Current Project: AFT Sample Project | sign out | change password

Step 1 Activities | Step 2 Field Management | Step 3 Report

Parcel Locations → Historic Management (Pre-2000) → Baseline Management (2000-2023) → Scenario Management (Scenarios for 10 year period)

Tillage, Implements, Manure/Compost Application, Lining, Irrigation, Fertilizer Application, Crop and Planting Date, Burning

For Parcel in 2024 what crop will you plant, when will you plant, and when will you harvest?

Selected Scenario [new]

Select a parcel: Field 1 [CP#]

Field 1 (16 acres)

Data complete | Data incomplete | Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

2024 Undefined
2025 Undefined
2026 Undefined
2027 Undefined
2028 Undefined
2029 Undefined
2030 Undefined
2031 Undefined
2032 Undefined
2033 Undefined

Future Management Scenarios

You will now be asked to describe future land management scenarios that you would like to consider. Each scenario includes all of your parcels over a 10 year period. The previously entered data in current management would be set as your **Baseline** scenario. You may choose to create one or more future scenarios. These scenarios will be compared to your current management practices in the final report to show differences in carbon sequestration and greenhouse gas emissions.

First Management Scenario

Please enter a **name for your first management scenario** (you will have the opportunity to create additional scenarios later):

convert to NT

Copy management information from my Current Management

Drag and Drop Crop Rotation Or Add Conservation Practices Or Start >>

<< Back | Save | Next >> | Skip Ahead >> | Need Help?

COMET-Farm - Adding conservation scenario (optional)

Select **one** conservation scenario to automatically apply to scenario management.

Any changed management can be modified.

The screenshot displays the COMET-Farm web application interface. The top navigation bar includes the COMET Farm logo, USDA United States Department of Agriculture Natural Resources Conservation Service, Colorado State University, and COMET Planner. The user is logged in as Haley Nagle, with the current project being 'AFT Sample Project'. The interface is divided into several sections:

- Step 1: Activities** (selected)
- Step 2: Field Management** (selected)
- Step 3: Report**

The main content area is titled 'Scenario Management' and shows a progress bar with steps: 'Parcel Locations', 'Historic Management', 'Baseline Management', and 'Scenario Management'. The 'Scenario Management' step is active, showing a 'Selected Scenario' of 'convert to NT' and a 'Select a parcel' dropdown set to 'Field 1'. A map shows 'Field 1 (16 acres)' highlighted in green. Below the map, there are buttons for 'Data complete', 'Data incomplete', and 'Selected'. A 'Parcel Management Summary' section includes a 'Drag and Drop Crop Rotation' button and a list of crop rotation scenarios for years 2024 through 2033, alternating between Corn and Soybean.

A modal dialog box titled 'Conservation Practice for Field 1' is open, showing 'MANAGEMENT CONSERVATION PRACTICES'. The 'CONSERVATION TILLAGE' option is checked, with sub-options for 'Convert to reduced tillage (CPS 345)' and 'Convert to no tillage (CPS 329)'. Other options include 'ADD COVER CROPS (CPS 340) AND CORRESPONDINGLY ADJUST FERTILIZER APPLICATION RATES (CPS 590)', 'ADD COVER CROPS (CPS 340)', and 'Strips & Borders'. A detailed description of the Conservation Practice Advisor (CPA) is visible on the right side of the dialog.

At the bottom of the interface, there are navigation buttons: '<< Back', 'Save', 'Next >>', and 'Skip Ahead >>'. A 'Need Help?' button is located in the bottom right corner.

COMET-Farm - Modify any scenario management (optional)

Any scenario management can be modified or second/third crops added like in the baseline management scenario

The screenshot displays the COMET Farm web application interface. At the top, there are logos for COMET Farm, USDA, United States Department of Agriculture, Natural Resources Conservation Service, and Colorado State University. The main header includes the text "Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System." and navigation links for HOME, TOOL, INFO, and HELP. A user welcome message for Haley Nagle is visible in the top right corner.

The interface is divided into three main steps: Step 1 Activities, Step 2 Field Management (selected), and Step 3 Report. Under Step 2, there are four sub-sections: Parcel Locations, Historic Management (Pre-2000), Baseline Management (2000-2023), and Scenario Management (Scenarios for 10 year period). The Scenario Management section is currently active, showing a progress bar with stages: Tillage, Implements, Manure/Compost & Planting, Application, Irrigation, Fertilizer Application, Liming, and Burning.

The main content area is titled "Selected Scenario" and includes a "convert to NT" button. Below this, there is a "Select a parcel" dropdown menu set to "Field 1" and a "CPA" button. A satellite image of "Field 1 (16 acres)" is shown with a green overlay. Below the image are three colored squares representing "Data complete" (green), "Data incomplete" (blue), and "Selected" (orange).

The "Parcel Management Summary" section includes a "Drag and Drop Crop Rotation" button and a list of crops for the years 2024 through 2033: 2024 Corn, 2025 Soybean, 2026 Corn, 2027 Soybean, 2028 Corn, 2029 Soybean, 2030 Corn, 2031 Soybean, 2032 Corn, and 2033 Soybean.

The "Implement Table" section is titled "For Parcel Field 1 in 2024 what will be your tillage practices?" and includes an "Add New Tillage Application Practice" button. The table has three columns: "Date Applied", "Implement Pass", and "Delete". The current entry is for "5/8/2024" with "No Tillage" selected in the "Implement Pass" column and an "X" in the "Delete" column.

At the bottom of the interface, there are navigation buttons: "<< Back", "Save", "Next >>", and "Skip Ahead >>". A "Need Help?" button is located in the bottom right corner.

COMET-Farm - Add more scenarios or go to report

Users may add up to 10 scenarios or go to the report.

The screenshot shows the COMET Farm web application interface. The user is in the 'Scenario Management' step, configuring a scenario for 'Field 1 (16 acres)'. The interface includes a sidebar with a map of the field, a main content area with crop selection options (Corn, Soybean, etc.), and a 'Future Management Scenarios' modal dialog box. The modal dialog asks 'Are you ready to run your report?' and provides three options: 'Continue to Report >>', 'Create New Scenario', and 'Keep Editing'. The 'Continue to Report >>' option is highlighted in orange.

COMET Farm
USDA United States Department of Agriculture Natural Resources Conservation Service Colorado State University
Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.
HOME TOOL INFO HELP
Welcome Haley Nagle
Current Project: AFT Sample Project
sign out | change password

Step 1 Activities Step 2 Field Management Step 3 Report

Parcel Locations Historic Management Baseline Management Scenario Management

Selected Scenario [new]
convert to NT [delete] [rename]

Select a parcel: Field 1 [CPA]

Field 1 (16 acres)

Data complete Data incomplete Selected

Parcel Management Summary [Delete Selected Crop]

Drag and Drop Crop Rotation

2024 Corn
2025 Soybean
2026 Corn
2027 Soybean
2028 Corn
2029 Soybean
2030 Corn
2031 Soybean
2032 Corn
2033 Soybean

Tillage, Implements, Manure/Compost & Planting Application Lining
Crop and Planting Date Irrigation Fertilizer Application Burning

For Parcel Field 1 in 2024 what crop will you plant, when will you plant, and when will you harvest?

What type of crop?:
 Annual Crop/Hay/Grass
 Seasonal Cover Crop
 Orchard/Vineyard Crop

Crop: Corn
Planting Date: 05/09/2024

Harvest Table

Harvest Date	Grain / Fruit / Seed / Root / Tuber?	Projected Yield (bu/ac)	Straw / Stalk / Hay / Residue Removal (% dry matter)
10/26/2024	<input checked="" type="checkbox"/>	51	0

Grazing Table

Start Dates	End Dates	Rest Period (days)	Daily Utilization %	Delete
No data to display				

Are you ready to run your report?
Continue to Report >>
If Not...
Create New Scenario Or Keep Editing

<< Back Save Next >> Skip Ahead >>

Need Help?

COMET-Farm - Report Generation

Time to generate report depends on number of fields and scenarios.

The screenshot displays the COMET Farm web application interface. At the top, there are logos for COMET Farm, USDA, Colorado State University, and COMET Planner. The main navigation bar includes 'HOME TOOL INFO HELP' and a user welcome message for Haley Nagle. The interface is divided into three steps: Step 1 (Activities), Step 2 (Field Management), and Step 3 (Report). Under Step 3, there are three sub-tabs: 'Cropland, Pasture, Range, Orchards/Vineyards', 'Cropland Graphical Report', and 'Available Water Holding Capacity'. The current report is for 'Field 1 (16 acres - Soybean, Corn)' and is in the 'Checking status...' phase. A table shows the progress of the report generation, with a 'Total' row indicating 0.0 emissions. The table has columns for 'Source', 'Baseline Emissions', and 'convert to NT'. The 'Baseline Emissions' section has columns for 'Emissions' and '+/-' (uncertainty). The 'convert to NT' section has columns for 'Emissions', '+/-' (uncertainty), and 'Change'. The table shows 0.0 for all these values. At the bottom, there are navigation buttons: '<< Back To Management', 'Print', 'Cropland Export Files', 'Interpret Cropland Report', 'Rerun Reports', and 'GHG Equivalencies Calculator'. A 'Need Help?' button is also present in the bottom right corner.

Step 1 Activities Step 2 Field Management Step 3 Report

Cropland, Pasture, Range, Orchards/Vineyards Cropland Graphical Report Available Water Holding Capacity

Report is running: 00:00:14 0% Complete

NAME: Haley Nagle PROJECT: AFT Sample Project REPORTING YEARS: 2024 - 2033 Daycent Service Version: 30cm Daycent Service

JOBID: 17868_77570_NONE Time: Tue Apr 16 2024 15:44:34 GMT-0600 (Mountain Daylight Time) Version: appengine.cometfarm v0-10 build 4.1.8795.40849 (01/30/2024 22:41:41)

USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University

DayCent Portal Data Offramp

Show uncertainty as percentage Show IPCC Soil C

Source	Baseline Emissions		convert to NT			
	Emissions	+/-	Emissions	+/-	Change	+/-
Field 1 (16 acres - Soybean, Corn) Checking status...						
Running step 2 of 6 for Field 1. Waiting in queue for compute resources.						
Total	0.0		0.0		0.0	

†Uncertainty estimations for empirical calculations for indirect N2O, liming, and burning are available on the reports page by double clicking the GHG source category. Methods for the uncertainty estimations for soil carbon and direct N2O are currently in development.

<< Back To Management Print Cropland Export Files Interpret Cropland Report Rerun Reports GHG Equivalencies Calculator

Need Help?

COMET-Farm - Report Interpretation (Tabular)

Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System.

HOME TOOL INFO HELP

Welcome Haley Nagle
Current Project: AFT Sample Project
[sign out](#) | [change password](#)

Step 1 Activities | Step 2 Field Management | Step 3 Report

Cropland, Pasture, Range, Orchards/Vineyards | Cropland Graphical Report | Available Water Holding Capacity

Report finished: 00:02:54 100% Complete

NAME: Haley Nagle | PROJECT: AFT Sample Project | REPORTING YEARS: 2024 - 2033 | Daycent Service Version: 30cm Daycent Service

JOBID: 17868_77570_NONE | Time: Tue Apr 16 2024 15:46:58 GMT-0600 (Mountain Daylight Time) | Version: appengine cometfarm v0-10 build 4.1.8795.40849 (01/30/2024 22:41:41)

DayCent Portal | Data Offramp

Show uncertainty as percentage

Show IPCC Soil C

Source	Baseline Emissions		convert to NT		Change	+/-
	Emissions	+/-	Emissions	+/-		
Field 1 (16 acres - Soybean, Corn)						
C (tonnes CO ₂ equiv./yr.)	2.4	+0/-0	-4.1	+0/-0	-6.5	+0/-0
CO ₂ (tonnes/yr.)	0.2	+0/-0	0.2	+0/-0	0.0	+0/-0
CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
N ₂ O (tonnes CO ₂ equiv./yr.)	4.7	NR ¹	3.6	NR ¹	-1.1	NR ¹
Direct N ₂ O Emissions	4.3	+0/-0	3.2	+0/-0	-1.1	+0/-0
Direct - Soil	4.3	+0/-0	3.2	+0/-0	-1.1	+0/-0
Direct - Biomass Burning	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
Direct - Drained Organic Soils	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
Indirect N ₂ O Emissions	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0	+0/-0
Indirect - Volatilization	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0	+0/-0
Indirect - Leaching and Runoff	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
Total	7.3	NR¹	-0.3	NR¹	-7.6	NR¹
Total (all parcels)	7.3	NR¹	-0.3	NR¹	-7.6	NR¹

Source Categories expand to view subsource

Avg. annual tonnes of CO₂e per field over 10 years assuming the last 10 years of baseline management is continued

Avg. annual tonnes of CO₂e per field over 10 years assuming the management change from the scenario

Avg. annual change in tonnes of CO₂e per field compared to the baseline

<< Back To Management

Report | Rerun Reports | [GHG Equivalencies Calculator](#)

Need Help?

COMET-Farm - Report Interpretation (Tabular)

Step 1 Activities Step 2 Field Management Step 3 Report

Cropland, Pasture, Range, Orchards/Vineyards Cropland Graphical Report Available Water Holding Capacity

Report finished: 00:02:54 100% Complete

NAME: Haley Nagle PROJECT: AFT Sample Project REPORTING YEARS: 2024 - 2033 Daycent Service Version: 30cm Daycent Service

JOBID: 17868_77570_NONE Time: Tue Apr 16 2024 15:46:58 GMT-0600 (Mountain Daylight Time) Version: appengine cometfarm v0-10 build 4.1.8795.40849 (01/30/2024 22:41:41)

USDA United States Department of Agriculture Natural Resources Conservation Service

Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. HOME TOOL INFO HELP

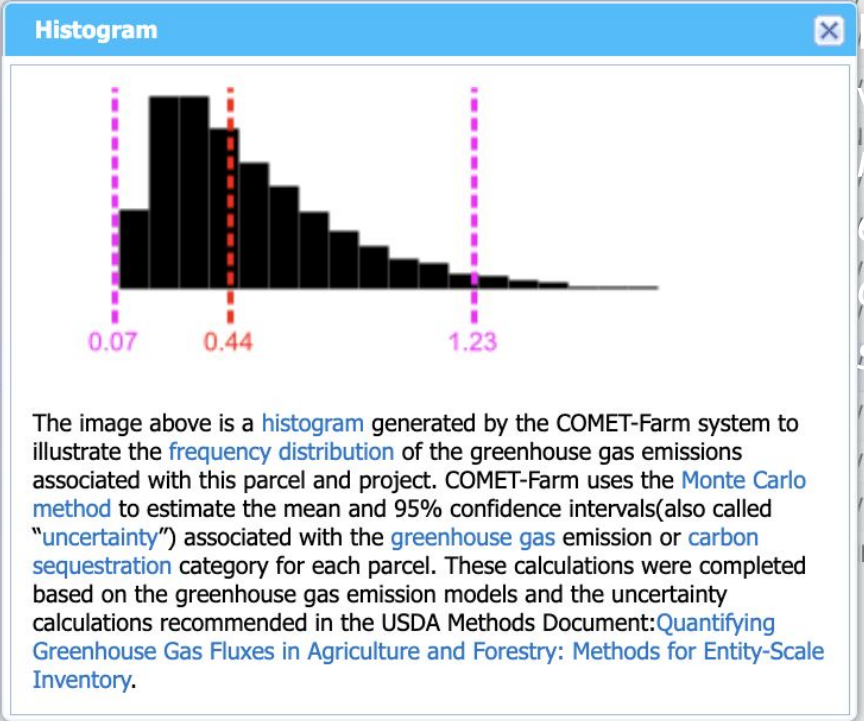
Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Source	Baseline Emissions		convert to NT		
	Emissions	+/-	Emissions	+/-	Change
Field 1 (16 acres - Soybean, Corn)					
C (tonnes CO ₂ equiv./yr.)	2.4	+0/-0	-4.1	+0/-0	-6.5
CO ₂ (tonnes/yr.)	0.2	+0/-0	0.2	+0/-0	0.0
CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0
N ₂ O (tonnes CO ₂ equiv./yr.)	4.7	NR [†]	3.6	NR [†]	-1.1
Direct N ₂ O Emissions	4.3	+0/-0	3.2	+0/-0	-1.1
Direct - Soil	4.3	+0/-0	3.2	+0/-0	-1.1
Direct - Biomass Burning	0.0	+0/-0	0.0	+0/-0	0.0
Direct - Drained Organic Soil	0.0	+0/-0	0.0	+0/-0	0.0
Indirect N ₂ O Emissions	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0
Indirect - Volatilization	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0
Indirect - LeachingandRunoff	0.0	+0/-0	0.0	+0/-0	0.0
CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0
Total	7.3	NR[†]	-0.3	NR[†]	-7.6
Total (all parcels)	7.3	NR[†]	-0.3	NR[†]	-7.6

†Uncertainty estimations for empirical calculations for indirect N2O, liming, and burning are available on the reports by source category. Methods for the uncertainty estimations for soil carbon and direct N2O are currently in development.

<< Back To Management Print Cropland Export Files Interpret Cropland Report Rerun Reports GHG Equivalencies Calculator

Scenario uncertainty; Monte Carlo method



Positive (+) values = Emissions

Negative (-) values = reduced emissions or carbon sequestered

COMET-Farm - Report Interpretation (Tabular)

Source	Baseline Emissions			convert to NT			
	Emissions	+/-	Emissions	+/-	Change	+/-	
Field 1 (16 acres - Soybean, Corn)							
+ C (tonnes CO ₂ equiv./yr.)	2.4	+0/-0	-4.1	+0/-0	-6.5	+0/-0	
+ CO ₂ (tonnes/yr.)	0.2	+0/-0	0.2	+0/-0	0.0	+0/-0	
+ CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	
- N ₂ O (tonnes CO ₂ equiv./yr.)	4.7	NR [†]	3.6	NR [†]	-1.1	NR [†]	
Direct N ₂ O Emissions	4.3	+0/-0	3.2	+0/-0	-1.1	+0/-0	
Direct - Soil	4.3	+0/-0	3.2	+0/-0	-1.1	+0/-0	
Direct - Biomass Burning	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	
Direct - Drained Organic Soils	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	
Indirect N ₂ O Emissions	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0	+0/-0	
Indirect - Volatilization	0.4	+0.8/-0.4	0.4	+0.8/-0.4	0.0	+0/-0	
Indirect - Leaching and Runoff	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	
+ CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	
Total	7.3	NR[†]	-0.3	NR[†]	-7.6	NR[†]	
Total (all parcels)	7.3	NR[†]	-0.3	NR[†]	-7.6	NR[†]	

By switching from *intensive tillage* (corn) and *reduced tillage* (soybeans) to *no tillage* for both crops in Fort Collins, Colorado, there is an estimated 7.6 tonnes of CO₂e reduction per year (10 year scenario period) for the 16 acre field.

COMET-Farm - Report Interpretation, multiple fields (Tabular)

Source	Baseline Emissions			convert to NT				convert to RT			
	Emissions	+/-	Emissions	+/-	Change	+/-	Emissions	+/-	Change	+/-	
Field 1 (16 acres - Soybean, Corn)											
+	C (tonnes CO ₂ equiv./yr.)	2.4	+0/-0	-4.1	+0/-0	-6.5	+0/-0	-0.5	+0/-0	-2.9	+0/-0
+	CO ₂ (tonnes/yr.)	0.2	+0/-0	0.2	+0/-0	0.0	+0/-0	0.2	+0/-0	0.0	+0/-0
+	CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
+	N ₂ O (tonnes CO ₂ equiv./yr.)	4.7	NR [†]	3.6	NR [†]	-1.1	NR [†]	4.2	NR [†]	-0.6	NR [†]
+	CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
	Total	7.3	NR[†]	-0.3	NR[†]	-7.6	NR[†]	3.8	NR[†]	-3.5	NR[†]
Field 2 (19 acres - Corn, Soybean)											
+	C (tonnes CO ₂ equiv./yr.)	3.7	+0/-0	-3.8	+0/-0	-7.5	+0/-0	0.4	+0/-0	-3.3	+0/-0
+	CO ₂ (tonnes/yr.)	0.2	+0/-0	0.2	+0/-0	0.0	+0/-0	0.2	+0/-0	0.0	+0/-0
+	CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
+	N ₂ O (tonnes CO ₂ equiv./yr.)	5.5	NR [†]	4.3	NR [†]	-1.1	NR [†]	4.9	NR [†]	-0.6	NR [†]
+	CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
	Total	9.4	NR[†]	0.7	NR[†]	-8.6	NR[†]	5.4	NR[†]	-3.9	NR[†]
	Total (all parcels)	16.6	NR[†]	0.4	NR[†]	-16.2	NR[†]	9.3	NR[†]	-7.4	NR[†]

Estimates provided at a *field* level

Total (*all fields*) = project/farm level accounting

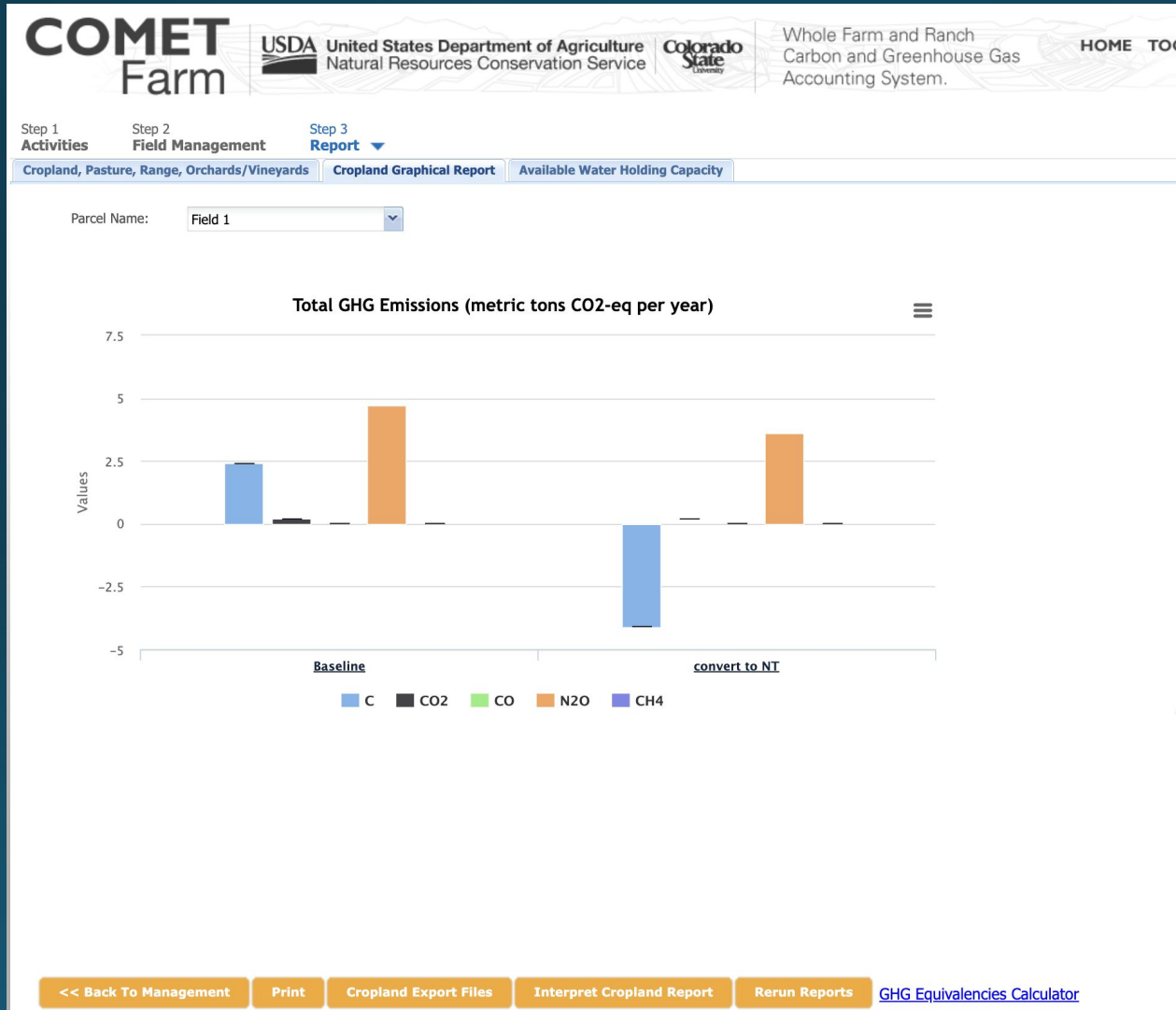
COMET-Farm - Report Interpretation, multiple fields (Tabular)

Source	Baseline Emissions			convert to NT				convert to RT			
	Emissions	+/-		Emissions	+/-	Change	+/-	Emissions	+/-	Change	+/-
Field 1 (16 acres - Soybean, Corn)											
C (tonnes CO ₂ equiv./yr.)	2.4	+0/-0		-4.1	+0/-0	-6.5	+0/-0	-0.5	+0/-0	-2.9	+0/-0
CO ₂ (tonnes/yr.)	0.2	+0/-0		0.2	+0/-0	0.0	+0/-0	0.2	+0/-0	0.0	+0/-0
CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0		0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
N ₂ O (tonnes CO ₂ equiv./yr.)	4.7	NR [†]		3.6	NR [†]	-1.1	NR [†]	4.2	NR [†]	-0.6	NR [†]
CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0		0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
Total	7.3	NR[†]		-0.3	NR[†]	-7.6	NR[†]	3.8	NR[†]	-3.5	NR[†]
Field 2 (19 acres - Corn, Soybean)											
C (tonnes CO ₂ equiv./yr.)	3.7	+0/-0		-3.8	+0/-0	-7.5	+0/-0	0.4	+0/-0	-3.3	+0/-0
CO ₂ (tonnes/yr.)	0.2	+0/-0		0.2	+0/-0	0.0	+0/-0	0.2	+0/-0	0.0	+0/-0
CO (tonnes CO ₂ equiv./yr.)	0.0	+0/-0		0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
N ₂ O (tonnes CO ₂ equiv./yr.)	5.5	NR [†]		4.3	NR [†]	-1.1	NR [†]	4.9	NR [†]	-0.6	NR [†]
CH ₄ (tonnes CO ₂ equiv./yr.)	0.0	+0/-0		0.0	+0/-0	0.0	+0/-0	0.0	+0/-0	0.0	+0/-0
Total	9.4	NR[†]		0.7	NR[†]	-8.6	NR[†]	5.4	NR[†]	-3.9	NR[†]
Total (all parcels)	16.6	NR[†]		0.4	NR[†]	-16.2	NR[†]	9.3	NR[†]	-7.4	NR[†]

Converting all to No Till → Reduced emissions by 16.2 tonnes of CO₂e for both fields

Converting all to Reduced Till → Reduced emissions by 7.4 tonnes of CO₂e for both fields

COMET-Farm - Report Interpretation (Graphical)



Emissions/reductions
estimates per source
category displayed by **field**

Hover over columns to view
estimate

COMET-Farm - Report Interpretation (AWHC)

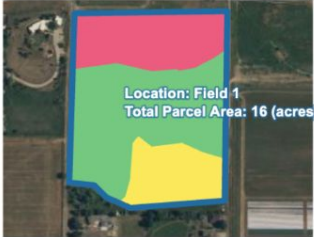
COMET Farm | USDA United States Department of Agriculture Natural Resources Conservation Service | Colorado State University | Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. | HOME TOOL INFO HELP | Welcome Haley Nagle Current Project: AFT Sample Project sign out | change password

Step 1 Activities | Step 2 Field Management | Step 3 Report


Cropland, Pasture, Range, Orchards/Vineyards | Cropland Graphical Report | Available Water Holding Capacity

Available Water Holding Capacity Report

Location: Field 1



Location: Field 1
Total Parcel Area: 16 (acres)



Location: Field 1
Total Parcel Area: 16 (acres)
Map Unit Name: Loam
Map Unit ID: 497683
Soil Focus Area: 5 (acres)

Summary Results

Project Scenario(s)	Estimated AWHC in Top 6 inches of Soil (gallons/acre)	Estimated Absolute AWHC in Top 6 inches of Soil (inches water)
Baseline	27,374	1.008
convert to NT	+310	+0.011

Soil Map Unit: Loam - 497683

Project Scenario(s)	Estimated AWHC in Top 6 inches of Soil (gallons/acre)	Estimated Absolute AWHC in Top 6 inches of Soil (inches water)
Baseline	30,295	1.116
convert to NT	+358	+0.013

Soil Map Unit: Loam - 497682

Project Scenario(s)	Estimated AWHC in Top 6 inches of Soil (gallons/acre)	Estimated Absolute AWHC in Top 6 inches of Soil (inches water)
Baseline		
convert to NT		

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Changes in Available Water Holding Capacity (AWHC) of the top 6" of soil.

Provided at a field OR soil map unit level

Download abilities will be available in the updated interface

COMET-Farm - Detailed report Interpretation

CAUTION This report * Yearly results & period averages are presented instead.

1. General Information

Report version appengine cometfarm v0-10 build 4.1.8795.40849 (01/30/2024 22:41:41)

Template version [-] 1

Creation date [date] 4/17/2024

Name [-] Field 2

Area [acres] 18.79136

State [-] Colorado

County [-] Larimer County

Coordinates (Me [-] POLYGON ((-11703239.672752524 4953453.817803477, -11702693.505876059 4953450.225487084, -11702695.677813293 4953211.867749683, -11703240.875354791 4953208.218428594, -11703239.672752524 4953453.817803477))

Parcel Name:	Field 2																				
TimeFrame	Parcel	acres	Scenario	Year	Crop1	Crop1 Tillage	Crop1 Organic N	Crop1 N Fert Ev	Crop1 Yield	Soil Carbon Stoc	Liming CO2 (ton	Urea CO2 (tonne	Drained Organic	Biomass Burning	Soil Direct N2O	Biomass Burning	Drained Organic	N2O Indirect Em	Biomass Burning	GHG Balance Total	
Current	Field 2	18.79136	Baseline	2000	Corn	(05/08/2000;Intensive Tillage)	(05/09/2000;0;EI		51	35.200314		0	0.6277838	0	10.668075	0	0	0.06518354	0	46.561356	
Current	Field 2	18.79136	Baseline	2001	Soybean	(05/28/2001;Intensive Tillage)	(05/29/2001;18.3		34	16.822529		0	0.1641206	0	4.1572905	0	0	0.06518354	0	21.209124	
Current	Field 2	18.79136	Baseline	2002	Corn	(05/08/2002;Intensive Tillage)	(05/09/2002;0;EI		51	16.74499		0	0.3138919	0	6.457458	0	0	0.06518354	0	23.581524	
Current	Field 2	18.79136	Baseline	2003	Soybean	(05/28/2003;Intensive Tillage)	(05/29/2003;18.3		34	16.378439		0	0.0820603	0	3.6004295	0	0	0.06518354	0	20.126112	
Current	Field 2	18.79136	Baseline	2004	Corn	(05/08/2004;Intensive Tillage)	(05/09/2004;0;EI		51	13.327787		0	0.3138919	0	4.916869	0	0	0.06518354	0	18.623732	
Current	Field 2	18.79136	Baseline	2005	Soybean	(05/28/2005;Intensive Tillage)	(05/29/2005;18.3		34	10.486545		0	0.0820603	0	2.863949	0	0	0.06518354	0	13.497737	
Current	Field 2	18.79136	Baseline	2006	Corn	(05/08/2006;Intensive Tillage)	(05/09/2006;0;EI		51	11.544227		0	0.3138919	0	4.493007	0	0	0.06518354	0	16.41631	
Current	Field 2	18.79136	Baseline	2007	Soybean	(05/28/2007;Intensive Tillage)	(05/29/2007;18.3		34	15.66641		0	0.0820603	0	53.407738	0	0	0.06518354	0	69.22139	
Current	Field 2	18.79136	Baseline	2008	Corn	(05/08/2008;Intensive Tillage)	(05/09/2008;0;EI		51	14.024785		0	0.3138919	0	5.3473873	0	0	0.06518354	0	19.751247	
Current	Field 2	18.79136	Baseline	2009	Soybean	(05/28/2009;Intensive Tillage)	(05/29/2009;18.3		34	8.407903		0	0.0820603	0	3.0080884	0	0	0.06518354	0	11.563234	
Current	Field 2	18.79136	Baseline	2010	Corn	(05/08/2010;Intensive Tillage)	(05/09/2010;0;EI		51	5.0002623		0	0.3138919	0	9.838593	0	0	0.06518354	0	15.21793	
Current	Field 2	18.79136	Baseline	2011	Soybean	(05/28/2011;Intensive Tillage)	(05/29/2011;18.3		34	3.6248646		0	0.0820603	0	3.0271964	0	0	0.06518354	0	6.799305	
Current	Field 2	18.79136	Baseline	2012	Corn	(05/08/2012;Intensive Tillage)	(05/09/2012;0;EI		51	8.325262		0	0.3138919	0	4.5712028	0	0	0.06518354	0	13.275541	
Current	Field 2	18.79136	Baseline	2013	Soybean	(05/28/2013;Intensive Tillage)	(05/29/2013;18.3		34	8.2767		0	0.0820603	0	3.4437115	0	0	0.06518354	0	11.867655	
Current	Field 2	18.79136	Baseline	2014	Corn	(05/08/2014;Intensive Tillage)	(05/09/2014;0;EI		51	11.360836		0	0.3138919	0	9.745901	0	0	0.06518354	0	21.485813	
Current	Field 2	18.79136	Baseline	2015	Soybean	(05/28/2015;Intensive Tillage)	(05/29/2015;18.3		34	-1.1337311		0	0.0820603	0	2.4117298	0	0	0.06518354	0	1.4252425	
Current	Field 2	18.79136	Baseline	2016	Corn	(05/08/2016;Intensive Tillage)	(05/09/2016;0;EI		51	6.4692187		0	0.3138919	0	4.6528544	0	0	0.06518354	0	11.501148	
Current	Field 2	18.79136	Baseline	2017	Soybean	(05/28/2017;Intensive Tillage)	(05/29/2017;18.3		34	5.736595		0	0.0820603	0	4.0017147	0	0	0.06518354	0	9.885553	
Current	Field 2	18.79136	Baseline	2018	Corn	(05/08/2018;Intensive Tillage)	(05/09/2018;0;EI		51	5.4230146		0	0.3138919	0	4.0342164	0	0	0.06518354	0	9.836307	
Current	Field 2	18.79136	Baseline	2019	Soybean	(05/28/2019;Intensive Tillage)	(05/29/2019;18.3		34	4.9565525		0	0.0820603	0	5.999964	0	0	0.06518354	0	11.103761	
Current	Field 2	18.79136	Baseline	2020	Corn	(05/08/2020;Intensive Tillage)	(05/09/2020;0;EI		51	8.805108		0	0.3138919	0	9.710176	0	0	0.06518354	0	18.89436	
Current	Field 2	18.79136	Baseline	2021	Soybean	(05/28/2021;Intensive Tillage)	(05/29/2021;18.3		34	5.9916797		0	0.0820603	0	2.9768715	0	0	0.06518354	0	9.115795	
Current	Field 2	18.79136	Baseline	2022	Corn	(05/08/2022;Intensive Tillage)	(05/09/2022;0;EI		51	9.371092		0	0.3138919	0	9.252626	0	0	0.06518354	0	19.002794	
Current	Field 2	18.79136	Baseline	2023	Soybean	(05/28/2023;Intensive Tillage)	(05/29/2023;18.3		34	-3.0797005		0	0.0820603	0	2.289768	0	0	0.06518354	0	-0.64268863	

Detailed report includes a *most* data inputs and estimated reported values on an annual basis. Improvements to come with the new interface release!



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Natural Resources Conservation Service

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State
University

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COMET-Farm Questions?



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COMET-Planner Tool

Constructing Conservation Scenarios

BASELINE



No Winter
Cover/Bare Soils

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

COVER CROP
(Ac.)

CODE 340

<p>DEFINITION Grasses, legumes, and forbs planted for seasonal vegetative cover.</p> <p>PURPOSE This practice is applied to support one or more of the following purposes:</p> <ul style="list-style-type: none"> • Reduce erosion from wind and water. • Maintain or increase soil health and organic matter content. • Reduce water quality degradation by utilizing excessive soil nutrients. • Suppress excessive weed pressures and break pest cycles. • Improve soil moisture use efficiency. • Minimize soil compaction. <p>CONDITIONS WHERE PRACTICE APPLIES All lands requiring seasonal vegetative cover for natural resource protection or improvement.</p>	<p>successive production crops, or companion-planted or relay-planted into production crops. Select species and planting dates that will not compete with the production crop yield or harvest.</p> <p>Do not burn cover crop residue.</p> <p>Determine the method and timing of termination to meet the grower's objective and the current NRCS Cover Crop Termination Guidelines.</p> <p>When a cover crop will be grazed or hayed ensure the planned management will not compromise the selected conservation purpose(s).</p> <p>Do not harvest cover crops for seed.</p> <p>If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.</p> <p><u>Additional Criteria to Reduce Erosion from Wind and Water</u> Time the cover crop establishment in conjunction with other practices to adequately</p>
---	--

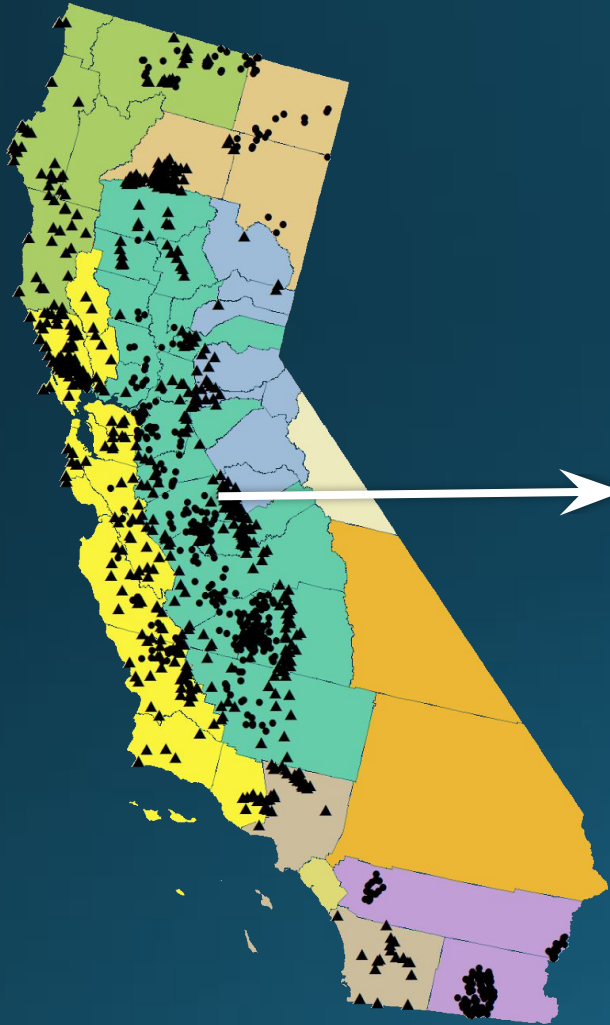
NRCS Conservation
Practice Standard

CONSERVATION PRACTICE

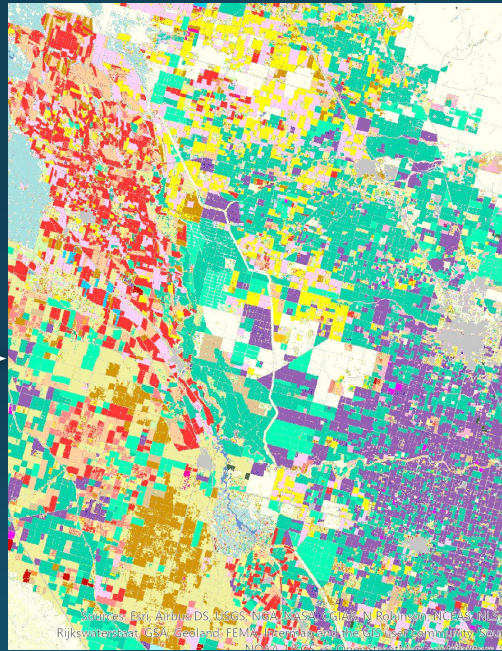


Legume Cover
Crops

GHG Estimation Methods



Random point sample



Remotely-sensed annual crop cover > crop rotation

Typical practices/average inputs

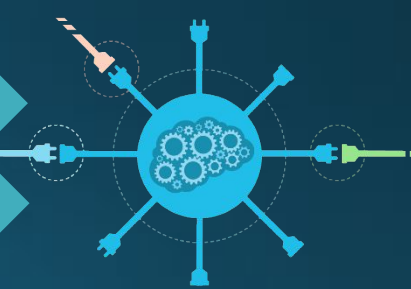
State	Crop	Non-Irri Nitrogen	Irrigated Nitrogen
California	alfalfa	0	0
California	barley	30	100
California	corn	150	190
California	cotton	80	150
California	dry field beans	0	0

Xml file builder

COMET-Farm API

Conservation

Baseline

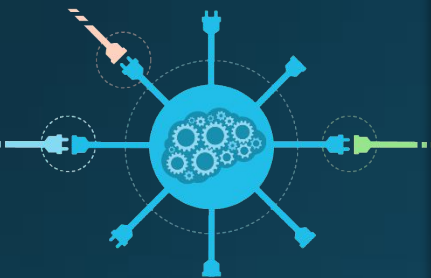


GHG Estimation Methods

Current, Baseline and Conservation Management Details

Spatial Location

COMET-Farm API



Climate and Soil Datasets



Historic Management



Parcel Management Summary

Year	Crop
2000	Cotton
2001	Sorghum
2002	Sugar Beets
2003	Cotton
2004	Sorghum
2005	Sugar Beets
2006	Cotton
2007	Sorghum
2008	Sugar Beets
2009	Cotton
2010	Sorghum
2011	Sugar Beets

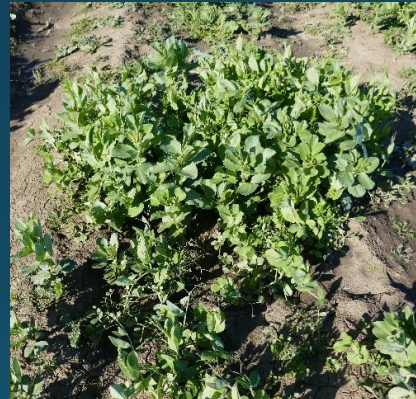
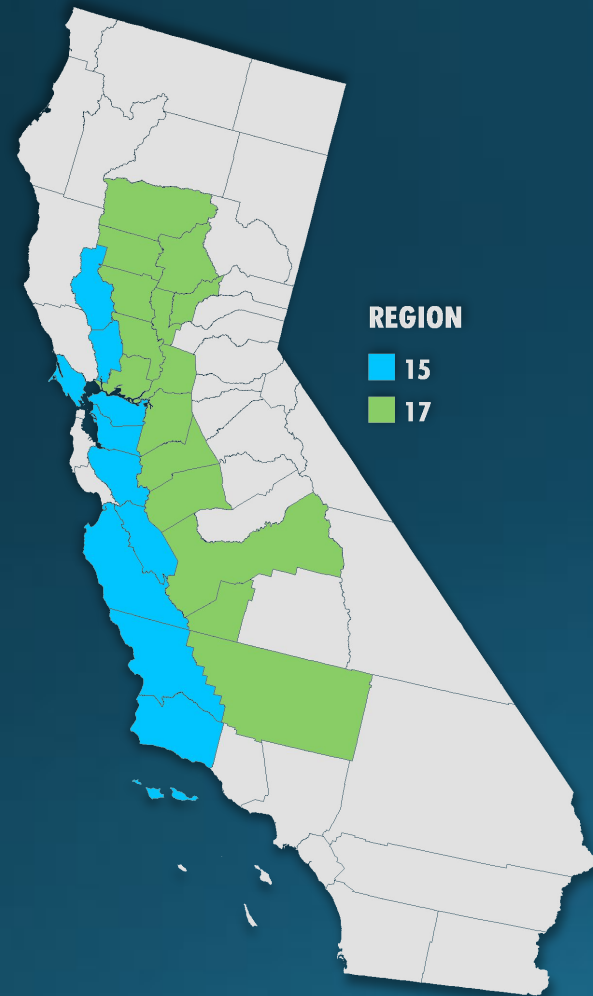
Harvest Table

Harvest Date	Grain?	Yield (lbs/ac)	Straw/Stover/H... Removal (%)	Delete
10/21/2000	<input checked="" type="checkbox"/>	1443	0	X

Grazing Table

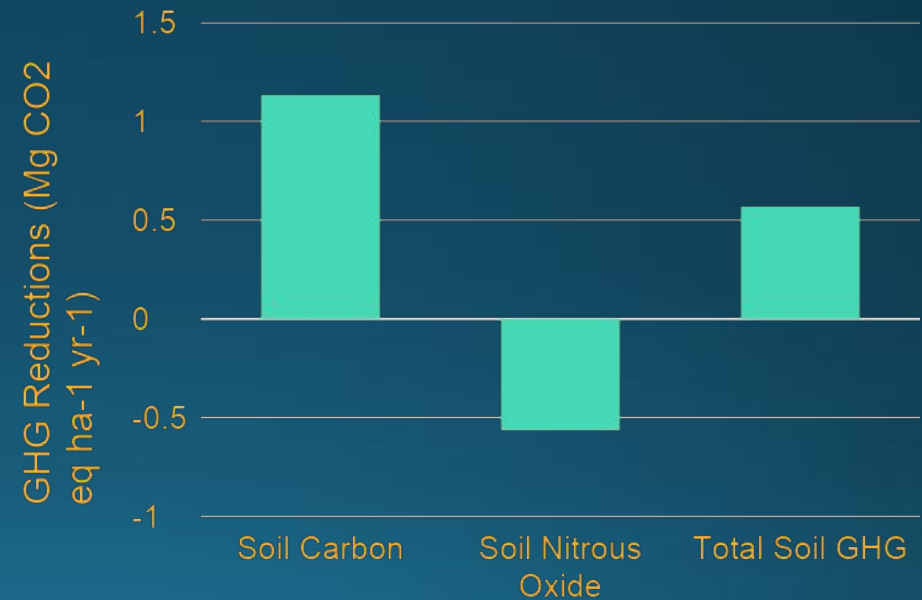
Start Dates	End Dates	Rest Peri... (days)	Utilization %	Delete
No data to display				

GHG Estimation Methods



Legume Cover Crops

Cover Crops: Add Leguminous Seasonal Cover Crop to Irrigated Annual Cropland



COMET-Planner - Step 1: Location; Step 2: Class

Evaluate Potential Carbon Sequestration and Greenhouse Gas Reductions from Adopting NRCS Conservation Practices

NRCS Conservation Practices included in COMET-Planner are only those that have been identified as having greenhouse gas mitigation and/or carbon sequestration benefits on farms and ranches. This list of conservation practices is based on the qualitative greenhouse benefits ranking of practices prepared by [NRCS](#).

[INTRODUCTION VIDEO](#)

Step 1: Begin by naming your project and selecting your state and county

Project Name:

State:

County:

Step 2: Select the class of conservation practices that best describes the practice you would like to evaluate



Cropland Management



Grazing Lands

Cropland To Herbaceous
CoverRestoration of Disturbed
Lands

Woody Plantings

Step 3: Select a NRCS Conservation Practice Standard and a Practice Implementation that best describes your system. You may add multiple practices. If you would like to add a practice under a different class of practices, return to Step 2.

[Need Help?](#)

COMET-Planner - Step 3: Selecting practice(s)

Step 3: Select a NRCS Conservation Practice Standard and a Practice Implementation that best describes your system. You may add multiple practices. If you would like to add a practice under a different class of practices, return to Step 2.

Conservation Practice Standard (CPS):

- Combustion System Improvement (CPS 372)
- Conservation Crop Rotation (CPS 328)
- Cover Crop (CPS 340)
- Mulching (CPS 484)
- Multiple Conservation Practices
- Nutrient Management (CPS 590)
- Residue and Tillage Management - No-Till (CPS 329)
- Residue and Tillage Management - Reduced Till (CPS 345)
- Stripcropping (CPS 585)

Conservation Practice Implementation:



- Intensive Till to No Till or Strip Till on Irrigated Cropland
- Intensive Till to No Till or Strip Till on Non-Irrigated Cropland
- Reduced Till to No Till or Strip Till on Irrigated Cropland
- Reduced Till to No Till or Strip Till on Non-Irrigated Cropland

COMET-Planner - Step 4: Report

Step 4: Enter the acreage associated with each conservation practice you selected

Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions*

(tonnes CO₂ equivalent per year) 

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO ₂ Equivalent
  Intensive Till to No Till or Strip Till on Non-Irrigated Cropland	100 ac	15	1	0	16
Totals	100	15	1	0	16

*Negative values indicate a loss of carbon or increased emissions of greenhouse gases

**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

[Download COMET-Planner Results](#)

COMET-Planner - Extras: Downloaded Report

COMET-Planner Report: Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions

Project Name:

State: Colorado

County: Larimer

Date: 2024/4/17 8:39:27

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO2 Equivalent
Intensive Till to No Till or Strip Till on Non-Irrigated Cropland	100	15	1	0	16
Totals	100	15	1	0	16

COMET-Planner - Extras: Detailed Emission Reductions

How are your carbon sequestration and greenhouse gas emission reduction estimates calculated?

Info

NRCS Conservation Practices	Soil Carbon	Biomass Carbon	Fossil CO2	Biomass Burning CO2	Biomass Burning N2O	Biomass Burning CH4	Liming	Direct Soil N2O	Indirect Soil N2O	Soil CH4	Total CO ₂ Equivalent	Minimum Total Emission Reductions*	Maximum Total Emission Reductions*
Intensive Till to No Till or Strip Till on Non-Irrigated Cropland	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.00	0.00	0.16	-0.05	0.57

*Minimum and maximum emission reductions represent the minimum and maximum total emissions over a range of soil, climate and management conditions within multi-county regions. Min/Max emissions are not estimated for all practices, due to limitations in quantification methods

**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

- - Carbon Sequestration, Greenhouse Gas Reduction
- - Carbon Loss, Greenhouse Gas Increase

These emission reduction coefficients may be used when assessing smaller areas.

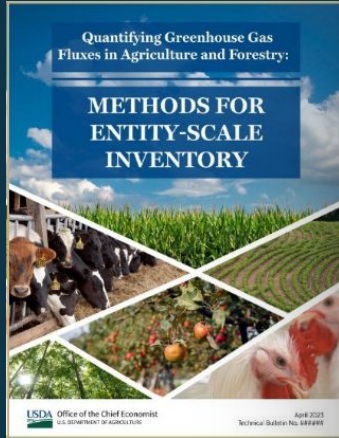
Use Case: Assessing 2 acres for the same CPS in the same county as the example above. $0.16 \times 2 \text{ acres} = \sim 0.32$ tonnes of total CO₂e

Cancel

NRCS Conservation Practices	Carbon Dioxide	Nitrous Oxide	Methane
Intensive Till to No Till or Strip Till on Non-Irrigated Cropland	0.15	0.01	0.00

Click to Show Detailed Emission Reductions

COMET-Tools: Support



Understanding Methods

Office of the Chief Economist
Climate Change Program Office
Technical Bulletin XXXX
April 2014

Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry :
Methods for Entity-Scale Inventory



HOME TOOL INFO HELP

Click the image below to Download the Comet-Farm and Comet-Planner Brochure

Brochure

Please contact us via email with any training requests at atappnel@colostate.edu.

COMET-Farm Events

Today	Apr 1	2	3	4	5	6
	11am COMET-Too			10am (ZOOM-MS)		
	7 11am COMET-Too			10am (ZOOM-MS)		
			17 10am (ZOOM-MS)			
	21 11am COMET-Too					
	28 11am COMET-Too		May 1			

+ Google Calendar

Trainings & Office Hours

Need Help? Widget

COMET-Tools Support

Got questions?

Search for help

Suggested articles

- COMET Farm vs COMET Planner Comparison
- Accessing API
- Crops with overlapping calendar years

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Thank you & Questions!

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Next steps in our outcomes estimation journey

- ❑ Join June 5 for the CAST webinar
- ❑ Fill out the 8-question (2-min) online evaluation survey
- ❑ Schedule a free “coaching” session with us
 - ❑ Email atappross@farmland.org, RE: Coaching Request
- ❑ Order a free print copy of the OET Guide
 - ❑ Keyword: “AFT outcomes tools”

