

Start Using COMET-Planner

What is COMET-Planner?

COMET-Planner is a web-based greenhouse gas inventory tool for land based systems and is designed for conservation scenario analysis based on conservation practice adoption. COMET-Planner was created as a simpler tool for regional assessments (by county) to visualize general greenhouse gas benefits for initial planning purposes.

Where is COMET-Planner available?

COMET-Planner is currently available in the contiguous United States. There is also a [California Healthy Soils Program COMET-Planner](#). For more information on COMET-Planner, please visit the program [information page](#) and/or contact cdfa.HSP_Tech@cdfa.ca.gov.

Let's Get Started:

Navigate to www.COMET-Planner.com

Navigate to the COMET-Planner dataset to download.

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

Project Name: State: County:

Step 1: Enter a project name and select a state/county for your assessment using the drop down menus.

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

Step 2: Select a class of conservation practices. The standards in Step 3 will change as you select each class.

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:

- Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to Irrigated Cropland
- Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to No-Till Irrigated Cropland
- Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to No-Till Non-Irrigated Cropland
- Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to Non-Irrigated Cropland
- Add Non-Legume Seasonal Cover Crop (with 25% Fertilizer N Reduction) to Irrigated Cropland
- Add Non-Legume Seasonal Cover Crop (with 25% Fertilizer N Reduction) to No-Till Irrigated Cropland
- Add Non-Legume Seasonal Cover Crop (with 25% Fertilizer N Reduction) to No-Till Non-Irrigated Cropland



Step 3a: Using the radio buttons, select which conservation practice standard to assess. You will be able to add more after Step 4.

Step 3b: Using the multi-select buttons, select the conservation practice implement that best matches your assessment. Use the vertical scroll bar to view all practices. As you select a practice in step 3, they will populate the table below.

Use the trashcan icon to delete unwanted practices and the i-icon to learn more about each practice 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
  Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to Irrigated Cropland	<input type="text" value="100"/> ac	124	-33	0	91
Totals	100	124	-33	0	91

*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](#)

Enter the total acreage this conservation practice standard will be applied to on the land. The greenhouse gas estimates will generate on the fly as you adjust the acres. The values provided reflect the average annual tonnes of CO₂ equivalent per year. There is an assumption that annual practices selected, such as cover cropping or tillage reductions, will be implemented yearly and perennial practices, such as buffer strips will be implemented in year one and maintained the following nine years.

Positive (blue) values indicate that there is a reduction of emissions or a sequestration may occur. Negative (red) values indicate a loss of carbon or increased emissions of greenhouse gases. You may also see "N.E. 2" in the table, which indicates that values were not estimated due to limited data on reduction of greenhouse gas emissions from this practice.

You may also download your COMET-Planner results by selecting the green button "*Download COMET-Planner Results*". The COMET-Team would recommend saving the results in this manner, as your location, conservation practices selected, and respective results will reset when you navigate away from the COMET-Planner page.

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

Emission reduction coefficients were largely derived using a sample-based approach and model runs in COMET-Farm, which utilizes USDA entity-scale greenhouse gas inventory methods. Coefficients were generalized by multi-county regions defined by USDA Major Land Resource Areas. Emissions estimates represent field emissions only, including those associated with soils and woody biomass as appropriate, and do not include off-site emissions, such as those from transportation, manufacturing, processing, etc. More information on quantification methods can be found in the [COMET-Planner Report](#)

Each emission reduction is calculated using the following equation:

$$\text{Emission reduction} = \text{Area (acres)} * \text{Emission Reduction Coefficient (ERC)}$$

As you populate the table above by selecting conservation practices and entering the respective acreage, the table under *How are your carbon sequestration and greenhouse gas emission reduction estimates calculated?* will also populate. Each practice will be listed with its emission reduction coefficient (ERC).

Emission Reduction Coefficients (ERC)

(tonnes CO₂ equivalent per acre per year)

NRCS Conservation Practices	Carbon Dioxide	Nitrous Oxide	Methane
Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to Irrigated Cropland	1.24	-0.33	0.00

[Click to Show Detailed Emission Reductions](#)



Select the *Detailed Emission Reductions* button to view the subsource category emission reduction coefficients (ERC).

Recommended Use of COMET-Planner:

This evaluation tool is designed to provide generalized estimates of the greenhouse gas impacts of conservation practices and is intended for initial planning purposes. Site-specific conditions (not evaluated in this tool) are required for more detailed assessments of greenhouse gas dynamics on your farm. Please visit [COMET-Farm](#) if you would like to conduct a more detailed analysis.

Contact Us

Please contact us via the [help desk](#) widget or send an email to apnrel@colostate.edu with any questions.



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Carbon and greenhouse gas evaluation for NRCS conservation practice planning

A *Need Help?* widget will follow you on every step of COMET-Planner (and COMET-Farm). The widget is populated with several FAQ's and *contact us* option when you cannot find a solution or experience a problem with the program.

