

COMET-Farm Step-by-Step Animal Ag (Dairy) Guide

Multi Year Accounting

Tasks:

1. Navigate to COMET-Farm.com and Create an account

- a. Navigate to www.comet-farm.com
- b. Using the Navigating COMET-Farm document [HERE](#), familiarize yourself with the COMET-Farm user interface.
- c. Using the Creating a COMET-Farm Account document [HERE](#), create a COMET-Farm account (if you have not already done so).
 - i. While you can use any component of COMET-Farm *without* creating an account, creating an account has many benefits. Review how COMET stores your project information and the benefits of creating an account [HERE](#).

2. Create new project

- a. Select *Tool* in the upper right corner of the COMET-Farm web page.
- b. Follow the instructions on [Creating a New Project](#) help document to begin your project.
 - i. For users new to COMET Animal Agriculture accounting, we would recommend just selecting *Animal Agriculture* as your accounting activity. You can always add other accounting activities later.
 - ii. Select *define activities* to proceed to the next task.

3. Information collection:

- a. Data required for COMET-Farm: property location, animal types, animal characteristics, and your change in management for the scenario comparison.
- b. Due to the layout of the interface, it may be useful to collect your management information ahead of time and simply transfer to the user interface. This can aid in data organization and also provides a simple way viewing all inputs together.
 - i. We do have a [Animal Ag \(Dairy\) Data Entry Spreadsheet](#) to assist in data collection prior to going through the user interface and outlines every data point COMET-Farm will ask for. Unfortunately, you cannot upload that spreadsheet to COMET. It is simply a tool to gather all of your management information before using the COMET-Farm interface.

4. Select Property Location

- a. COMET-Farm allows for zip code and animal specific greenhouse gas (GHG) accounting. When entering management details on the baseline and scenario management pages, you are tying the management details to that *specific zip code and animal*.

- b. Using the navigation window that appears after you define your accounting activity, enter the zip code of the general area of your property. Zip code will be used to determine temperatures for manure and housing related calculations.

Select Property Location

Enter your Zip code

What are your preferred units of measure? English ▾

Please enter all data in Pounds except where noted

<< Back
Save & Continue >>

- c. Once you've entered your zip code, select the orange button, *Save & Continue*.

5. Select Animal Types

Step 1
Activities
Step 2
Animal Agriculture ▾
Step 3
Report

Property Location →
Animal Types →
Animal Characteristics

Current Step

Select Animal Types

Select Animal Types ?

Cattle

Beef-Heifer Replacements ☐

Beef-Mature Cows/Cow-Calf ☐

Bulls ☐

Dairy-Dry Cows ☐

Feedlot Cattle ☐

Beef-Heifer Stockers ☐

Beef-Steer Stockers ☐

Dairy-Heifer Replacements ☐

Dairy-Lactating Cows ☐

Poultry

Broilers ☐

Laying Hens ☐

Ducks ☐

Turkeys ☐

Sheep

Feeder Sheep ☐

Flock Sheep ☐

Swine

Gestating Sows ☐

Lactating Sows ☐

Grow-Finish Pigs ☐

Weaning Pigs ☐

Other

American Bison ☐

Goats ☐

<< Back
Save & Continue >>
Set Baseline Period >>

- a. The Animal Types pane allows COMET-Farm users to define different animals within their operation.
- i. Check all of the animal types for which you want to include in your project. Once you have entered management data for these animals, you *cannot* go back and add or remove animal types to your project.

- ii. Proceed to animal characteristics for *multi-year accounting*. Multi year accounting is recommended for:
 1. Experienced COMET-Farm users
 2. Users looking to assess multiple years of animal agriculture management
 3. When management changes across multiple years. For example, a producer manages their dairy cattle differently year to year.
 4. Note that a multi year accounting report will look identical to the single year accounting report *EXCEPT* the report provides the **average annual tonnes of CO2 equivalent over the defined time period**.
- iii. For single year accounting, see our [Step by Step Animal Ag \(Dairy\) Single Year](#)
- b. To define your baseline years, click *Set Baseline Period >>*

6. **Enter Baseline Management Details:** In this section you will be asked to define your management practices for your Baseline Scenario (“business as usual,” current management, or how your animals are currently managed.).
 - a. Select the *end year* of your baseline period. The baseline end year is the last year before your management changes.
 - i. COMET-Farm defaults to a baseline period that begins with 2013. If, for example, you would like to assess GHG changes from installing an anaerobic digester in 2016 AND the feed type for your cattle varies year to year, you would set your baseline to end in 2015.
 - ii. Once you select your baseline end year, it cannot be changed.

The screenshot shows the 'Enter Animal Characteristics' section of the COMET-Farm tool. The interface is divided into several panes and sections:

- Management Details:** A green box at the top left of the interface.
- Navigation pane:** A vertical sidebar on the left containing:
 - Current Step:** 'Enter Animal Details' with a sub-section 'Current Category Selection' showing 'Dairy-Heifer Replacements' (checked) and 'Dairy-Dry Cows'.
 - Scenarios:** A list with 'Baseline' (checked) and 'Digester Install Practice'.
 - Activity Years:** A list with '2013' (checked) and '2014', '2015', '2016', '2017'.
- Animal Characteristics:** The main content area with a title 'Enter Animal Characteristics - Dairy-Heifer Replacements'. It includes instructions: 'Please define your herds. You may add up to 5 herds per animal category. For the purpose of this tool, a herd is defined as a group of animals managed within the same animal category but with different diets or different manure handling practices. Please think about the **Dairy-Heifer Replacements** and add additional herds if needed.' Below this is a 'Replacements' input field and an 'Add Additional Herd +' button.
- Navigation pane helps you move through your management inputs:** A green box on the right side of the interface.
- Green check specifies which animal type and herd you are currently entering data for:** A green box pointing to the 'Dairy-Heifer Replacements' and 'Baseline' options.
- Green check specifies from which year in your baseline you're currently entering activities:** A green box pointing to the '2013' year selection.

At the bottom of the interface are buttons for '<< Back' and 'Save & Continue >>'.

- b. Once you begin entering data, COMET-farm will default to entering data for the first year in your baseline period, 2013.

7. Number of Herds

- a. You may add up to 5 herds per animal category (e.g., 5 herds of dairy-dry cows, 5 herds of dairy-lactating cows). In this step, a herd is defined as a group of animals managed *within the same animal category* but with different diets, different manure handling practices, or different housing management. The default is 1 herd, and you will not be able to name the default or replacement herd.
 - i. Click *Add Additional Herd* to name and provide management details for another herd.
 - ii. COMET-Farm will prompt you to focus on one of your animal types at a time. For instance, in the above example, the user is being asked to input herds of Dairy-Heifer Replacements.
 - iii. Select *Save & Continue >>*
- b. **Note that COMET-Farm will force you to input accounting information for one animal type at a time each year.** For example, if you have two herds of Dairy-Dry Cows and two herds of Dairy-Heifer Replacements, you will be prompted to enter all of the information *for both herds* of Dairy-Dry Cows (one at a time) in 2013 before being asked to enter information for the herds of Dairy-Heifer Replacements in 2013.
- c. **To keep track of what animal type/herd/year/scenario you're entering data for**, view the navigation panes on the left side of your screen. The current selection will be denoted by a **green check mark**.

The screenshot displays three navigation panes from the COMET-Farm interface:

- Current Step:** This pane is titled "Enter Animal Details". It contains two sections: "Current Category Selection" with a green checkmark next to "Dairy-Heifer Replacements", and "Current Herd Selection" with a green checkmark next to "Replacements" and "Herd 2". Below these are the options "Dairy-Dry Cows" and "Dairy-Lactating Cows".
- Activity Years:** This pane is titled "Activity Years" and shows a list of years: 2013, 2014, 2015, 2016, and 2017. A green checkmark is next to the year 2013.
- Scenarios:** This pane is titled "Scenarios" and contains a "Scenario List" with links for "[new]" and "[delete]". Below the list, there is a green checkmark next to "Baseline", followed by the text "Digester Install Practice".

8. Animal Details

- a. You will next be prompted to enter animal details for the *first herd* of your *first animal type* in the *first year* of your baseline. Enter how many cattle you have, on average, per month across a roofed facility, dry lot, and pasture range. If your number is the same across all months, you can use the 📋 icon to copy your January value to all months.
- b. Then enter the average daily feed intake and the average live body weight (in pounds). If average daily feed intake is unknown, leave as 0. A default of 3% of the average live body weight will be used to estimate dry matter intake (DMI). When average daily feed intake is known, DMI is estimated using animal diet feed characteristics.

Enter Animal Characteristics - Dairy-Heifer Replacements

How many Dairy-Heifer Replacements do you have, on average, per month?

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Roofed Facility	85	85	85	85	85	85	85	85	85	85	85	85
Dry Lot	0	0	0	0	0	0	0	0	0	0	0	0
Pasture Range	0	0	0	0	0	0	0	0	0	0	0	0
Average Daily Feed Intake (lbs)	17											
Average live body weight (lbs)	800											

Average Daily Feed Intake
 If average daily feed intake is unknown, leave as 0. A default of 3% of the average live body weight will be used to estimate dry matter intake (DMI). When average daily feed intake is known, DMI is estimated using animal diet feed characteristics.

<< Back
Save & Continue >>

- c. For Dairy-Lactating Cows, you'll also be asked to enter days in milk and milk production per day (lbs)
- d. Once you press *Save & Continue*, you'll be prompted with a pop-up message to **repeat this step** for any other herds within this animal type for this year (see below).

Continue to Next Herd

Herd **Replacements** is complete. Click next to proceed to **Herd 2**. Click cancel to continue editing.

Cancel
Next

9. Types of Feed

- a. First, select the months that the *same feed types are fed to the selected herd* in the "Date Range" table. If animals are fed the same feed types all year long, clicking on the box to the left of "Month" at the top of the "Date Range" table will select all of the months. Select "Remove all dates and start over" to delete the previous entries if needed.
 - i. Note that you will have to have feed types entered into all months before you can proceed to the next management pane.
 - ii. Feed stuff selected will need to include all types of feed the animal is provided, including representing feed the animal may consume on pasture.
 - iii. In the example below, the cattle are given the same feed types across all months.
- b. Once you've selected your first range of months of the same feed types (e.g. May-August), you can choose *the types of feed consumed by the selected herd for the selected month(s)*. Selecting one of the "Feed Stuff" items (e.g., alfalfa, grass) allows you to then select a Category (e.g. silage, grain screenings, hay). Click Add to populate the Date Range above.

Enter Animal Characteristics - Dairy-Heifer Replacements

1. Select a range of months for your Dairy-Heifer Replacements in the table below to enter in your feed types. Complete all months before proceeding to next panel. ?

Date Range		
Month	Completed	Feed
<input type="checkbox"/> Jan	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Feb	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Mar	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Apr	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> May	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Jun	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Jul	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Aug	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Sep	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Oct	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Nov	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls
<input type="checkbox"/> Dec	Yes	Grass Hay, Corn Silage, Mature Well Eared, Corn Grain, Whole, Soybean Meal, Solv. Ext. 44% CP, Cottonseed Hulls

Remove all the dates and start over

2. Choose the types of feed consumed for your Dairy-Heifer Replacements for the month/months in your Replacements.

Feed Stuff ?	Category ?	Your Selections ?
Search <input type="text"/> Alfalfa Almond Ammonium Apple Artichoke Avocado Bahiagrass Bakery Bananas Barley Beans Beet Bermudagrass Birdsfoot Blureet Blood Meal Bluegrass Bluestem Bread		Cottonseed Hulls Soybean Meal, Solv. Ext. 44% CP Corn Grain, Whole Corn Silage, Mature Well Eared Grass Hay

Add >>

<< Remove

Confirm Selections

c. Once you Confirm Selection, enter the percentage of each feed for your herd. The percentages of all feeds for the selected months must equal 100%. Click *Done – Save feed types for current selected date* to either select a new range of months or move to the next step.

3. Enter the percentage of each feed for your Dairy-Heifer Replacements in Replacements. ?

Cottonseed Hulls	<input type="text" value="6"/>
Soybean Meal, Solv. Ext. 44% CP	<input type="text" value="8"/>
Corn Grain, Whole	<input type="text" value="10"/>
Corn Silage, Mature Well Eared	<input type="text" value="37"/>
Grass Hay	<input type="text" value="39"/>
Total % of Diet	<input type="text" value="100"/>

Done - Save feed types for current selected date

- d. If you cannot find a feed type that matches your animal feed type in the selection box, please refer to the feed stuff table in the [Blue Book](#) (page 369 or Appendix 5-B) to choose the feed that closely matches yours based on dry matter intake and other parameters.
- e. Once you press *Save & Continue*, you'll be prompted with a pop-up message to **repeat this step** for any other herds within this animal type for this year.

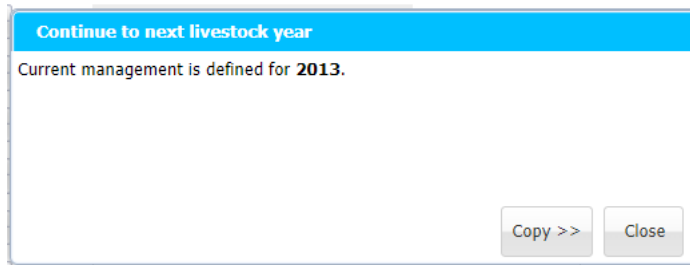
10. Housing Details

- a. Select *how manure is handled within your housing type* (roofed facility, dry lot, pasture range paddock)
 - i. If handled using Pit Storage:
 - 1. Select whether the pit is deep or shallow
 - 2. Enter the number of days manure is in housing
 - ii. If handled using a Bedded Pack:
 - 1. Select whether you use an active mix or no mix
 - 2. Enter the number of days manure is in housing
 - iii. If manure is Flushed or Scraped:
 - 1. Enter the area of the barn floor covered with manure (sq. feet)
- b. Once you press *Save & Continue*, you'll be prompted with a pop-up message to **repeat this step** for any other herds within this animal type for this year.

11. Manure System Types

- a. Select which *manure management systems are currently in use*. Begin by entering whether or not you use a solid/liquid separator.
 - i. If you do use a solid/liquid separator, select from the drop-down menus:
 - 1. The separator type (e.g., roller press, vibrating screen, etc.)
 - 2. The percentage of solids removed
 - a. Depending on the separator type selected, COMET provides default values on the percent solids removed. Users can modify this default value.
 - 3. The primary solid treatment method
 - 4. The primary liquid treatment method
 - ii. If you do *not* use a solid/liquid separator, select from the drop-down menu:

1. The final or end treatment/outdoor storage method (e.g., composting, daily spread, etc.)
 - b. Once you press *Save & Continue*, you'll be prompted with a pop-up message to **repeat this step** for any other herds within this animal type for this year.
12. Manure System Details. Depending on your selections, you might be asked to provide more details about your manure system.
- a. If you *selected temporary stack and long-term stockpile*, enter:
 - i. The system cover type
 - ii. If the manure is stored short term (less than six months) or long term (more than six months)
 - b. If you selected *composting*, select the composting method.
 - c. If you selected *aerobic lagoon*, enter:
 - i. The total volume of the lagoon (cubic feet)
 - ii. If the system aeration is natural or forced
 - d. If you selected *anaerobic digester*, select the digester type
 - e. If you selected *aerobic treatment*, enter:
 - i. The system cover type
 - ii. The exposed surface area (square feet)
 - f. Once you press *Save & Continue*, you'll be prompted with a pop-up message to **repeat this step** for any other herds within this animal type for this year.
13. Manure Details - based on what you have entered in the previous panel, COMET will provide default values for total dry manure produced and percent nitrogen content of manure each month. Users can modify any of these default values.
- a. Enter the total dry manure produced per head per day (lbs). Use the 📋 icon to copy your animal count to every month.
 - b. Enter the average percent nitrogen content of the manure each month. COMET-Farm will provide default values if you do not have a lab report.
 - c. Once you click *Save & Continue*, you'll be notified that you completed management for 2013 and prompted to continue to the next livestock year in your baseline. You will have the option to click *Copy >>* to replicate entries for your first year of management to subsequent years.



14. If you select *Copy >>* a *copy* window will appear. The current year and herd you are working on will be selected with a green check mark. If the project had more than one herd, the additional herd(s) would appear below the default or replacement herd. Years highlighted with a red background indicate that management details have already been entered for that year.

Copy Years?

Animal Details for Dairy-Heifer Replacements for 2013 is complete.

If you would like to copy the animal characteristics details to other years, select those years and click the Copy button.

*Management is required for every defined herd, however, herds are not required for every year. Using the same example above with a baseline period 2012-2015: if a producer sells one of their two herds off at the end of 2013, they will not need to enter that herd, and management, in 2014 - 15. The report, however, will still average the emissions over the entire baseline period(4 years) for all herds.

	2013 select	2014 select	2015 select	2016 select	2017 select
Replacements select	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Herd 2 select	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- The Copy function minimizes the data entry load for users if multiple years follow the same or similar management practices, allowing the user to enter the details for one herd/year and copy to other herds/years. If there is only a slight change in management practices between two years, it may be beneficial to copy the information from one year to a single other year, then make the necessary adjustments. Then, repeat the copy function to any subsequent years with the same management.
- To copy information from one herd/year to another:* check the boxes for the corresponding herds/years you would like to copy the data to.
- If you do not want to copy management details, select, No thanks, continue>>.*
 - To finish entering baseline details for your first animal type, select the **next undefined** year in the grey pane to the left. Repeat steps 6-14 until all baseline years are populated with management practices.
 - You cannot proceed to the next animal type or your management scenario if your baseline for all herds, animal types, and years is incomplete.*

15. Repeat these steps

- a. If you have *multiple herds or multiple animal types* in your baseline scenario, you will have to repeat these steps for each herd/type before moving on to your management scenario.

16. Enter Future Management Details: Once baseline scenario is completed, you will be able to define new scenarios for future management. You can either copy your entire baseline scenario and then modify only the necessary fields or start a completely new future scenario (using the same animal type).

- a. COMET-Farm allows for a maximum of 10 scenarios.

17. A small window will appear where you will be given the option to run a report, create a new scenario, or continue editing your baseline scenario. If you choose to *create a new scenario*:

- a. We would recommend a short (25 characters), descriptive title. This will help when interpreting reports.
- b. If making small changes to the future scenario (ex. Installing an anaerobic digester or switching feed types), **select the box *Copy management information from Baseline*** to minimize the data entry process for the future scenario.
 - If you would like to start from scratch for your future scenario, Add the descriptive title and select *Start or Create new scenario*.
- b. If you only want to report on your current management practices, you will still need to create a new scenario. You can select copy management from baseline, and click Continue to Report. There should be no change between the two scenarios.

18. If you copied the management information from your baseline to the future scenario, your future scenario will now look *identical* to the *baseline scenario*.
19. Management details can be added, modified, or deleted in the *exact* same manner as the *baseline management* you completed in steps 7-15. The only thing you cannot change is animal type (but you can adjust number of herds).
20. When you have completed modifying and checking all management for your first scenario, click *Save & Continue* until you're prompted to either *Continue to the report, add another scenario*, or keep editing.
 - a. *Create a new scenario*- Each project can accommodate up to 10 future scenarios.
 - i. If you have more than one scenario, you can only proceed to the report if all management data in all scenarios are completed.

b. Keep editing if you need to review your changes

21. **Continue to Report Page.** You will be taken to the report page. If you have created an account, you can navigate away from the browser and the system will keep your report active.
22. For a detailed breakdown of the report, please visit this page on [Interpreting Animal Agriculture Report](#).

This document was created by Haley Nagle & Andie Conlon, Outreach Specialists on the COMET Team.