Farm management system User Guide:

Introduction

Welcome to the official farm_management_system user guide. These documents are intended for people who will be using farm_management_system for record keeping and farm management.

Logging in

The first step to using farm_management_system is logging in. All records are private by default, and can only be viewed people with a username and password.

To log in, first you need to know the address of your farm_management_system site. If your farm_management_system is hosted by someone else, they will be able to point you to the correct URL.

Enter the URL into the web browser on your computer, phone, or tablet, and you should see a login form. Enter your username and password, and click "Log in" to begin using farm_management_system.

Dashboard

The first thing you will see when you log in is the farm_management_system dashboard.

On the left is the farm map, where you will see any areas that you have mapped. You can use this to navigate to records within farm_management_system by clicking on an area and then clicking on the available links within the area popup.

On the right are the todo lists. The "Plan" shows all upcoming tasks that need to be done. If you miss a task, a "Late tasks" list will also be displayed underneath.

Navigation

farm_management_system is designed to make your records approachable from multiple angles, so it is easy to find records you made in the past, and add new ones in the future.

The main menu at the top provides direct links to the 4 main types of records:

- Areas - Places on or off the farm
- Assets - Things of value that you are managing
- Logs - Events that are related to areas, assets, and people
- People - People with logins to farm_management_system

These pages will list all areas, assets, logs, or people within the system. Filter and sort options allow you to narrow down the lists to find the record you're looking for.

You can also use the map to navigate to records that relate to specific areas. For example, if you want to view the record for a specific planting, you can click on the field in the map where the planting is and you will see all assets in that field.

If you are looking for a specific log, you can either find it via the "Logs" main menu (and submenus), or you can find the area or asset that the log is associated with, and the log will appear there as well.

All your records can be connected and related in this way to make navigating them easier.

Mapping your farm

farm_management_system gives you the ability to organize all of the various places on (and off) your farm. These places are referred to as "Areas" in farm_management_system, and they can be referenced when you are logging events. They are specifically useful in movement logs for setting location of assets.

To create an area, go to the Farm Dashboard and click the "Add an area" button. This will take you to a form for defining an area. Here is a quick overview of the fields available to you when you are describing an area:

- **Name** - The first (and only) thing an area needs is a name. All the other fields are optional.
- **Area type** - farm_management_system uses the concept of "area type" to organize and color-code areas on a map. Some of the types available include: Property, Building, Field, and Water. The area type field is not required, but if you do not use it then the area will not be displayed on the main map.
- **Geometry** - The Geometry field lets you draw your area on a map, using points, lines, and polygons (see a more detailed description below).
- **Description** - This is a simple text field that you can use to describe each area in further detail. It can be used to take notes, but it is recommended that any activities be recorded using logs instead, because they have a timestamp associated with them.
- **Photo(s)** - This field lets you attach photos to your area.
- **Files** - This field lets you attach files to your area. You can also use this to upload KML files and automatically import them into the Geometry field above (see more information below).

- **Relations** - The "Parent" and "Weight" fields let you define a hierarchy and order to your areas. You can edit these fields individually on each area, or you can use the drag-and-drop hierarchy editor - which is much easier for moving a lot of areas around at once (more details below).
- **Flags** - Flags can be added to areas (as well as assets and logs) for easier searching/filtering. Some flags are provided by default (eg: "Priority", "Needs Review", "Monitor"), and modules can provide additional flags (eg: "Organic" and "Not Organic" provided by the [Organic module]).

Using geometry fields

Here are some common things you will do with the geometry fields in farm_management_system:

Zooming

There are four ways to zoom in/out:

1. On touch screens, you can "pinch zoom" using two fingers.
2. With a computer mouse, you can use the scroll wheel to zoom in/out.
3. The plus (+) and minus (+) buttons in the top left of the map control zoom.
4. There is a "Geolocate" button in the upper left (looks like a bullseye) that will automatically zoom in to your current location. On a computer this will use your IP address, and on a mobile device it will use your GPS.

Drawing

There are four buttons for drawing shapes:

1. **Point**: Click on the map to create a point.
2. **Line**: Create a series of line segments by clicking points on the map, and double-clicking when you're done. You can also hold shift to draw freehand.
3. **Circle**: Create a circle by clicking where you want the center to be, dragging the circle outward to expand it, and clicking again to finish.
4. **Polygon**: A polygon works the same as a line, except it will create a closed shape at the end, whereas a line will not be filled in.

Modifying

There are three buttons for modifying shapes:

1. **Edit**: Click the edit button, and then click a shape to select it. You can click and drag any of the vertices to modify the overall shape.

2. **Move**: Click the edit button, and then click a shape to select it. Then click and drag the shape to move it to a different position.
3. **Clear**: The clear button will clear ALL shapes from the map. If you do accidentally click this, refresh the page WITHOUT saving, and you will revert to the previously saved shapes. Note that this will also revert any other changes to your area that you haven't saved.

Importing a KML file

KML files are special shape files that define a geometry on a map. They can be created with various GIS/mapping software. If you already have your farm mapped in another software (like Google Earth), you can export KML files for each area and then import them into farm_management_system's geometry fields.

To import a KML file, follow these steps:

1. Create a new area (or edit an existing one).
2. Scroll down to the Files field and upload your KML file.
3. Scroll up to the Geometry field, and just below the map you will see a button labeled "Find using Files field". If you uploaded a valid KML file, you will see the shape(s) appear in the map.

Remember to save!

When you're done modifying your area, remember to click the Save button at the bottom of the page to save your changes.

Organizing areas hierarchically

There are two ways to arrange areas hierarchically in farm_management_system:

1. When you are editing an individual area, click "Relations" at the bottom and use the "Parent" and "Weight" values to define the area's relationship to other areas.
2. Or, you can click and drag all your areas at once into a hierarchical list. To do this, click on the Areas link in the main menu, and in the right column you will see a list of all your areas with a heading of "Hierarchy (change)". Click "(change)" to be brought to the hierarchy editor. Click and drag the areas up and down, and left and right to arrange them how you want, and then click "Save" at the bottom of the page.

Generate beds

farm_management_system includes a special "Area Generator" module that makes it easy to automatically generate a whole bunch of areas in bulk. The original goal was to make it easier to generate parallel beds within a field, but it may provide additional possibilities in the future.

To use the area generator to generate beds, follow these steps:

1. Go to the "Areas" page (from the main menu) and click the "Area generator" tab.
2. Select the field that the beds will be created within.
3. Set the "Area type" to "Bed".
4. Enter the number of beds that should be generated within the field.
5. Set the orientation of the beds, and use the "Preview" button to see how they look.
6. When you are satisfied with the preview, click the "Generate" button to generate the beds.

Beds will be numbered and labeled using the parent area's name.

Logging events

Logs are records of all kinds of events. You can be as granular as you want: the more information you're recording, the more you can look back on and learn from in the future.

Planning ahead

Planning ahead in farm_management_system is exactly the same as recording things that already happened. The only difference is that the date is in the future, and the log is "not done".

All events in farm_management_system are entered as logs, and all logs can be marked as "done" or "not done". So to plan an event in the future, create a log with a future date, and make sure the "done" box is not checked.

Logs that are in the future and "not done" will appear in your "Upcoming Tasks" list on the dashboard. Underneath that is a "Late tasks" list, which shows all "not done" logs with a date in the past. So as time goes by, you can mark your logs as done (or not), and it will keep track of what happened and what didn't.

Calendar

In addition to the standard lists by log type, you can also view all logs in a calendar format. This is available via the main menu, next to "My Account", or directly at `farm/calendar`. Month, week, day, and year views are all available.

Standard log types

There are a number of different type of logs in farm_management_system - each with its own purpose and set of fields. Some of the general log types are described below, but there are also other log types that pertain to specific asset types.

Activities

Activities are a sort of catch-all, or default, log type, which can be used for general planning and recordkeeping of activities that don't fit any of the other, more specific, log types.

Observations

Observations are used to record any kind of passive observation on the farm. For example, seeing that a planting has germinated is an observation. This is a very flexible log type that can be used for a lot of different things. It comes with it's own "Observation Type" vocabulary for defining your own custom categorizations.

Inputs

Input logs are used to record resources that are put into an asset. Fertilizer (for plantings) or feed (for animals) can be recorded with input logs.

Harvests

Harvest logs are used to record harvests.

Other log types

In addition to the standard log types described above, there are a few other types provided for specific purposes. Note that these log types are provided by modules that may not be turned on by default in your farm_management_system. If you do not see these types in your farm_management_system, turn on the applicable module (or ask you farm_management_system host to do so for you).

Soil tests

Soil test logs can be used to record when you have a soil test performed. They can be linked to a specific field or area, and you can specify the exact points on a map where samples were taken from. Integration is also provided with the US NRCS Soil Survey

API, which allows you to view soil type map overlays, as well as look up soil name for the specific sample points in your soil tests.

Water tests

Water test logs can be used to record when you have a water test performed. Similar to soil test logs, they can be linked to a specific field or area, and you can specify the lab that performed the test. Some regulatory guidelines require that water tests are taken for both field and pack house water sources.

Sales

Sale logs provide the ability to record the sale of specific assets. You can specify quantity sold, unit price, total price, customer, and invoice number. Sales logs can only represent the sale of a single item, and are not intended for use as multi-item invoices. The primary purpose of sale logs is to connect the final dots for food traceability.

Log features

Task assignment

Logs can be assigned to one or more person(s) in farm_management_system using the log's *Owner* field. Users can view a list of all logs assigned to them by clicking "My Account" in the menu and then selecting the "Logs" tab of their user profile.

Categorization

Logs can be assigned to one or more categories. A set of predefined categories are provided by farm_management_system, and more can be added by users. Log categories enable you to organize, sort, and filter your logs in ways that make sense to you, so you can find the logs you need easily in the future.

Managing assets

All the important and valuable things on your farm are represented as "assets" in farm_management_system. Assets include Plantings, Animals, Equipment, etc.

Assets are organized into different sections in the farm_management_system interface, and can be accessed from the main menu. You can add assets from within each asset type's dashboard.

Asset fields

Each asset type will have its own set of fields, but some of the common ones include:

- **Name** (required) - The name of the asset.
- **Location** - This is actually not a real field. It is a shortcut for creating a log that assigns the asset to a location. For more information see Movements and location.
- **Photos** - This field lets you attach photos to your asset.
- **Description** - This is a simple text field that you can use to describe each asset in further detail. It can be used to take notes, but it is recommended that any activities be recorded using logs instead, because they have a timestamp associated with them.
- **Flags** - Flags can be added to assets (as well as logs and areas) for easier searching/filtering. Some flags are provided by default (eg: "Priority", "Needs Review", "Monitor"), and modules can provide additional flags (eg: "Organic" and "Not Organic" provided by the Organic module).

Asset cluster maps

In the dashboard of each asset, there is an "asset cluster map" that displays counts of assets in a map, along with the geometries of their locations.

They are called "cluster" maps because they use a feature of the Openlayers mapping library called a "Cluster source". This means that the location of all assets of a particular type (eg: animals) are loaded into a map at once, and they are "clustered" into points based on their proximity to one another.

So if you have 20 animals all within the same relative area, you will see a single point with a "20" on it. You can click on that point to see a list of the animals, and if you zoom in, that point will automatically break up into multiple other cluster points, showing more precise locations.

Here's a little more nitty-gritty on how this works: logs are used to record the location of assets in farm_management_system, along with a geometry field for storing precise geodata about location. This geometry is being loaded into cluster maps twice. The first is to draw the actual geometry of the asset location. And the second is to generate the cluster points. The points themselves are just the "centroid" of the geometry itself - which basically means it's the average centerpoint, represented in latitude and longitude. So by displaying both the actual geometry, and the centroid points, you're able to get a very nice overview of exactly where assets are on your farm. Pretty cool huh?

Archiving assets

Assets can be archived so they do not show in farm_management_system unless you specifically want to see them. So for example, when you are done harvesting a planting, you can mark it as "archived" to hide it in the list of plantings. Archived records can be retrieved using the "Filter/sort" options on asset listing pages.

Plantings

farm_management_system can be used for very fine-grained crop planning and record keeping. It can be used by large or small operations, nurseries, seed producers, breeders, and home gardeners.

The asset type used to manage crops is called a **Planting**.

Plantings can be used to represent groups of plants (eg: a field of corn, or a group of seedlings), or it can be used to represent individual plants (eg: in the case of nurseries).

Crops/varieties

When you create a planting asset, you will need to define what **crop/variety** it is. Crops/varieties represent the various **types** of plantings you grow. These can be very general crop names (eg: "Broccoli") or very specific breeds or varieties (eg: "Belstar F1 Organic Broccoli").

Plantings are the specific asset you are growing, whereas crops/varieties are used to categorize and define planting types. You may have multiple plantings of the same crop/variety. Consider the following example:

> 1 pound of red lettuce seed was purchased and seeded 4 times over the course of 8 weeks (every two weeks).

In this example, there would be 4 planting assets with a crop/variety of "Red lettuce":

- 2017 Red lettuce planting 1
- 2017 Red lettuce planting 2
- 2017 Red lettuce planting 3
- 2017 Red lettuce planting 4

The way you name your plantings is up to you - this is just an example. Including the year at the beginning and the planting number at the end is helpful when you are looking at long lists of plantings.

Planting logs

In addition to the standard log types that all farm_management_system assets share (activities, observations, inputs, and harvests), there are two log types that are specific to plantings: seedlings and transplanting.

Seeding logs represent when seeds were planted in the ground or in containers. With a seeding log, you can specify the seeding quantity (eg: 100 lbs, 20 72-plug trays, etc), and you can specify where the seeding occurred (using the movement fields) so that farm_management_system knows where the planting asset is located.

Transplanting logs represent when a planting was transplanted from one place to another. Similar to seeding logs, transplantings can have a quantity and a location.

If you are direct seeding into the field, you may only use the seeding log. If you are purchasing starts from another grower, you may only use the transplanting log. If you are starting your plantings in a greenhouse and then planting them out in the field, you may use both a seeding and transplanting log.

Planting plan

When you add a new planting, you will see a special "Plan" fieldset, which lets you specify seeding and transplanting dates and locations. By filling in these fields when you create a planting, you can let farm_management_system automatically create a seeding and/or transplanting log for you.

You can optionally mark the logs as "done" immediately, which is useful if you are adding information about past plantings. If you have not performed the seeding or transplanting yet, do not mark it as "done" so that it will appear in your todo list.

Animals

farm_management_system can be used to manage animal/livestock records.

An "Animal" asset type is provided for representing animal records, and all of the standard farm_management_system log types can be used to record events and activities.

Animal records can be used to represent either individual animals, or multiple animals (see "Inventory / head counts" below).

Species/breeds

When you create an animal asset, you will need to define what **species/breed** it is. Species/breeds represent the various **types** of animals you manage. These can be very general names (eg: "Cattle") or more specific breeds (eg: "Jersey cattle").

Animal groups/herds

Animals can also be organized into groups using the Group asset type. This is useful if you always manage certain animals together. It is also possible to assign animals to more than one group. This can be used in many different ways to help manage large numbers of animals in farm_management_system. See the Group asset guide to learn more.

Inventory / head counts

A single animal record can be used for managing more than one animal. This is useful in cases where animals don't need to be tracked individually, for instance with flocks of birds or heads of cattle (where individual tagging is not necessary for record keeping purposes).

To learn how to use inventory adjustments to track animal head counts over time, read the inventory use guide.

Q: Should I use inventory or groups for my animals?

This comes down to whether or not you need to maintain separate records for individual animals. If you do, then create a separate animal asset for each animal, and you can optionally organize them into group assets after that. If you don't need individual animal records, you can create a single animal asset and use the inventory features to track a head count over time with logs. Or, you could do both! Perhaps you have a herd (group asset) with some individual animals, and some larger groups of animals (head count). It's just a matter of how granular you need your record keeping to be.

Movements

Animals can be moved from place to place in farm_management_system using movement logs. You can also filter your animal list down to animals within a certain group, select all, and create a combined movement log for all of them at once. This is a great way to manage grazing records as you move animals from paddock to paddock. For more general information on moving assets in farm_management_system, read the page on movements and location.

Animal logs

In addition to the standard log types that all farm_management_system assets share (activities, observations, inputs, and harvests), the livestock module provides two additional log types that are specific to animals:

Birth logs can be used to record the birth of one or more animals on the farm. Birth logs can optionally reference the mother animal, and when they are saved they will automatically update the "Parents" and "Date of birth" fields on all referenced child animals. You can view a list of a mother's birth logs from her page, as well as add new ones. The "Date of birth" field on animal records will automatically link back to their birth log (if one exists). The child animal asset records must be created before the birth log, so that they can be referenced, but the livestock module also provides a "Birth" quick form that will create the children and birth log all in one step.

Medical logs can be used to record animal health records. This can be a veterinary visit, administering medicine/vaccinations, or other medical procedures. You can also use standard **Input** logs when administering medicine or vaccinations, if you prefer, and reserve **Medical** logs for more serious events/procedures.

Equipment

farm_management_system can be used to manage equipment assets on the farm.

Equipment movements and activities can be recorded via standard log types, and a special **Maintenance** log type is provided specifically for keeping equipment maintenance records.

Equipment logs

In addition to the standard log types that all farm_management_system assets share (activities, observations, inputs, and harvests), the equipment module provides an additional log type that is specific to equipment: maintenance.

Maintenance logs can be used to record when you perform maintenance on a piece of equipment. This can be a repair, a tune-up, an oil change, a cleaning, or anything thing else that is maintenance related to the proper use and functioning of the equipment. All your maintenance records can be organized, categorized, and filtered like other log types in farm_management_system.

Suggested uses

- Keep track of equipment location via movement logs.
- Record oil changes, repairs, and inspections with maintenance logs.
- Use activity logs to record equipment use.

- Track fuel usage with input logs.

Compost

farm_management_system can be used to manage all types of compost production activities. The *Farm Soil: Compost* module provides a generic "Compost" asset type, which can be used with various log types to record activities, observations, inputs, harvests, etc. The compost asset can be used to represent a compost pile, windrows, vermicompost, tea, or any other form of production.

Sensors

In addition to manually-entered records, farm_management_system also provides a framework for receiving data from automated environmental sensors. The *Farm Sensor* module adds a **Sensor** asset type, which can be tracked like any other asset.

Sub-modules (like *Farm Sensor: Listener*) extend the Sensor asset type by providing integration with external devices. Additional modules can be built to connect to specific types of sensors, if necessary.

It is possible to assemble your own sensors with inexpensive components and send their data to farm_management_system without any soldering or programming.

Farm Sensor: Listener

The *Farm Sensor: Listener* module is a general-purpose sensor sub-module that provides a simple "Listener" sensor type. Each sensor asset that is denoted as a listener receives a unique URL with a public and private key that data can be pushed to using standard HTTP requests with JSON-encoded data. Data is stored in the database and is displayed in the sensor asset within farm_management_system.

The listener module is useful for simple data streams. For more complex data, a more customized sub-module may be necessary.

Posting data to a listener

Data can be posted to the listener using a standard HTTP request.

Each sensor will have a unique URL endpoint, which contains both the public key (as part of the address), and the private key (as a URL query parameter). This can be found in the configuration settings for the sensor asset within farm_management_system.

It is recommended that you serve farm_management_system over an HTTPS connection, so that the keys are encrypted in transit.

URL example:
`https://myfarm.farm_management_system.net/farm/sensor/listener/xxxxxx?private_key=yyyyyy`

The endpoint expects a JSON object with name/value pairs, and an optional timestamp.

JSON example: `{ "timestamp": 1541519720, "value": 76.5 }`

If the timestamp is omitted, farm_management_system will assign the data a timestamp based on the time that the request is received.

JSON without timestamp: `{ "value": 76.5 }`

Multiple sensor values can be included in each request (if a device measures more than one metric, for example). The name given to each value can be any string of numbers and letters other than "timestamp", which is reserved. Each name/value pair will be stored in a separate row in the database.

JSON with multiple values: `{ "timestamp": 1541519720, "temperature": 76.5, "humidity": 60 }`

The following `curl` command demonstrates how to post simple data to a sensor from the command-line.

```
curl -H "Content-Type: application/json" -X POST \
-d '{ "timestamp": 1541519720, "value": 76.5 }' \
https://myfarm.farm_management_system.net/farm/sensor/listener/xxxxxx?private_key=yyyyyy
```

Pulling data from a listener

Data can also be retrieved from the sensor via the same API endpoint, using a `GET` request instead of a `POST` request. The URL is the same as the URL for posting data.

URL example:
`https://myfarm.farm_management_system.net/farm/sensor/listener/xxxxxx?private_key=yyyyyy`

The private key must be included, unless public API read access is allowed (see below).

Only the most recent data point will be returned, unless additional query parameters are provided for limiting/filtering the data. Available parameters include:

- `name`: Filter to data with a matching name.
- `start`: Filter data to timestamps greater than or equal to this start timestamp.
- `end`: Filter data to timestamps less than or equal to this end timestamp.

- `limit`: The number of results to return.
- `offset`: The value to start at.

Example filtered by name:`https://myfarm.farm_management_system.net/farm/sensor/listener/xxxxxx?private_key=yyyyyy&name=temperature`

Allowing public API read access

Data in farm_management_system is private by default. A private key is required to push data to a sensor, and by default the same key is also required to pull data.

If you want to access your sensor data outside of farm_management_system, you should be careful not to leak your private key, because that would allow anyone to post data to your sensor.

One area where this is of particular concern is one in which you want to use a client-side language like JavaScript to pull sensor data for display on a public web page (eg: in a graph you develop yourself). Doing so runs the risk of exposing your private key, if it is included in the client-side code that is publicly visible. To allow for this use-case, you can choose to make your sensor data itself publicly available.

Listener sensors have an optional configuration setting to "Allow public API read access". Enabling this will allow data from the sensor to be queried publicly via the API endpoint without a private key.

This setting will make the data available to anyone who knows the farm_management_system URL and sensor public key.

If more privacy is needed, it is recommended that the sensor be kept private, and server-side API requests are used instead of client-side code.

GrovePi + Node Red

If you are looking for a DIY approach to collecting sensor data that doesn't require soldering or coding check out this guide to Collecting sensor data in farm_management_system using GrovePi and Node-RED on Farm Hack.

Open Pipe Kit

The Open Pipe Kit project provides a command-line script that can be used to push data to farm_management_system from various sensors using the *Farm Sensor: Listener* module. The following video demonstrates how to set it up. For more information about Open Pipe Kit, refer to: http://openpipekit.github.io

Open Pipe Kit farm_management_system CLI:
https://github.com/openpipekit/farm_management_system-cli

Notifications

The *Farm Sensor: Listener* module comes with a basic alert notification mechanism that can be configured to send an email or text message if an incoming value is above or below a given threshold.

Text messages: It is possible to send text messages by entering a special email address that corresponds to your phone number and mobile carrier.

This feature requires integration to a USSD service to enable SMS to be sent to the respective users phones.

Groups

A **Group** asset type is provided for organizing other assets into groups. This provides a lot of flexibility in managing and organizing your assets. Logs can reference the group asset, instead of all the individual members.

This is useful when managing herds of animals. Each herd can be represented as a group asset, with animal records assigned to it. A movement log can be used to move the whole group, instead of referencing animal assets individually.

You can also use groups to organize equipment, plantings, or any other asset type. It's even possible to have groups within groups, to create a hierarchy of group membership.

Group membership is assigned to assets via logs, in very much the same way that location is. You can assign assets to a group via the "Group membership" fields on Activity and Observation logs. This specifies that the asset(s) became members of the group at the time of the log.

Therefore, assets can also change their membership over time, moving from one group to another. One example where this is useful is in managing cattle: you may have a group of mothers with calves, a group of weaned calves, and other groups of steers, heifers, etc. As a calf grows up, weans, and perhaps has their own calf, they can be moved from group to group, and the full history of their group membership is saved as logs.

Movements and location

The locations of all assets in farm_management_system are determined by "Movement" fields on log entries.

When you create an asset, it will not be located anywhere until a log is added that includes this movement information. These logs can be referred to as "movement logs" even though they are actually an "Activity", "Observation", or other log type.

farm_management_system determines the "current location" of an asset by looking at the asset's most recent movement log (with a date less than or equal to the present moment). Only logs that have been marked as "done" are taken into consideration.

Every movement has a "Movement To" field on it, which is required in order to record a movement. It also includes an optional "Movement Geometry" field, which can be used to specify a more specific location of the assets on a map.

Creating movement logs

There are three ways that movement logs can be created:

1. Click "Add an activity" (or other log type) when you are viewing a single asset. This will present you with a new log form, and automatically fill in the "Assets" field with the asset you were looking at. In the "Movement" fieldset, select an area in the "Movement To" field to record a movement.
2. Select multiple assets in a list, and click the "Move" button at the bottom. This allows you to move multiple assets at once. Similarly, this will present you with a new activity log form, and automatically fill in the "Assets" field with the assets you selected in the list. Add an area to the "Movement To" field to record a movement.
3. Click "Add a log" from the farm_management_system dashboard, and select a log type. This presents you with a blank log form, which you can fill in however you'd like. Add an area to the "Movement To" field to record a movement.

If you leave an activity log name blank, and it includes movement information, it will default the log name to "Move [asset] to [area]".

There is also a shortcut: when you are editing an asset, you will see a field labeled "Location". This field will show the asset's current location, and if you change it a new observation log will automatically be created when you save the asset titled "Current location: [area]". Doing this will set the date of the log to the moment you clicked "Save", and it will be marked "done" immediately.

Movement fields

Here is a quick summary of the fields in the "Movement" fieldset:

- **To** - (required) This is the most important field on a movement log. The area that is referenced with this field will be considered the asset's location.
- **Geometry** - (optional) movements can be defined with a more specific geometry on the map using this field. This can be useful for temporary locations (like a

moveable fence) within a larger area. If you leave this blank, the geometry will be automatically copied from the area referenced in the "Movement To" field (if available).

Quantity measurements

Most logs in farm_management_system have the ability to record structured quantity measurements alongside other details. These can be used to collect data about your farm activities in an organized way, which can be analyzed later to provide insights.

Quantity measurements can be added via the "Quantity" field on logs. More than one quantity measurement can be added to a single log.

The "Quantity" field consists of four optional sub-fields:

- Measure - What type of measurement is this? Eg: Weight, Volume, Count, Temperature, etc.
- Value - The measurement value (a number).
- Units - The unit of measure. This can be anything you like, but it's always good to keep your units consistent, as much as possible, for later analysis.
- Label - Labels are just a text field that allow you to add an additional note to the quantity measurement. This is helpful if you have multiple quantities of the same measure.

Quantity report

A single log in farm_management_system can have multiple quantity measurements, but when viewing a list of logs only the first quantity measurement will be displayed. A special "Quantity Report" module is provided specifically for querying logged quantity measurements . This allows you to specify filter criteria and generate a list of quantity measurements that can be viewed in farm_management_system or exported to a CSV file. This provides a very flexible approach to gathering ongoing quantitative data on your farm, and then analyzing it for trends over time.

This module is still in "beta", and more filters/capabilities are being added. If you have ideas, please create feature requests on GitHub. It is not enabled by default when farm_management_system is installed, so you need to turn it on in order to use it.

Inventory tracking

A new feature available in farm_management_system 7.x-1.0-beta16 is an inventory module, which allows for tracking of asset inventory levels over time via logs. As of this release, inventory management is only enabled on animal assets, but will be enabled on

other asset types in future releases. For more information about tracking animal inventory, read the animal asset user guide.

Inventory can be added/subtracted from an asset using the "Inventory adjustment" fields on logs. You may also make more than one inventory adjustment on an individual log (to different assets, for example).

The inventory adjustment field has two subfields: **Asset** and **Value**.

The asset field references the asset whose inventory is being adjusted. The value field is a positive or negative adjustment to the asset's inventory. A positive number will add to the inventory, and a negative number will subtract from the inventory.

An asset's current inventory is visible on the asset record page. You can also view a list of all logs that have adjusted the asset's inventory in the past (as well as planned inventory adjustment logs in the future).

People

farm_management_system allows a farm to have multiple "users" accessing it, and each of those users is assigned one or more "roles" to grant them different levels of permission.

Roles

Three roles are provided with farm_management_system:

Farm Manager

Farm Managers have access to everything in farm_management_system. They can create areas, add assets, record logs, and change configuration.

Farm Worker

Farm Workers have most of the same permissions as Managers, but they cannot change configuration.

Farm Viewer

Farm Viewers are limited to viewing farm_management_system areas, assets, and logs - but they cannot edit anything.

The Farm Viewer role is useful if you want to share your farm's activities with someone, but you don't want to give them the ability to make changes.

For example, if you are applying for Organic certification in the United States, you can create a user with the Farm Viewer role for your certifying agent, so they can log into your farm_management_system and see your records.

Importing data

CSV importers are provided for all asset and log types in farm_management_system.

Links to each importer can be found at the top of each primary asset or log listing page (accessible via the main menuof farm_management_system). For example, if you want to import Animal assets, click on Assets > Animals in the main menu, and then click the "Import animals" action link at the top of the page.

There is a link to "Download a template" within the importer page, which will give you a blank CSV file with all the necessary column headers. Start with the template file, and add a row for each of the records you want to import. Save this file and upload it to the importer form to create the new records in farm_management_system.

Common fields

Each asset/log type has its own importer, and some have fields that are unique to their type, but there are some common fields that are shared across all importers.

Common asset fields include:

- **Name** - The name of the asset (required).
- **Archived** - Whether or not the asset is archived. See "Boolean options" below for allowed values. If omitted, the asset will not be archived.
- **Description** - A longer description of the asset.
- **Parent IDs** - A comma-separated list of asset IDs that represent parents of the asset being imported. These parent assets must already exist in farm_management_system in order for the link to be created.

Common log fields include:

- **Name** - The name of the log. This will be automatically generated if it is left blank.
- **Date** - The date when the logged event takes place (required). This can be a string in any English date format that is convertible to a UNIX timestamp.
- **Done** - Whether or not the log is complete. See "Boolean options" below for allowed values. If omitted, the log will be marked as "done".
- **Notes** - A longer description of the logged event.
- **Asset IDs** - A comma-separated list of asset IDs that this log is related to. These assets must already exist in farm_management_system in order for the link to be created.

- **Area names** - A comma-separated list of areas that this log is related to. Areas will be matched on their name, and new areas will be created if they do not exist.
- **Category names** - A comma-separated list of log categories that should be applied to the log. The categories must already exist in farm_management_system in order for the assignment to take place.

Common fields that are required are noted above. Specific asset/log type importers may have additional required fields.

Boolean values

The following values are acceptable for boolean fields, like "Archived" for asset importers, and "Done" for log importers. These values are not case sensitive (so "Yes" and "yes" will be treated the same).

True

- Yes
- Y
- True
- T
- 1

False

- No
- N
- False
- F
- 0

Access

CSV importers are only available to users with the Farm Manager role.

Exporting data

All asset and log lists in farm_management_system provide a CSV export button at the bottom that will generate and download a CSV file.

Any sorts or filters that are applied to the list will be represented in the CSV output.

Reimporting

While it is technically possible to move data from one farm_management_system to another via CSV files, it is not recommended due to differences in the import/export CSV format.

If you are trying to export assets or logs from one farm_management_system site so that they can be imported into another farm_management_system site it is important to note that there are some differences that can complicate things. It is technically possible, but there are some limitations and differences to be aware of. Please read all of the following before attempting it.

There is an open issue to resolve these differences here: https://www.drupal.org/node/2900239

Differences and considerations

Some of the differences and considerations to be aware of are described below.

Column differences

In most cases, the CSV column names that are exported from asset and log lists will match those of the corresponding CSV importer for that type. There may be columns present in imports that are not present in exports, and vice versa. Compare the exported CSV columns to the importer's CSV template columns before importing to understand what pieces of information might be missing from either side.

Asset and log IDs

Exported CSVs will include a column for the asset or log ID, which is not available as a field for import. You can still import CSVs with this column, but it will be ignored during the import and a new ID will be assigned by farm_management_system to the imported asset or log. If there are any other logs or assets that reference this ID, they will need to be manually updated to point to the correct IDs when you import them.

Log "Done" column

In log exports, the "Done" column will contain a checkmark if the log is done, and it will be empty if the log is not done. This differs from the format expected by log importers. Log importers expect a value of "yes" or "no" in the "Done" column, and blank values will automatically default to "yes", which is the opposite of what a blank value means in CSV exports.

Truncated text

Descriptions, notes, and other long text fields are truncated when they are displayed in asset and log lists in farm_management_system. When those lists are exported to CSV, the text will also be truncated in the export.

Files and images

CSV exports do not provide any mechanism for exporting images or files that are attached to assets or logs. Files and images need to be uploaded manually after import.

Asset location

The CSV importers provided for assets do not currently support setting asset location, and log importers do not currently support importing movement information. Asset location needs to be set manually after assets are imported.

Quick forms

farm_management_system provides a framework for building "quick forms" for common data entry needs. This allows a simplified and focused UI to be provided for fast and easy recording of common events, while maintaining the underlying flexibility of the generalized asset and log data architecture.

If you have the "Farm Quick" module enabled, you will see a new "Quick" tab on the farm_management_system dashboard. This will have sub-tabs for each quick form that is available. farm_management_system modules can provide their own quick forms which will show up here. It is also possible to enable/disable quick forms provided by modules, so that ones you don't need are not cluttering the menu structure.