Description

MyEggPrint helps stakeholders in the egg industry (traders, feedmills, farmers) gain insights into sustainability parameters, initially focusing on Total Carbon Footprint and Land Use Change. It addresses the increasing demand from retailers, regulators, and consumers for sustainability transparency. The tool allows egg traders to monitor the sustainability of their egg labels and helps feed mill nutritionists optimise feed programmes to reduce carbon footprints. By providing insights into feed production, raw material origins, and flock carbon footprints, MyEggPrint supports the industry in managing and reducing its carbon footprint over time.

Overview of Modules

Dashboard

The dashboard summarises the average carbon footprint of selected flock closeouts, based on filter options. It allows comparison between different time periods to track progress towards sustainability targets. Monitoring by egg label reveals the carbon footprint for retail and consumers. The breakdown shows the main contributors to the carbon footprint, including raw materials with the highest impact on both Total Carbon Footprint and Land Use Change. The farm KPIs for selected flocks display average technical performance, while carbon footprint reduction is shown in kg CO2/kg eggs and mature tree equivalents for reference.

Farms

In this section, you can register your farm location, setup, and housing details, including the full setup of housing and manure systems.

Flocks

Once the farm and henhouses are set up, you can register flocks. Details include flock name, start date, egg label, rearing batches, feed, and energy. Multiple rearing batches can be included, and the carbon footprint can be calculated (default or custom). The feeding program can be pre-set and adjusted later, with energy start values registered. At the end of the production cycle, final performance, feed, and energy details can be added, and the carbon footprint calculated in kg CO2/kg eggs.

Overview of Modules

Feed

MyEggPrint calculates carbon footprints and monitors changes over time. As feed impacts up to 80% of the carbon footprint, managing raw materials and feed programmes has the highest effect. Nutritionists can compose sustainable feeds, adjust feeding phases, and compare new scenarios with previous feed programmes. These changes are stored and can be updated over time, making MyEggPrint a tool for both historical monitoring and future improvements.

Raw Materials

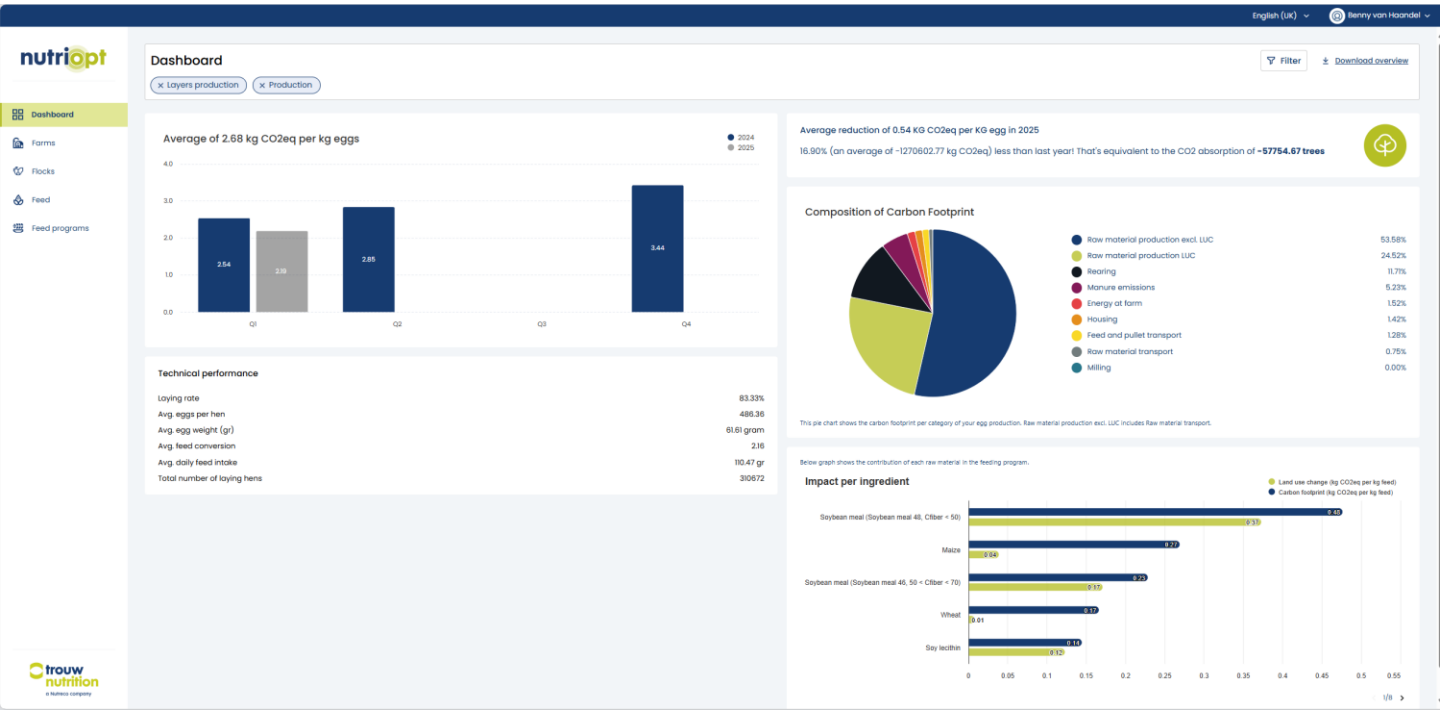
A significant portion of the carbon footprint relates to Land Use Change, mainly deforestation. The origin of raw materials also impacts this. The GFLI database, a global collection of feed ingredient datasets using Life Cycle Assessment (LCA) methodology, calculates the sustainability impact of raw materials based on factors like origin and transport. These values are then used in feed formulation to calculate the overall carbon footprint of feeds.

Navigation Menu

- **Dashboard:** Full overview of carbon footprint details.
- **Farms:** Menu to enter and view farm, henhouse, flock information.
- **Flocks:** Overview of all flocks.
- **Feed:** Feed portfolio.
- **Feed programs:** Feeds scheduled to be fed in a specified feed program.

- **Dashboard Message:** First time you enter there will be no data yet.
  - **Instructions:** Get started by adding a farm and henhouse, or begin by creating a feed program.
  - **Buttons:**
    - Add a farm.
    - Create feed program.

Entrance Dashboard



Dashboard Menu

Filters:

- **Production Phase:** Choose between "Production" (actual flock data) or "Rearing" (early production phase).
- **Animal Group Type:** Select "Production" (actual flock data) or "Simulation" (scenario based on actual flock data, adapted to test factors like feed or raw material origin).
- **Account:** Switch between accounts.
- **Date Range:** Set the date range for closeouts to include in the overview (e.g., 01 Jan 2023 - 31 Dec 2023).
- **Egg Label:** Select the egg label of interest (e.g., “Free range”, “Beter leven 1 ster”). Egg labels group farms producing for the same concept.
- **Farms:** Select farms of interest.
- **Flocks:** Select specific flocks of interest.
- **Clear Filters:** Clear all selected filters.
- **Cancel:** Cancel filter selection.
- **Apply Filters:** Apply selected filters.

Dashboard Content

Carbon Footprint Details and Technical Data and KPI's of the Selected Flocks

- Avg. Carbon Footprint: 2.74 kg CO2e per kg eggs
- Reduction in 2023: 0.24 kg CO2e per kg egg (8.44% decrease)
- Total Reduction: -151,441.34 kg CO2e (equivalent to 6,883.70 trees CO_2 absorption)

Carbon Footprint Composition

- Raw Material Production (excl. LUC): 50.83%
- Raw Material Production (LUC): 25.01%
- Rearing: 12.96%
- Manure Emissions: 4.71%
- Housing: 1.83%
- Farm Energy Use: 1.70%
- Raw Material Transport: 1.50%
- Feed & Pullet Transport: 1.47%
- Milling: 0.00%

Technical Performance

- Laying Rate: 81.9%
- Avg. Eggs per Hen: 515.2
- Avg. Egg Weight: 61.93 g
- Feed Conversion Ratio: 2.19
- Avg. Daily Feed Intake: 110.84 g
- Total Laying Hens: 46,759

Impact Per Ingredient High to Low (kg CO_2e per kg feed, LandUseChange and Total)

- Maize: 0.04 (LUC) | 0.25 (Total Carbon Footprint)
- Soybean Meal (46.5, Cfbr 50-70): 0.18 (LUC) | 0.24 (Total Carbon Footprint)
- Wheat: 0.01 (LUC) | 0.17 (Total Carbon Footprint)
- Sunflower Seed Meal (35% CP): 0.01 (LUC) | 0.09 (Total Carbon Footprint)
- Soybean Oil: 0.02 (LUC) | 0.03 (Total Carbon Footprint)
- Subsequent ingredients can be tracked similarly by 1/5 > 2/5

Additional Dashboard Features

- Download Overview: Option to download an overview of the data.
- User Profile: Access your user profile and settings.
- Language : Choose your preferred language.
- Help Centre: Provides access to support resources.

Adding a Farm

1. **Navigate to Farms:** On the left menu, click “Farms”.
2. **Open Add Farm Form:** Click the “Add Farm” button (top right).
3. **Enter Farm Details:**

- Name farm: Enter farm name.
- Account: Select from the dropdown the company or integrator the farm belongs to, e.g., Byrne Limited.
- Climate specifications: Select from dropdown (see appendix 1 for climate zone determination).
- Humidity Class: Select from dropdown (see appendix 1 for humidity class determination).
- Feed transport distance: Enter distance in km.
- Postal code: Enter postal code.
- City: Enter city name.
- Address: Enter full address.
- Country: Select from dropdown.
- State or province: Select from dropdown.

4. **Save the Farm:**

- Click “Add Farm” to save.
- Click “Cancel” if you want to discard changes.

Adding a Henhouse

1. **Open a Farm:** Click on the desired farm from the Farms list.
2. **Open Add Henhouse Form:** Click "Add Henhouse" (top right).
3. **Enter Henhouse Details:**

- Name (e.g., House A1).
- Total housing space (m²): Housing space per hen.
- Housing system: Select from dropdown.
- Manure management system: Select from dropdown for example "manure with litter"; (see Appendix 2).

4. **Save the Henhouse:** Click "Add Henhouse" to save.

Adding a Flock

1. **Go to a Henhouse:** Click on the henhouse where the flock will be added.
2. **Open Add Flock Form:** Click "Add Flock" (top right).
3. **Enter Flock Details:**

- Name (e.g., Flock 202301).
- Production phase:
  - Layers production or Layers rearing.
- Start date
- Egg Label (combined egg flow from the same concept, like "free range")
- Start weight (kg)
- Breed: Select from dropdown list
- Egg color
- Number of hens

4. **Add Rearing Batch (if needed):** Select an existing batch or click "Add new rearing or hatch batch".
5. **Save & Start Flock:** Click "Save" or "Start Flock" to activate.

Add Rearing or Hatch Batch

- **Flock Name:** Some defaults will be added, like “Default Isa White”.
- **Hatch Date:** Provide hatch date.
- **CO2 per Rearing Hen or Pullet:** Provide default value as suggested or copy from calculated flocks in case of rearing.
- **Number of Animals at Start:** Provide number of animals at start.
- **Add Another Batch:** In case of multiple rearing batches are combined.

Closing a Flock

1. **Go to the Flocks Section:**
   - Click on Farms.
   - Select the desired Farm.
   - Choose the appropriate House and Flock from the list.
2. **Open Close Flock Form:**
   - Click Close Flock in the Actions menu.
3. **Enter Flock Details:**
   - End Date (e.g., 20-12-2022).
   - Number of Animals at End.
   - Live Weight Hens at End (kg).
4. **Enter Egg Production Data:**
   - Number of Eggs Produced per Hen.
   - Average Egg Weight (gr).
5. **Input Feed Consumption:**
   - Select an Existing Feed Program or Add/Update Feed.
6. **Total Energy used per flock:**
   - Diesel Usage (liters)
   - Green Electricity Usage (kWh)
   - Grid Electricity Usage (kWh)
   - Total Natural Gas Used (MJ)
7. **Save & Calculate:**
   - Click Save and Calculate to finalize the flock closure and generate carbon footprint results.

Consumed Feed by Flock

- **Feeding Program:** Feeding program A1
- **Feed Name:** Prelay
- **Amount:** 1200 kg
- **Feed Name:** Peak
- **Amount:** 1800 kg
- **Feed Name:** Layer 1
- **Amount:** 5200 kg
- **Feed Name:** Layer 2
- **Amount:** 4800 kg
- **Add/Update Feed**

Actions

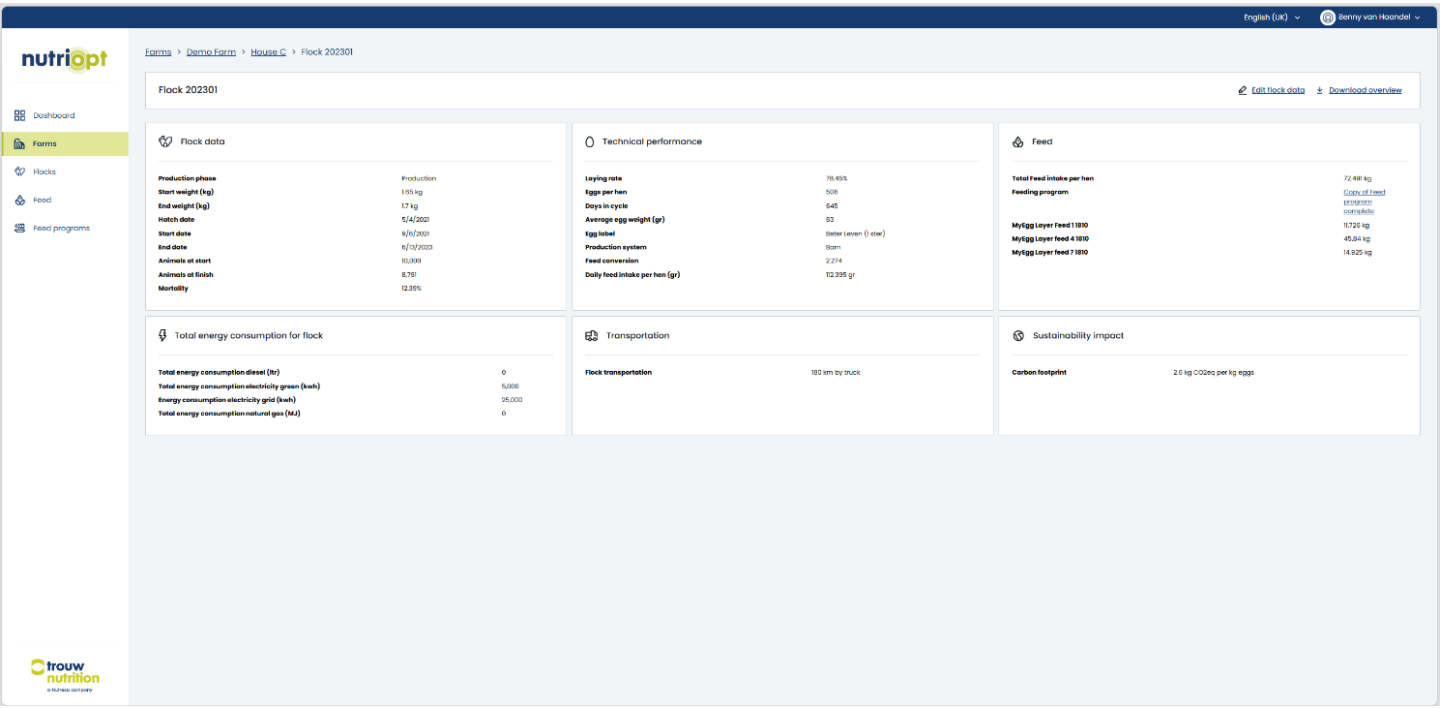
- **Cancel:** Discards the information and closes the form.
- **Save:** Saves the current information without closing the flock.
- **Save and Calculate:** Saves input data, closes the flock, and calculates the final carbon footprint per kg of whole eggs.

Simulation of Flock

- **Select** the "Farm - Henhouse – Flock" you would like to use for simulation.
- **Create:** Creates in a few steps a simulated copy of the flock, which can be adapted for different scenarios for alternative feed programs, different origins of raw material or a prolonged cycle.
- **The simulated flocks do not get mixed up with real records**, so they won't influence farm or egg label trends. In the dashboard filter you can select either Production or Simulation.

Flock Summary (Technical Data & Carbon Footprint)

After running the carbon footprint calculation, select "View Results" to see the flock's input data, technical KPIs, and carbon footprint. A footprint can only be calculated after a full closeout, requiring complete egg, feed, transport, and energy data. Since a full cycle takes 70–100 weeks, the footprint is calculated at the end. See the example below for Flock 202301.



Flock Summary (Technical Data & Carbon Footprint)

Flock Data of flock 202301

- **Production Phase:** Production
- **Start Weight:** 1.65 kg
- **End Weight**: 1.7 kg
- **Hatch Date:** 5/4/2021
- **Start Date:** 9/6/2021
- **End Date:** 6/3/2023
- **Animals at Start**: 10,000
- **Animals at Finish:** 8,781
- **Mortality Rate:** 12.39%

Technical Performance

- **Laying Rate:** 78.45%
- **Eggs per Hen:** 506
- **Days in Cycle:** 645
- **Avg. Egg Weight**: 63 g
- **Egg Label:** Beter Leven (1 star)
- **Production System:** Barn
- **Feed Conversion:** 2.274
- **Daily Feed Intake per Hen:** 112.396 g

Flock Summary (Technical Data & Carbon Footprint)

Feed Information

- **Total Feed Intake per Hen:** 72.491 kg
- **Feeding Program:** Feed Program Complete
- **Feed Types:**
  - MyEgg Layer Feed 1 1810 – 11.726 kg
  - MyEgg Layer Feed 4 1810 – 45.84 kg
  - MyEgg Layer Feed 7 1810 – 14.925 kg

Energy Consumption

- **Diesel:** 0 L
- **Electricity (Green):** 5,000 kWh
- **Electricity (Grid):** 25,000 kWh
- **Natural Gas:** 0 MJ

Transportation

- **Flock Transport Distance:** 180 km by truck

Sustainability Impact

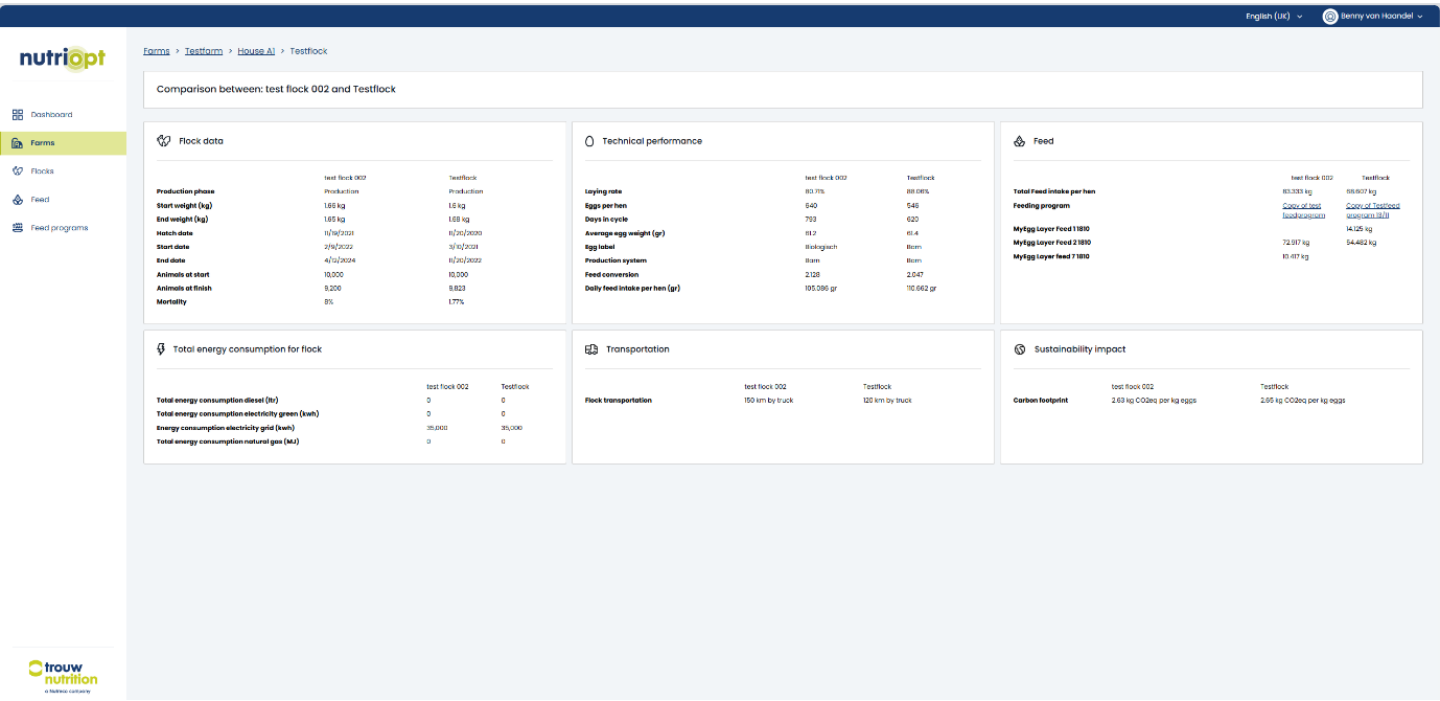
- Carbon Footprint: 2.6 kg CO_2eq per kg eggs

Actions

- **Edit Flock Data:** Modify the details of the flock.
- **Download overview:** Generate a PDF report of the flock data.

Compare Flocks (Technical Data & Carbon Footprint)

After running the carbon footprint calculation, select "View Results" to compare two flocks or a production flock with a simulated flock. The summary includes input data, technical KPIs, and carbon footprints, highlighting differences and their impact. This helps analyse prolonged cycles, alternative raw material origins, or diets with alternative protein sources. See the example below.



Feed and Feed Programs

- **Feed:** All available feeds are listed with key nutritional and sustainability details. New feeds can be added manually or imported from MyFeedPrint.
- **Imported feeds:** After import, the following nutritional values must be entered manually: Dry Matter %, Ash %, Crude Protein %, Metabolisable Energy (MJ), and Gross Energy (MJ). Environmental impact data is generated automatically.
- **Manually added feeds:** Both nutritional and environmental data must be entered, including energy, processing, carbon footprint, and land use change. This applies when a supplier does not use MyFeedPrint or relies on alternative software for sustainability calculations.

Actions

The Feed Overview section displays a list of available feed formulations, along with key nutritional values such as energy (MJ), crude protein (%), and feed ash (%). This helps in assessing feed composition and sustainability impact and composing your feed program.

Adding a New Feed

1. **Navigate to the Feed Section:** Select "Feed" from the left menu to access the feed portfolio.
2. **Click "Add Feed":** Open the "Add Feed" panel to enter new feed details.
3. **Enter Feed Information:**
    - **Feed Name & Code:** Assign a name and select a relevant feed code.
    - **Nutritional Data:** Specify dry matter, ash, crude protein, and metabolizable/gross energy values.
    - **Environmental Impact (only when not imported from myFeedPrint):** Input sustainability metrics like carbon footprint, land use change emissions, and energy sources (electricity, natural gas).
4. **Save the Feed:** Click "Add Feed" to save the new feed entry.

This functionality ensures that all feed formulations details are provided to estimate sustainability impact of the feed.

Actions


nutriopt
Feed overview
Dashboard
Forms
Flocks
Feed
Feed programs
FEED NAME
FEED CODE
LAST UPDATED ON
ENERGY (MJ)
CRUDE PROTEIN (%)
FEED ASH (%)
trouw nutrition
Add Feed
Name Feed
10085 v90 0502
Account
Feed code
Opfokmeel 3 170
Dry matter
88
%
Ash
%
Crude protein
%
Metabolizable energy
MJ
Gross energy (default ME/0.82)
MJ
Environmental impact per kg of feed
Carbon footprint
Kg CO2eq
Carbon footprint Land use and LU change (LULUC)
Kg CO2eq
Feed transport raw materials
kg CO2eq
Electricity for feed production
0.085
kWh
Natural gas for feed production
0.131
MJ
Cancel
Add Feed

Feed Programs

Feed programs allow you to make a detailed overview of all feeds that are fed in a full production cycle of a flock at different phases. Different feed programs can be composed and their environmental impact can be evaluated. The final amounts fed can be changed later when the flock closeout is established.

Managing Feed Programs

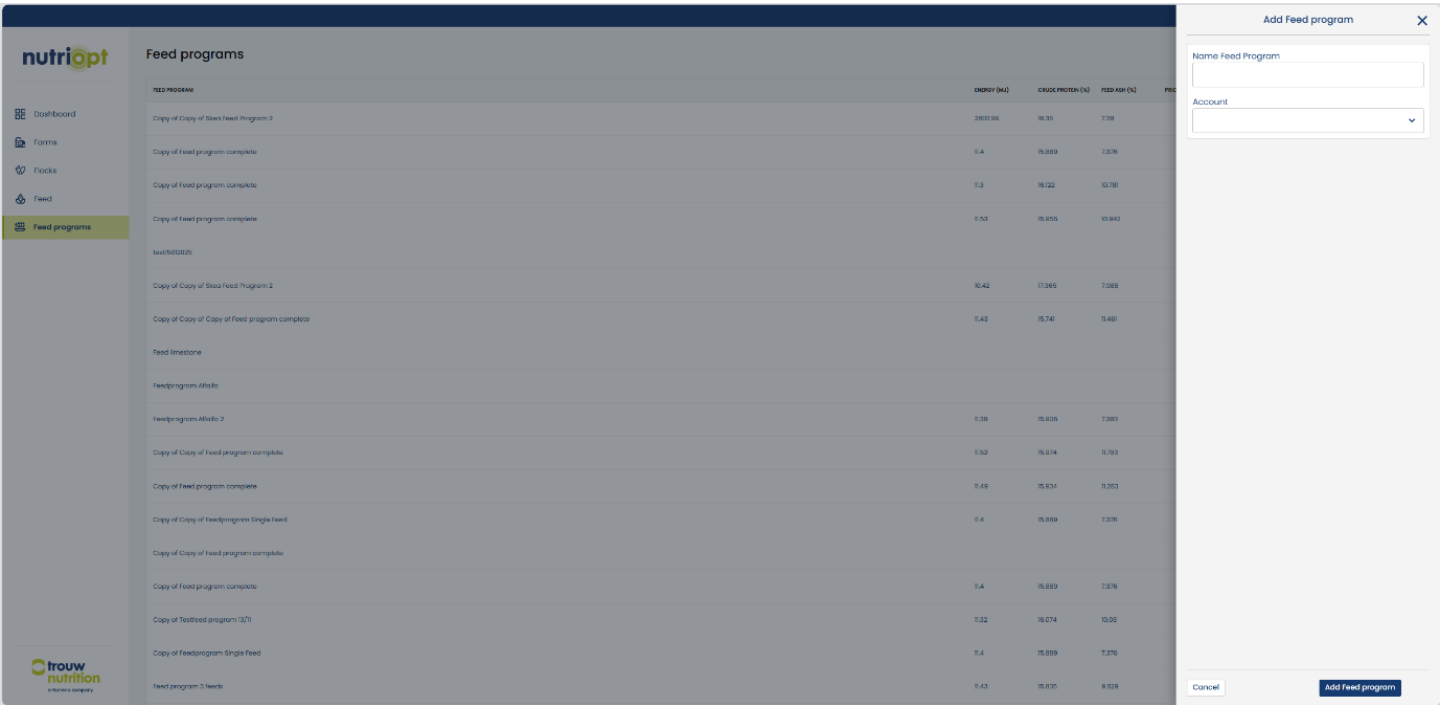
1. The list displays available feed programs along with key nutritional values such as energy (MJ), crude protein (%), and feed ash (%).
2. Users can duplicate, modify, or create new programs to align with specific production needs.

Adding a New Feed Program

1. **Navigate to Feed Programs:** Select "Feed Programs" from the left menu.
2. **Click "Add Feed Program":** Open the program creation panel.
3. **Enter Feed Program Details:**
    - Program Name: Assign a unique name.
    - Account: Select the relevant account.
4. **Save the Program:** Click "Add Feed Program" to finalise and save.

Various feed programs can be used for optimising feed formulations for different production levels or carbon footprint targets for egg production.

Feed Programs



Appendix 1: Climate Zone Definitions

Climate zones according to IPPC Climate zone determination:

Tropical Montane: has > 18°C mean annual temperature and at an elevation greater than 1000m;

Tropical Wet: has > 18°C mean annual temperature and mean annual precipitation >2000mm;

Tropical Moist: has > 18°C mean annual temperature and mean annual precipitation >1000mm;

Tropical Dry: has > 18°C mean annual temperature and mean annual precipitation < 1000mm;

Tropical Moist: has > 18°C mean annual temperature and mean annual precipitation >1000mm;

Warm temperate moist: has > 10°C mean annual temperature and a ratio of potential evapotranspiration to precipitation > 1;

Warm temperate dry: has > 10°C mean annual temperature and a ratio of potential evapotranspiration to precipitation < 1;

Cool temperate moist: has > 0°C mean annual temperature and a ratio of potential evapotranspiration to precipitation > 1;

Cool temperate dry: has > 0°C mean annual temperature and a ratio of potential evapotranspiration to precipitation < 1;

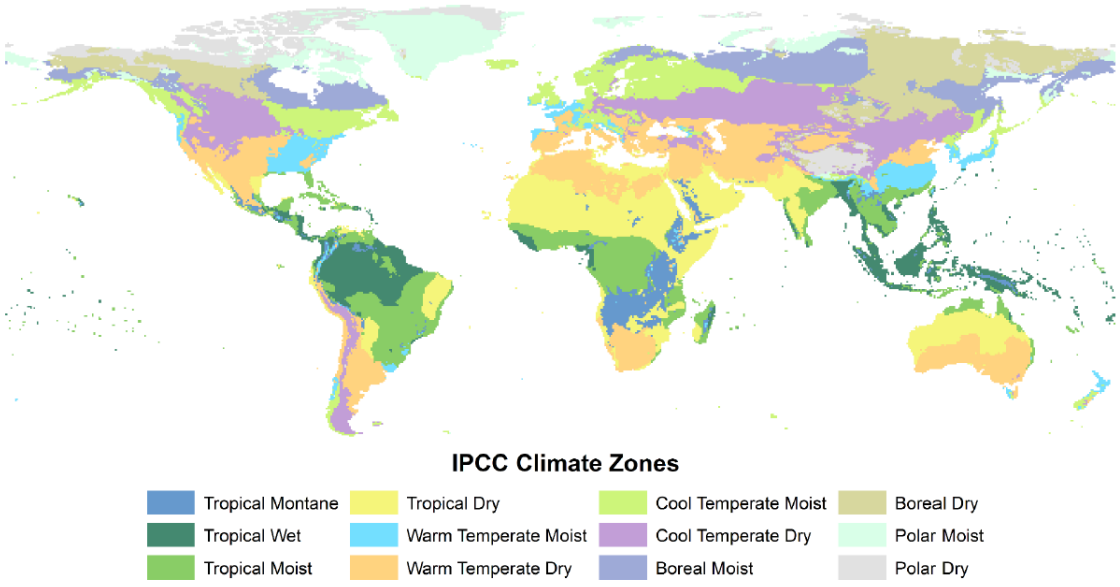
Boreal moist: has < 0°C mean annual temperature but some monthly temperatures > 10°C and a ratio of potential evapotranspiration > 1;

Boreal dry: has < 0°C mean annual temperature but some monthly temperatures > 10°C and a ratio of potential evapotranspiration to precipitation < 1;

Polar moist: has < 0°C mean annual temperature but all monthly temperatures < 10°C and a ratio of potential evapotranspiration > 1;

Polar dry: has < 0°C mean annual temperature but all monthly temperatures < 10°C and a ratio of potential evapotranspiration to precipitation < 1.

Figure 10A.1 (New) Mapping of IPCC climate zones (taken from Volume 4, Chapter 3, Annex 3A.5)



Appendix 2: Manure Management systems

TABLE 10.18 (UPDATED)
DEFINITIONS OF MANURE MANAGEMENT SYSTEMS[3]

System	Definition
Pasture/Range/Paddock (PRP)	The manure from pasture and range grazing animals is allowed to lie as deposited, and is not managed.
Daily spread	Manure is routinely removed from a confinement facility and is applied to cropland or pasture within 24 hours of excretion.
Solid storage	The storage of manure, typically for a period of several months, in unconfined piles or stacks. Manure is able to be stacked due to the presence of a sufficient amount of bedding material or loss of moisture by evaporation. Solid stores can be covered or compacted. In some cases, bulking agent or additives are added .
Solid storage-Covered/compacted	Similar to solid storage, but the manure pile is a) covered with a plastic sheet to reduce the surface of manure exposed to air and/or b) compacted to increase the density and reduce the free air space within the material.
Solid storage - Bulking agent addition	Specific materials (bulking agents) are mixed with the manure to provide structural support. This allows the natural aeration of the pile, thus enhancing decomposition. (e.g. sawdust, straw, coffee husks, maize stover)
Solid storage - Additives	The addition of specific substances to the pile in order to reduce gaseous emissions. Addition of certain compounds such as attapulgite, dicyandiamide or mature compost have shown to reduce N_2O emissions; while phosphogypsum reduce CH_4 emissions
Dry lot	A paved or unpaved open confinement area without any significant vegetative cover. Dry lots do not require the addition of bedding to control moisture. Manure may be removed periodically and spread on fields.
Liquid/Slurry[1]	Manure is stored as excreted or with some minimal addition of water or bedding material in tanks or ponds outside the animal housing. Manure is removed and spread on fields once or more in a calendar year. Manure is agitated before removal from the tank/ponds to ensure that most of the VS are removed from the tank..
Uncovered anaerobic lagoon	A type of liquid storage system designed and operated to combine waste stabilization and storage. Lagoons have a lower depth and a much larger surface compared to liquid slurry stores. Anaerobic lagoons are designed with varying lengths of storage (up to a year or greater), depending on the climate region, the volatile solids loading rate, and other operational factors. The supernatant water from the lagoon may be recycled as flush water or used to irrigate and fertilise fields.
Pit storage below animal confinements	Collection and storage of manure usually with little or no added water typically below a slatted floor in an enclosed animal confinement facility, usually for periods less than one year. Manure may be pumped out of the storage to a secondary storage tank multiple times in one year, or stored and applied directly to fields. It is assumed that VS removal rates on tank emptying are >90%.

Appendix 2: Manure Management systems

System		Definition
Deep bedding		As manure accumulates, bedding is continually added to absorb moisture over a production cycle and possibly for as long as 6 to 12 months. This manure management system also is known as a bedded pack manure management system and may be combined with a dry lot or pasture. Manure may undergo periods where animals are present and are actively mixing the manure, or periods in which the pack is undisturbed.
Composting	In-vessel[2]	Composting, typically in an enclosed channel, with forced aeration and continuous mixing.
	Static pile	Composting in piles with forced aeration but no mixing, with runoff/leaching containment.
		Composting in piles with forced aeration but no mixing, without runoff/leaching containment.
	Intensive windrow[2]	Composting in windrows with regular (at least daily) turning for mixing and aeration, runoff/leaching containment
		Composting in windrows with regular (at least daily) turning for mixing and aeration, no runoff/leaching containment
	Composting - Passive windrow[2]	Composting in windrows with infrequent turning for mixing and aeration, with runoff/leaching.
		Composting in windrows with infrequent turning for mixing and aeration, no runoff/leaching.
Poultry manure with litter		Similar to cattle and swine deep bedding except usually not combined with a dry lot or pasture. Typically used for all poultry breeder flocks, for alternative systems for layers and for the production of meat type chickens (broilers) and other fowl. Litter and manure are left in place with added bedding during the poultry production cycle and cleaned between poultry cycles, typically 5 to 9 weeks in productive systems and greater in lower productivity systems.
Poultry manure without litter		May be similar to open pits in enclosed animal confinement facilities or may be designed and operated to dry the manure as it accumulates. The latter is known as a high-rise manure management system and is a form of passive windrow composting when designed and operated properly. Some intensive poultry farms installed the manure belt under the cage, where the manure is dried inside housing.
Aerobic treatment		The biological oxidation of manure collected as a liquid with either forced or natural aeration. Natural aeration is limited to aerobic and facultative ponds and wetland systems and is due primarily to photosynthesis. Hence, these systems typically become anoxic during periods without sunlight.

[1] Covers on manure management systems can impact emissions of direct N_2O, CH_4 and NH_3. With N_2O and CH_4 emission, the effect of the cover depends upon character of the cover material .

[2] Composting is the biological oxidation of a solid waste including manure usually with bedding or another organic carbon source typically at thermophilic temperatures produced by microbial heat production.