FeedPrint

Website: http://webapplicaties.wur.nl/software/feedprint/

Factsheet

General description of the tool

Category	Outcome-based
Objective	To gain an understanding of GHG emissions generated by animal feed supply chains over their complete life cycle as well as from feed utilization To use results to assist in strategic management (sourcing feed materials, change compound feed composition, affect upstream production) to reduce GHG emissions To help organizations report on corporate responsibility
Geographical applicability	Europe
Functionalities	Hotspots identification, Alternative scenarios testing, provide a footprint value/metrics
Target audience	Farmers, food supply chain managers and feed industry and suppliers
Developers	Wageningen University and Blonk Milieu Advies (Netherlands)
Cost (tool and data)	Free
Past or current users	Several EU and international initiatives

Commodities covered

Live cattle (exc. Purebred), pork, prepared animal feeds and chicken

BMPs covered

Reduced tillage practices*
Fertilizer application - source
Application rate based on testing and book values
Application method - all types of land tillage
Fertilizer application - rate
Fertilizer application - placement

*modelled partially (i.e. only to calculate the emissions from machinery use)

Indicators covered

Land use
Energy use
Eutrophication
Fossil fuel depletion
Acidification
GHG emissions

Data inputs

Data requirements	Primary data required	Default values
Environmental conditions	Farm type: farm category (dairy, pigs, poultry or veal calves) and animal category	n/a
Crop management	Feeding livestock: soil type of grassland, nitrogen on grassland	- Source of feed (country) - Feed: dry matter, energy value, crude protein, phosphorus - Feed management: pesticides applied, manure applied, fertilizers applied, machinery use, energy for storage, yield at harvest, weight losses
Carbon sequestration/storage	No	No

Livestock	Farm feeds: byproducts and roughage (select the feed only) Feeding livestock: - for all livestock: ration of feed - for dairy only: amount of concentrate in feed, amount of feed besides grass - for fattening pigs: type of fattening pigs, bodyweight at slaughtering, strategy of feeding, water/feed ratio - for breeding sows: farrowing per sow per year, age of weaning piglets, age of selling piglets, littersize (piglets born alive), water/feed ratio - for broilers: type of broilers, type of growth curve, bodyweight at slaughtering - for laying hens: type of laying hens, number of laying days	- Housing, manure storage: "For each animal product the most common Dutch farming system is assumed, implying an average housing type, average manure storage facilities etc."
Energy use	No	No
Primary processing	No	No
Water	No	No
Transport	No	No
Others	No	No

Scope ☑ Farm level ☑ Supply chain

Ease of use for the data collector: Relatively easy, but may require specific documentation, quick to fill - Qualitative data entries can be easily completed by the user. However, unless the producer has done a soil assessment, data on soil organic matter (nitrogen) can be hardly found but there are default values for guidance. Any data entries related to livestock are easy for producer to fill.

Modelling methods

Consistency of the model with the goal and scope of the tool	Consistent - calculation of entire life cycle impacts of feed supply (including utilization) which helps identify the hotspots and test alternative scenarios
Transparency and quality of documentation	Guidance document: Yes - A manual is imbedded in the tool Methodology document: Yes - http://edepot.wur.nl/254098
Conformity of the methodology with the current state-of-the-art agronomic and environment sciences	Consistent - aligned with GHG calculation and LCA standards (ISO 14040/14044/14067, PAS2050, IPCC Guidelines for National Inventory Reports, IDP Guide to standard LCA)
Methodology	- LCA standards such as ISO 14040 and 14044 and PAS 2050 are the basis of the methodology - For GHG emissions calculations at the national level, the LCA methods were consistent with IPCC requirements - For methane emissions from enteric fermentation: Tier 3 method used in the Dutch National Inventory Report - Cradle-to farm gate with functional unit for meat of 1 kg of live weight of a specific animal, for eggs of 1 kg of fresh eggs, and for milk 1 kg of FPCM leaving the farm-gate - Allocation methodology: based on ISO 14044 rules and Dutch horticulture protocol
Dataset sources used for modelling	- Collected data publicly available: FAOstats, Eurostat, public research results from Blonk Consultants and WUR - Reviewed the draft reports with industry experts: stakeholders of CFPAN working group - Feed: average nutritional quality of feed materials from Dutch feed list of the "Centraal Veevoeder Bureau" (CVB-list)

Outputs / Results

Results ☑ Detailed summary of results in tables ☑ Detailed summary of results in graphs

Analysis ☐ Summary of main hotspots ☑ Comparison with alternative scenarios

Limits of the tool/model

As the tool is focused on GHG emissions related to feed, options to modify farm conditions are limited