Nutrient Tracking Tool

Website: http://nn.tarleton.edu/nttWeb082014/(S(ptlhfca2qjtljdpvjh40b40r))/Default.aspx

Factsheet

General description of the tool

Category	Outcome-based
Objective	To facilitate the trading of nutrient (nitrogen and phosphorous) credits to reduce water pollution To estimate on-farm nitrogen and phosphorus losses and assess the credit generating capacity from agricultural management practices To help farmers determine the most cost-effective conservation practice alternatives
Geographical applicability	USA
Functionalities	Alternative scenarios testing, provide a footprint value/metrics
Target audience	Farmers
Developers	TIAER (Tarleton State University) with funding from the USDA-NRCS Conservation Innovation Grants program and various state agencies (enhanced version of the Nutrient Trading Tool developed by USDA and World Resources Institute, 2006) - latest update: 2014
Format	Online tool
Cost (tool and data)	Free
Past or current users	unknown

Commodities covered

Barley, bean, hay-grass, potato, wheat

BMPs covered

Reduced tillage practices
Crop rotation, incorporating perennial or pulse crops
Timing of application for plant needs
Use of buffer zones for field crops
Cover crops
Fertilizer application - timing
Run-off control
Catch basin management
Manage livestock access to water bodies and riparian areas (e.g. provide off-site watering)
Fertilizer application - source*
Application rate based on testing and book values*
Fertilizer application - rate*

**modelled partially (i.e. can only model default scenarios)*

Indicators covered

Nutrient losses (nitrogen and phosphorus)

Data inputs

Data requirements	Primary data required	Default values
Environmental conditions	- Soil: location, max depth, slope, soil P, bulk density, sand %, silt %, organic matter %, pH - Field: area, weather information	No
Crop management	- Cropping system: amount of fertilizer applied and time of application, seeding/planting type and date, date of harvest, nutrients applied, tillage management - Drainage Water Management System: tile drain depth and days	Yes - user can upload an existing cropping system baseline scenario by selecting the crop and the tillage
Carbon sequestration/storage	n/a	No
Livestock	Grazing: date and type of livestock	No
Energy use	n/a	No
Primary processing	n/a	No
Water	- Manual irrigation: date, type and amount - Auto Irrigation and Fertigation: type	No
Transport	n/a	No

Others	- Wetlands and Ponds: area, fraction of area controlled by pond - Stream and Riparian Management: stream fencing (number of animals, days, hours/day in stream, type of animal, dry manure, nutrient fraction), streambank stabilization, riparian forest buffer (area, width, grass field portion, buffer slope), Filter strip (vegetation type, width, strip slope), Waterway (grassed buffer) (vegetation type and width) - Strip Farming (Contour Buffer): Buffer vegetation type, buffer width and crop width - Land Grading and Management: land leveling (slope reduction %), terrace system, liming	No

Scope ☑ Farm level ☐ Supply chain

Ease of use for the data collector Difficult, require a lot of specific documentation, time consuming.

Modelling methods

Consistency of the model with the goal and scope of the tool	Consistent - the model allows the calculation of credits that can be traded on the nutrient market
Transparency and quality of documentation	Guidance document: Yes - User guide available in the tool online (http://pa-demo.nutrientnet.org/guide/index.app) Methodology document: The documentation on the methodology was not found online
Conformity of the methodology with the current state-of-the-art agronomic and environment sciences	Consistent - regularly updated to account for changes in science (e.g. APEX model) and newly available data
Methodology	Builds on previous Nutrient Trading Tool methodology
Dataset sources used for modelling	"Web-based linkage to the Agricultural Policy Environmental eXtender (APEX) model and (...) to the USDA Natural Resources Conservation Service's Web Soil Survey to utilize their geographic information system interface for field and operation identification and load soil information"

Outputs / Results

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

Analysis ☑ Comparison with alternative scenarios

Limits of the tool/model

Only applicable to farms located in the US
Assumptions: One-directional flow; no ditches, gullies, or direct conveyance; edge-of-field only (not through adjacent fields or through the water body); models rotation average over 42 years (output is an average); not all crops have profile yet (e.g. raspberries); not all practices can be simulated (e.g. flood irrigation)