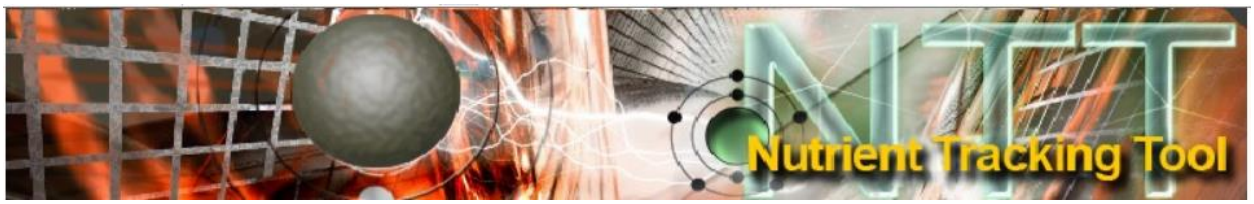


The NUTRIENT TRACKING TOOL (NTT)

Overview

The Nutrient Tracking Tool (NTT)[1] (http://nn.tarleton.edu/ntt/) is an enhanced version of Nitrogen Trading Tool, a user-friendly web-based computer program originally developed by the United States Department of Agriculture (USDA). NTT was developed by TIAER staff in collaboration with USDA-NRCS. The tool estimates nutrient (nitrogen and phosphorus) and sediment losses from fields managed under a variety of cropping patterns and management practices through its user-friendly linkage to the Agricultural Policy Environmental eXtender (APEX) (Williams et. al, 2008). NTT provides farmers, government officials, and other users with a fast and efficient method of estimating nitrogen and phosphorus credits for water quality trading, as well as other water quality, water quantity, and farm production impacts associated with conservation practices. The information obtained from the tool can help farmers to determine the most cost-effective conservation practice alternatives for their individual operations and provide them with more advantageous options in a water quality credit trading program. NTT can also be used in evaluating conservation practice effectiveness outside of a water quality trading environment.

How does NTT work?

NTT uses a widely recognized farm-scale environmental model, APEX, to determine nutrient and sediment losses and runoff from agricultural fields. APEX is an environmental model that uses mathematical processes to simulate the transport of water, sediment and nutrients through land. NTT is a web-based program which requires no software installation. The required data for this program for major portions of US are provided through GIS data layers and pre-existing databases.

Who can use NTT?

APEX is a very sophisticated model. However, NTT uses a very user-friendly web-based interface program to make the benefits of APEX directly accessible to farmers, crop consultants, government officials and the general public. Anyone with internet access can use NTT, but the tool was designed with specific attention to the needs of the typical farmer.

Scope of NTT

NTT is used to estimate the impacts of alternative conservation practices on nutrient and sediment losses and flow from agricultural fields, as well as crop yields on those fields. NTT output on the impacts of alternative conservation practices can be used in integration with other watershed models to calculate the nutrient credits that would be associated with these practices in a water quality trading program.

Farm-scale simulation:

NTT is a farm-scale simulator. The tool is designed to provide reliable estimates of nutrient and

[1] Formerly referred to as the Nutrient Trading Tool (NTT).

sediment losses and flow when measured at the edge of the farm. To estimate watershed loadings, NTT output can be linked to a watershed model.

Conservation Practices:

NTT can simulate a wide variety of conservation practices. The following are among the many practices that are commonly simulated using the web-based program.

Nutrient management: alternative fertilizer and manure applications.

Contour buffer strips: Buffer strips positioned along field contour.

Filter strips: Managed strip of vegetation to reduce sediment and nutrient runoff.

Riparian forest buffer: Multi-plant buffer zones around water bodies.

Alternative tillage systems: a variety of tillage systems (e.g., no-till, conventional tillage, minimum till).

Tile drainage: Subsurface drainage management

Strip cropping: Alternating strips of different crops.

Cover cropping: Vegetative cover crops (e.g., Rye) planted after harvesting the main crop.

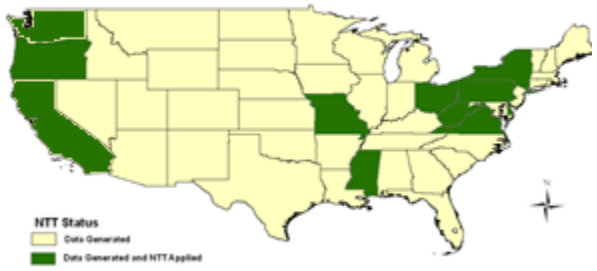
Data Sources

The major data provided in NTT are as follows. Weather data are from the USDA-NRCS High Resolution Climate Extractor (HCE), soil and geometry data are from the USDA-NRCS Web Soil Survey, and predefined management data were obtained by modifying RUSLE2 management data files.

Where NTT has been applied to date

NTT has been verified and used in three states and is currently being verified in over half dozen additional states (see map below). In all other states the required data have been assembled for general application of the tool.

States with current or completed NTT applications



Contacts:

Additional information on NTT can be obtained by contacting any of the following:

- Dr. Ali Saleh, Texas Institute for Applied Environmental Research (TIAER), Tarleton State University.
  254-968-9799
  saleh@tiaer.tarleton.edu

Reference:

Saleh, A., O. Gallego, E. Osei, H. Lal, C. Gross, S. McKinney, and H. Cover. “Nutrient Tracking Tool – a user-friendly tool for calculating nutrient reductions for water quality trading”. Journal of Soil and Water Conservation 2011 66(6):400-410; doi:10.2489/jswc.66.6.400

Williams, J.R., R.C. Izaurralde, and E.M. Steglich. 2008. “Agricultural Policy/Environmental eXtender Model” BRC Report No. 16.