

STAR, a Web-Based Tool for Natural Resource Impact Assessment in Conservation Planning



Services / Expertise

Environmental Systems Modeling
GIS Application Development

Markets

Government
Crop Managers
Conservation Districts

Project Location

Montpelier, Vermont

Date Completed

2012-present

Project Owner

USDA Natural Resources Conservation Service
Texas A&M University

Project ID#

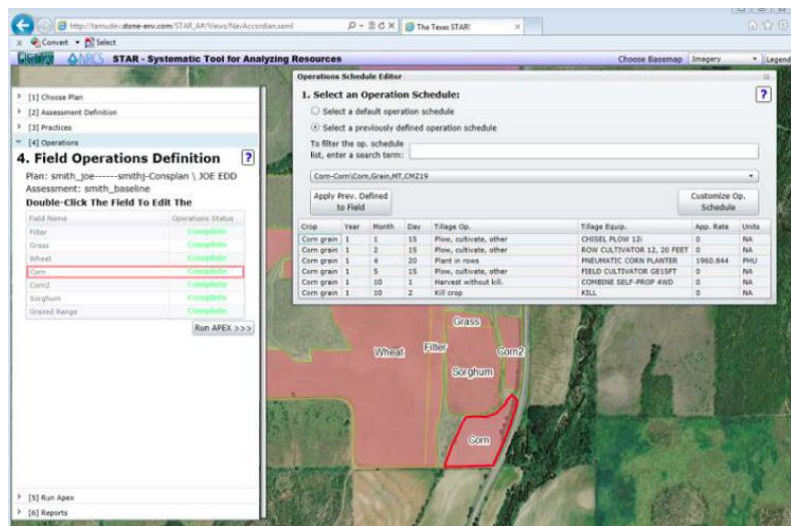
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STONE developed the Systematic Tool for Analyzing Resources (STAR), a web-based modeling tool for simulating the impacts of alternative conservation practices applied across individual farms to help government scientists conduct more efficient resource assessments. STAR incorporates the Agricultural Policy/Environmental Extender (APEX) model to help scientists determine the applicability and effectiveness of a range of farm-scale nutrient management and conservation plans.

Using APEX, modelers can evaluate the impact of a number of agricultural strategies and practices, including: evaluate the impacts of alternative fertilization, irrigation, and tillage strategies on crop yield and nutrient/soil budgets; assess potential improvements in water quality leaving a farm after the installation of vegetative buffers or grass waterways; investigate the impacts of alternative herd management on pasture land sustainability; and assess the environmental quality impacts of numerous other best management practices.

STAR has four modules available to users: 1. Conservation Practices Parameterization Module: allows for the selection and parameterization of a number of practices to be applied to individual farms; 2. Operation Schedule Definition: allows user to select from predefined operations schedules that can then be customized based on actual farm operations; 3. APEX Simulation Module: executes APEX simulations incorporating the practices and operations specified by the resource conservationist; and 4. Output Analysis Module: allows for the output and analysis of the model simulation which will return post-processed model results and analysis of alternative practices to the resource manager via the web-based user interface.

Users select an operation schedule for each field and can review and modify individual operations such as irrigation, fertilization, and pesticide applications. Users can then define conservation practices for each field in order to evaluate alternative management scenarios.