Tips For Selecting a Practical Decision Support Tool

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Decision support tools aid conservation planning by identifying opportunities for Best Management Practices (BMPs) and estimating potential outcomes or costs. It is important to consider tradeoffs to select the right tool for your project.

REGIONAL/STATE AVAILABILITY

Some tools are adapted to specific geographic regions. They can be used elsewhere, but additional data preparation or outcome validation may be required.

MODEL TYPE

Planning: BMP-focused tools that identify potential locations by using landscape and NRCS standards.

Estimation: Outcomes-focused tools that predict the benefits or costs of adopting BMPs.

SPATIAL EXPLICITNESS

Spatially Explicit: BMPs are in a precise spatial location and hydrology (water flow) is considered. Models generally take longer to run and require more processing power.

Spatially Implicit: The effects of BMPs are estimated without spatial location. In these models, soil type or properties are often considered, but not hydrology.

OUTCOMES MEASURED

Phosphorus, nitrogen sediment, economics, water storage, carbon. Be sure the outcomes are what you expect; some models only estimate total nutrient loads or nutrients in specific forms (e.g., nitrate).

ANALYSIS SCALE

Tools range from field scale to a HUC-2 watershed. Most tools run on the HUC-12 scale. Results from a field scale are often more precise than those at a large watershed scale.

INPUT DATA REQUIRED

Often corresponds to the analysis scale. Smaller analysis coverage (i.e., field) often requires more specific data. Larger coverage (i.e., large watershed) often requires less data collection but provides more generalized results.

PLATFORM

Consider what platform the model lives on and who will run the model. GIS applications like Q-GIS and ArcGIS are not as user-friendly as Excel or online applications. Some platforms (like ArcGIS) require paid accounts.

COMPUTER SPECIFICATIONS

The analysis scale and platform often determine how much memory and processing speed are required to run a model. Using the wrong computer can result in slow processing times or crashed programs.

MODELED LAND USE

Most water outcomes estimation models focus on cropland, while pastureland, forests, feedlots, and urban systems are harder to find a model for.

TIME REQUIRED

Models can take a few hours to several weeks to run, based on all the details discussed above. Some models contain default data, which allows you to run the model with little effort or choose how much time to invest.

DIFFICULTY

Models range in complexity due to the platform and steps involved. Some models can be run by students or interns, while others require extensive GIS knowledge. All model results should be validated by someone with local knowledge of the landscape and soils.

DATA SOURCES

Name	Available Data	Website
Web Soil Survey	Soils	websoilsurvey.nrcs.usda.gov
Geospatial Data Gateway	Boundaries, elevation, climate, roads, etc.	datagateway.nrcs.usda.gov
State GIS Databases	Boundaries, coarse elevation, roads, etc.	geodata.iowa.gov gisdata.mn.gov geodata.wisc.edu
National Agricultural Statistics Service	Annual farm survey: counts, acres, yields, etc.	nass.usda.gov
USDA Cropland CROS	Annual land cover	croplandcros.scinet.usda.gov
Agricultural Conservation Planning Framework Core Data	Watershed and field boundaries, land cover, soils, etc.	acpfdata.gis.iastate.edu/acpf/download
USGS StreamStats	Stream flow volume, coarse watershed delineation	usgs.gov/streamstats

ADDITIONAL RESOURCES

- **American Farmland Trust**: A Guide to Water Quality, Climate, Social, and Economic Outcomes Estimation Tools (*farmland.org/guide-to-outcomes-estimation-tools*)
- **Minnesota Board of Soil and Water Resources**: Water Quality Model, Tool, and Calculator Basics (*bwsr.state.mn.us/water-quality-tools-and-models*)

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