

INTEGRATED CROP MANAGEMENT

A photograph of a person in a field, possibly a farmer, with large, stylized text overlaid that reads "INTEGRATED CROP MANAGEMENT". The text is in a serif font, with "INTEGRATED CROP" in green and "MANAGEMENT" in white. The background shows a person in a field with tall grasses.

Sediment and total maximum daily loads

An understanding of total maximum daily loads (TMDLs) is important when planning and implementing conservation practices. You need to define and plan for TMDLs as part of your farm's conservation plan. But you also need to consider all the land and farmers in the entire watershed, as well as the impact of management decisions that you and other farmers make on the whole watershed.

When a TMDL is developed, it identifies the adverse impact that a pollutant could have on a water body, and calculates the maximum amount of a pollutant (sediment, nutrients, and pathogens) that a water body can receive and still meet water quality standards. (Standards are usually determined by the intended use of the water body--known as "fish-able, swim-able, drink-able").

After the maximum amount of a pollutant that a water body contains has been determined, an allocation of that amount of pollutant to the sources in the watershed can be developed. It is still too early to say for sure, but for Iowa farms within impaired watersheds (watersheds requiring the development of a TMDL), designating allocations for "sources in the watershed" could mean converting highly erodible row crop fields to a sod-based crop, changing tillage practices, or using no-till, and applying manure and fertilizer according to a set of best management practices.

Is sediment really a TMDL problem?

The Environmental Protection Agency (EPA) has identified more than 200 types of impairments (sediment is listed as the number one pollutant). The importance of controlling sediment cannot be overstated. Soil loss due to erosion is compounded by phosphorus, nitrate, and other nutrient pollution, which also affects water quality.

What do TMDLs mean to Iowa agriculture?

The EPA and Iowa Department of Natural Resources (IDNR) are exploring ways to apply the TMDL model to agriculture in Iowa. But because Iowa farmfields do not have discharge pipes (with the exception of drainage tile outlets), and sediment can enter a waterway from many points rather than one point of discharge, the runoff from farmfields is classified as originating from non-point sources. If the EPA uses a non-point source approach for sediment TMDLs, it will change the way Iowa producers' farm the land.

How quickly could you be affected?

Currently, the EPA has identified 157 of Iowa's streams, rivers, and lakes as impaired water bodies, or not meeting state water quality standards. To address the problem, the IDNR is writing TMDLs that address pollutant reduction in these impaired water bodies.

How might a TMDL impact an Iowa farming operation?

Keeping sediment out of water bodies means limiting erosion. When thinking about how TMDLs could impact your operation, think in terms of soil conservation techniques.

Tillage practices. Whether using no-till, conservation tillage, or a conventional tillage system, harvest is the best time to begin residue management for next year. Aim for residue cover of 30 percent at planting time for significant reductions in soil erosion. Other benefits include less time in the field, lower fuel consumption, and improved soil physical and chemical properties.

Waterways and terraces. Wide, shallow, sod-lined waterways reduce the speed of water by providing a grass cushion, thereby preventing gullies. They also filter out sediments. Terraces are flexible and adaptable to the needs of the producer, soil type, and equipment.

Buffers. Buffers (areas or strips of land where permanent vegetation is established by row crops) are designed to intercept pollutants, stop sediment flow, and protect soil. They also enhance fish and wildlife habitat, increase biodiversity, and beautify agricultural landscapes. And buffers can pay. Check with your local conservationist about enrolling a buffer area in Conservation Reserve Program.

Best management practices for nutrient use. A nutrient management plan helps manage the amount, source, placement, form, and timing of nutrients. A well-implemented nutrient management plan should maintain (or improve) the physical, chemical, and biological condition of your soil.

Reducing pasture erosion. The best overall erosion management for pasture is to establish and maintain a good sod cover and residual turf. Extended and close grazing and high animal traffic generally lead to weakened plants, thinner sod cover, and the potential for surface erosion, particularly on sloping sites.

Another way to begin thinking about TMDLs is to talk to your neighbors about the sediment in your watershed and about erosion in terms of watershed boundaries instead of property lines.

Talk to your county soil and water conservationist about conservation practices for your operation. For more information on TMDLs in general, go to the [Total Maximum Daily Load website](#) [1]. For Iowa TMDL information, visit the [Iowa Impaired Waters website](#) [2]. Examples of approved sediment TMDLs can be found [here](#) [3].

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Links:

[1] <http://www.epa.gov/owowwtr1/tmdl/>

[2] <http://www.state.ia.us/dnr/organiza/epd/wtresrce/303dnotc.htm>

[3] <http://www.ipm.iastate.edu/ipm/icm/www.epa.gov/owow/tmdl/examples/sediment.html>

IOWA STATE UNIVERSITY
University Extension