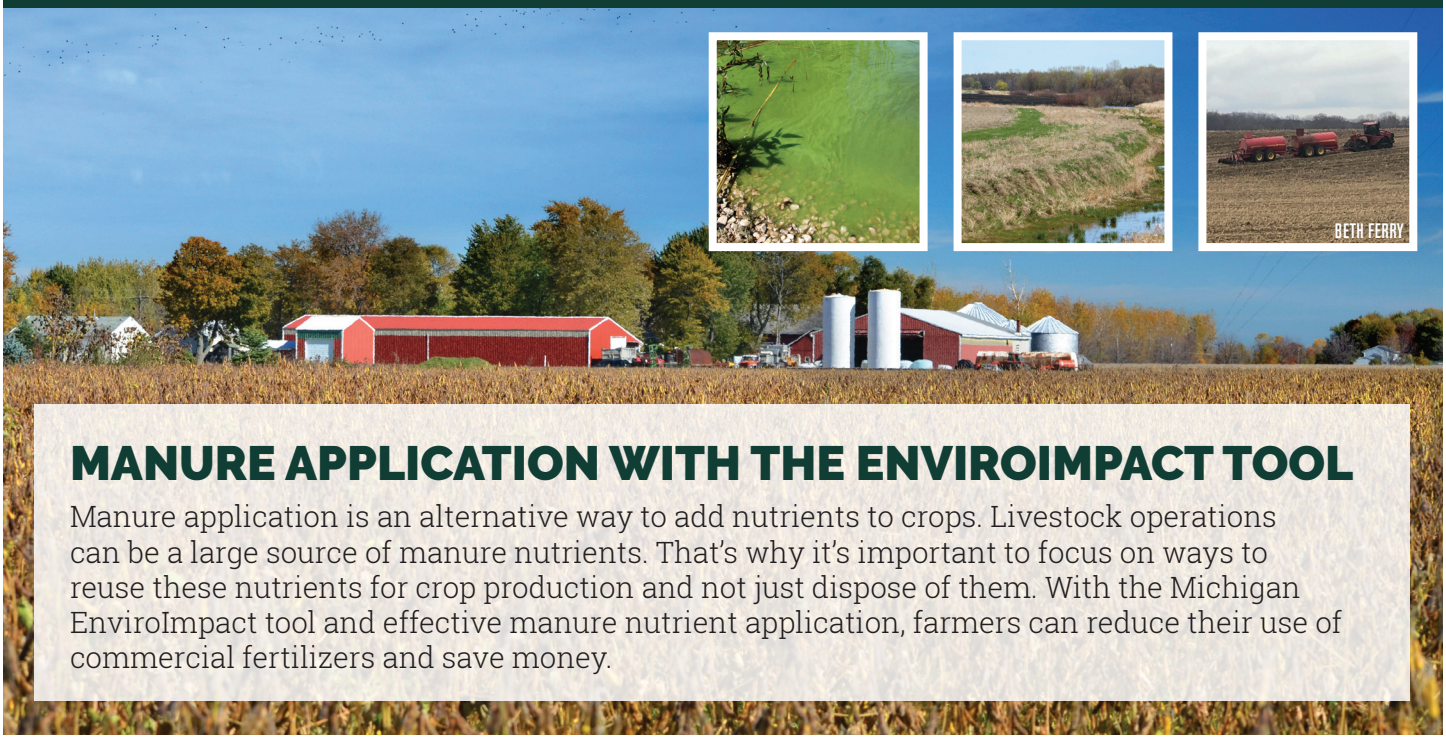
MICHIGAN STATE UNIVERSITY

Michigan EnviroImpact

Part of the Regional Runoff Risk Decision Support Tools Network



MANURE APPLICATION WITH THE ENVIROIMPACT TOOL

Manure application is an alternative way to add nutrients to crops. Livestock operations can be a large source of manure nutrients. That's why it's important to focus on ways to reuse these nutrients for crop production and not just dispose of them. With the Michigan EnviroImpact tool and effective manure nutrient application, farmers can reduce their use of commercial fertilizers and save money.

IMPACT OF NUTRIENT RUNOFF ON THE GREAT LAKES

When it rains, nutrients like nitrogen and phosphorus can wash into nearby waterways as runoff. In Michigan, almost all of our waterways flow to the Great Lakes, where extra nutrients can remain for long periods of time.

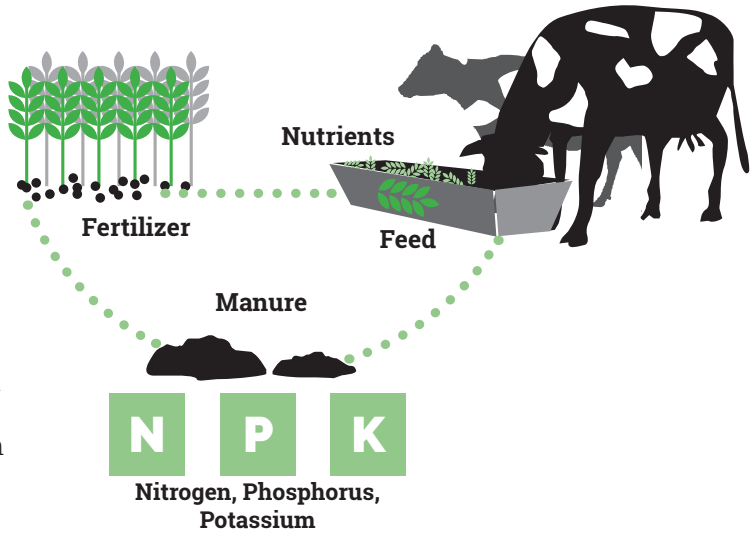
Excess nitrogen and phosphorus in ponds, rivers, and lakes can lead to algae overgrowth, sometimes called harmful algal blooms. These algal blooms can impact watershed health. When decomposing, they consume oxygen that fish and other aquatic species need to live. Additionally, blooms can degrade the quality of our drinking water. Beach accessibility and outdoor recreation may also be limited as some types of algae produce toxins that damage human and animal health.

MANURE APPLICATION PLANNING

Proper planning helps keep applied manure nutrients on farmlands and can reduce the risk of runoff into the Great Lakes watershed. Since the timing of manure application is critical, farmers should consider the following factors:

- Manure storage capacity
- Slope and drainage of fields
- Weather forecasts and seasonal conditions
- Snow and water saturation levels in fields
- Soil temperature, especially frozen ground
- Type of applied manure (e.g., solid vs. liquid)

Farmers should keep records of manure applications, which over time can lead to a greater understanding of field dynamics and nutrient needs for different crop rotations. These records should include current soil test results, manure nutrient analysis or book values, and realistic yield goals. All of these factors are important in planning the manure application rate.

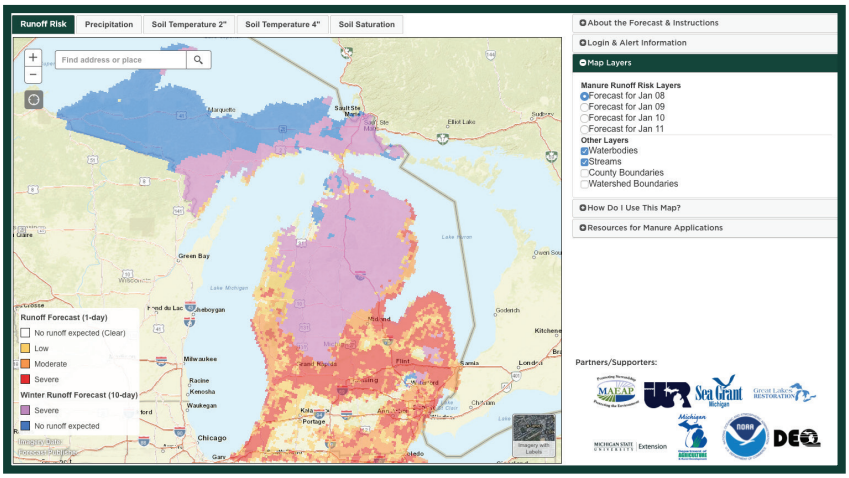


WHAT IS THE MICHIGAN ENVIROIMPACT TOOL?

The Michigan EnviroImpact tool shows daily runoff risk across Michigan using National Weather Service information about precipitation, soil moisture and temperature, and landscape characteristics. Farmers can use this information as a decision support tool to effectively plan short-term manure application.

RUNOFF RISK FORECAST

The runoff risk forecast is derived from real-time precipitation and temperature forecasts. This information is combined with snow melt, soil moisture and temperature, and other landscape characteristics to forecast times when the risk of runoff will be higher. These prediction models were tested and validated using data from edge-of-field monitoring sites across the region.



Using the base map for reference, users can toggle among runoff risk assessments for the current 24-hour period and up to three days ahead. By clicking on the map, users can see seven-day runoff risk and precipitation forecasts for specific locations. The runoff risks range from low to high and include a winter condition mode, where the daily average snow depth and soil temperature are taken into account.

ALERTS, TUTORIALS, AND MORE RESOURCES

With this free web tool, users can create alerts for specific locations to get email or text updates for runoff risks. Within the tool, there are tutorials to learn how to interact with the map, create an account, and create an alert. Users can also explore manure application resources on the webpage.

> *"Farmers have to be excellent stewards. There are nutrients in manure, and we want to, number one, protect these nutrients. We don't want them running off. It takes a lot of money with fuel, wear and tear on machinery to get the manure out to where it needs to be. We need to wisely manage resources and capture all of those nutrients."*

Brent Wilson
Wilson Centennial Farm (established in 1851)

Create a free account, watch tutorials, and learn more at:
www.enviroimpact.iwr.msu.edu

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