

Ag retailers and water quality solutions for the Western Lake Erie Basin

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The Western Lake Erie Basin (WLEB) of Lake Erie grabbed headlines across the nation this summer when more than 400,000 Toledo residents lost access to safe water as a result of toxins from a harmful algal bloom (HAB). This latest incident has accelerated scrutiny of practices leading to excess phosphorus (P) runoff from cropland in the watershed.

Lake Erie's water woes stem from factors including shallow, warm waters; a vast and gently sloped watershed

of urban and agricultural land; and intensified rainfall runoff events in recent years. Attention in the 1970s and 1980s was successfully focused on reducing particulate phosphorus attached to eroded sediment by reducing tillage and by improving waste and stormwater treatment. The renewed HAB problem over the past 15 years has been tied to agriculture and dissolved reactive P (DRP), which is more readily accessible to algae as a nutrient, fueling explosive population growth (4).



| Algal bloom in Lake Erie. Source: NASA Earth Observatory.

With algal blooms increasing in intensity and frequency, policymakers are taking action. According to the International Joint Commission (IJC), formed years ago by the U.S. and Canada to manage their border waterways, current voluntary agricultural best management practices (BMPs) are not enough to reduce P loads to target levels (3). In February of this year, the IJC recommended categorizing Lake Erie as “impaired waters” under the Clean Water Act. This action would require a P Total Maximum Daily Load (TMDL) plan for the WLEB, overseen by the USEPA. Such a plan would center on the Maumee River watershed, for which IJC recommends a 37% reduction in March–June DRP loading into WLEB waters.

Most recently, Ohio enacted new legislation requiring certification for nutrient applicators working 50 or more acres, the first step the Ohio legislature has taken to regulate nutrient management. The aim is to increase awareness about fertilizer losses and improve practices by applicators.

Ag retail leadership

Ag retailers are proactively responding to nutrient loading issues in their watersheds. These voluntary measures have the potential to facilitate improvements in nutrient management and water quality in ways that best meet the needs of growers, retailers, and consumers.

For instance, the Nutrient Stewardship Council, in collaboration with ag retailers, non-governmental organizations, universities, and government agencies, recently unveiled a 4R Certification Program at 4rcertified.org. The 4R message focuses on the right source, right rate, right time, and right place to limit fertilizer movement from fields. The certification program for retailers has been launched exclusively in the WLEB, with 49 retailers currently enrolled and taking steps to gain certification. The Ohio Agribusiness Association is administering the program, which includes independent third-party verification.

Legacy Farmers Cooperative in Findlay, OH is a participant. “We believe in doing the right thing both environmentally and economically for the grower,” says Logan Haake, CCA and precision ag manager for the company. “Our focus is putting product where it has the greatest likelihood to benefit the crop and reduces the chances it will move off-site.”

Sunrise Cooperative in Fremont, OH, is working to meet the HAB challenge by offering farmers opportunities to apply P in ways that reduce losses while maintaining yield. Scott Chalfin, CCA, TSP, and agronomy sales consultant for the cooperative reports, “We pride ourselves on doing the right thing for the customer as well as the environment. For instance, we have reached approximately 70% participation in grid soil sampling and variable-rate fertilizer application. When calculating prescriptions,



CCA Logan Haake of Legacy Farmers Cooperative enters precision management data.



CCA Scott Chalfin of Sunrise Cooperative reviews grid sampling data to develop nutrient recommendations for his client.

we have the ability to put a cap on each fertilizer being applied to ensure that we don't apply more than the next crop can utilize.”

Across the Midwest, ag retailers are pooling resources to find new ways to improve resource management. In Illinois, the Council on Best Management Practices initiated “Keep it for the Crop 2025.” The group supports ongoing research, education of farmers and ag retailers, and implementing the 4Rs, supported in part by a fee on fertilizer sales. Agriculture’s Clean Water Alliance in Iowa is comprised of 13 ag retailers committed to improving agronomic performance while protecting the environment in the Des Moines and Raccoon River watersheds. The Alliance has worked with the Natural Resources Conservation Service (NRCS), targeting several watersheds for nutrient management planning, cover crops, and denitrifying bioreactors through the Environmental Quality Incentives Program (EQIP).

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Products and services for nutrient management

Ag retailers are uniquely positioned to influence adoption of many promising products and services in sensitive areas. With support from the Great Lakes Protection Fund, the National Fish and Wildlife Foundation and Ohio NRCS, the IPM Institute of North America has been working with retailers to promote services that can be profitably marketed to growers, including variable-rate soil testing and application, cover crops, and strip till. The Institute is an independent nonprofit organization whose mission is to leverage marketplace power to improve health, environment, and economics in agriculture and communities.

While adoption of GPS soil sampling has been increasing over many years, there is still room for improvement. A recent study from Purdue showed that a little over half of respondents (56.7%) use GPS for soil sampling (2). Soil sampling allows agronomists to make informed decisions on where fertilizer is needed and reduce application rates where they are not.

Cover crops are another promising opportunity for retailers to offer sales and service. A 2012–2013 survey from the Conservation Technology Information Center and USDA North Central Sustainable Agriculture Research and Education (1) reports cover crop acreage has risen 350% since 2008. The WLEB is no exception. Reports Chalfin, “Cover crops have been taking off over the last three to four years. We make sure our customers find a variety that fits their program and knows what may be involved in managing that cover crop.”

Strip till has potential to improve water quality by incorporating nutrients into the soil while maintaining

residue to protect soils. Custom strip tillage has seen widespread adoption across many Plains states. Yet, according to retailer surveys conducted by the IPM Institute, less than 3% of acres in the Sandusky River Watershed, which drains into the WLEB, received strip tillage in 2013.

Innovations in equipment may make custom strip till more appealing and feasible for WLEB retailers to offer. New 40- to 60-ft toolbars are available, which can cover 225 to 400 ac a day. Many of these units also enable variable-rate application and GPS guidance, allowing ag retailers to put nutrients where they can be utilized by the crop.

Retailers can also notify growers as soon as custom fertilizer applications are completed in a field, so the farmer can lightly incorporate, and alert farmers to conditions in their fields that they may be unaware of such as drain tile blowouts, gullies, or stream bank issues.

Nutrient management planning and implementation through NRCS EQIP programs are potentially promising opportunities for retailers to offset the costs of developing in-depth nutrient management strategies for their clients. NRCS will cover the majority of the cost for developing and implementing nutrient management plans on the farm. There are currently 32 new Technical Service Providers (TSPs) certified to write Nutrient Management Conservation Activity Plans (CAP 104) in the WLEB as a result of a streamlined training offered to CCAs in February 2014 by NRCS, Ohio State University Extension, and the IPM Institute. Retailers without the personnel or time to write plans can contract with the IPM Institute or other independent TSPs in the watershed to write nutrient management plans with their clients. &

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