SIERRA CLUB
IOWA CHAPTER

Nutrient Reduction is More Than Cover Crops

When someone mentions nutrient reduction, one of the first things that comes to mind is planting cover crops. Cover crops are a good solution, but not the only one. A recent study points out that farmers must take the next step beyond cover crops if we are to effectively reduce nutrients.

The study "Increased extreme precipitation challenges nitrogen load management to the Gulf of Mexico" was published in Communications Earth and Environment in September 18, 2020, by Chaoqun Lu, Jien Zhang, Hanqin Tian, William G. Crumpton, Mathew J. Helmers, Wei-Jun Cai, Charles S. Hopkinson, and Steven E. Lohrenz.

The researchers stated "Our study suggest that special attention should be paid to the effectiveness of N reduction practices during hydroclimate extreme events, extreme precipitation in particular." They noted, "On average, the reduction in N yield during non-extreme precipitation days accounted for two-thirds of the annual total reduction, leaving one-third to the extreme precipitation days". Further they state, "up to 16% of annual N load could be potentially reduced during 1980-2017 by removing fall application and applying N fertilizer after planting, without harming the productivity of major crops." The study defines extreme precipitation as "days with daily precipitation over the 90th percentiles in each month."

As that study stated, "Basin-wide, extreme precipitation events occurred only 8.6 days a year (2.4% of 365 days) on average, but they contributed to approximately one-third of annual total water yields and N yields."

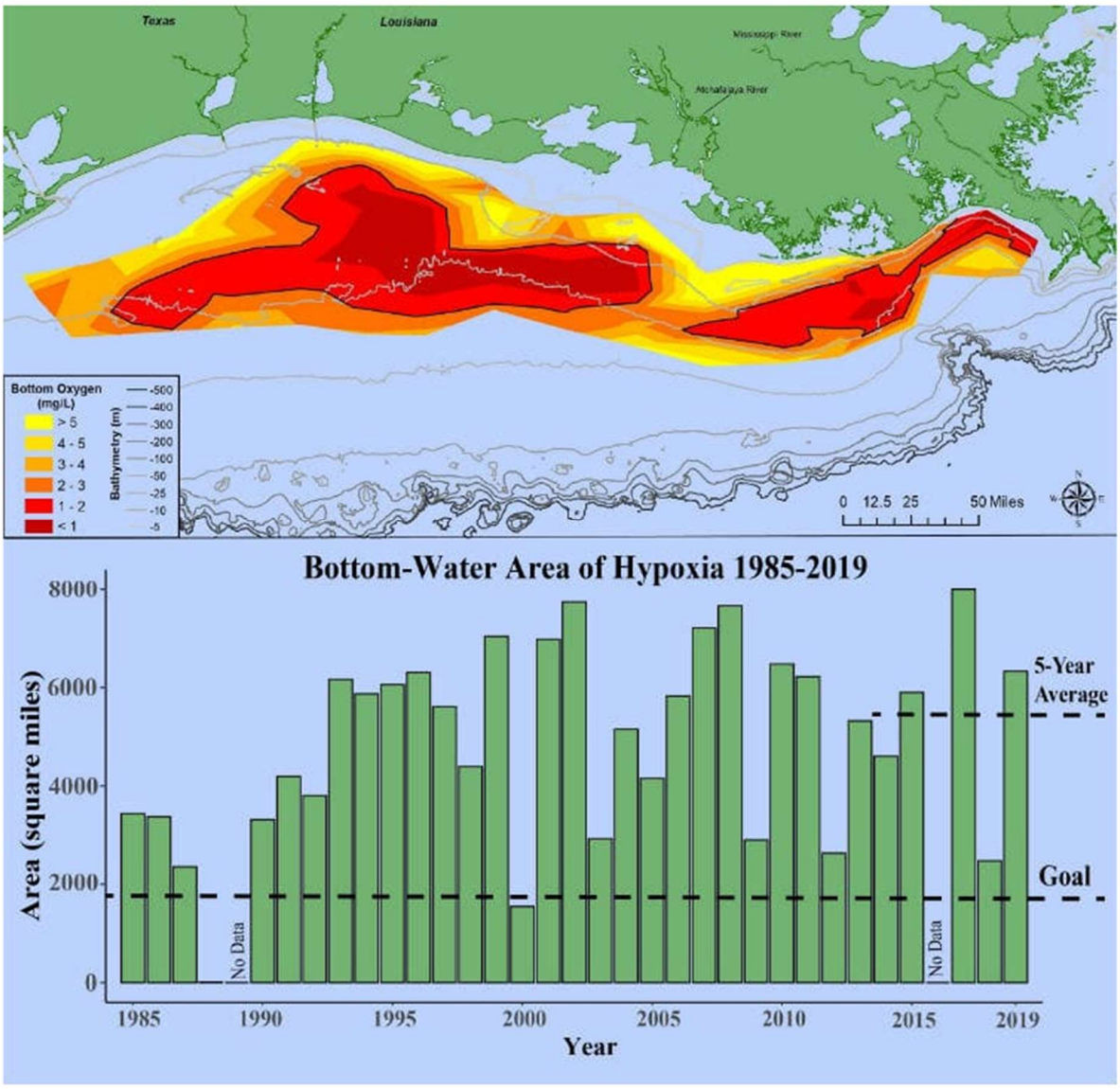
In other words, those 8.6 days account for one-third of the nitrogen contributed to the Gulf of Mexico. With this study in mind, it makes sense to apply fertilizers to fields after they are planted and, therefore, the crops are more likely to utilize the fertilizer. Second, it makes sense to increase the number farms implementing techniques that retain storm water and then filter it, such as edge-of field practices (bioreactors and saturated buffers), stream buffers, wetlands, grassed waterways, increased soil carbon, no-till farming.

Sources

Chaoqun Lu, Jien Zhang, Hanqin Tian, William G. Crumpton, Mathew J. Helmers, Wei-Jun Cai, Charles S. Hopkinson, and Steven E. Lohrenz, "Increased extreme precipitation challenges nitrogen load management to the Gulf of Mexico", Communications Earth and Environment, September 18, 2020

"ISU finds nitrogen runoff tightly linked to extreme rain", Corridor Business Journal, September 21, 2020

The Dead Zone



*Top panel: At **6,952 square miles**, the 2019 hypoxic zone in the Gulf of Mexico is the 8th largest ever measured in the 33-year record. The red area denotes two milligrams per liter of oxygen or lower, the level which is considered hypoxic, at the bottom of the seafloor. **Bottom panel**: The long-term measured size of the hypoxic zone, indicated with green bars, measured during ship surveys since 1985; black dashed lines indicate the target goal established by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and the five-year average measured size of the zone. Graphic credit: Louisiana Universities Marine Consortium.*