

# Cleaner Fertilizer

*New center looks for ways to decrease harm caused by phosphorus fertilizers used in farming.*

A new research center based on Centennial Campus seeks to reduce the country's dependence on phosphorus fertilizers in agriculture while also reducing the amount going into soil and waterways.

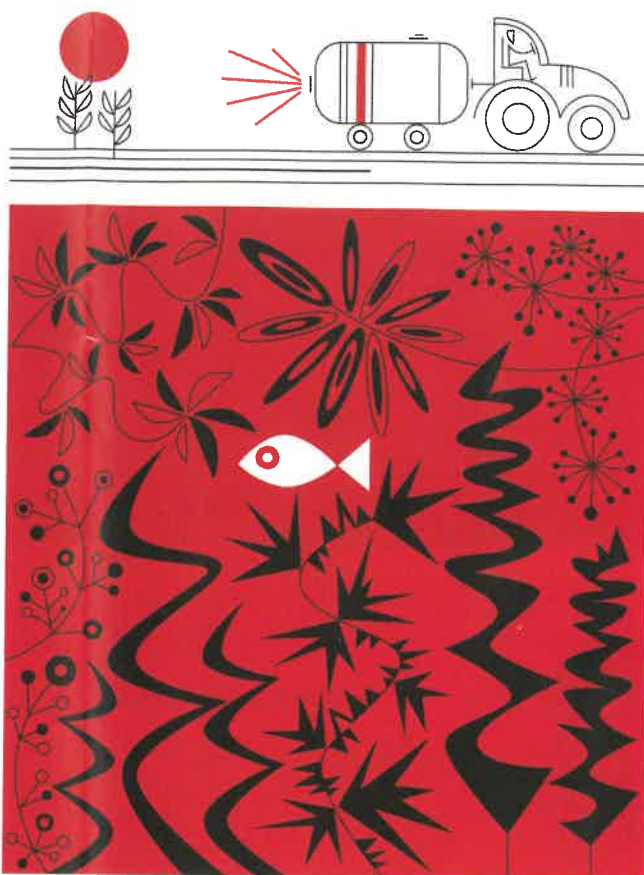
A five-year, \$25 million grant from the National Science Foundation will fund the center, called the NSF Science and Technology Center — Science and Technologies for Phosphorus Sustainability, or STEPS Center.

Phosphorus is a mineral used in fertilizers and is usually obtained by mining underground phosphate deposits — a process that disrupts natural habitats in ways that are difficult to reverse. Once mined, some 80 percent of the phosphorus used on crops finds its way into soil and waterways, says Jacob Jones, director of the new center, which is a collaboration between NC State and seven partner institutions. Phosphorus in lakes and rivers can cause algal blooms, which rob the water of oxygen, killing marine life and making the water unsafe for drinking or recreation.

The problem is widespread, seen in the Great Lakes of the Midwest and in Florida's Everglades, or in North Carolina, where algal blooms have caused fish kills in the Neuse River. Jones says that while nitrogen, another mineral used in fertilizers, has been studied extensively, this will be the first large-scale, multipronged effort to minimize the effects of phosphorus.

Jones says the research will tackle the problem from two directions. On the conservation side, economists and plant scientists might focus on ways to use less phosphorus to fertilize crops. Another area of research will find ways to capture phosphorus before it harms the environment, by limiting agricultural runoff, for example. "We need to develop technologies to get it out of the water so that we can reuse it," says Jones, a professor of materials engineering. "Using less of it is fine, but we also need to recover it."

MARTI MAGUIRE



## STEPS Partnerships

Six NC State colleges are involved in STEPS Center.  
Partner institutions are:

Research Triangle Institute • Appalachian State University  
Joint School of Nanoscience and Nanoengineering (N.C. A&T and  
UNC-Greensboro) • University of Florida • Marquette University  
Arizona State University • University of Illinois at Urbana-Champaign