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Fertilizer Rates Increase in the Top 10 Hog States, But Excess Nutrient Levels Are Falling

Finding: Fertilizers & Pesticides August 03, 2020

Fertilizer Rates Increase in the Top 10 Hog States, But Excess Nutrient Levels Are Falling

by Richard Nehring

Fertilizers provide nutrients, such as nitrogen and phosphorous, that are essential in the production of crops. However, excess nutrients can build up in the soil, contribute to air pollution, and contaminate groundwater, streams, and rivers. In recent years, total fertilizer applications have generally increased in the 10 States with the highest value of hog production — Iowa, Illinois, Indiana, Kansas, Minnesota, Missouri, Nebraska, North Carolina, Ohio, and Oklahoma. Hog farmers in these States often use a combination of chemical fertilizers and manure to grow crops, particularly corn.

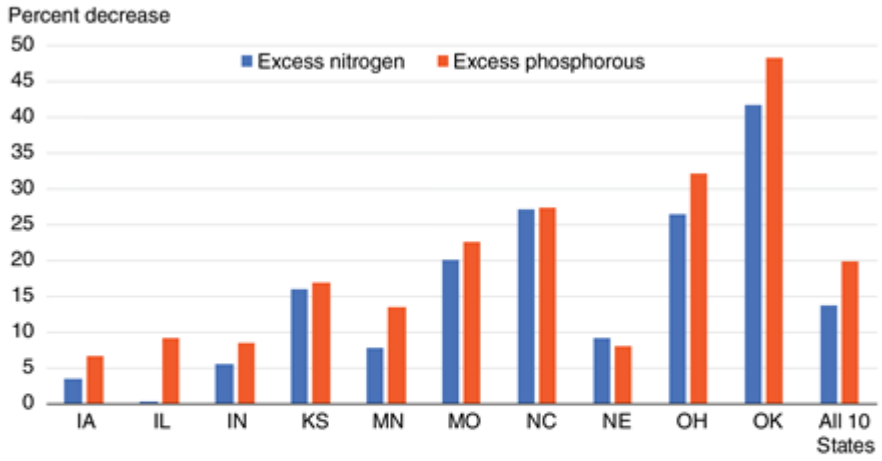
According to data from USDA's National Agricultural Statistics Service, nitrogen and phosphorous application rates between 2007-09 and 2015-17 increased in all 10 States except Iowa (where nitrogen rates declined) and Indiana (where both nitrogen and phosphorous rates declined). In addition, many farms in the States examined rely on manure for crop nutrients, particularly in more rural areas. USDA, Economic Research Service researchers found that livestock farmers in these States tended to supplement manure use with chemical fertilizer, boosting excess nutrients on such farms by more than

10 percent on average. Compared to chemical fertilizers, manure applications tend to create more excess nutrients per acre. Thus, where manure is more heavily used relative to chemical fertilizers, excess nutrient discharge is higher. Researchers also found that in the key corn- and hog-producing States of Illinois and Iowa, higher corn yields were consistent with higher nitrogen uptake (crop absorption) and lower excess nitrogen.

In 2015-2017, excess nitrogen and phosphorous per harvested acre were higher in urban than rural areas because of higher application rates for chemical fertilizer. Urban areas (which accounted for nearly 25 percent of all harvested cropland) had 87.04 pounds of excess nitrogen and 36.02 pounds of excess phosphorous, compared to 82.46 pounds of excess nitrogen and 28.21 pounds of excess phosphorous in rural areas. The urban areas of Minnesota, Indiana, and Ohio were particularly susceptible to excess nitrogen and phosphorous loadings.

Excess nutrients decreased in all States except Illinois between 2007-2009 and 2015-2017, an average of about 14 percent for excess nitrogen and 20 percent for excess phosphorous. Excess nitrogen levels were lowest in Oklahoma (43 pounds per harvested acre), North Carolina (56 pounds), and Ohio (66 pounds) in 2015-2017. These States also saw the biggest decreases in excess nitrogen between 2007-2009 and 2015-2017. By comparison, excess phosphorous levels were lowest in Oklahoma (about 15 pounds per harvested acre), which also had the biggest decrease in excess phosphorous between 2007-2009 and 2015-2017, at 48.3 percent.

Excess nutrients on farms in major hog States declined between 2007-09 and 2015-17, reducing the potential for groundwater contamination, excess runoff to streams, and air pollution



Note: Chart shows excess nutrients between 2007-09 and 2015-17 for the top 10 hog States: Iowa (IA), Illinois (IL), Indiana (IN), Kansas (KS), Minnesota (MN), Missouri (MO), Nebraska (NE), North Carolina (NC), Ohio (OH), and Oklahoma (OK). Excess nitrogen decrease in Illinois was near zero (0.1 percent).
Source: USDA, Economic Research Service (ERS) analysis of model estimates of excess manure nutrients based on livestock inventories, crop plantings, and yield data from ERS and USDA, National Agricultural Statistical Service, Agricultural Resource Management Survey, 2007-09 and 2015-17.

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