Water Conservation Practices Mitigate Nutrient Losses from Turf

A dense and healthy lawn is capable of retaining properly applied nitrogen fertilizer with minimal nutrient loss to the environment. In Texas and much of the southern United States, urban water conservation strategies often include reduced irrigation programs, which can diminish the health and density of residential lawns temporarily. The impact of water conservation programs such as deficit irrigation on the ability of turfgrasses to retain nitrogen fertilizer is not well understood.

In the July–August issue of the Journal of Environmental Quality, researchers report on a two-year field study that utilized specially designed runoff plots to estimate the effects of water-conserving irrigation practices on runoff volume and nutrient losses from turf. The team found that irrigating at reduced amounts lead to a decline in turf aesthetics, less runoff, and less nitrate in the first year regardless of nitrogen rate. However, cumulative effects of high nitrogen applications under these drier conditions increased nitrate concentration in fertilized plots the following year (compared with well-watered turf).

These findings indicate water conservation programs can be effective tools for reducing nitrate pollution from turf, but conventional fertilizer rates should be adjusted downward to maintain these benefits.


Mixtures of Bedding Material May Reduce Odors in Deep-Bedded Livestock Facilities

Bedding mixtures containing pine shavings produce less odors and have lower levels of total *E. coli* compared with those containing other crop- and wood-based materials. While availability and affordability may limit the use of pine bedding in beef deep-bedded facilities, it may be possible to see some of the benefits of pine bedding if it is mixed with readily available and affordable corn stover bedding.

In a recent study published in the July–August 2017 issue of the Journal of Environmental Quality, mixtures of bedding materials, containing 0, 10, 20, 30, 40, 60, 80, and 100% pine chips combined with corn stover, were tested over a seven-week period for odor generation and presence of *E. coli*. Bedding material did not affect *E. coli*. However, including even 10% pine chips in the mixture lowered the concentration of skatole, a highly odorous compound emitted from livestock waste. When 100% pine chips were used, skatole was reduced by 88% compared with using corn stover alone. Including greater than 60% pine chips in the mixture increased the concentration of odorous sulfur compounds up to 2.4 times compared with corn stover.

A bedding material mixture that contains 30 to 60% pine and 40 to 70% corn stover may be the ideal combination to mitigate odorous emissions from livestock facilities using deep-bedded systems.