Archived Publication

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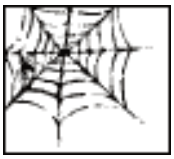

EPA promulgated regulations for Concentrated Animal Feeding Operations (CAFOs) in February 12, 2003 that expanded the number of operations covered by the CAFO regulations and included requirements to address the land application of manure from CAFOs. The rule became effective on April 14, 2003. NPDES-authorized states were required to modify their programs by February 2005 and develop state technical standards for nutrient management. On February 28, 2005, in response to litigation brought by various organizations, the Second Circuit court issued its decision in *Waterkeeper Alliance et al. v. EPA*, 399 F.3d 486 (2d Cir. 2005). EPA has updated the CAFO rule to reflect the changes requested by the Court. Visit www.epa.gov/npdes/caforule to view the 2008 CAFO Final Rule and supporting documents.

APPENDIX G - LEACHING INDEX

Tools such as the Soil Nitrogen Leaching Index have been developed to assist field staff, watershed planners, and land users in evaluating various land forms and management practices for potential risk of nitrogen and phosphorus movement to water bodies. The vulnerability ratings of the Leaching Index (i.e., inches of water infiltrating below the 1- meter root zone) address the ability of soluble nitrogen to move below the crop root zone and into groundwater.

The material contained in this appendix should be used for your informational purposes only. Specific leaching index calculations should be done by NRCS, your local extension, or a certified nutrient management planner.

Description

The Leaching Index (LI) is a simple index of potential leaching based on average annual percolation and seasonal rainfall distribution. It is important in determining the amount of nitrate nitrogen leached. The LI considers the saturated hydraulic conductivity and storage capacity of individual soils (based on various regions of the country), the average annual rainfall, and the seasonal distribution of that rainfall. It does not look at the leaching potential of specific nutrients, but rather the intrinsic probability of leaching occurring if nutrients are present and available to leach.

Instructions for Calculating Your Leaching Index

The LI for local areas is in the USDA/NRCS Field Office Technical Guide (FOTG), Section II-3, or you can calculate it using the following equations:

$$LI = P \times SI$$

where:

$$P = \frac{(p - 0.4s)^2}{p + 0.6s}$$

where:

p	=	annual precipitation
s	=	(1,000/curve number) - 10

$$SI = \left(\frac{2PW}{p} \right)^{1/3}$$

where:

PW = fall and winter precipitation when crop growth is minimal, usually the sum of precipitation during October, November, December, January, and February

An LI below 2 inches would indicate that soluble nitrogen would likely not leach below the root zone, whereas an LI between 2 and 10 inches indicates that soluble nitrogen may leach below that zone. You should consider nutrient management practices and techniques, such as pre-sidedress nitrate nitrogen testing (which measures soil nitrate during the growing season rather than prior to it) and use of a nitrification inhibitor.

An LI greater than 10 inches indicates that soluble nitrogen leaches below the root zone. You should use an intense nitrogen management plan to minimize nitrate nitrogen movement. This would include careful management of applied nitrogen, precise timing to match crop utilization, conservation practices that restrict water percolation and leaching, and covering crops to capture and retain nutrients in the upper soil profile.

References

USDA/NRCS Field Office Technical Guide.

Core4 Conservation Practices, August 1999.

Who to Contact for More Information

Your Local Cooperative Cooperative Extension Office
Your Local Land Grant University
National Water Management Center/Natural Resources Conservation Service (USDA)