

SOIL RATING FOR NITRATE AND SOLUBLE NUTRIENTS

Introduction

This section provides a way to determine the degree to which water percolates below the root zone in certain soils. Percolating water containing dissolved nitrates or other soluble nutrients can be a hazard to ground water. The method is based on a Leaching Index (LI).

For areas with ground water concerns, the LI should be determined to evaluate the potential for contaminating the ground water with soluble nutrients. In addition, nutrient management policy requires LI be used in selected watersheds to assess the potential for nitrogen leaching. The LI uses annual precipitation, hydrologic soil group, and rainfall distribution data.

Leaching Index

The LI map for each hydrologic soil group has not changed from the previous version (1990). The hydrologic group describes those soils that do not have dual hydrologic ratings because of differences in drainage. Soils with dual hydrologic rating such as A/D (drained/undrained) should be evaluated on the basis of the current drainage status. If the soil has a high LI and is over a shallow aquifer, soluble nutrients-especially nitrates-may contaminate the water.

The LI does not account for irrigation. If irrigation is applied only to supply plant needs, there will be little additional loss below the root zone. The additional loss would be relative to the precipitation events after the soil profile is saturated or nearly saturated due to irrigation.

In arid regions of the U.S. areas of marginal water quality, the amount of irrigation water applied includes a leaching fraction to ensure that salts do not build up in the soil. If a leaching fraction is applied, this amount of water must be added to the LI. For example, if the leaching fraction is 1.2 and irrigation is applied to make up a 4-inch soil-water deficit, a 4.8 inch (1.2 x 4.0) irrigation would be applied. The LI should be increased by 0.8 inches. The same calculation must be made for each irrigation.

Procedure

Follow these steps to determine the leaching index of a certain soil:

1. Find the soil's hydrologic group.
2. Locate the Iso-leaching map for that group.
3. From the map, based on the soil location, determine the LI.

Guidelines for Recommendations

| LI | Potential Leaching | Technical Guidance |
|------------------|---|--|
| < 2 | Low potential to contribute to soluble nutrient leaching below the root zone | None |
| > = 2 and < = 10 | Moderate potential to contribute to soluble nutrient leaching below the root zone | Nutrient Management (590) should be planned. |
| > 10 | High potential to contribute to soluble nutrient leaching below the root zone | Nutrient Management (590) should be planned. Other conservation practices that improve the soils available water holding capacity and improve nutrient use efficiency should be considered. Examples are Cover Crops (340) to scavenge nutrients, Sod-Based Rotations (328), Long-Term No-Till (778), and edge-of-field practices such as Filter Strips (393) and Riparian Forest Buffers (391). |