SOIL RATING FOR NITRATE AND SOLUBLE NUTRIENTS

Introduction

This section provides a way to determine the degree to which water percolates below the rootzone in certain soils. Percolating water containing dissolved nitrates or other soluble nutrients that could be a hazard to ground water. The method is based on a Leaching Index (LI)[1].

For areas with ground water concerns, the LI should be determined to evaluate the potential for contaminating the ground water with soluble nutrients.

Leaching index

The LI was developed using annual precipitation, rainfall distribution data and hydrologic soil groups. Climatic data was used for a weather station located in the county, where possible. If no weather station data was available for a county, data from an adjacent county was used. The weather data was obtained from the SCS/NRCS Climatic Data Access Network in Portland, Oregon and reflects weather data collected from 1950 through 1980.

The values for each map unit reflect the drainage condition expressed in the map unit description in the Soil Survey report.

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

Guidelines for recommendations:

A LI 0 - 2 would probably not contribute to soluble nutrient leaching below the rootzone.

A LI 3 - 9 may contribute to soluble nutrient leaching below the rootzone and nutrient management should be considered.

A LI 10+ will contribute to soluble nutrient leaching below the rootzone. Nutrient management practices should be intense or soluble nutrients should not be applied. Also, consider using conservation practices that minimize infiltration.

1/ The method to calculate the Leaching Index was developed by J. R. Williams and D. E. Kissel in "Water Percolation: An Indicator of N Leaching Potential", from Managing Nitrogen For Groundwater Quantity and Farm Profitability, Edited by R. F. Follet (Unpublished).

The Leaching Index value for each soil map unit can be found in the FOTG Section II (H) Detailed Soil Information – Property, Quality and Soil Interpretations, Nitrate Leaching. LI values were not assigned to map units that have widely ranging soil properties, such as gravel pits and madeland. Onsite investigations are needed to assign values. LI values are assigned to map units that are complexes on the basis of the dominant component.

These ratings are based on the soil profile (maximum depth of 80 inches). Depth to the aquifer, type of underlying material and other factors will influence nitrates leaching into the ground water.

The following table shall be used to evaluate the potential hazard for nitrogen loss.

N Leaching Potential by Leach Index and Application Method.

Application Method	Nutrient Leach Index		
	10+	**3-9**	**0-2**
Fall applied	**H**	**H-M**	**L**
Spring applied, preplant	**H-M**	**M-L**	**L**
Sidedress or split application	**M-L**	**L**	**L**

Potential Ratings: H - High probability for leaching loss
M - Moderate probability for leaching loss
L - Low probability for leaching loss

General Guidelines: Given the same climatic conditions, the more permeable the soil and the greater the time between application and plant utilization, the greater is the potential for leaching loss. Therefore,

- Use sidedress or split application programs on soils with a Leach Index of 10+.
- Use spring preplant, sidedress or split applications on soils with a Leach Index of 3-9.
- Avoid using nitrogen sources which contain nitrate nitrogen when conditions indicate a high loss potential.
- Fall applications should be injected with a nitrification inhibitor on non-coarse textured soils <50°F north of U.S. 40.

Refer to the current FOTG standard NUTRIENT MANAGEMENT (590) and Table 4 - *Forms of Nitrogen, Placement and Timing of Applications for Spring-Seeded Crops (Other than Starter)* for additional guidance.