

TECHNICAL NOTES

U.S. Department of Agriculture

Natural Resources Conservation Service

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(updated web link url)

Nitrate Groundwater Pollution Hazard Index

The Nitrate Groundwater Pollution Hazard Index (HI) is a tool to help identify risk of nitrate leaching from agricultural fields considering soils, deep tillage, crops, and irrigation system type. HI is a scoping or screening tool that can be used in the planning process. For example, fields with permeable soils using surface irrigation to grow shallow rooted crops will be flagged by HI as a very high risk for nitrate leaching and can be emphasized for planning. HI can also be used to evaluate the effect of major alternatives, such as changing irrigation systems or changing crops, on the risk of nitrate leaching. Enter alternative crops, irrigation systems, or deep tillage into HI and compare the new risk rating to the original one to show potential for risk reduction from a given alternative. HI can also be used to help educate the producer on factors affecting nitrate leaching.

HI is not designed to evaluate irrigation and nutrient management techniques. NRCS planners using HI should refer to Practices 590 and 449, and other supporting technical resources, to evaluate and plan site specific irrigation and nutrient management activities. Management and site conditions are important considerations when assessing risk of nitrate leaching from a given field. For example, a permeable field with high risk for nitrate leaching may have little leaching when nitrogen applications, water management, and crop rotations are managed well. That same field may leach at a high rate due to sub-optimal nutrient application or water management practices. As well, a soil rated high risk for leaching based on texture and structure may be lower risk due to salt effects. High SAR and low salinity in the irrigation water can significantly impede infiltration and lower risk of nitrate leaching. In order to determine the best actions for a given field, unique management and field properties will need to be considered.

HI is a web-based tool available at the url below. The tool is simple and intuitive to use. Enter the soil map unit, irrigation system type, and crop. HI will return a risk rating, a brief explanation of the associated values, and mitigation suggestions. In addition, the website includes supporting documents related to nitrates, and HI development.

http://ucanr.org/sites/wrc/Programs/Water_Quality/Nitrate_Groundwater_Pollution_Hazard_Index/