Protecting Groundwater Quality While Practicing On-Farm Recharge

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Sustainable Conservation

Sustainable Conservation and our partners have developed resources that inform on-farm recharge practices that are protective of drinking water quality.

The Tool: Agricultural Managed Aquifer Recharge (AgMAR) is an important tool to increase groundwater supplies by applying water on farm fields to percolate into soils and recharge aquifers.

The Challenge: There are concerns that AgMAR could also mobilize nitrate and worsen groundwater quality. Our resources help address this issue.

MANAGEMENT CONSIDERATIONS FOR PROTECTING GROUNDWATER QUALITY UNDER AGRICULTURAL MANAGED RECHARGE

This paper – **intended for those interested in a deeper dive on water quality under AgMAR** – summarizes current research on potential mobilization of nitrate and salts under AgMAR and presents field- and regional-scale considerations to protect water quality for communities.

PROTECTING GROUNDWATER QUALITY WHILE REPLENISHING AQUIFERS

This brief – **intended for growers, water planners, and communities** – summarizes the nitrate-specific findings from the research paper.

Our key findings:

Nitrate contamination is likely to get worse before it gets better in many places in California.

Historical land use and fertilizer applications over the last several years and decades determine how much applied nitrogen has already leached below the root zone, and is referred to here as legacy N. Depending on soil type and past irrigation practices, legacy N is either still in the soil or is already in the groundwater.

The single most important step to improve groundwater quality is to minimize any further leaching of nitrogen (N) below the root zone.

Groundwater Sustainability Agencies (GSAs) should ensure growers participating in recharge programs follow recharge-specific best agronomic practices.

Field-scale considerations help growers to determine how to engage in recharge activities that protect water quality.

GSAs and Irrigation Districts can also use these considerations to help develop local and regional recharge guidelines and prioritization tools.

Regional-scale considerations help water planners evaluate potential cumulative N effects of recharge programs.

Groundwater gradients, location and depth of drinking water wells, and surface water availability are important to consider in developing recharge guidelines and prioritization tools.

Analysis of groundwater quality and legacy N loading helps to prioritize sites.

If groundwater quality is still good or marginal (below 10 mg/L nitrate-nitrogen), special care should be taken to protect water quality. If water quality is already poor, recharge might improve conditions sooner than would have otherwise occurred.

Community engagement and coordination with nitrate regulatory programs is essential to building a robust monitoring program and contingency plan.

If higher risk sites are expected to be included in the recharge program and are located in areas where drinking water is a concern, planning agencies should have a plan (including funding identified) for monitoring and addressing impacts of recharge.

Have questions or comments?
Interested in a presentation of our findings?

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Learn more about Sustainable Conservation at suscon.org.