Heartland Nutrient and Pesticide Management: Regional Extension Publications

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What are Heartland Regional Extension Publications?

These publications address nonpoint source pollution from agriculture, which is the principal cause of water quality impairment throughout the Midwest.

The Heartland Nutrient and Pesticide Management (NPM) Team facilitates multi-state and inter-agency communication to promote the use of agricultural best management practices (BMPs) to reduce nonpoint source pollution. The NPM Team has led in the development of four regional extension publications:

1) "Agricultural Phosphorus Management and Water Quality Protection in the Midwest",

2) "Agricultural Nitrogen Management and Water Quality Protection in the Midwest",

3) "Targeting of Watershed Management Practices for Water Quality Protection", and

4) "Pesticide Management for Water Quality Protection in the Midwest".

Development of each of the publications was preceded by a roundtable of specialists who shared state-of-the-art research and a workshop where the information was shared and discussed with Extension, agency, and private field personnel.

Goal: The goal of these publications is to improve land and water management practices for water quality protection and to increase awareness and knowledge on these priority issues. The publications introduce the topic, explain its importance to water quality, address cost effectiveness of BMPs, and then recommend BMPs for specific cropping systems and/or environmental conditions.

Who are the Authors?

The publications were co-authored by specialists from Land Grant Universities (LGU) and from state and federal agencies in Iowa, Kansas, Missouri and Nebraska. A total of 37 specialists collaborated to publish the four regional extension publications that are summarized to the right.

Publications are available for download at www.oznet.ksu.edu/waterquality/publications.htm.

Heartland Regional Extension Publications…

Agricultural Phosphorus Management for Water Quality Protection in the Midwest: *Pho*sphorus (P) is an essential nutrient for growth of crops and aquatic vegetation and often needs to be applied to land for optimal crop growth. Land application of P as animal manure, biosolids (sewage sludge), and mineral fertilizer can increase the risk of P pollution of freshwater. The movement of P from agricultural land to surface and ground water is a complex process involving multiple pathways. This publication is a resource that nutrient management planners can use to understand the risk of P delivery to surface waters, assessment of this risk, and P management options for reducing this risk. It is targeted to U.S. EPA Region 7 comprised of Iowa, Kansas, Missouri and Nebraska.

Agricultural Nitrogen Management for Water Quality Protection in the Midwest: Nitrogen is an essential nutrient for growth of crops and aquatic vegetation and often needs to be applied for optimal crop production. Land application of nitrogen in animal manure, biosolids (sewage sludge) and mineral fertilizer can increase the risk of nitrogen entering ground and surface waters. This publication provides an overview of factors influencing nitrogen loss to ground and surface waters in the four-state Heartland region of Iowa, Kansas, Missouri and Nebraska. After a discussion of nitrogen in the environment, the implications of agricultural nitrogen management practices for nitrogen loss to ground and surface water are discussed. More detail on supporting research is available in several review papers.

Targeting of Watershed Management Practices for Water Quality Protection: Ensuring a clean and adequate water supply implies using water conservatively and protecting water resources from pollution. Sediment, nutrient, and pesticide losses in runoff are major pollutants of surface waters in the Midwest. This publication addresses targeting best management practices (BMPs) in watersheds or landscapes to maximize the impact of investments in water quality protection. It is intended as a resource for those who advise on or practice land and water management. The authors recognize the ecological and social diversity of watersheds and land managers, and that agricultural pollutants often come from small parts of watersheds as a result of landscape sensitivity coupled with management inappropriate for water quality protection. Targeting BMPs to important source or mitigation areas is likely to have the most cost-effective impact on water quality.

Pesticide Management for Water Quality Protection in the Midwest: Pesticides are used to control weeds, disease, and insect pests of plants in agricultural, urban, and natural settings. Appropriate pesticide use can enhance the quantity and quality of food, feed, and fiber production and the appearance of landscape plants and areas. However, inappropriate or poorly planned use of pesticides can result in the degradation of surface water and groundwater. This publication provides an overview of factors influencing pesticide movement into groundwater and surface waters in the four-state region of Iowa, Kansas, Missouri, and Nebraska. First, it discusses the benefits of appropriate pesticide use and highlights the risks associated with pesticide movement into ground water and surface water. Second, it describes chemical processes and landscape characteristics that affect pesticide movement and behavior in soil and water. Third, it presents BMPs that can be applied to minimize off-site movement of pesticides. Finally, it details legislation and policies that are used to regulate the use of pesticides.

Distribution: The printed publications have been distributed to personnel of Extension and environmental agencies as well as to private sector consultants and advisors. Publications are available for download at **www.oznet.ksu.edu/waterquality/publications.htm.**

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