COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE

Best Management Practices for Water Quality

Managing Nutrients on the Farm to Protect Water Quality

Some agricultural practices have been designated as sources of non-point pollution that contribute nutrients to our water resources. Excess nutrients in water contribute to poor stream health and can affect drinking water quality. Agriculture operators may control or limit the amount of nutrients leaving their farms through nutrient management planning.

Nutrient management plans deal primarily with the flow of nutrients to, from and within farms. A major goal of nutrient management is to supply or provide farm nutrients for optimum growth of crops and minimize losses to the environment. A second goal is to balance crop requirements with a farm's nutrient supply.

Nutrient management starts with an assessment of the farm. Estimating the nutrients coming onto the farm in the form of purchased feeds, as well as feeds produced on the farm, allows producers to estimate nutrients from animal waste available for crop production. Nutrients available on the farm can also be estimated by determining animal waste produced based on the number of animals on the farm. In addition to this information, the producer will need an up-to-date soil analysis to determine the crop nutrient requirements for each field. Other information that is used in developing a nutrient management plan include cropping history, crop yields, and past analysis and application rates of animal waste.

Producers must take into consideration how animal waste has been managed before it is applied to the land. Storage and handling can impact the amount and form of nutrients available in the waste that is applied. A representative sample of the animal waste to be applied should be analyzed for nutrient content at a reputable lab.

All of this information will be used by the producer to calculate the amount of animal waste to be applied to each field. Waste nutrient availability to crops following application varies with nutrient forms in the waste, method of application, and the time between waste application and crop nutrient demand. Grain crops have their greatest need during the late vegetative and grain filling periods and forage grasses during vegetative growth.

Developing a nutrient management plan results in establishing a 'nutrient budget' for that particular operation. This budget ensures that the correct amount of nutrients are being applied for crop production, taking into consideration any nutrients already available in the soil. If nutrient sources on the farm (from animal waste and crop residue) are not sufficient for optimum crop growth, the nutrients are then supplemented with purchased fertilizers.

A nutrient management plan also ensures that nutrients are applied at a time they are most readily available to crops and at the time of greatest crop need. This reduces the risk of having nutrient losses into water resources. Nutrient management is more than soil and animal waste analysis. It is a whole farm plan to adequately assess nutrients available from livestock production and distribute for crop production. Contact your County Extension Office to learn more about developing a nutrient management plan for your agriculture operation.

Fact sheet prepared by Dr. William Thom, Dr. Monroe Rasnake and Jennifer Cocanougher.

January, 1999