

SSSI/BSSS Joint Conference

Johnstown Castle, Co Wexford, 9th-11th September

Probable Sessions for abstract submittal?

Agriculture- benefits and threats

-Nutrient cycling – can we reduce losses?

Title

Managing nitrogen and phosphorus sources on farms within the EU Nitrates Directive framework in Ireland.

Key Words

Nitrogen, Phosphorous, Water quality, Nitrates Directive, Agricultural Catchment Programme, Nutrient sources, Nutrient losses, Soils

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Abstract 335 Words

The Teagasc Agricultural Catchments Programme is evaluating the Nitrates Directive National Action Programme (NAP) for the major farming and environmental stakeholders in Ireland. A framework of research using a nutrient transfer continuum (source-mobilisation-pathways-delivery-impact) concept is the main biophysical protocol being undertaken in seven small agricultural catchments representing a range of Irish soil and landuse types. The NAP requires limits on the use and storage of fertilizer amendments and the restriction and timing of certain management practices to minimize the mobilization of nitrogen (N) and phosphorus (P) from soils to runoff and leaching pathways. In parallel to these restrictions is the assumption that more efficient fertilizer amendment and seasonal management practices can maximize grassland and arable crop production. This paper describes the experimental design and early results from the 'source' part of the conceptual model, and especially the catchment soils and their spatial and temporal risk of nutrient accumulation, mobilization and potential loss to water bodies.

In each catchment a field-by-field census of soil nutrient status and management (inputs and accumulation) is being used to develop soil nutrient management plans for the catchment farmers. These data are also being used, in conjunction with metrics of runoff/leaching risk, to define critical source areas of diffuse nutrient transfer.

In addition to soil nutrient status, N and P balances are being developed to quantify farm nutrient loading, farm nutrient off-take, residual nutrient availability in soils and potential nutrient losses. Other soil nutrient mobilization metrics, including P saturation and erodibility, N mineralization rates and nutrient concentration changes in local surface and groundwater pathways are being monitored in targeted areas to predict the spatial and temporal impact of soil nutrient management on water quality. An evaluation of the mandatory over-winter green cover is also being conducted in the tillage catchments using a combination of aerial imagery and in-field and laboratory assessments.

Information gained from this research will help develop management strategies and guide future advice and regulations that will keep farmers profitable and cross-compliant while protecting the environment and water quality.