

A review of diffuse agricultural pollution control in Ireland: recent research and current legislation.

K. Richards¹, N.M Holden², K. Irvine³ and O.T. Carton¹

¹ *Teagasc, Johnstown Castle, Wexford, Ireland*

² *UCD School of Agriculture, Food Science and Veterinary Medicine, University College Dublin, Belfield, Dublin 4, Ireland*

³ *School of Natural Sciences, Zoology Building, Trinity College, University of Dublin, Dublin 2, Ireland.*

The importance of good water quality continues to be a national environmental priority. The latest national water quality report (Lucey *et al.*, 2007) has shown another slight improvement in surface water quality with 71% of river channel length classified as unpolluted. On the other hand groundwater quality continued to decline, with faecal coliforms recorded in 57% of all groundwater sources sampled, 25% exceeded 25 mg/l NO₃ and 2% exceeded 50 mg/l NO₃. Under the Water Framework Directive Ireland has identified that 45% of river water bodies and 37% of groundwater bodies are at risk from diffuse pollution and of not meeting the objectives of the Directive.

Historically, research in Ireland has focused on both nitrogen and phosphorus loss to water, but more recent research has started to consider pathogen transport as well. For base-flow dominated catchments with elevated soil P, TP losses of ~0.2 kg/TP/ha/yr are typical, compared to 2 kg/TP/ha/yr for hydrologically responsive catchments. P loss to water will only be reduced when P inputs are approximately balanced with outputs for fields and optimum STP for grassland production is attained.

In 2006, the national action plan under the Nitrates Directive was agreed and regulations were enacted to reduce agricultural N and P diffuse pollution. The action plan controls nutrient loss through nutrient management planning, setting prohibited periods for spreading and control of farmyard pollution. The effectiveness of the national action plan is being assessed by a new multidisciplinary research project through investigation of water quality and farming practices at the catchment scale. In addition, further diffuse pollution research is focussing on understanding the loss mechanisms, defining mitigation measures, using risk assessment and developing decision support tools for potential pollutants such as faecal coliforms, enteric pathogens, phosphorus and nitrogen from agricultural systems.