

THE AGRICULTURAL CATCHMENTS PROGRAMME:

An evaluation framework for the Nitrates Directive National Action Programme

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INTRODUCTION

The Agricultural Catchments Programme (ACP) is a science-farmer-advice action research initiative to assess the Nitrates Directive National Action Programme (NAP) regulations in Ireland. As the NAP is legislated on a whole-territory basis, the regulations form the Programme of Measures as mitigation actions to manage diffuse nutrient transfers from land to water under the Water Framework Directive. These effectively constrain the timing and magnitude of nutrient management and the processes that influence mobilisation, although with recognition of the need to maximise productivity under optimum nutrient use and land management conditions.

METHODS

The ACP uses the nutrient transfer continuum concept to gauge uptake and social acceptance of changed nutrient management, and the economic and biophysical consequences from agricultural sources to water body receptors in six intensive agricultural catchments covering a landuse and physiographic gradient (6-30km²) [Fig. 1]. This also covers a legislative spectrum from the Nitrates Directive regulations at one end to more specific regulations concerned with water body status; each having a place under the overarching Water Framework Directive. A high resolution approach to biophysical monitoring has been adopted to cover elements of the source, pathway and delivery components of the nutrient transfer continuum [Fig. 2]. Embedded in the evaluation experiment, is an advice network to enable farmers to engage with the scientific programme and to avail of the best agricultural advice on production within the constraints of the NAP.

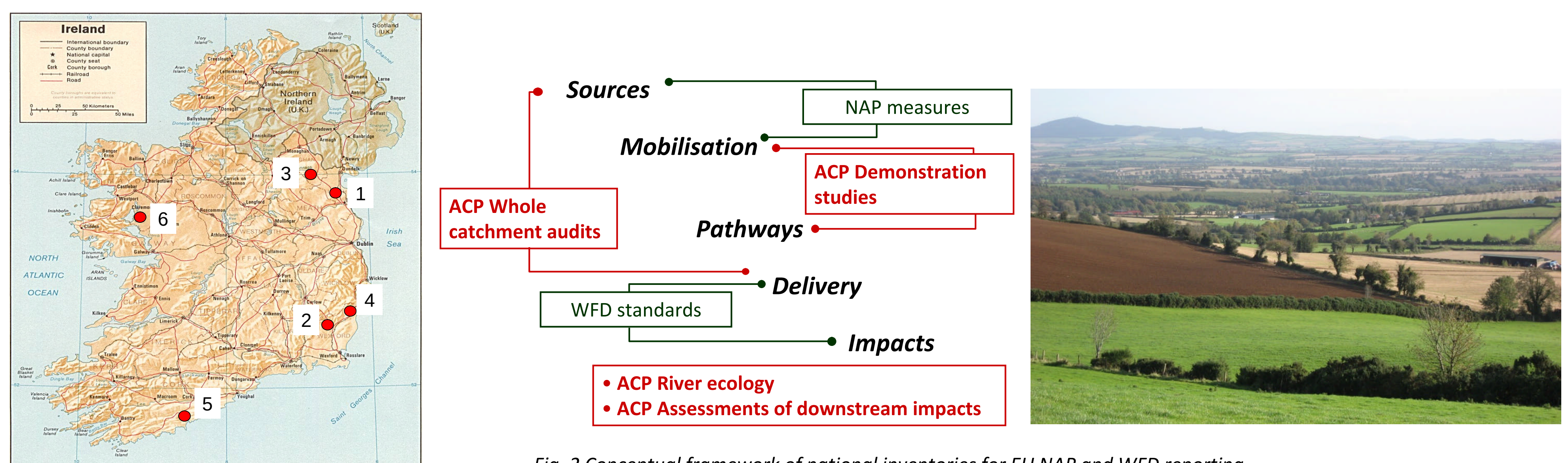


Fig. 1. Six agricultural catchments chosen by multi-criteria decision analysis (Fealy et al., 2010)

Fig. 2 Conceptual framework of national inventories for EU NAP and WFD reporting and ACP experiment (Wall et al., 2011) using the nutrient transfer continuum

INTERIM RESULTS

In the early years of the NAP, ACP is defining a focussed extended baseline of landuse status [Fig. 3] and water quality response [Fig. 4] that can integrate and interpret national inventories on, for example, nutrient use, farm nutrient status and water body response. Early data are also indicating where theory on source to impact processes may need re-evaluating to ensure that benefits accruing from catchment management are properly described and quantified. Further, important socio-economic information on the performance of the National Action Programme is being gathered that will help future catchment actions in Ireland and other EU countries.

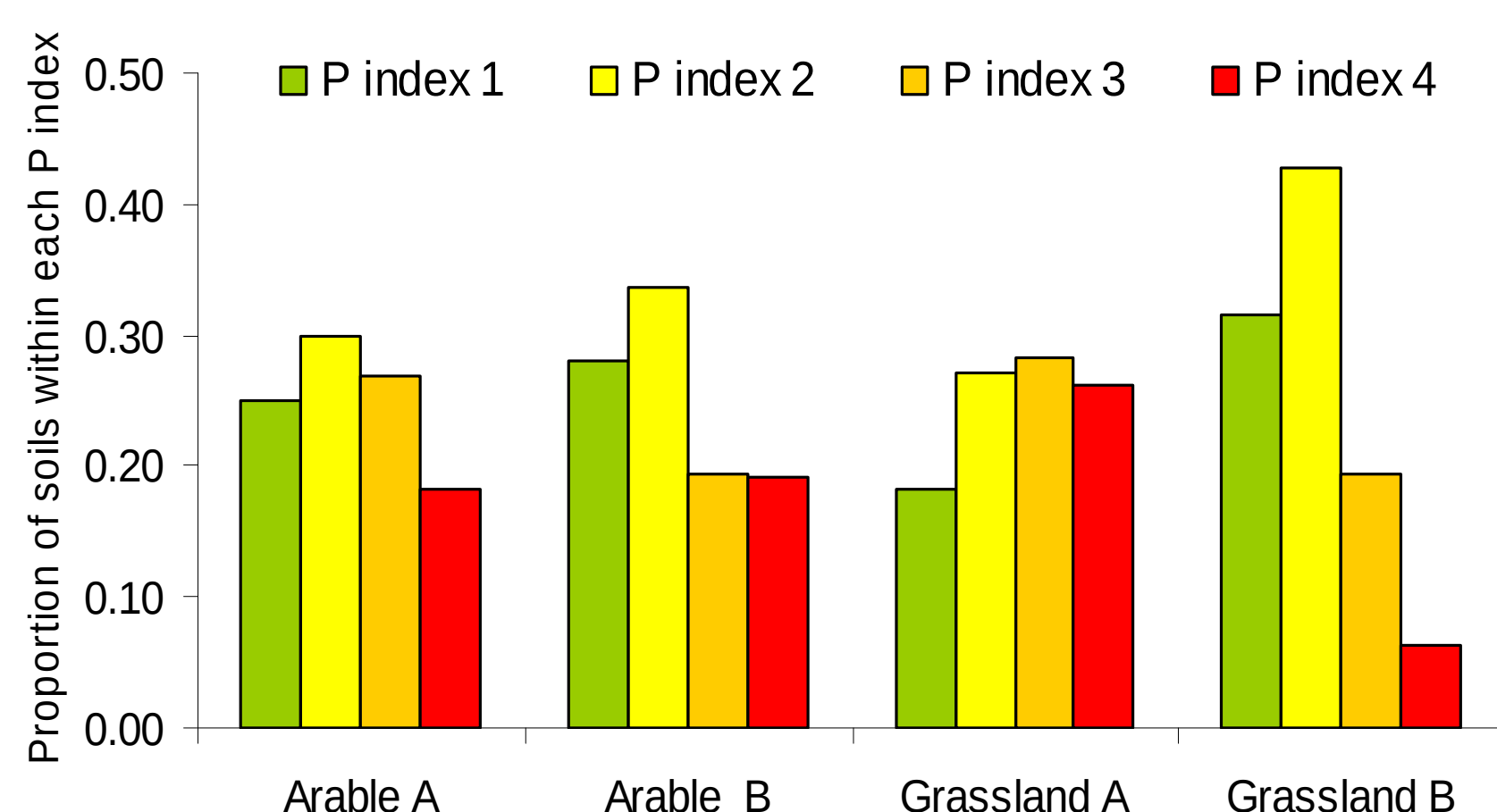


Fig. 3. Soil P source status in 4 ACP catchments. P index 4 reflects above optimum for grass/production and is required to decline under NAP regulation

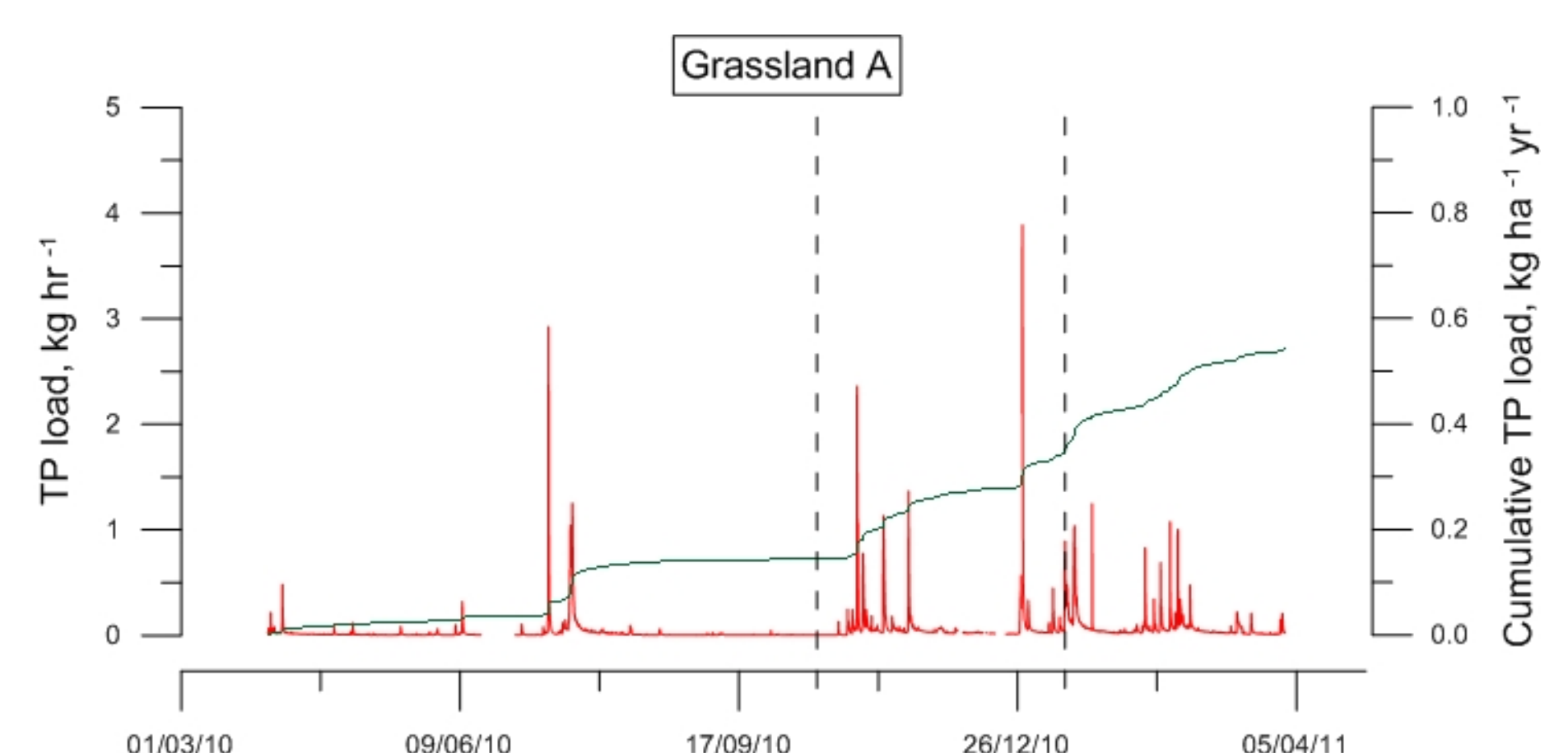


Fig. 4. One years hourly time series of P flux in a grassland ACP catchment. Forty percent of the P was exported during the closed period for slurry spreading.



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