Benchmarking P and N use efficiency in Irish farm systems to motivate practice change

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Agriculture faces the challenge of achieving sustainable, profitable production while maintaining environmental quality. In Ireland, for example, ambitious national growth targets for agricultural output have been set but, at the same time, Ireland, like other countries, must meet international environmental obligations in terms of water quality and greenhouse gas (GHG) emissions. Conventional agricultural production is highly dependent on nutrient inputs of P and N in fertilizer and feed and poor use efficiency of these resources is associated with losses to the environment and impacts on water quality, GHG emissions, air quality, acidification and biodiversity. Stakeholders are increasingly interested in the environmental performance and efficiency of different farming systems and seek reliable indicators of improvements in sustainability. Nutrient accounting systems (farm nutrient balance and use efficiency) have been proposed as a means of assessing nutrient management efficiency at farm level while also providing an indicator of environmental pressure. We report initial results from a study of Irish farm sytems, using nationally representative data from the National Farm Survey (part of the EU Farm Accountancy Data Network) to assess P and N balances and use efficiencies across different farm systems and set benchmark indicators for those systems that could be used to motivate practice change and improvement in resource use efficency, and reduce overall environmental pressure, at farm level. We discuss the approach taken to classify farming systems for this purpose and to developing benchmark indicators. We explore the potential for application of a farm benchmarking tool to drive practice change on farm and the potential impact such change could have nationally, in terms of reduced environmental pressure in the form of farm nutrient surpluses.