



Economic assessment of GHG mitigation practices: a case study within Emilia Romagna Region - Climate ChangE-R project

Abstract

There has been an increasing policy interest in reducing greenhouse gas (GHG) emissions from agriculture in recent years. While the main concern for the total economy is CO₂, for agriculture the most important issues are related to N₂O emission mainly from soils and N inputs to crop and soil systems. Greenhouse gas mitigation is one of the main challenges facing agriculture, exacerbated by the increasing demand for food, in particular for livestock products. Farm production needs to be accompanied by reductions in the GHG emission intensity of agricultural products. In many cases the introduction of suggested best mitigation practices (BMPs) in agriculture has not only influence on the environment but also on other aspects (e.g. global agronomic technical management, relationship between farms, therefore their investigation requires a whole farm approach. Economic, social, political, institutional, education and market barriers in many cases affect the implementation of mitigation practices and can affect mitigation potential of these practices.

Economic barriers happen when farmers or land managers cannot afford the costs of implementation of the practices, or there is a decrease in profit due to a reduction in yield/level of output, costs of implementing BMPs have consequences on their environmental effectiveness. Farmers are less likely to adopt high-cost BMPs even though they may be the most effective. Implementation costs for particular BMPs are equally important for policy makers, as they usually want to mitigate pollution at the least cost. Additional research is needed to further assess the costs and benefits derived from the application of mitigation practices, to help policy-makers understand which policy options are better placed in terms of subsidies. While a significant share of these practices is estimated to be profitable, findings vary considerably, depending on which mitigation options are assessed and which species and regions they are applied to. This work attempts to report preliminary results from a case study carried out in farms located within Emilia Romagna Region undertaken within the LIFE+ Climate ChangE-R Project. The main goal of this project is to help to mitigate climate change while taking into account the complexity of Emilia-Romagna's

agricultural system and will respect its balance. The agriculture of Emilia-Romagna is specialized in the production of raw materials for high quality food: such as DOP Parmigiano Reggiano cheese and PGI peaches and pears as well as environment-friendly integrated farming crops for the food industry, labelled beef, and fresh milk. For the purpose of the project effective and efficient BMPs that do not reduce productivity (both in terms of quality and quantity) are proposed at farm level for the high quality farming just mentioned. The presented study aims to provide the economic assessment of BMPs. In particular, three different agricultural practices, that can be assimilated to traditional, integrated pest management and organic farming, are compared in order to estimate their sustainability under the economic point of view. Agricultural practices adopted are identified in LAA1 (Environmental Attention Level), LAA2 and LAA3 in relation to the fertilization and plant protection products and agronomic practices. The crop balance for each LAA of 25 Demonstratives farms is compiled. The economic evaluation is performed in term of farm marginal income generated from the comparison of different Environmental Level of Attention in farms under study.