



IMPACCT CASE STUDY No. 7

Integrated Management Options for Agricultural Climate Change Mitigation

Stefaniak farm – Poniatowice, Poland

This case study is based on small farm that lies in the Silesian lowland in the administrative district of Gmina Oleśnica in south-western Poland. A large part of the region is covered by forests with four natural parks, many protected natural areas and biosphere reserves. The farm is a mixed holding of 27.5 ha. It grows cereals (20 ha) and potatoes (5 ha), and has 150 pigs.

The farms fields are generally small being between 1 and 5 ha in size. There are two three year rotations in use (i) wheat, triticale, OSR and back to wheat (ii) wheat, OSR, potatoes and then back to wheat. There are no breaks in the rotation. All fields have Luvisol soils formed from silt loam and loam, which are characteristic of forested regions. The farm landscape is quite plain but does feature a watercourse surrounded by trees.



Location of the farm in Poland

The local climate is a transitional one, lying mid-way between coast and continent. Consequently, climatic conditions can vary significantly.

The farm has taken several steps to mitigate climate change and to ensure the farm is economically sound. These steps include:



- Farm pig buildings have been modified to make them more energy efficient. The previously metal windows have been replaced with new plastic ones. This should mean less heat is lost, saving money and greenhouse gas emissions. However, there was capital outlay of around €850 for four windows.
- Up until 2005 only around a quarter of the pig manure produced on the farm was utilised. This has been greatly increased and now less mineral fertiliser is used.
- Livestock practices have also been amended including adding nutrient premixes and soya to traditional feed. 25% less feed is now used.
- Crop nutrition practices have been amended over the last few years. A new fertiliser store has been built which allows bulk sacks of fertiliser to be stored safely. Prior to the new building small sacks of fertiliser were purchased and left on covered pallets. Whilst this was a significant financial outlay of around €13000 it means less fertiliser is wasted and saves money and labour.
- Potato yields have been significantly increased (2x) by direct placing of fertiliser next to the tuber during planting. Prior to the adoption of this practice fertiliser was spread using a granule distributor. This has reduced fertiliser consumption by a third and significantly reduced greenhouse gas emissions through both a reduction in emissions during their manufacture and emissions of N₂O from soils. The increase in yield alone has halved emissions per unit of output.



Photo: Wrocław University

- Crop protection practices have also been amended over the last three years. Adjuvants are now added to pesticide spray mixtures which has significantly increased efficacy and reduce spray application problems that were being experienced. Pesticide dose strength has also been reduced and where ever possible the minimum label recommendations are used.



Photo: Wroclaw University

- The farm has 2.33 ha of uncultivated land that is left for wildlife and there is a small forest area of 0.17 ha. This preserves stores of carbon in the soil and biomass.
- The photograph opposite shows a watercourse that runs adjacent to the farm surrounded by tree biomass.

- The farm is also actively involved in developing new wildlife habitats. The photograph opposite shows the development of a new wildlife pond that is currently under construction. It also shows a quantity of standing biomass in the field margins.



Photo: Wroclaw University

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