



IMPACCT CASE STUDY No. 10

Integrated Management Options for Agricultural Climate Change Mitigation

Długosz Farm, Wrocław, Poland

This case study is based on a mixed 85 ha farm in the administrative district of Wrocław in Poland. Wrocław is the chief city of the historical region of Silesia in south-western Poland, situated on the Oder river.

The farm is a family run business. However, due to town development plans there is a risk the farm will not operate for long as the land may be claimed for housing.

The farm lies in the Silesian Lowland where mostly Pleistocene moraine till and glaciofluvial deposits are found but also alluvial deposits in the river valleys. The landscape has plain features mostly with arable cultivation on small fields.

All the fields on the farm have Luvisols, a characteristic soil of forested regions. These have developed from silt loam and loam or sandy loam on sand and locally close to the river brown spodosols can be found.



Wrocław, Poland



Location of the farm yard

- The main crops on the farm are maize (40 ha), winter wheat (20 ha) and sugar beet (10 ha). The farm has 30 fields which are all treated differently but there the main crop rotation pattern is 1 year wheat, 1 year sugar beet, 1 or 2 years of maize and then back to wheat. There are no breaks in the rotation.
- The farm also has 40 sheep and 6 horses with 15 ha of grassland. Grassland is mowed one per year and grazed thereafter. The grassland is often flooded in spring by the rivers Widawa and Dobra. A number of activities aimed at reducing the impacts of climate change and saving money have been implemented. These are described below:

- The farm has implemented several changes to save fuel and energy. This has included purchasing a second-hand modern (160 HP) tractor with accompanying equipment (cultivator, stubble unit, reversible plough and grain drill) to be used for arable operations. This tractor has replaced two smaller and less efficient machines. This has improved the quality of the field operations, uses less fuel and so produces less greenhouse gases.



The new machinery is also much more reliable and less labour is required as operations are quicker. There was however a significant capital outlay of ca €50,000 for the tractor and a further €12,500 for the equipment.

- Machinery is kept under cover. This protects it from harsh weather and also means there is now less risk of contaminants being washed off and causing pollution.
- Residues from the arable and oilseed crops are ploughed into the soil. This has increased the soil organic matter and reduced the use of synthetic fertilisers. A small financial outlay is required for annual soil analysis.
- Fertiliser purchasing has been rationalised to reduce labour and waste. Prior to 2006 fertilisers were purchased as small 50 kg sacks. Large 500 kg bags are now purchased and stored under cover. Larger sacks are more economical to buy and less is now wasted.
- Crop protection chemicals are only used when the threat of yield loss is significant. Sprayer nozzles are carefully selected to reduce drift and increase efficacy. Operators have all been trained in pesticide use and application.
- In 2005 the farm installed a new 130 t silo for storing wheat grain. Prior to this the grain was just stored in a heap under shelter. This was prone to losses from birds and vermin and at risk of contamination. However, the old store collapsed due to the pressure of the grain on the walls. Capital costs of the new silo were ca. €5000 and a further €1000 was required for a farm and spiral grain loading machine.



Machinery shelter



Fertiliser storage



The grain silo

Original case study content collated by Wroclaw University of Environmental and Life Sciences

