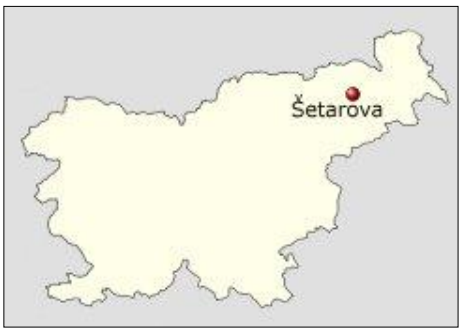
IMPACCT CASE STUDY No. 15

Integrated Management oPtions for Agricultural Climate Change miTigation

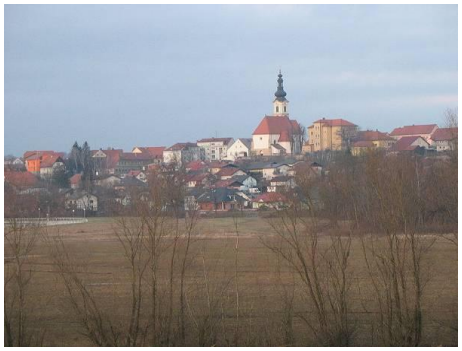
Zipo Lenart d.o.o, Šetarova, Slovenia

This case study is based on a modest sized farm in the small village of Šetarova which is close to the town, and municipality, of Lenart in north-eastern Slovenia, in the centre of Slovenske gorice.

Slovenske Gorice (the Slovenian Hills) is an area of just over a 1000 km^2 and is the largest hilly region of Slovenia. It is comprised of the Western Slovenian Hills and the Eastern Slovenian Hills (also named Prlekija). The climate is temperate and humid and it has predominately heavy alluvial soils. The region is known for its vineyards and wines.



Šetarova, Slovenia



The town of Lenart

The case study farm, however, is a predominately livestock enterprise (beef) but does produce its own animal feed. It has 1100 cattle (Simmental and other meat breeds), 60 ha of meadows and pasture and 780 ha of arable land.

Crop rotation is a simple two- or three-year rotation of silage maize and grass-lucerne-rye mixture.

The farm also has 5 ha of riparian zones. These consist of shrubs and permanent grassy vegetation bordering streams which are not treated with fertilisers or pesticides

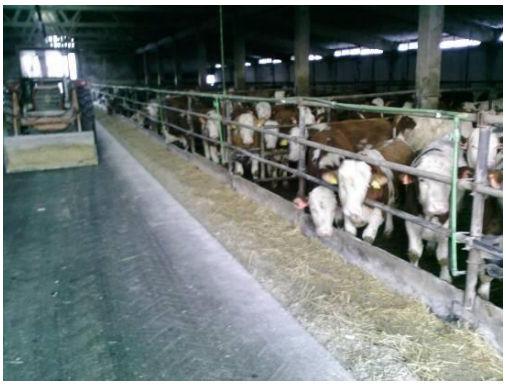
The farm was formerly a socialistic agricultural company. Since 1992 the farm has considerable downsized and has lost land due to denationalization. It is now jointly owned by four companies: two slaughter and meat factories, a feed producer (grain drying and feed mixing), and commercial company (international agri-products). The farm is now in a more stable position and is beginning to think about the future and modernization. It is currently planning to build a biogas plant and anaerobically digest the manure produced on the farm. It is anticipated that this plant will produce ca. 185 kW of electricity and ca. 200 kW of surplus heat. The surplus heat will be used mainly for drying alfalfa.

The farm is also focusing attention on becoming more financially efficient and environmentally friendly. For example:

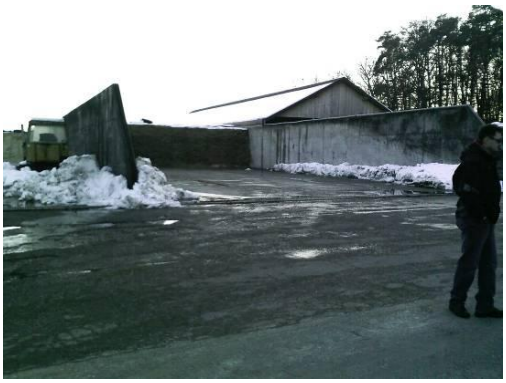
- Insulation on farm buildings has been improved, including the cattle barn roof. This has improved the climate within the barn making it more stable, reduced condensation and reduced the need for winter heating. The capital cost of this work was in the region of €100,000.

- The farm has also invested in new machinery including new tractors and soil tillage equipment. This has improved the efficiency of the operations, reduced fuel consumption and, as a consequence, reduced greenhouse gas emissions. €300,000 has been spent on equipment to date and the purchase of a slurry soil injector (that will increase the nitrogen in slurry available to the crop and potentially substitute greater quantities of mineral nitrogen fertiliser) is planned in the near future.
- Attention has been given to optimising the use of nitrogen fertilisers, particularly as the farm is located within a Nitrate Vulnerable Zone. Soil analysis is regularly undertaken and a consultant produces soil fertilisation plans on an annual basis. The use of legumes for nitrogen fixation has been increased.
- These actions have improved soil fertility, reduced the use of mineral fertilisers and will also help reduce greenhouse gas emissions. Soil analysis and the fertilisation plan cost around €1,500 per year.
- Waste management is given a high priority on the farm. This is driven partly by the States strategy on source separation of communal waste. Wood, paper, plastics, metal and glass are all recycled. Until 2005 most wastes were sent to landfill but now all wastes are separated by type, waste oil is delivered to communal collection sites and larger items are collected by the State twice a year. However, the national waste strategy has meant that communal service charges have increased.
- With respect to pesticide use and plant protection strategies, the farm follows guidelines on Integrated Crop Management (ICM) and uses manual and non-chemical techniques where ever possible. Staff have also undergone training in ICM.
- Since 2009 home-grown fodder has been used for animal feed. The farm also uses an algae-based preparation as a probiotic feed additive to reduce odour emissions from manures and slurry. The home-grown fodder appears to be more palatable to the cattle and consumption and digestion seems to have improved. The health of young animals has also improved. The additive, however, is quite expensive.
- Grass and maize is ensiled in order to preserve green feed for the cattle. Prior to ensiling and producing home grown fodder feed costs were a significant part of the total livestock production cost. The major disadvantage of feeding silage compared with hay is that ensiling requires more labour and time. Consequently, some hay is still produced. Additives improve the quality of the silage.

Farm cattle on slated floor



Inside the cow shed



The maize silo

Original case study content collated by University of Ljubljana, Slovenia

University of Ljubljana