



IMPACCT CASE STUDY No. 17

Integrated Management Options for Agricultural Climate Change Mitigation

Gyuricza Farm, Gödöllő, Szárítópuszta, Hungary

This case study is based on a 37 ha arable farm close to Budapest in the Gödöllő hilly region, on the north-west part of the Great Hungarian Plain.

The farm lies on a hill side overlooking the region's largest river, the Rákos-patak that is about 1 Km away.

The main enterprise on the farm is cereal production. 14 ha of maize, 8 ha of wheat and 5 ha of barley are grown. There are also 5 ha each of oilseed rape and sunflowers. In addition the farm has a neglected orchard next to the farm, 1.5 ha of woodland, 0.5 ha of permanent grassland and the farm is surrounded by a bushy zone with many standard trees.

The soil is a loamy Ramann brown forest soil and the area has a continental climate. The distribution of cropping is fairly constant year on year. Mono-cropping is avoided where possible but as the farm is also used for experimental purposes this can be difficult.



Gödöllő, Szárítópuszta, Hungary



Western Corn Rootworm

The farm has had some severe pest problems in recent years and these have enforced some changes. The Western Corn Rootworm (*Diabrotica virgifera virgifera* LECONTE) appeared in the region a few years ago and now corn mono-cropping is not possible.

In addition sunflower and oilseed rape cannot return to the same area within a five year period due to *Sclerotinia sclerotiorum*.

The farm has adopted several changes in its practices to improve its financial situation, mitigate climate change and protect the environment. These include:

- Implemented several changes to save fuel and energy. This has included purchasing a new, multifunctional tractor. This has improved the quality of the field operations, uses less fuel and so produces less greenhouse gases. This has also lowered operation costs by 15-25%.
- The farm is also used by the SZIU Crop Production Institute, Szent István University to undertake field experiments on management in order to increase soil microbial activity to improve fertility and soil organic matter. These experiments have led to improved crop biomass and yield and increased the soil organic matter content.



View of the valley of Rákos-patak , Photo: SZIU

- Nutrition experiments are also ongoing to identify ways of improving nitrogen uptake, N use efficiency and increasing biomass for healthier plants whilst causing less nitrate leaching and a decrease in greenhouse gases from reduced inorganic N fertiliser use and emission of nitrous oxide from soils.
- The data and knowledge arising from these experiments is utilised by the farm and used for farmer and student education purposes.



Field experiments, Photo: SZIU

Original case study content collated by SZIU Crop Production Institute, Szent István University

