

## SLOVENIA

### Soil erosion & soil management

#### Location

Pragersko

#### Programming period

2014 – 2020

#### Priority

P4 – Ecosystems management

#### Measure

M10 – Agri-environment – climate

#### Funding (EUR)

Total budget 61 546.8

EAFRD 49 237.4

National/Regional 12 309.4

#### Project duration

2015 – on-going

#### Project promoter

Anton Medved

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#### Website

n/a

A family farm invested in soil conservation practices to increase its capacity to store water and its microbial biomass activity.

### Summary

The Medved farm is a family farm located in north-eastern Slovenia. The family started farming 40 years ago on 4 hectares of arable land; today the farm has 55 ha of cultivated land. The farm grows in rotation corn, wheat or barley and a grass-clover mix (TDM), although its main activity is milk production with 75 cows.



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The farm has gradually switched from conventional agriculture to agri-environmentally friendly practices. Some of the commitments the family has undertaken under the agri-environment-climate measure in the Slovenian Rural Development Programme (RDP) include field greening, through sowing of green manure crop and no tillage. They have also undertaken the application of liquid organic fertilisers directly into the soil or on the surface, immediately before sowing, leading to its immediate incorporation into the soil. An earlier RDP investment project, funded under the measure for investments in physical assets (M4), enabled the family to acquire the necessary machinery for implementing conservation agriculture.

### Results

Organic matter has been increasing in various proportions relative to the soil type. The average increase of the share of organic matter ranges from 1% to 1.5%.

Conservation practices result in simple and effective farming. Fuel consumption was reduced by approximately 20%.

For now, the farm's productivity is the same as when conventional agriculture was carried out. However, the owners expect that by improving the soil's condition, the productivity will increase each year.

## Context

The Medved farm is in Drava and Ptuj Field, in north-eastern Slovenia, in the region of Styria. Two generations have been living and working on the family farm, currently the Medved parents Marjeta and Anton senior with their son Anton junior and his wife Nadja. The family started farming 40 years ago with 4 ha of arable land; today the farm has 55 ha of cultivated land. They grow in rotation corn, wheat or barley and a grass-clover mix (TDM). The main activity of the farm is milk production from 75 cows, of black and white breed under a free-range breeding system, with robotic milking. The average annual production per cow in standard lactation is 9 600 kg of milk. All bulk feed is harvested on the farm and part of the cereals used are purchased.

Six years ago, the Medved farm began to progressively move away from conventional farming practices by shifting to methods aimed at soil conservation. The main reason for taking up the agri-environment-climate payments through the RDP, was to increase the fertility of the land and improve the nutrient loop of fertilisers within the farm, in an environmentally-friendly way. Soil conservation management of land has several advantages: it saves time and fuel, reduces soil compaction, increases soil aeration, increases soil water storage and the soil's microbial biomass activity. The farm was subsequently included in the agri-environment-climate payments measure and upgraded its agricultural machinery to meet the requirements. Today, almost all the farmed areas are being cultivated in accordance with soil conservation practices.

## Objectives

The farm switched from conventional agriculture to agri-environmentally friendly practices to reduce the amount of inputs required, whilst improving the quality of production. This approach will also contribute to climate change mitigation.

## Activities

The farm participates in M10 of the RDP, the agri-environment-climate payments measure, under the following requirements:

Conservation soil practices. The farm is required to ensure minimal soil disturbance for the main crop using a gruber scarifier and a rotary harrow. No tillage is allowed. By applying conservation soil practices, the farmers aim to retain as much moisture in the soil as possible. This is of

utmost importance in periods of drought as the soil is more resilient.

Field greening through sowing of green manure crop. Under this requirement, the soil must be covered with a green manure crop from the 15 November of the current year to at least 15 February of the following year.

Only organic fertilisers with low emissions can be used and applied in liquid form directly into the soil or on the surface, immediately before sowing. They must then be immediately incorporated into the soil. Liquid manure is transported with a low emission system and incorporated directly into the soil (1 to 3 cm deep).

After the main crop is harvested, the fields are sown with a high volume green manure crop. In the past, conventional farming resulted in the loss of too much water from the soil and the work was more time-consuming.

Conservation soil management in layers is implemented. This results in a better aeration of the deep layers, while the organic fertilisers remain incorporated on the surface. The surface must be covered by crop residues and sown in the most optimal way. All the operations are done with a single passage of machinery, with a considerable saving of time and fuel.

This layer-by-layer treatment allows the farmer to break down mounds of soil with one pass and at the same time make a seeding floor mixed, with crushed crop debris.

In 2016 the farm successfully participated in a public tender for investments in agricultural holdings, with a proposal for the group purchase of agricultural machinery. The result is that, using the new tools purchased, it is now easier to work and implement soil conservation methods. One tool, which is attached to the front of the tractor, is machined to reach a soil depth of up to 10 cm. Another, which is attached to the rear of the tractor, called the Pannonian plough, processes the soil to a depth of 35 cm. Behind the Pannonian plough are circular harrows that are machined to a depth of 15 cm. These circular harrows are optionally replaced by a combination of a rotary harrow and a planter, depending on the soil condition and needs.

In the process of adopting the new technology, the owners of the farm tested several methods in cooperation with the Agricultural Advisory Service of the Faculty of Agriculture and Life Science of the University of Maribor. Based on this research they decided to adopt the practice they are currently implementing on the farm.

### Main Results

The beneficiaries adopted conservation soil practices because of their positive impact on soil properties and on the crops. They realised they needed to make a change in their soil management practices to overcome the recurrent periods of drought, by increasing the humus content in the soil resulting in the increased carbon dioxide sink. With each passing year it is evident that the soil on the farm is more resilient to drought and more fertile. Analyses shows significant improvement; organic matter increased in various proportions, in relation to the soil type, and the farmers have managed to achieve an average increase in the share of organic matter from 1% to 1.5%.

The participation in the agri-environment-climate payments measure enabled the farmers to engage in

more professional and focused farming. They acquired new and different know-how and learnt a lot from their new experiences.

Conventional soil management would require more investment, more work and more strain on the soil to achieve crops of the same quality as those obtained with conservation practices. In contrast, conservation practices result in simple and effective farming. Fuel consumption was reduced by approximately 20%.

An additional benefit is that the milder odour of organic fertilisers, makes this type of farming and transport of liquid manure more acceptable to the general public.

For now, the farm's productivity is the same but the owners expect that improving the condition of the soil will result in improving productivity each year.

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### Additional sources of information

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