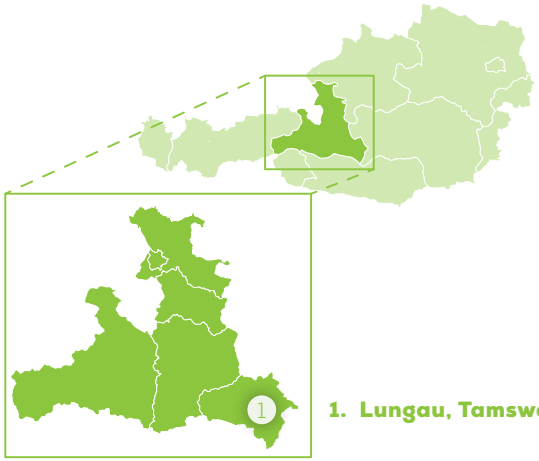
Challenge



1. Lungau, Tamsweg

DESCRIPTION

Mountain areas with mean altitude of 1148 m, average slopes of 22.7%, low mean annual temperatures of 5.2°C and mean annual precipitation of 720mm.

CHARACTERISTICS

The most important land use is permanent grassland, but some farmers in privileged locations are growing cereals (barley and triticale). The region is also famous for its potatoes.

CHALLENGES

- Area with low productivity, mean stocking rates are 1.02 LSU/ha of which 92% are cattle.
- Farmers aim to differentiate their products on the market to sustain themselves economically.
- Ruminants feed mostly on forage, concentrate represents only 5% of their diets.
- The main challenge is to establish a closed system of local production under rough, alpine conditions.

SELECTED PRACTICES

- Close nutrient cycles at dairy farms and reduce GHG emissions which are usually attributed to extensive farming systems.
- Develop feeding strategies based on measurements of gaseous emissions by using a respiration chamber.

Participating partners

Case study leader :

HBLFA
Raumberg-Gumpenstein
Landwirtschaft

Höhere Bundeslehr- und Forschungsanstalt für Landwirtschaft
Raumberg-Gumpenstein
Raumberg 38
8952 Irdning-Donnersbachtal

Collaborators :

UNESCO Biosphäre LUNGAU

Landwirtschaftskammer Salzburg

SalzburgMilch

Contact

Programme coordinator :

IRTA – Institute of Agri-food Research and Technology
Torre Marimon
08140 Caldes de Montbui
Barcelona, Spain
mail@irta.cat

Follow Circular Agronomics online

www.circularagronomics.eu

bit.ly/CircAgNews

@CircularAgro

Circular agronomics receives funding from the European Union´s Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement nº. 773649

Circular Agronomics

Circular solutions for carbon and nutrient management

Case study
Lungau, Austria



Case study
Lungau, Austria

What ? Closing nutrient cycles at dairy farms; developing feeding strategies, measuring gaseous emissions.

How ? Sampling and assessment of soil, forage and manure on the farms; Life Cycle Assessment (LCA) for each farm.

Circular Agronomics

Closing nutrient cycles at dairy farms

Twenty-two farms representative of the farming system in the region were selected to help study the N and P cycles of grassland-based dairy farms. Soil, forage and manure samples are taken from the farms every year to get an overview of the nutrient cycles.

Additionally, each farm documents the entire processes **of plant production and animal production.** Based on this documented data, a Life Cycle Assessment (LCA) was conducted for each of the farms.

Based on the milk yield per area (kg ECM/ha), the 22 farms were divided into three groups :

- **Disadvantaged extensive farming (D) :** < 4,900 kg ECM/ha
- **Average extensive farming (A) :** 4,900-8,200 kg ECM/ha
- **Preferred extensive farming (P) :** > 8,200 kg ECM/ha

First results show, that the groups D and P are able to nearly close their N and P cycles (Group D, however, has a slightly negative P balance).

Group A, on the other hand, has a clearly negative N and P balance.

Forage sample



Feeding strategies and gaseous emissions

Different diets (0, 20 and 40% of concentrate) are tested on various genotypes of dairy cows (Holstein Friesian conventional breeding, Holstein Friesian New Zealand, Holstein Friesian lifetime performance breeding and Simmental).

Besides feed intake, milk yield and efficiency of milk production, methane emissions of dairy cows are measured additionally in respiration chambers. The results will produce conclusions on which genotype, which diet composition and which combination of genotype and diet composition will lead to the most efficient milk production in a certain geographic region.

