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ClieNFarms EIP-AGRI Practice Abstracts

Optimization of grassland management

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Grassland-based dairy production is a mainstay of Swiss agriculture, as in other parts of Europe. Dairy farmers have since long been under economic pressure and now face political pressure to reduce methane and nitrous oxide emissions associated with milk production.

This can lead them to abandon dairy production altogether and, depending on site conditions, convert grassland into arable land. Yet, grasslands have a high ecological value. They contribute to biodiversity preservation and water filtration. Carbon stocks under Swiss grassland sites were shown to amount to an average 80 tons C/ha in the top 20 cm alone, much more than under arable land¹.

Grassland management is now increasingly being optimized by measures such as (i) choosing site-adapted grass-legume mixtures, (ii) synchronising grazing with vegetation stages, (iii) judicious use of compensatory feed and (iv) keeping dual-purpose cows with high pasture suitability. Site-adapted packages of measures were shown to contribute to reduced greenhouse gas emissions and increased environmental efficiency. Several farms in the Swiss I3S have adopted some or all of these measures, at different levels of intensity, from an organic mountain farm to intensive valley farms. Under suitable conditions (e. g. pasture areas close to the stable) and with appropriate processing and marketing, workload was reduced while economic revenue increased.

¹ Moll-Mielewczik J, Keel S and Gubler A. (2023). Organic carbon contents of mineral grassland soils in Switzerland over the last 30 years. *Agriculture, Ecosystems & Environment* 342. [108258. 10.1016/j.agee.2022.108258](https://doi.org/10.1016/j.agee.2022.108258).



Figure 1 : Many Swiss landscapes are dominated by pastures used to feed dairy cows. Soils under pastures tend to store much more carbon than under arable land.



Figure 2 : Dual-purpose cattle breeds, such as Simmental and Fleckvieh (here crossed with Red Holstein), and site-adapted multi-species pastures are at the centre of optimized grassland systems.



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