

grow



Humus Build-Up Through Catch Crops on Heavy, Clayey Soils

About

This case study highlights over 20 years of experience in using catch crops and light tillage on heavy, clayey soils to improve soil structure, enhance fertility, and support carbon sequestration. Even after the discontinuation of greening subsidies, the farmer has continued the practice, developing cost-efficient seed mixtures and implementing a circular economy using biogas plant manure. The approach demonstrates long-term sustainability and soil-specific strategies suitable for most farms.

The Challenge

Key challenges included:

-Soil management: Heavy, clayey soils are prone to compaction, erosion, and poor fertility.

-Regulatory and financial pressures: Discontinuation of greening subsidies and changing EU regulations increased financial and compliance challenges.

-Maintaining soil life and humus: Ensuring continued fertility and CO₂ sequestration without relying on external inputs.

These challenges were important because sustainable soil management is critical for long-term productivity, erosion prevention, and climate adaptation on heavy soils.



THE SOLUTION

The farmer addressed these challenges through:

- Catch crops:** Sown between cereal and maize crops to build humus, improve soil structure, and provide green manure.
- Light tillage methods:** Harrowing or rolling used to optimize soil structure without causing damage.
- Circular economy practices:** Applying liquid manure from an in-house biogas plant, reducing the need for external fertilization.
- Self-developed seed mixtures:** Cost-efficient and adapted to the specific soil type (~€20/ha).

IMPACT AND RESULTS

Key outcomes include:

- Improved soil fertility and structure over two decades.
- Carbon sequestration:** Consistent humus buildup contributes to long-term soil health and climate benefits.
- Economic efficiency:** Low-cost, self-developed seed mixtures and use of farm-produced manure.
- Sustainability without subsidies:** Practice continues unfunded from 2023, showing long-term commitment to regenerative agriculture.

Catch crops and light tillage are effective for most farms but less suitable for black, swampy soils. Soil-specific adaptations are essential for maximizing results. Going forward, the farmer plans to refine these methods further and promote adoption on compatible farms to encourage long-term sustainable soil management.

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