

HERBAL LEYS FOR CARBON CAPTURE

The Centre for High Carbon Capture Cropping (CHCx3) is a four-year, multi-partner research project that aims to help UK farmers capture more carbon and increase resilience to climate change.



One of the four cropping groups being considered within CHCx3 is perennial food and forage crops. Niab set up a herbal ley trial near Cambridge in 2023 to consider four mixes (Figure 1). The trial is replicated at FarmED's Honeydale Farm in The Cotswolds..

Assessments

Soil assessments have been conducted in the trial in spring and autumn since March 2024. The assessments include:

- Visual Evaluation of Soil Structure (VESS) score
- Worm counts (adult and juvenile)
- Bulk density taken at the surface and at 30 cm deep.
- Soil cores taken at 0-30 cm, 30-60 cm and 60-90 cm deep for broad spectrum nutrient analysis plus soil carbon content.

Above-ground biomass has been measured in spring 2024, 2025 and 2026; and below-ground biomass in spring 2024 and 2026 only (Figure 2). The control treatment (for comparison) is an adjacent cereal crop.

Next steps

The data are being collated and will be compared with those from the FarmED site. At the end of the project, the findings will be made available through the project website and publications.

This project has received funding from Innovate UK under the Farming Futures R&D Fund: Climate Smart Farming, part of Defra's Farming Innovation Programme.

Figure 1. CHCx3 herbal ley mixtures. Seed mixtures provided by Cotswolds Seeds

Mixture	Mixture components
Herbal grazing ley	14.95% Donata cocksfoot, 14.95% Lofa festulolium, 5.84% Toddington perennial ryegrass, 5.84% Calibra tetraploid perennial ryegrass, 36.58% Sainfoin, 2.48% Diplomat red clover, 0.71% Plato lucerne, 0.23% Sweet clover, 0.23% Aurora alsike clover, 0.23% Leo birdsfoot trefoil, 3.27% Burnet forage herb, 2.10% Puna II chicory, 0.23% Endurance ribgrass, 0.13% Sheeps parsley forage herb, 0.02% yarrow forage herb
Medium diversity ley	34.43% AberClyde tet. perennial ryegrass, 34.43% AberWolf perennial ryegrass, 17.54% Donata cocksfoot, 11.78% Winnetou timothy, 0.71% Merwi white clover, 0.71% Diplomat red clover, 0.26% Puna II chicory, 0.06% Endurance ribgrass (plantain)
Lamb finishing herbal ley	59.12% Puna II Chicory, 0.74% Endurance ribgrass, 32.26% Diplomat red clover, 8.06% Merwi white clover
Simple lolium ley with white clover	33.26% Toddington perennial ryegrass, 16.95% AberWolf perennial ryegrass, 24.35% Twymax tetraploid perennial ryegrass, 24.35% Diwan organic tet. perennial ryegrass, 0.43% AberSwan white clover, 0.43% Barblanca white clover, 0.11% S184 wild white clover

Figure 2. Above and below ground measurements before oven-drying. Plants were washed, shoot and root were separated and then dried at 90 degrees for 48 hours to measure biomass



Figure 3. Adult *Lumbricus terrestris* from simple Lolium clover herbal ley mixture (March 2024)



For more information

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