



Diverse forage crops for sustainable livestock wintering



The Field Lab

Farmers in south west England have been trialling a diverse (16 variety) mix against their current systems of monoculture winter brassicas used for grazing outwintering livestock. Supported by FWAG, they measured changes in soil health, biodiversity and monitored forage quality and yield.

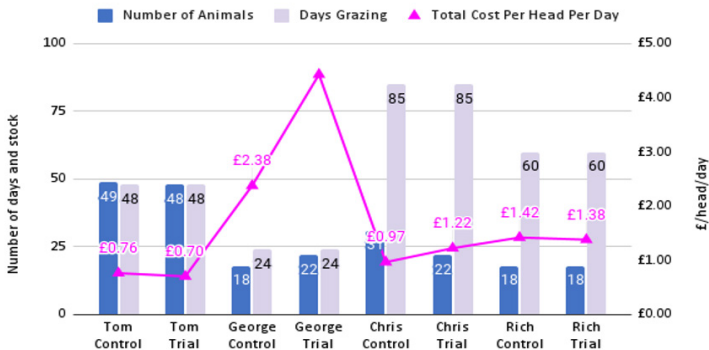
This field lab took a Whole Farm System approach to winter feed provision. Mono-culture forage brassicas are the standard but damage soil health, so investigating diverse species as a winter forage is a new area in which the industry has little or no experience. This could inform regulatory policy around options for winter grazing that benefit wild birds (ELMs, SFI, Countryside Stewardship).

The Trial Design

Each farm established a 4Ha plot of forage brassica or fodder beet (A) and another plot of 4Ha diverse forage crop based on a mixture of annual and perennial plants (B).

Tests done to determine bacterial-fungal ratios, soil health assessments, weighing of animals and condition score breeding prior and post removal from crop, forage analysis and bird counts.

Grazing Density, Duration and Cost



The Species Mix

Species	%	Functional Group	Description
White Clover	2.9	Legume	Low growing, high protein content, minerals, digestibility, persistence, waterlogging tolerance, good relative yield
Berseem Clover	1.1	Legume	Annual, fast growing, large biomass, least hardy, soil fertility
Crimson Closer	1	Legume	Annual, soil fertility
Alsike Clover	1	Legume	Perennial, slower growing than red clover, Good for heavy and acid soils, frost tolerant
Hairy Vetch	16	Legume	Out competes weeds, fixes N, improves soil structure
Linseed	5.31	Forb	Annual, bird feed, improves soil structure
Forage Rape	2.1	Brassica	Palatable, high yield, protein rich
Kale Seed R/C	1.9	Brassica	Highest yielding brassica, winter hardy, high protein
Kale x Rape Hybrid R/C	0.45	Brassica	Quick establishment, winter hardy, high protein
Attila Diploid Italian Ryegrass	25.7	Grass	Short lived, high yielding,
Spadona Perennial Chicory	0.4	Herb	Protein, Minerals, digestibility, good yield, anthelmintic, drought and frost tolerance
Ribwort Plantain	0.8	Herb	Protein, Minerals, good relative yield, anthelmintic, waterlogging tolerance, marginal soil, drought
C2 Canyon Spring Oats	28.6	Grass	Soil improving, can be allelopathic, grows on less fertile soils
Daikon Tillage Radish	5.7	Brassica	Deep rooted, improves soil structure, competes with weeds
Iregi Sunflower Seed	6.2	Forb	Strong roots break up compacted soils, seeds for farmland birds
White Millet Seed	0.84	Grass	Bird seed
Functional Groups	% Composition		
Brassica	10.15		
Grass	55.14		
Herb	1.20		
Legume	22.00		
Forb	11.51		
Grand Total	100.00		

The Findings

The farmers agree that the following objectives were achieved through increasing diversity:

1. Improvements in soil structure and aggregation
2. Increases in soil organisms, and improvement in soil cycling of OM (evidence of fungal activity).
3. Increases in biodiversity, including pollinators, insects and birds.
4. Reduction in poaching and better water infiltration
5. Faster transition for the mobs onto the diverse mix.
6. Better dung scores consistently across the diverse mix.

The following improvements and further research are required:

1. Tweaking to ensure more winter hardy species are included.
2. Timing of grazing and stocking density need to be improved to encourage recovery and regrowth.
3. It is important to time the grazing to maximise forage value
5. Different stock classes performed better on the diverse mix, and this needs further investigation.
6. Further research required to assess compensatory growth when stock are moved off both kale and the diverse mix.

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