AHDB Beef & Lamb

AHDB Monitor Farm – Glovers Farm

Farm Trial: Assessment of GS4 mixes

Report for AHDB

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1   INTRODUCTION

1.1   Background

Glovers Farm is an AHDB Beef and Lamb monitor farm in Sedgeford, Norfolk, farmed by David Cross and his father John. The farm is 360 ha of tenanted land, with around 3 0ha sublet to a free-range pig operation. 80 ha of temporary grassland feature heavily within the arable rotation, in addition to barley, wheat, potatoes and sugar beet. The farm sits predominantly on light alkaline soils over chalk making it susceptible to drought in the summer months. David runs a closed flock of 900 ewes tupped by EasyRams and is expanding to beef cattle in 2023.

The farm is planning to expand the proportion of temporary grassland sown to multispecies mixes, which are more drought tolerant than grass or grass & clover mixes. The farm has sown multispecies mixes under the Countryside Stewardship GS4 'Legume and herb-rich swards' option, which provides a payment of £382/ha[1]. This requires that the sward is left to rest for at least 5 weeks between 1st May and 31st July so that the majority of flowers are open and available to pollinators. By paddock grazing the GS4 fields with a grazing rotation of at least 5 weeks during the 1st of May to 31st July period, the farm can comply with GS4 rules without having to remove livestock from the whole field.

1.2   Objectives

The aim of this farm trial was to assess the performance of three different GS4 mixes grazed with sheep, to identify which performed best and help inform future decisions on sown seed mixes.

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[1] GS4: Legume and herb-rich swards. https://www.gov.uk/countryside-stewardship-grants/legume-and-herb-rich-swards-gs4

2   METHODOLOGY

2.1   Treatments

The trial was carried out in a 40-ha field on Glovers Farm (Figure 1). Three different GS4 mixes were sown at two timings (late June and early August) in one field at Glovers Farm, giving 6 treatments (Table 1). The three seed mixes are given in Table 2 (Germinal GS4 mix), Table 3 (High legume and herb GS4 mix), and Table 4 (Home GS4 mix).

Table 1. Treatments List

| Treatment number	Seed mix	Sowing date
1	'Germinal' GS4	29/06/21
2	'High Legume & herb' GS4	29/06/21
3	'Home mix' GS4	29/06/21
4	'Germinal' GS4	1st wk of Aug 2021
5	'High Legume & herb' GS4	1st wk of Aug 2021
6	'Home mix' GS4	1st wk of Aug 2021

Table 2. 'Germinal' GS4 seed mix

kgs per pack	Variety	Variety type	% of mix	% total species
2.80	AberNiche	Festulolium	22	
3.00	AberWolf	Perennial Ryegrass Intermediate Diploid	23	
1.00	AberZeus	Perennial Ryegrass Intermediate Diploid	8	
0.90	Comer	Timothy	7	
0.50	Lidacta	Cocksfoot	4	
0.50	Corail	Strong Creeping Red Fescue	4	67
2.00	Avisto	Red Clover	15	
0.50	Altaswede	Red Clover Late	4	
0.50	Ermo	Alsike Clover	4	
0.15	Leo	Birdsfoot Trefoil	1	24
0.30	Puna II	Perennial Chicory	2	
0.30	Tonic	Plantain	2	
0.15	Burnet	Agricultural Burnet	1	
0.20	Yarrow	Yarrow	2	
0.20	Sheeps Parsley	Agricultural Sheeps Parsley	2	9
13.00				

Table 3. 'High legume and herb' GS4 seed mix

kgs per pack	Variety	Variety type	% of mix	% total species
1.50	AberNiche	Festulolium	10	
1.50	AberGain	Perennial Ryegrass Late Tetraploid	10	
1.00	Tropicana	Tall Fescue	7	
1.00	Lidacta	Cocksfoot	7	
1.00	Laura	Meadow Fescue	7	41
1.50	Milvus	Red Clover	10	
1.00	Avisto	Red Clover	7	
1.00	Timbale SAS Premium	Lucerne	3	
0.50	Altaswede	Red Clover Late	7	
2.00	Sainfoin	Sainfoin	14	
0.50	Leo	Birdsfoot Trefoil	3	45
0.65	Tonic	Plantain	4	
0.50	Puna II	Perennial Chicory	3	
0.30	Burnet	Agricultural Burnet	2	
0.30	Yarrow	Yarrow	2	
0.25	Sheeps Parsley	Agricultural Sheeps Parsley	2	14
14.50				

Table 4. 'Home mix' GS4 seed mix

kgs per pack	Variety	Variety type	% of mix	% total species
2.00	AberGreen	Perennial Ryegrass Intermediate Diploid	15	
2.00	AberGain	Perennial Ryegrass Late Tetraploid	15	
1.00	Laura	Meadow Fescue	8	
1.00	Tropicana	Tall Fescue	8	
0.50	Corail	Strong Creeping Red Fescue	4	
0.50	Comer	Timothy	4	54
1.25	Milvus	Red Clover	10	
1.25	Avisto	Red Clover	10	
0.50	Leo	Birdsfoot Trefoil	4	
0.50	Ermo	Alsike Clover	4	
0.25	AberSwan	White Clover Medium Leaved	2	
0.25	AberDai	White Clover Medium Leaved	2	31
0.75	Tonic	Plantain	6	
0.75	Puna II	Perennial Chicory	6	
0.30	Burnet	Agricultural Burnet	2	
0.10	Yarrow	Yarrow	1	
0.10	Sheeps Parsley	Agricultural Sheeps Parsley	1	15
13.00				
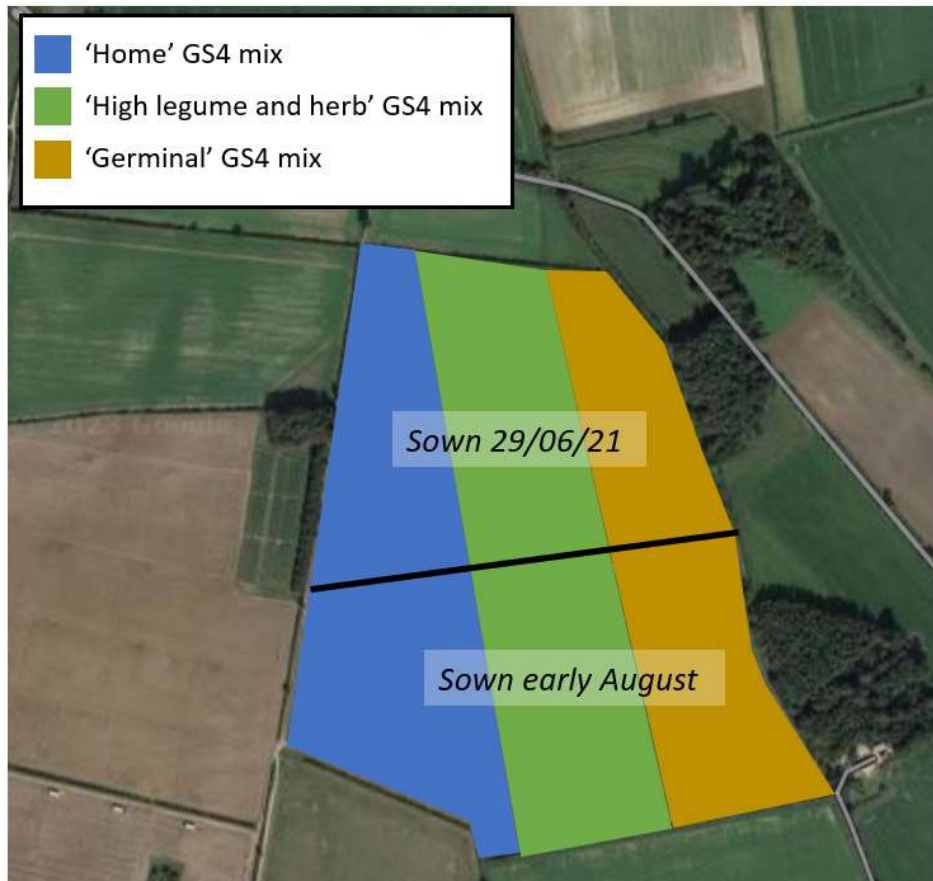
Figure 1. Field plan

2.2 Sward composition assessment

Information on sward species diversity was recorded in each treatment (GS4 mix x sowing date) in autumn 2021 before the field was grazed with sheep. Species composition was recorded in 8 replicate $1m^2$ quadrats per treatment. Quadrats were evenly distributed across each treatment using a 'W' pattern and avoiding any atypical areas.

Species composition and percentage ground cover for each species was recorded in each quadrat. In addition, vegetation height was recorded (maximum height at five points in the quadrat).

2.3 Grazing and livestock management

The field was grazed with ewes from 20th March. The ewes were split into six equal groups and each group was set stocked on one of the six treatments for lambing. The six groups were balanced for lambing date and number of lambs. The groups lambed between 5th and 25th April.

In the first week of May, the ewes grazing the same species mix were combined (T1 Germinal mix sown in June and T4 Germinal mix sown in August were combined; T2 High legume mix sown in June and T5 High legume mix sown in August were combined; and T3 Home mix sown in June and T6 Home mix sown in August were combined) to give three groups of ewes and lambs grazing the three different species mixes. The area of each species mix was split into 8 paddocks and the ewes and lambs rotationally grazed on 4.5 days moves giving a 36-day grazing rotation.

At the same time, the 'Home mix' treatment was expanded to include 12 ha of 'Home mix' sown in a neighbouring field, as grass covers in the 'Home mix' area of the treatment field were insufficient for the number of lambs.

The lambs were weighed on 11th June (approximately 8-week weights) and then combined into a single group and rotationally grazed across the 24 paddocks on the field on 1.5 day moves, maintaining the 36-day grazing rotation.

The lambs were weaned at around 12 weeks. After weaning the group were split and a number of lambs sold due to pressure of the drought on grass availability. After weaning, the farm sold around 400 of the 600 lambs that had been grazing the field. The 200 lambs retained by the farm were combined with another group of around 100 lambs and rotationally grazed in a single group of around 300 lambs across the 24 paddocks on 1.5 day moves.

2.4   Grazing – forage yields and quality

Grass covers (i.e., biomass) were measured for quantity and quality from the three different GS4 mixes three times during the 2022 grazing season:

- 17th May 2022, at the beginning of the 1st grazing rotation.
- 14th July 2022, the week before weaning.
- September 2022, during the 1st graze after the ewes have 're-set' the field.

Covers were measured using the 'cut and weigh' method. Grass covers were measured by cutting and weighing grass within three replicate 1 m^2 quadrats from the next cell to be grazed in each GS4 mixes. The grass was cut to grazing height (assessed by measuring grazing height in the last cell to be grazed).

Grass from the three replicate quadrats from each treatment were combined and a sub-sample of this fresh grass was sent to Sciantec Laboratory for NIR (Near-infrared spectroscopy) forage analysis.

2.5   Livestock performance

The farm weighed all lambs on 11th June (8-week weights) and calculated an average liveweight gain in grams per day for the lambs in each of the three treatment groups.

Lambs were weighed again at weaning and an average live weight gain in grams per day for all lambs calculated (lambs were combined into a single group after weaning, so this later weight data is not split into species mixes).

The ewes were assessed for mastitis on 17th May and body conditioned scored at weaning.

3 RESULTS

3.1 Weather data

Rainfall for 2022 was a total of 577 mm, compared to the long-term average (1971-2000) for the area of 629 mm (Figure 2). Rainfall was significantly lower than average in April (12 mm in 2022, compared to 45 mm long term average) and July (16 mm in 2022, compared to 46 mm long term average). The hot and dry conditions in July reduced grass growth and all three mixes were reported to be visibly affected by the drought.
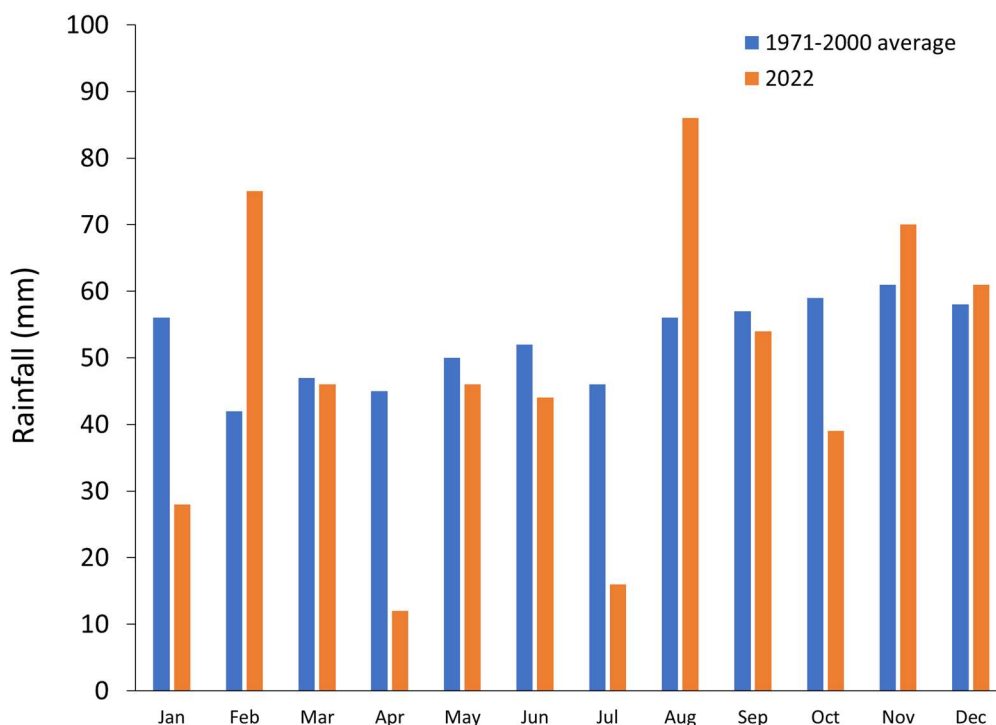
Figure 2. Monthly rainfall Jan-Dec 2022 compared to long term (1971-2000) average*

*2022 rainfall data was from a weather station on Glovers Farm. Long term average rainfall data for the farm postal district has been sourced from the MANNER-*NPK* climate database.

3.2 Sward species composition

Information on sward species diversity was recorded in each treatment (GS4 mix x sowing date) on 05/11/21 before the field was grazed with sheep. Table 5 shows the percentage ground cover for each of the sown species in the 'Germinal' GS4 treatment, Table 6 shows the percentage ground cover for each of the sown species in the 'High legume and herb' GS4 mix, and Table 7 shows the percentage ground cover for each of the sown species in the 'Home' GS4 mix. Appendix 1 includes photos showing ground cover in each treatment.

The 'Germinal' GS4 sward and 'high legume and herb' GS4 mixture were predominantly perennial ryegrass, red clover, perennial chicory and plantain, sward composition very similar between sowing dates. The low establishment of AberNiche (festulolium) in both mixes is surprising and it is not clear why this is. The grass species establishment for both the 'Germinal' and 'High legume and herb' mixes is as expected. The legumes have established well in both mixes. Earlier sowing dates tend to favour

legume establishment, and this is evident in both the 'Germinal' and 'High legume and herb' mixes with higher percentage covers of legume for the earlier sowing date.

The 'Home' GS4 mix sward was predominantly perennial ryegrass, perennial chicory, and plantain, with approximately 10% of meadow fescue. The herb establishment, particularly the plantain and chicory, was good. Plantain cover was notably higher at the later sowing date (39% compared to 16% for the earlier sowing), and this competition from the plantain may explain the poorer establishment of the grasses at the later establishment date.

Table 5. 'Germinal' GS4 treatment – sown species and species assessment

Variety	Variety type	% of seed mix	% ground cover T1 sown June	% ground cover T4 sown August
AberNiche	Festulolium	22	0.0	1.4
AberWolf	Perennial Ryegrass Intermediate Diploid	23	17.1	15.3
AberZeus	Perennial Ryegrass Intermediate Diploid	8		
Comer	Timothy	7	0.8	1.3
Lidacta	Cocksfoot	4	3.6	2.9
Corail	Strong Creeping Red Fescue	4	6.0	3.6
Avisto	Red Clover	15	30.3	22.1
Altaswede	Red Clover Late	4		
Ermo	Alsike Clover	4	5.4	4.0
Leo	Birdsfoot Trefoil	1	8.0	4.1
Puna II	Perennial Chicory	2	17.1	16.0
Tonic	Plantain	2	23.9	23.0
Burnet	Agricultural Burnet	1	2.6	2.9
Yarrow	Yarrow	2	0.5	1.6
Sheeps Parsley	Agricultural Sheeps Parsley	2	0.5	1.1
	Bare ground	-	0.8	1.1
	Other species*	-	4.0	21.7

* Other species include **T1** *Veronica persica* (2.1%), *Silene latifolia* (0.3%), *Viola arvensis* (0.9%), *Chenopodium album* (0.3%), *Stellaria media* (0.3%), and *Sonchus sp.* (0.3%); **T3** *Veronica persica* (9.5%), *Papaver sp.* (0.1%), *Senecio vulgaris* (0.5%), *Chenopodium album* (1.2%), *Volunteer barley* (9.4%), *poa sp.* (0.3%), *Viola arvensis* (0.2%), *Solanum nigrum* (0.1%), *Stellaria media* (0.4%), and *Urtica urens* (0.1%).

Table 6. 'High legume and herb' GS4 – sown species and species assessment

Variety	Variety type	% of seed mix	% ground cover T2 sown June	% ground cover T5 sown August
AberNiche	Festulolium	10	2.5	0.6
AberGain	Perennial Ryegrass Late Tetraploid	10	13.5	13.4
Tropicana	Tall Fescue	7		
Lidacta	Cocksfoot	7	1.0	7.6
Laura	Meadow Fescue	7	3.4	4.6
Milvus	Red Clover	10	29.3	18.0
Avisto	Red Clover	7		
Altaswede	Red Clover Late	3		
Timbale SAS Premium	Lucerne	7	0.0	0.1

Sainfoin	Sainfoin	14	0.4	2.1
Leo	Birdsfoot Trefoil	3	5.3	7.8
Tonic	Plantain	4	28.5	26.3
Puna II	Perennial Chicory	3	12.3	14.9
Burnet	Agricultural Burnet	2	4.1	3.4
Yarrow	Yarrow	2	1.7	2.6
Sheeps Parsley	Agricultural Sheeps Parsley	2	2.7	0.4
	Bare ground	-	1.8	1.5
	Other species*	-	5.0	9.8

* Other species include **T2** *Viola arvensis* (1.9%), *Veronica persica* (0.9%), *Cirsium vulgare* (0.6%), *Volunteer barley* (0.5%), *Papaver sp.* (0.8%), and *Euphorbia sp.* (0.3%); **T5** *Chenopodium album* (1.8%), *Papaver sp.* (0.8%), *Sinapsis arvensis* (0.3%), *Veronica persica* (2.4%), and *Volunteer barley* (4.6%).

Table 7. 'Home mix' GS4 – sown species and species assessment

Variety	Variety type	% of seed mix	% ground cover	
			T3 sown June	T6 sown August
AberGreen	Perennial Ryegrass Intermediate Diploid	15	36.3	13.3
AberGain	Perennial Ryegrass Late Tetraploid	15		
Laura	Meadow Fescue	8	11.5	8.9
Tropicana	Tall Fescue	8	1.1	0.3
Corail	Strong Creeping Red Fescue	4	3.9	0.4
Comer	Timothy	4	3.8	0.5
Milvus	Red Clover	10	8.8	8.1
Avisto	Red Clover	10		
Leo	Birdsfoot Trefoil	4	2.1	8.8
Ermo	Alsike Clover	4	4.8	3.8
AberSwan	White Clover Medium Leaved	2	4.4	1.4
AberDai	White Clover Medium Leaved	2		
Tonic	Plantain	6	15.5	39.1
Puna II	Perennial Chicory	6	13.4	17.9
Burnet	Agricultural Burnet	2	2.9	3.9
Yarrow	Yarrow	1	3.5	1.4
Sheeps Parsley	Agricultural Sheeps Parsley	1	2.0	0.0
	Bare ground		2.3	2.0
	Other species*		3.6	6.3

* Other species include **T3** *Silene noctiflora* (0.1%), *Viola arvensis* (1.0%), *Sisymbrium officinale* (0.1%), *Dactylis glomerata* (1.1%), *Veronica persica* (0.9%), and *Papaver sp.* (0.5%); **T6** *Veronica persica* (2.7%), *Capsella bursa-pastoris* (0.1%), *Chenopodium album* (2.1%), *Geranium sp.* (0.1%), *Urtica urens* (0.3%), *Cirsium vulgare* (0.1%), *Viola arvensis* (0.2%), *Sinapsis arvensis* (0.6%), and *Tripleurospermum inodorum* (0.1%).

Vegetation height (maximum height at five points in the quadrat) was also recorded on 05/11/21 at the same time as the species assessments. Table 8 shows the maximum vegetation height and percentage of bare ground in each treatment. Vegetation height and percent of bare ground was very similar between the two sowing dates. However, there was a difference between the seed mixes; vegetation height was lower (22 cm) and percent of bare ground higher (2.1%) for the 'Home' mix treatment, than either the 'Germinal' mix (27 cm and 0.9% bare ground), or 'High legume & herb' mix

treatment (26 cm and 1.6% bare ground), indicating better establishment of the latter two seed mixes compared to the 'Home' mix.

Table 8. Vegetation height and percentage of bare ground in each treatment on 05/11/21

Treatment number	Seed mix	Sowing month	Height (cm)	Bare ground (%)
1	Germinal	June	27	0.8
2	High Legume & herb	June	27	1.8
3	Home mix	June	21	2.3
4	Germinal	August	28	1.1
5	High Legume & herb	August	25	1.5
6	Home mix	August	22	2.0
Mean of each sowing date				
		June	25	1.6
		August	25	1.5
Mean of each grass species mix				
		Germinal	27	0.9
		High legume & herb	26	1.6
		Home mix	22	2.1

3.3   Grass yields and quality

3.3.1   Grass yields

Grass covers (i.e., biomass) were measured for quantity and quality from the three trials during the 2022 grazing season (Table 9). Grass covers varied across the grazing season; covers were greatest at a mean of 5.2 t/ha FW at the beginning of the grazing season, and lowest at a mean of 3.8 t/ha FW in July when grass growth had slowed due to the drought.

There were clear differences in grass growth between the three mixes visible in the field (Figures 3-7), and this is reflected in the grass cover measurements. On average grass covers were greatest from the 'Germinal' GS4 mix (mean of 5.3 t/ha FW), followed by the 'High legume and herb' GS4 mix (mean 4.4 t/ha), and lowest from the 'Home' GS4 mix (mean 3.8 t/ha) (Table 9).

Table 9. Grass cover measurements (using cut and weigh method); samples taken from the next cell to be grazed.

| Date sampled[1]	Seed mix	Fresh weight (FW) per 1m² quadrat (grams)				t/ha FW
		Q1	Q2	Q3	Mean	
17/05/22	'Germinal' GS4	520	606	685	604	6.0
17/05/22	'High Legume & herb' GS4	454	773	399	542	5.4
17/05/22	'Home mix' GS4	450	272	549	424	4.2
	Mean of all samples taken in May					5.2
14/07/22	'Germinal' GS4	540	360	480	460	4.6
14/07/22	'High Legume & herb' GS4	380	320	290	330	3.3
14/07/22	'Home mix' GS4	360	420	240	340	3.4
	Mean of all samples taken in July					3.8
Mean of all samples from each mix (May and July sampling dates)						
	'Germinal' GS4					5.3
	'High Legume & herb' GS4					4.4
	'Home mix' GS4					3.8

[1]. Grass cover data not available for September sampling.

Figure 3. 'Germinal' GS4 mix 17th May 2022 (mean grass yields of 6.0 t/ha FW)

Figure 4. 'High legume and herb' GS4 mix 17th May 2022 (mean grass yields of 5.4 t/ha FW)
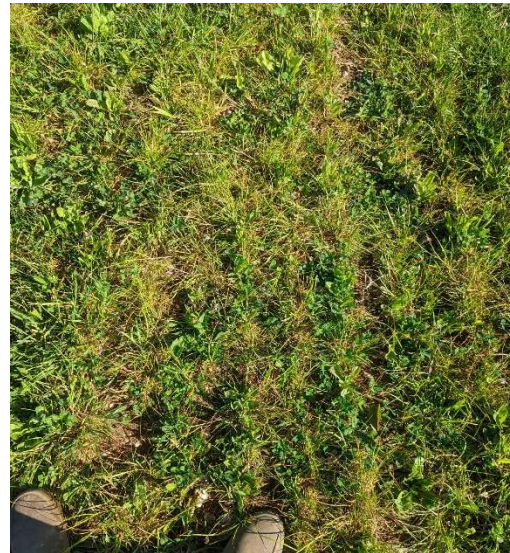
Figure 5. 'Home' GS4 mix 17th May 2022 (mean grass yields of 4.2 t/ha FW)

Figure 7. 9th June 2022 sheep grazing

Figure 6. 7th September 2022 'High legume and herb' GS4 mix.

3.4 Grass quality

Grass analysis data is shown in Table 10. Grass dry matter content for the May and July samples was similar at a mean of 20% DM content, but lower for the September samples at a mean of 13% DM. Higher dry matter forages can help improve intake volumes and potentially improve livestock performance. Seasonal variation in dry matter content often reflects differences in grass cover and weather conditions. There was no consistent difference in dry matter content between the three GS4 mixes.

There was seasonal variation in both crude protein and acid detergent fibre content. Crude protein content was a mean of 16.3% for the May samples, 13.4% for the July samples and 21.5% for the September samples. On each sampling date, crude protein content was greatest from the 'High legume and herb' GS4 mix (mean of 19.0% CP, compared to 16.4% CP for the 'Germinal' GS4 mix and 15.7% for the 'Home' GS4 mix.

Acid detergent fibre will tend to increase as forage matures and is inversely related to digestibility, and so forages with lower ADF are usually higher in energy. There was a strong seasonal variation in ADF, but no consistent difference between the three GS4 mixes. Acid detergent fibre was greatest at a mean of 31.7% for the July samples taken during the summer drought, compared to 18.6% for the May samples and 23.7% for the September samples.

Table 10. Grass quality analysis: samples taken from the next cell to be grazed.

Date sampled	Seed mix	Dry matter (%)	Crude protein - CP (% DM)	Acid detergent fibre - ADF (% DM)
17/05/22	'Germinal' GS4	20	14.6	18.8
17/05/22	'High Legume & herb' GS4	19	18.0	18.0
17/05/22	'Home mix' GS4	19	16.1	18.9
Mean of all samples taken in May		**20**	**16.3**	**18.6**
14/07/22	'Germinal' GS4	22	13.0	30.5
14/07/22	'High Legume & herb' GS4	15	16.3	30.7
14/07/22	'Home mix' GS4	25	10.8	33.9
Mean of all samples taken in July		**20**	**13.4**	**31.7**
Sep 22	'Germinal' GS4	12	21.7	24.1
Sep 22	'High Legume & herb' GS4	15	22.8	23.7
Sep 22	'Home mix' GS4	12	20.2	23.3
Mean of all samples taken in September		**13**	**21.5**	**23.7**
Mean of all samples from each mix (all sampling dates)				
Mean	'Germinal' GS4	18	16.4	24.5
Mean	'High Legume & herb' GS4	16	19.0	24.2
Mean	'Home mix' GS4	19	15.7	25.4

3.5 Livestock performance

Table 11 shows the average weight gain of the lambs in each group from birth to approximately 8 weeks. Weight gain was notably higher on the 'Germinal' and 'High legume & herb' treatments at 372 and 367 g/day respectively, than on the 'Home mix' treatment at 315 g/day.

Table 11 also shows the total area grazed by each group and the liveweight gain calculated on a per hectare basis. At lambing (in the first week of May), the 'Home mix' treatment was expanded to include 12 ha of 'Home mix' sown in a neighbouring field, as grass covers in the 'Home mix' area of the treatment field were insufficient for the number of lambs. The area grazed by the 'Home mix' group of lambs was 25.3 ha, compared to 13.9 ha for each of the 'Germinal' and 'High legume & herb' treatment groups. Liveweight gain per hectare for the lambs was 1.50 kg/ha for the 'Germinal' group, 1.48 kg/ha for the 'High legume' group, and 0.70 kg/ha for the 'Home mix' group. The lower average liveweight gain per lamb and greater area grazed by the 'Home mix' group resulted in a liveweight gain per hectare less than half that of the groups grazing the 'Germinal' and 'High legume & herb' mixes.

Table 11. Liveweight gain of the lambs grazing each grass mix.

Seed mix	LWG g/day	Number of days	Total LWG (kg)	Area grazed	LWG kg/ha
'Germinal' GS4	372	56	20.8	13.9	1.50
'High Legume & herb' GS4	367	56	20.6	13.9	1.48
'Home mix' GS4	315	56	17.6	25.3	0.70

Visual observations of the three groups supported the differences in weights recorded. The host farmer David Cross noted that the lambs on the 'Germinal' and 'High legume & herb' mixes looked to be performing better than those on the 'Home' mix. David noted that the 'High legume & herb' mix looked best (greener and more cover) during the drought, however early covers on the 'Germinal' mix were greater than on the 'High legume & herb' mix and lambs on both performed similarly.

David also noted that he thought the ewes moving onto the 'High legume & herb' mix had a more significant change in diet than the ewes moving onto either of the other two mixes, due to the higher proportion of herbs. All ewes were previously grazing grass or cover crops. Changes to diet at lambing can impact on ewe performance, and David noted that if the farm decided to use more of these species' mixes, the transition onto the mix could be managed better to minimise impact on the ewes.

The ewes were assessed for mastitis on 17/05/22. Six of the ewes grazing the 'Germinal' mix had hard lumps in their udders which is an early sign of mastitis, eight ewes grazing the 'High legume & herb' mix had hard lumps, and 9 ewes grazing the 'Home' mix had hard lumps. Mastitis is linked to reduced feed availability/nutrition; although overall number of ewes with hard lumps is similar between groups, the highest number was on the 'Home' mix, which also had the lowest grass covers (Table 5) and lowest protein forage (Table 6).

CONCLUSIONS

- This farm trial has shown differences in forage production and quality between the three GS4 mixes, which have impacted on livestock performance and stocking rate.

- The 'Germinal' and 'High legume & herb' mixes performed better than the 'Home' mix. Grass covers were lower on the 'Home' mix from November 2021 a few months after sowing and continued during the 2022 grazing season. Forage from the 'Home' mix was also lower in protein content. This was reflected in lower liveweight gain in lambs grazing the 'Home' mix and larger area requirement. The lower average liveweight gain per lamb and greater area grazed by the 'Home mix' group resulted in a liveweight gain per hectare less than half that of the groups grazing the 'Germinal' and 'High legume & herb' mixes.

- This highlights the impact that variety mix selection and establishment can have on forage yields, livestock performance and farm profitability.

- The trial was carried out during the 2022 summer drought, which may have accentuated the differences between the three mixes. The 'Germinal' and 'High legume & herb' mixes, which had a higher proportion of legumes and herbs performed better during the drought. Despite this, the farm still had a shortage of forage and had to sell lambs earlier than planned.

- Multispecies swards which include legumes and herbs provide a useful tool for farms planning for drought tolerance. However, it may be necessary to manage the dietary transition to a high legume and herb mix, if moving livestock from a grass-based mix, particularly if this is done around lambing when the ewe is particularly sensitive to changes in diet.

APPENDIX 1. SWARD SPECIES ASSESSMENT PHOTOS

T1 Q1 Germinal GS4, sown June

T1 Q3 Germinal GS4, sown June

T2 Q1 High legume & herb GS4, sown June

T2 Q3 High legume & herb GS4, sown June

T3 Q1 Home GS4, sown June

T3 Q3 Home GS4, sown June

T = Treatment; Q = Quadrat number (assessments made on 8 quadrats from each treatment, photos show quadrat numbers 1 and 3 from each treatment.

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