

Future CAP: Land Type Regionalisation



Supplementary analysis of an option to classify the Rough Grazing Land Type into two separate regions on the basis of Land Capability for Agriculture classes

Dave Miller, Keith Matthews, Doug Wardell-Johnson

The James Hutton Institute

12th May 2014

Version 2.0

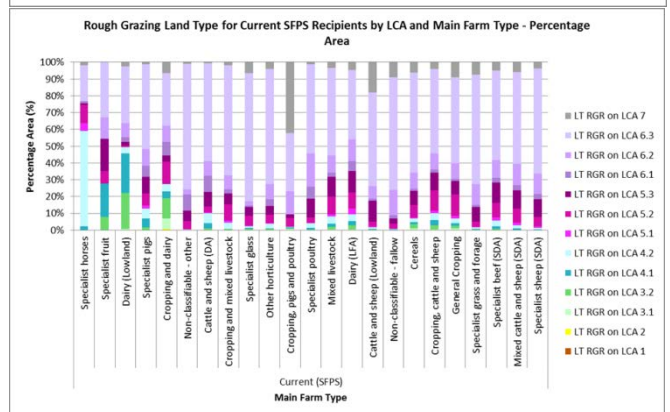
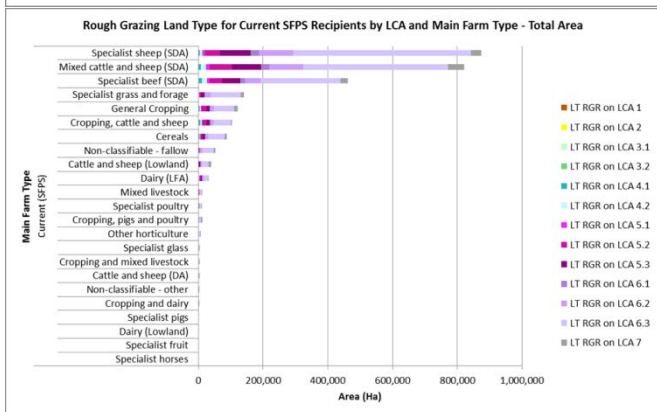
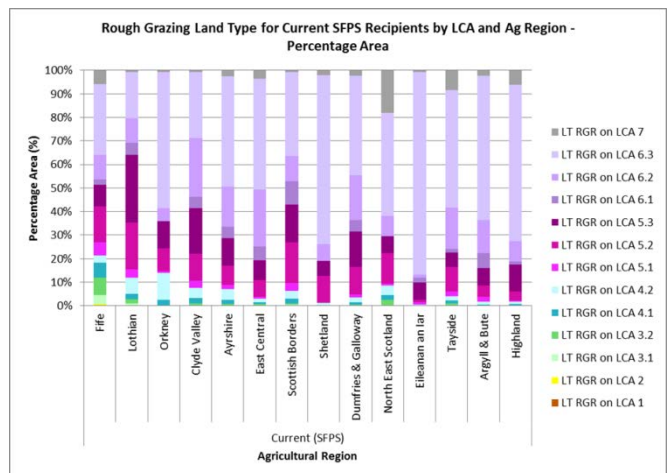
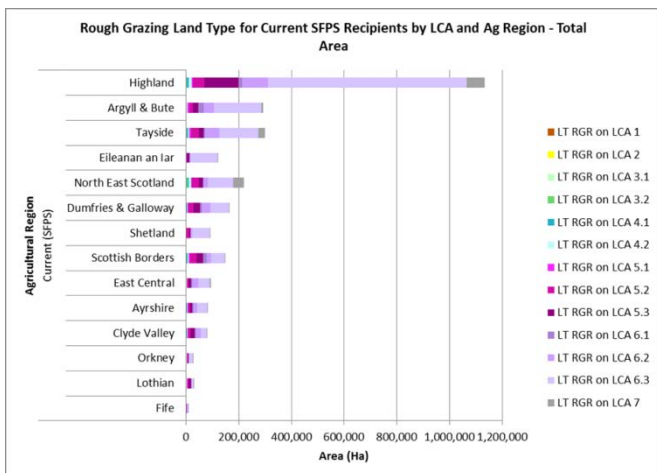
CONTENTS

Executive Summary.....	3
1 Introduction	4
2 Methodology.....	4
2.1 Data sources used to quantify the five land type categories.....	4
3 Results.....	5
3.1 Five Land Type Areas and RGR Mix.....	5
3.1.1 Current SFPS Area by Agricultural Region.....	5
3.1.2 Current SFPS area by Robust Farm Type.....	7
3.1.3 Current SFPS area by Main Farm Type.....	9
3.2 Full LCA breakdown for Rough Grazing.....	12
3.2.1 Current SFPS area by Agricultural Region.....	12
3.2.2 Current SFPS area by Robust Farm Type.....	13
3.2.3 Current SFPS area by Main Farm Type.....	15

EXECUTIVE SUMMARY

The work reported in this paper was developed to inform analysis by Scottish Government on the effects of using and additional payment region to differentiate payments within the Rough Grazing land type region being considered as an option for organising Pillar 1 direct payment in the post 2015 CAP. The report sets out areas of rough grazing and their relationships with Land Capability for Agriculture (LCA) classes as defined by the Macaulay system¹. The limitations of the small scale (1:250,000) LCA mapping for operational use were acknowledged but did not preclude the investigation in support of the SG led options appraisal. The specific option being investigated was splitting the rough grazing land type into two regions with the first including all LCA classes up to 5.3 and the second the classes from 6.1 to 7 where there is more limited likelihood of improvement. Overall assessments were made as well as breakdowns by agricultural region and farm types (robust and main).

The key findings illustrated in the figures and table below are that differentiating within the RGR is only likely to have any effect within the Highland region, since this contains by far the largest area of RGR associated with better quality land (LCA1-5.3). Larger proportions exist elsewhere but the total areas are small. Yet even for Highland previous analysis has indicated that most businesses will have a mix of LCA classes such that differentials in payments between RGR regions may have limited net effects as gains in one RGR region are offset by losses in the other. In terms of farm types the effect would be concentrated in the upland (SDA) livestock types with net changes in payments and balances between farm types likely to be affected by the same caveats as for the agricultural regions. The analysis presented here does not draw any final conclusions on outcomes as this analysis simply provides the inputs to the modelling of direct payments being carried out by Scottish Government.



¹ Other land types and their relationships with LCA have also been included for completeness and to allow flexibility in exploring options for how payment regions could be defined.

1 INTRODUCTION

This paper reports on the outputs of additional supplementary analysis conducted to support policy development for the Direct Payments component of the post-2015 CAP reforms.

Specifically this analysis sought to split the “Rough Grazing” land type identified in earlier Phase 1 modelling on the basis of the Land Capability for Agriculture classes. Two categories of Rough Grazing were defined. The first associated with better quality land on LCA classes 1 to 5.3, with the second associated with poorer quality land, LCA classes 6.1 to 7. This split occurs on the line beyond which the establishment of improved pastures is not usually feasible without exceptional management interventions. The serious limitations of the existing LCA mapping for operational purposes have been acknowledged but this analysis was carried out to support a policy options appraisal in which operational issues was only one of the factors being considered².

The analysis also split the Arable land type into two classes one containing only Temporary Grassland and the other the remaining classes that had been included in the Arable class. Five land type categories as thus identified:

1. Arable
2. Temporary Grassland
3. Permanent Grassland
4. Rough Grazing 1 (associated with LCA classes 1 to 5.3)
5. Rough Grazing 2 (associated with LCA classes 6.1 to 7)

This paper quantifies the areas associated with each of these classes and presents the outputs in terms of Agricultural Regions, Robust Farm Types and Main Farm Type for current (SFPS) recipients.

As with other analyses none of the results presented here should be interpreted as final policy decisions.

2 METHODOLOGY

2.1 Data sources used to quantify the five land type categories

All data used are for 2011, keeping compatibility with the previous Phase 1 modelling analysis. The same assumptions on land use eligibility are used as in the Pack Inquiry³.

Modelling undertaken in earlier Phase 1 analysis generated a mix of Land Capability for Agriculture classes for every IACS claim made and recorded in the Single Application Form (SAF). In earlier analysis each claim was assigned to a Land Type using a lookup table between IACS claim categories and the Land Types as were then defined. Analysis presented here required both the use of an amended lookup table, and a reclassification of the Rough Grazing category, to calculate the areas associated with each new land type category for each claim.

These areas were grouped to business level following methods defined in earlier analysis. The result was an output table, unique per business, which contained areas associated with each of the 5 land type regions outlined in the introduction. To this table, farm types and agricultural regions were added to enable the presentation of results by these groupings.

² <http://www.hutton.ac.uk/sites/default/files/files/ladss/LCA-Mix-per-Parish.pdf>

³ <http://www.hutton.ac.uk/sites/default/files/files/ladss/CAP-Modelling-Scenarios-Report.pdf>

3 RESULTS

3.1 Five Land Type Areas and RGR Mix

3.1.1 Current SFPS Area by Agricultural Region

Table 1, lists areas of land (in hectares) associated with each of the five land types for current (SFPS) businesses broken down by Agricultural Region. Table 2 presents the same data as percentages of the region as a whole. Table 3 highlights the ratio between RGR1 and RGR2 nationally and for the regions. Overall 23% of the Rough Grazing land type falls into RGR1 (associated with better quality LCA land) while 77% falls into RGR2 (associated with poorer quality LCA land). Regionally, the balance between the two Rough Grazing regions varies from 64% versus 36% for Lothian to 10% versus 90% for the Western Isles (Eileanan an Iar) reflecting the poorer quality of RGR.

Table 1

Ag Region	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
Argyll & Bute	1,961	7,721	59,170	46,850	246,621
Ayrshire	8,454	17,566	86,639	23,650	58,602
Clyde Valley	9,694	24,644	68,261	32,314	45,844
Dumfries & Galloway	19,429	46,248	165,693	51,971	113,382
East Central	12,460	13,267	33,417	18,117	75,633
Eileanan an Iar	628	1,746	20,130	11,897	107,440
Fife	48,205	13,219	14,715	3,839	3,619
Highland	37,685	41,219	110,451	199,756	934,652
Lothian	41,815	13,344	22,111	17,772	9,910
North East Scotland	167,233	122,317	67,593	64,576	154,112
Orkney	4,733	18,767	28,938	9,424	16,789
Scottish Borders	66,227	40,185	81,396	63,550	84,549
Shetland	182	1,027	24,359	17,130	73,406
Tayside	115,096	32,863	62,448	67,650	232,595
All Regions	533,801	394,134	845,321	628,498	2,157,155

Table 2

Ag Region	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
Argyll & Bute	1%	2%	16%	13%	68%
Ayrshire	4%	9%	44%	12%	30%
Clyde Valley	5%	14%	38%	18%	25%
Dumfries & Galloway	5%	12%	42%	13%	29%
East Central	8%	9%	22%	12%	49%
Eileanan an Iar	0%	1%	14%	8%	76%
Fife	58%	16%	18%	5%	4%
Highland	3%	3%	8%	15%	71%
Lothian	40%	13%	21%	17%	9%
North East Scotland	29%	21%	12%	11%	27%
Orkney	6%	24%	37%	12%	21%
Scottish Borders	20%	12%	24%	19%	25%
Shetland	0%	1%	21%	15%	63%
Tayside	23%	6%	12%	13%	46%
All Regions	12%	9%	19%	14%	47%

Table 3

Ag Region	All RGR Area	RGR 1 Share	RGR2 Share
Eileanan an Iar	119,338	10%	90%
Argyll & Bute	293,471	16%	84%
Highland	1,134,409	18%	82%
Shetland	90,537	19%	81%
East Central	93,750	19%	81%
Tayside	300,245	23%	77%
Ayrshire	82,252	29%	71%
North East Scotland	218,688	30%	70%
Dumfries & Galloway	165,353	31%	69%
Orkney	26,213	36%	64%
Clyde Valley	78,158	41%	59%
Scottish Borders	148,099	43%	57%
Fife	7,459	51%	49%
Lothian	27,682	64%	36%

Ag Region	All RGR Area	RGR 1 Share	RGR2 Share
Grand Total	2,785,653	23%	77%

Figure 1 shows the regional breakdown data from Table 1 by area and Figure 2 from Table 2 by percentage. These figures highlight the importance for Highland region of any regionalisation options that affect the RGR land type. Other smaller regions also have large proportions of RGR land which could mean significant localised consequences of change.

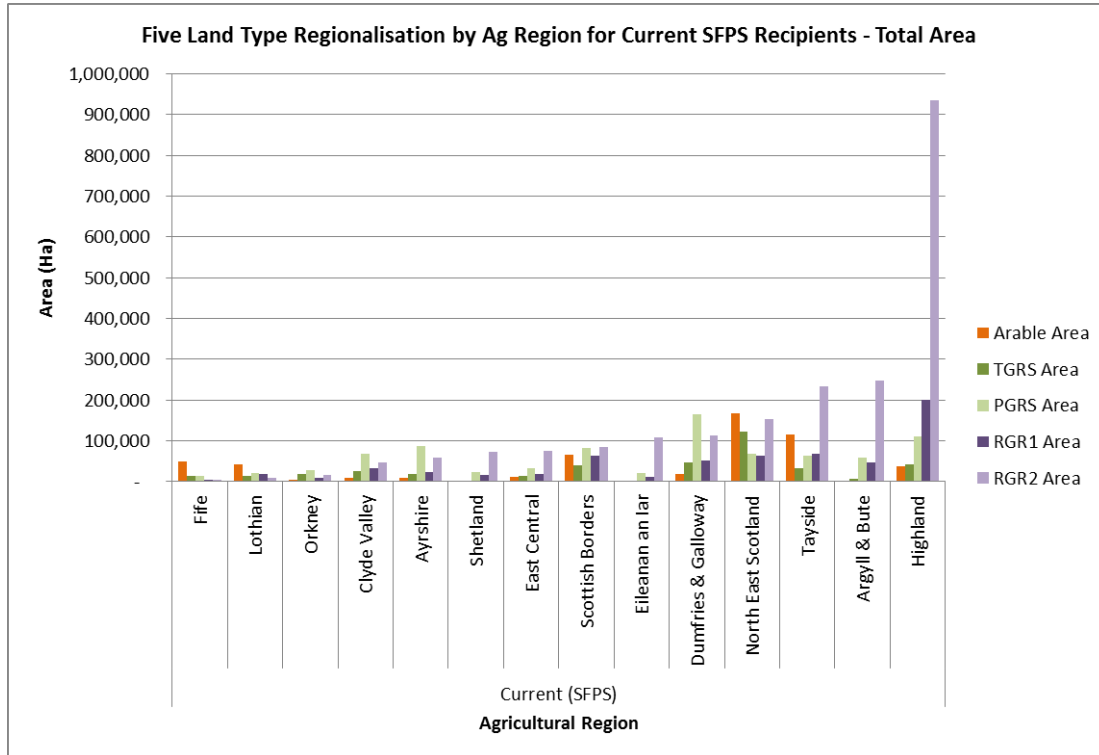


Figure 1

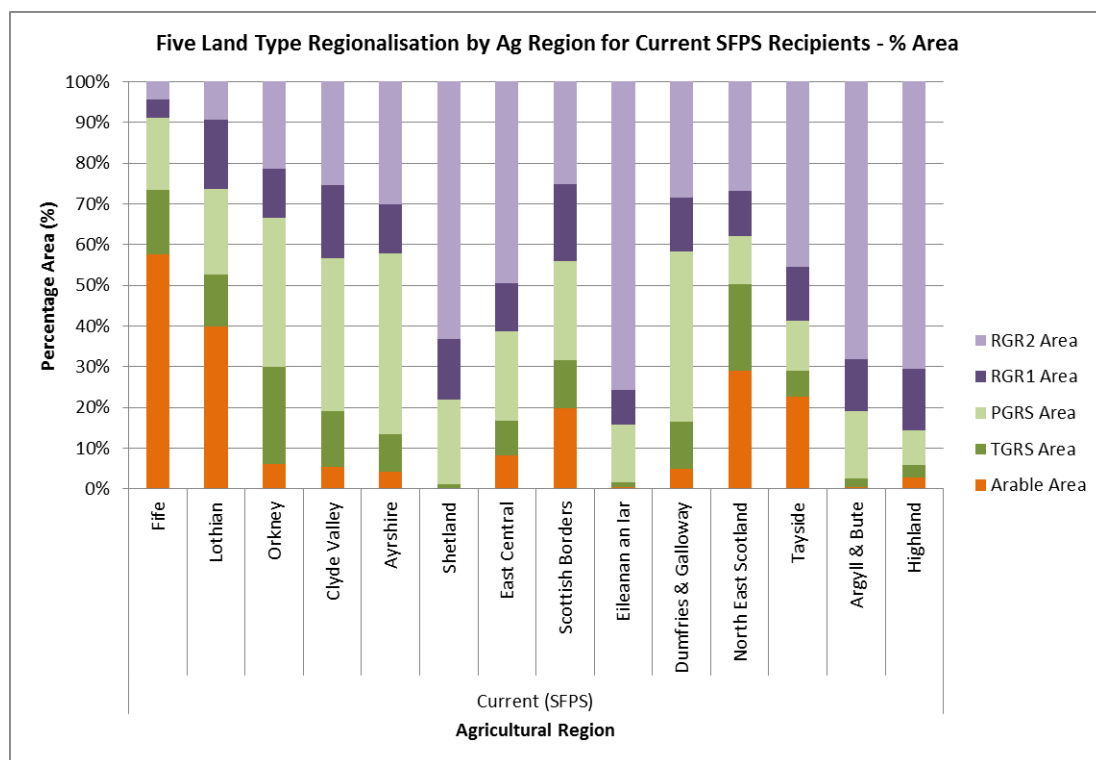


Figure 2

3.1.2 Current SFPS area by Robust Farm Type

Table 4 lists areas of land associated with each of the five land types, for current (SFPS) businesses, broken down by the 10 Robust Farm Types. Since it is by far the largest farm type in terms of area, Cattle & Sheep (LFA) shows the same balance between RGR1 and RGR2 as nationally (23% in RGR1 vs 77% in RGR2). Note that for typically more intensive farm types associated with better quality land, the proportion of RGR that occurs on better quality land is higher.

Table 4

Robust Farm Type	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
Cattle & Sheep (LFA)	32,418	158,203	564,184	487,064	1,673,824
Cattle & Sheep (Lowland)	515	2,933	6,771	6,829	32,527
Cereals	188,179	44,826	35,487	20,414	67,021
Dairy	20,030	49,005	86,565	10,962	20,071
General Cropping	194,431	38,413	37,298	35,513	85,941
Horticulture	3,168	691	1,723	1,288	7,745
Mixed	91,441	90,913	79,276	41,369	89,926
Other	2,267	7,920	30,283	23,097	172,027
Specialist Pigs	891	198	333	173	370
Specialist Poultry	460	1,032	3,401	1,788	7,702
All Robust Farm Types	533,801	394,134	845,321	628,498	2,157,155

Table 5

Robust Farm Type	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
Cattle & Sheep (LFA)	1%	5%	19%	17%	57%
Cattle & Sheep (Lowland)	1%	6%	14%	14%	66%
Cereals	53%	13%	10%	6%	19%
Dairy	11%	26%	46%	6%	11%
General Cropping	50%	10%	10%	9%	22%
Horticulture	22%	5%	12%	9%	53%
Mixed	23%	23%	20%	11%	23%
Other	1%	3%	13%	10%	73%
Specialist Pigs	45%	10%	17%	9%	19%
Specialist Poultry	3%	7%	24%	12%	54%
All Robust Farm Types	12%	9%	19%	14%	47%

Table 6

Ag Region	All RGR Area	RGR 1 Share	RGR2 Share
Other	195,124	12%	88%
Horticulture	9,034	14%	86%
Cattle & Sheep (Lowland)	39,356	17%	83%
Specialist Poultry	9,489	19%	81%
Cattle & Sheep (LFA)	2,160,888	23%	77%
Cereals	87,435	23%	77%
General Cropping	121,455	29%	71%
Mixed	131,295	32%	68%
Specialist Pigs	544	32%	68%
Dairy	31,033	35%	65%
All Regions	2,785,653	23%	77%

Figure 3 shows the area data in chart form while Figure 4 displays the percentages of land in each Robust Farm Type. In both cases these are ordered by the area of RGR2 in the Farm Type. The charts highlight the dominance of the Cattle & Sheep (LFA) farm type in terms of area and the expected wide variations in the proportions of the Land Types.

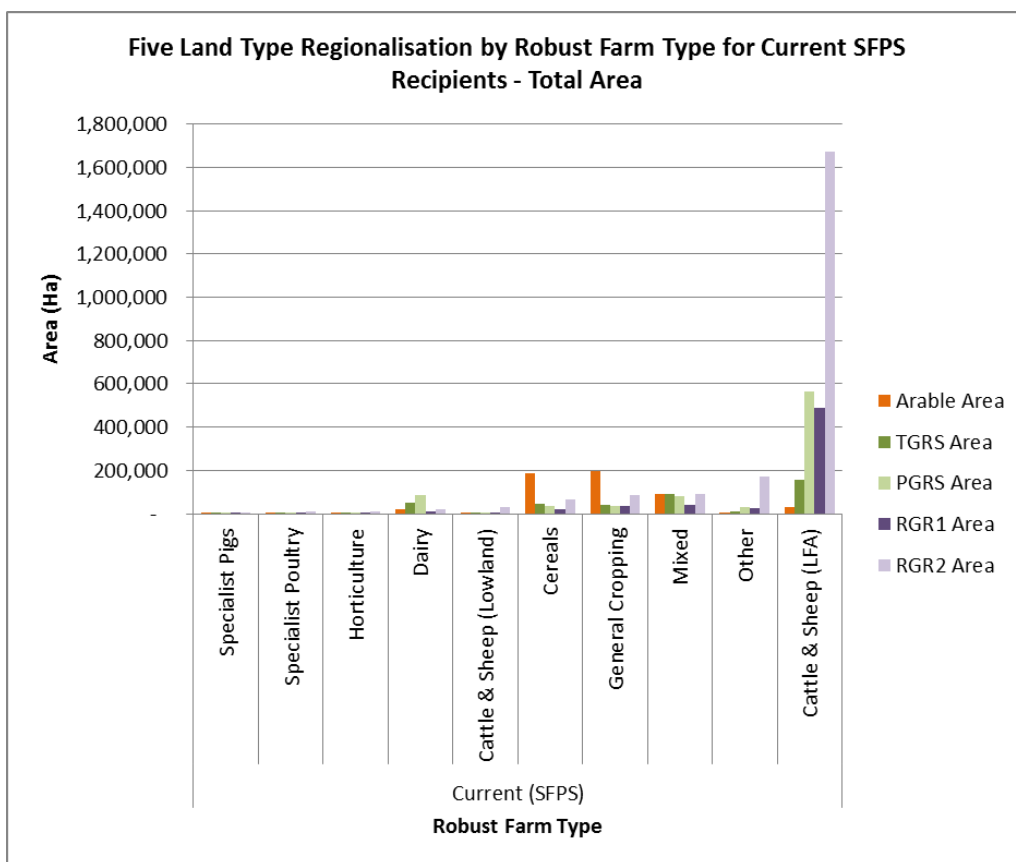


Figure 3

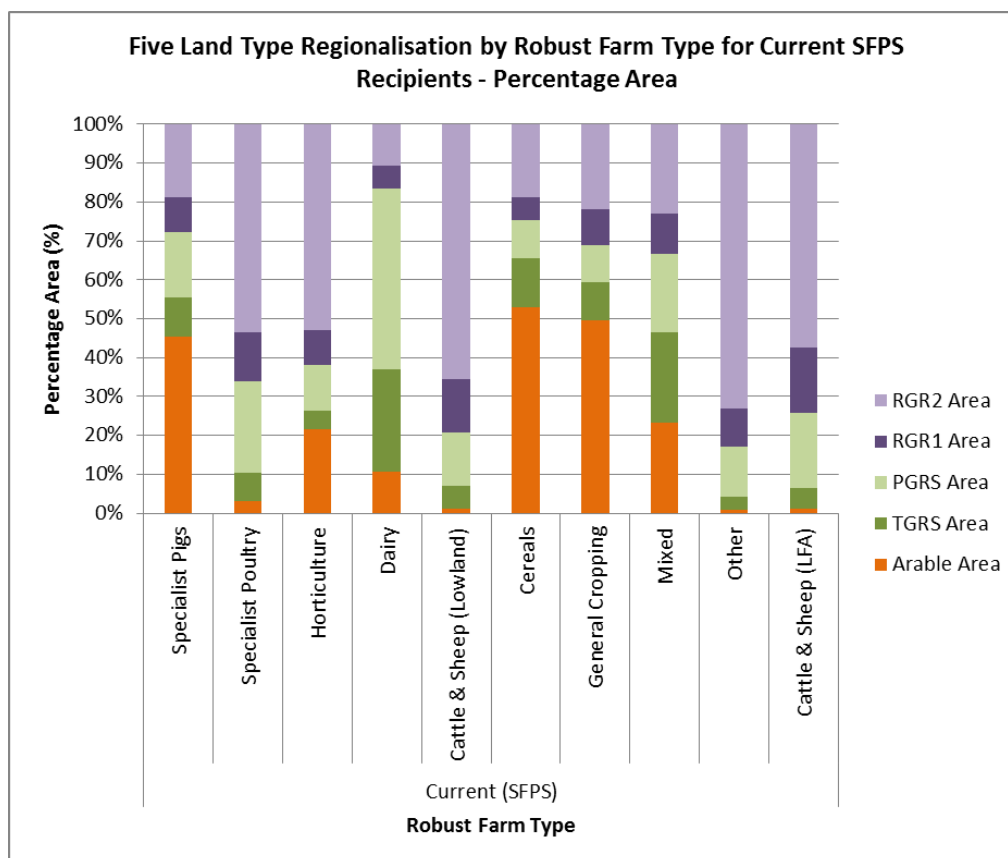


Figure 4

3.1.3 Current SFPS area by Main Farm Type

The results presented by Robust Farm Type in section 3.1.2 can be broken down further by the 23 Main Farm Types, for area in Table 7 and by percentage Table 8. The relative proportions of RGR1 and RGR2 per Main Farm Type are set out in

Table 9.

Table 7

Main Farm Type	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
Cattle and sheep (DA)	340	1,212	3,466	727	2,489
Cattle and sheep (Lowland)	515	2,933	6,771	6,829	32,527
Cereals	188,179	44,826	35,487	20,414	67,021
Cropping and dairy	9,175	5,052	1,741	417	519
Cropping and mixed livestock	195	141	976	625	2,241
Cropping, cattle and sheep	68,757	79,731	71,262	35,727	68,757
Cropping, pigs and poultry	9,421	1,435	988	1,127	10,967
Dairy (LFA)	19,639	48,208	86,045	10,918	20,032
Dairy (Lowland)	391	797	520	44	40
General Cropping	194,431	38,413	37,298	35,513	85,941
Mixed cattle and sheep (SDA)	11,998	54,150	163,017	194,206	627,007
Mixed livestock	3,893	4,553	4,309	3,473	7,442
Non-classifiable - fallow	1,818	1,202	5,624	3,655	48,783
Non-classifiable - other	18	-	2	114	880
Other horticulture	418	327	731	852	5,121
Specialist beef (SDA)	19,282	91,802	273,936	130,392	331,395
Specialist fruit	13	49	32	23	19
Specialist glass	2,737	315	960	414	2,605
Specialist grass and forage	432	6,662	24,537	19,297	122,354
Specialist horses	-	57	120	31	10
Specialist pigs	891	198	333	173	370
Specialist poultry	460	1,032	3,401	1,788	7,702
Specialist sheep (SDA)	799	11,039	123,765	161,739	712,933
All Main Farm Types	533,801	394,134	845,321	628,498	2,157,155

Table 8

Main Farm Type	Arable Area	TGRS Area	PGRS Area	RGR1 Area	RGR2 Area
----------------	-------------	-----------	-----------	-----------	-----------

Cattle and sheep (DA)	4%	15%	42%	9%	30%
Cattle and sheep (Lowland)	1%	6%	14%	14%	66%
Cereals	53%	13%	10%	6%	19%
Cropping and dairy	54%	30%	10%	2%	3%
Cropping and mixed livestock	5%	3%	23%	15%	54%
Cropping, cattle and sheep	21%	25%	22%	11%	21%
Cropping, pigs and poultry	39%	6%	4%	5%	46%
Dairy (LFA)	11%	26%	47%	6%	11%
Dairy (Lowland)	22%	44%	29%	2%	2%
General Cropping	50%	10%	10%	9%	22%
Mixed cattle and sheep (SDA)	1%	5%	16%	18%	60%
Mixed livestock	16%	19%	18%	15%	31%
Non-classifiable - fallow	3%	2%	9%	6%	80%
Non-classifiable - other	2%	0%	0%	11%	87%
Other horticulture	6%	4%	10%	11%	69%
Specialist beef (SDA)	2%	11%	32%	15%	39%
Specialist fruit	10%	36%	24%	17%	14%
Specialist glass	39%	4%	14%	6%	37%
Specialist grass and forage	0%	4%	14%	11%	71%
Specialist horses	0%	26%	55%	14%	5%
Specialist pigs	45%	10%	17%	9%	19%
Specialist poultry	3%	7%	24%	12%	54%
Specialist sheep (SDA)	0%	1%	12%	16%	71%
All Farm Types	12%	9%	19%	14%	47%

Table 9

Main Farm Type	All RGR Area	RGR 1 Share	RGR2 Share
Non-classifiable - fallow	52,438	7%	93%
Cropping, pigs and poultry	12,094	9%	91%
Non-classifiable - other	994	11%	89%
Specialist grass and forage	141,651	14%	86%
Specialist glass	3,018	14%	86%
Other horticulture	5,973	14%	86%
Cattle and sheep (Lowland)	39,356	17%	83%
Specialist sheep (SDA)	874,672	18%	82%
Specialist poultry	9,489	19%	81%
Cropping and mixed livestock	2,866	22%	78%
Cattle and sheep (DA)	3,216	23%	77%
Cereals	87,435	23%	77%
Mixed cattle and sheep (SDA)	821,213	24%	76%
Specialist beef (SDA)	461,788	28%	72%
General Cropping	121,455	29%	71%
Mixed livestock	10,915	32%	68%
Specialist pigs	544	32%	68%
Cropping, cattle and sheep	104,484	34%	66%
Dairy (LFA)	30,950	35%	65%
Cropping and dairy	936	45%	55%
Dairy (Lowland)	83	52%	48%
Specialist fruit	43	54%	46%
Specialist horses	41	75%	25%
All Farm Types	2,785,653	23%	77%

The same data is again presented in chart form in Figure 5 while Figure 6 presents the same data in percentage terms for each Main Farm Type, with the types ordered by the area of RGR2. While in area terms RGR is mainly associated with the SDA farm types it also makes up a substantial proportion for other classes. For example in the non-classifiable farm types there is a large proportion of land in the Rough Grazing land type and much of that land is made up of poorer quality ground (i.e. LCA classes 6.1 to 7).

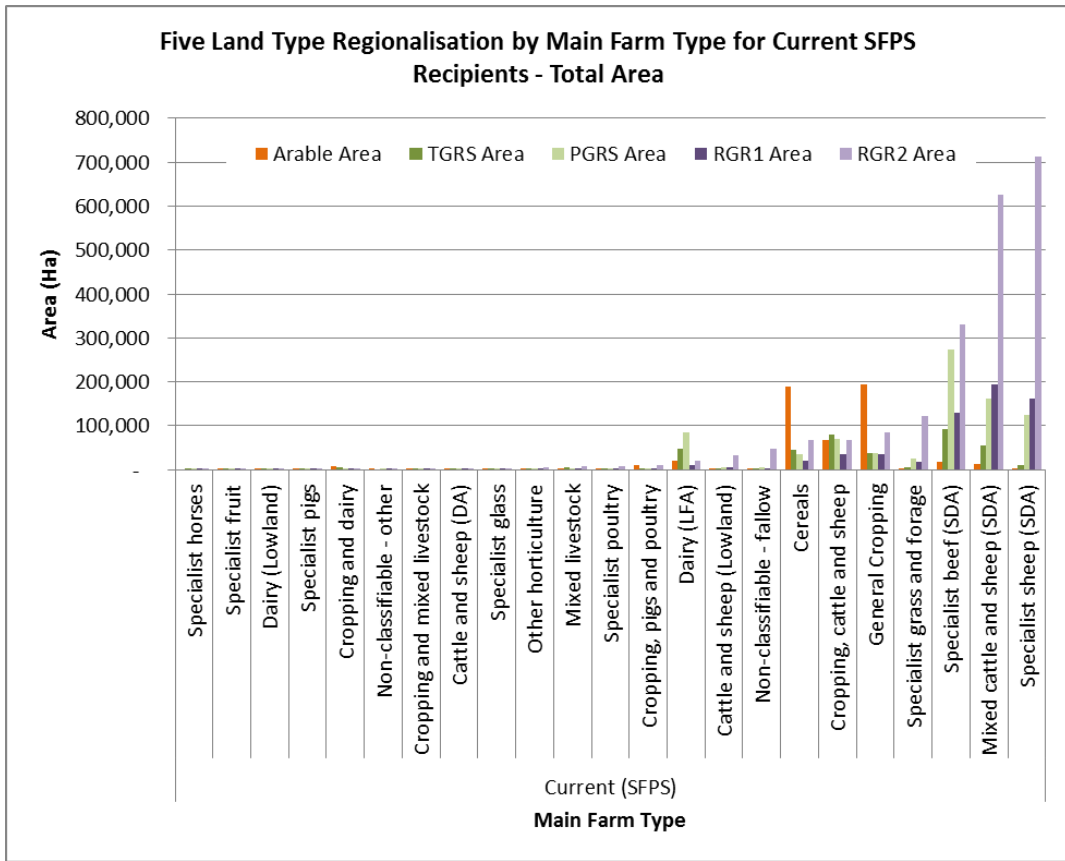


Figure 5

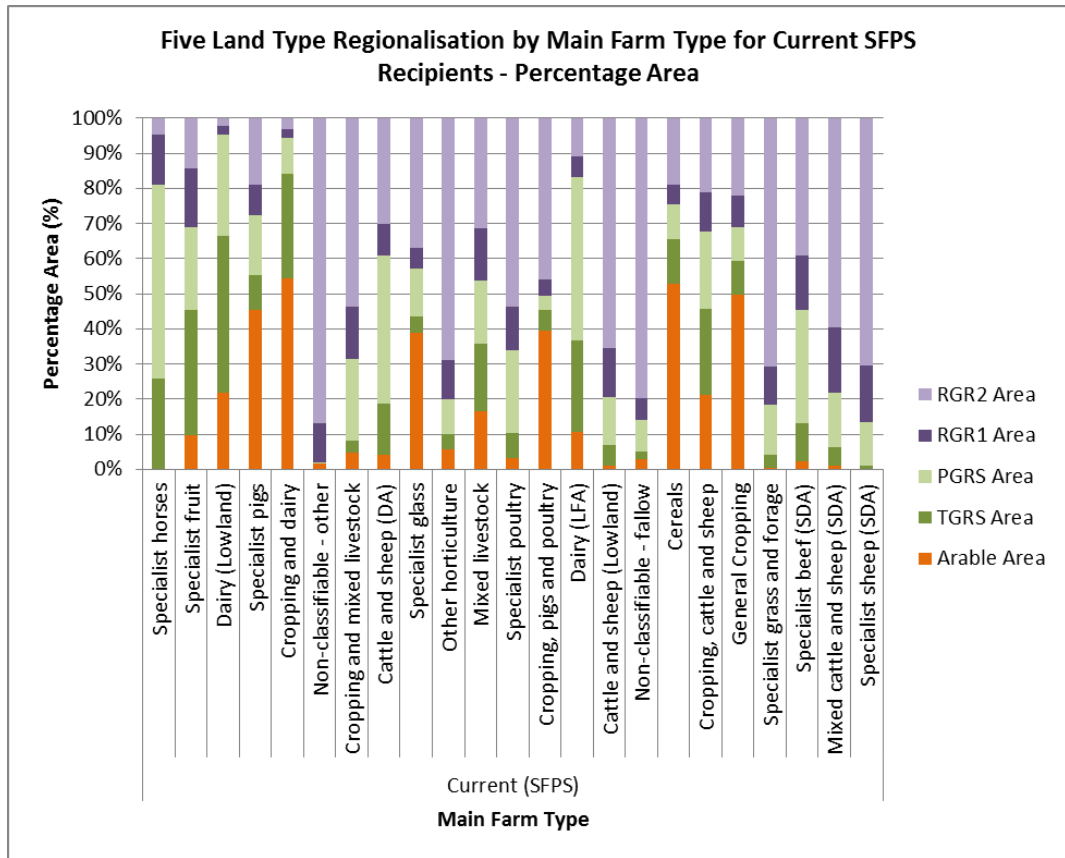


Figure 6

3.2 Full LCA breakdown for Rough Grazing

The purpose of the overall analysis, presented above was to quantify the areas under each of the five land types proposed, with a particular focus on how the Rough Grazing land type would be broken down if split into two categories on the basis of land capability with LCA classes 1-5.3 in RGR1 and LCA classes 6.1-6.3 in RGR2. In the sections that follow a full break down of the LCA characteristics of the RGR land type is presented. The intention here is to allow the assessment of other options for differentiating within the RGR land type, for example including LCA classes 6.1 and 6.2 in the better quality RGR1 type. The latter could be justified since while typically unimproved, LCA classes 6.1 and 6.2 are associated with vegetation having higher nutritive value and which are thus more likely to be more intensively utilised.

3.2.1 Current SFPS area by Agricultural Region

Figure 7 shows the Rough Grazing Land Type for current (SFPS) recipients broken down into each of the constituent LCA classes and subdivisions for each Agricultural Region, while Figure 8 shows the same data in percentage terms.

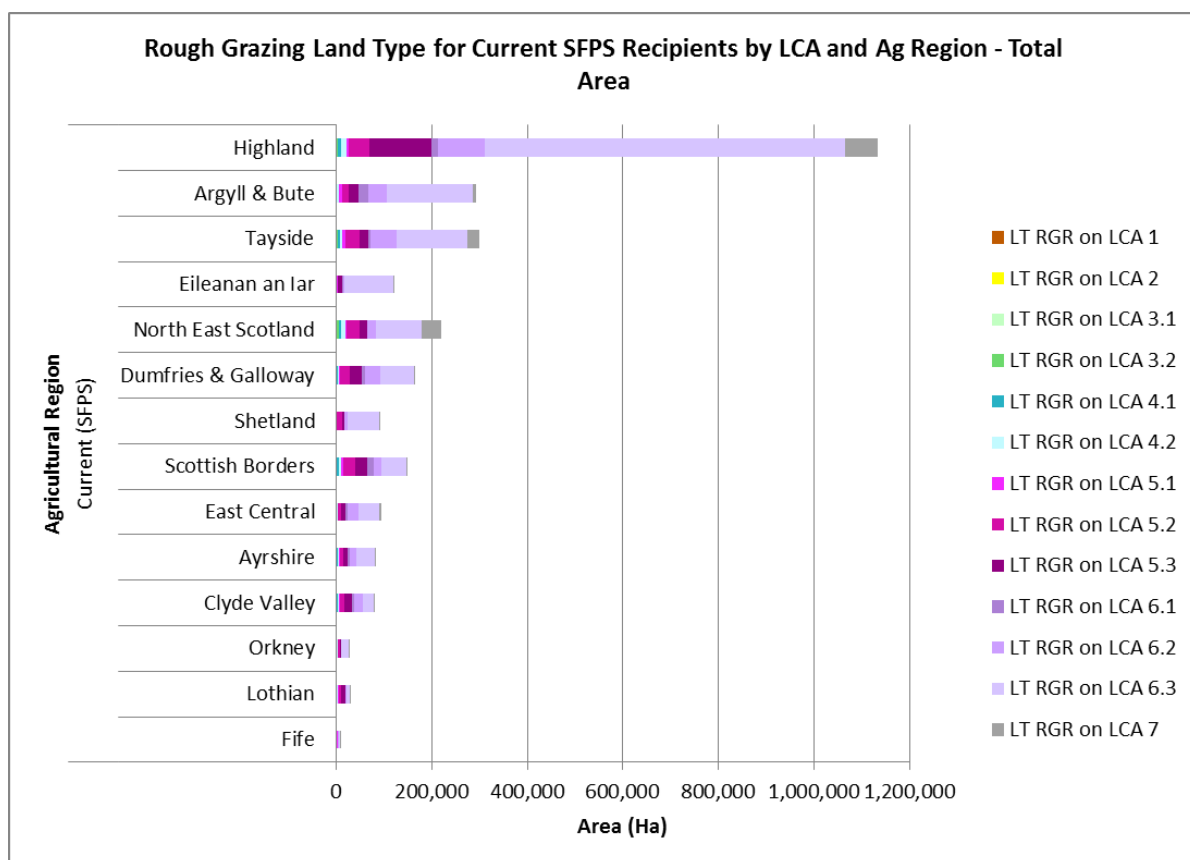


Figure 7

The dominance in area terms of Highland is apparent in Figure 7, as is the large amount of Rough Grazing land type on LCA 6.3 in this region. The percentage chart in Figure 8 shows that in Ag Regions such as Lothian, Fife, the Borders, and Clyde Valley, there is a higher proportion of better quality LCA land on which land assigned to the Rough Grazing Land Type is claimed.

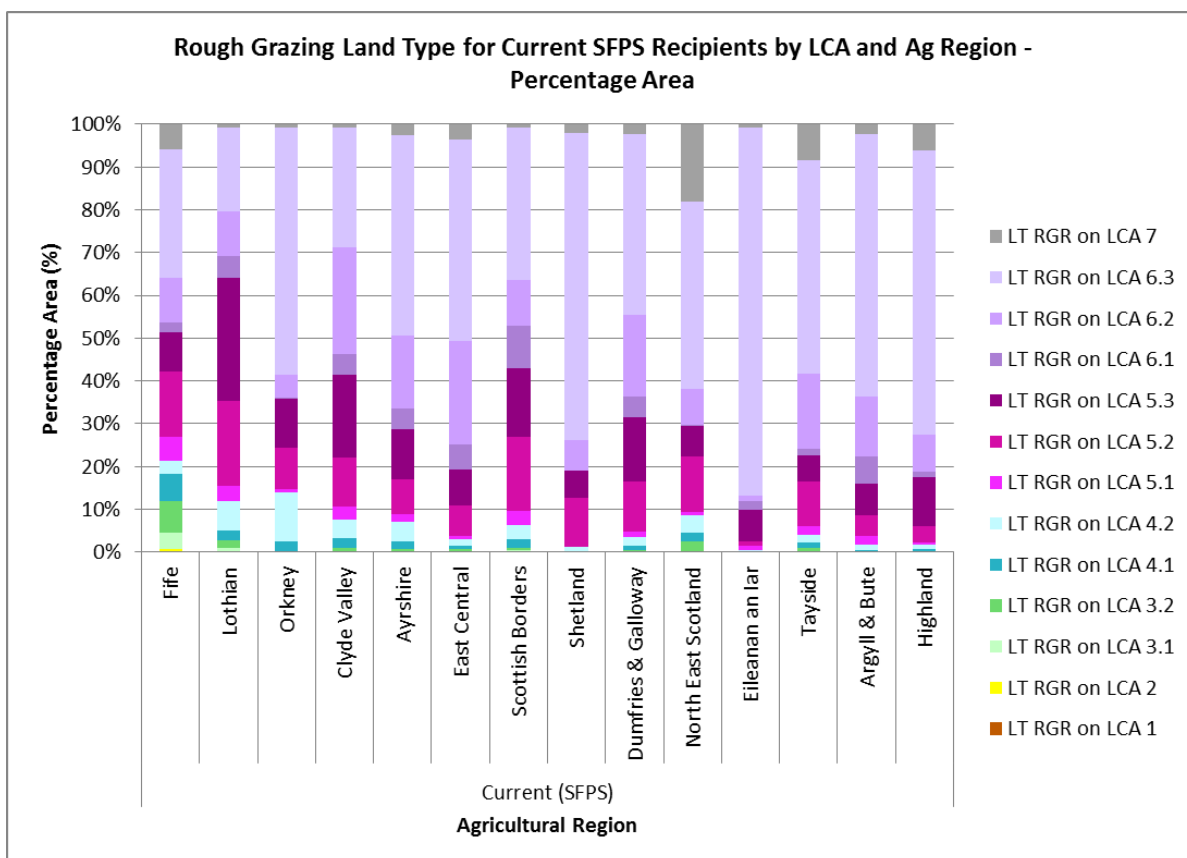


Figure 8

3.2.2 Current SFPS area by Robust Farm Type

The Rough Grazing Land Type LCA breakdown can also be presented by farm type. Table 10 indicates the total area of RGR for each robust farm type and the share of the total RGR land type area. For this break down of the sector the dominant importance of RGR in cattle and sheep (LFA) is clear. Figure 9 graphically presents the breakdown of the LCA classes present in each robust farm type, while Figure 10 shows the same data in percentage terms. For most of the farm types LCA there are substantial proportions of their RGR land that is not on LCA classes 6.1 or above, but in absolute terms any changes to payment rates for the RGR land type will play out most strongly for the cattle and sheep (LFA) type. A particular feature to note is that the Dairy robust farm type has the highest proportion of RGR occurring on better quality land (LCA class 5.3 or below).

Table 10

Robust Farm Type	Total RGR Area (Ha)	% of Total RGR Area
Cattle & Sheep (LFA)	2,160,888	77.57%
Other	195,124	7.00%
Mixed	131,295	4.71%
General Cropping	121,455	4.36%
Cereals	87,435	3.14%
Cattle & Sheep (Lowland)	39,356	1.41%
Dairy	31,033	1.11%
Specialist Poultry	9,489	0.34%
Horticulture	9,034	0.32%
Specialist Pigs	544	0.02%
All Robust Farm Types	2,785,653	100.00%

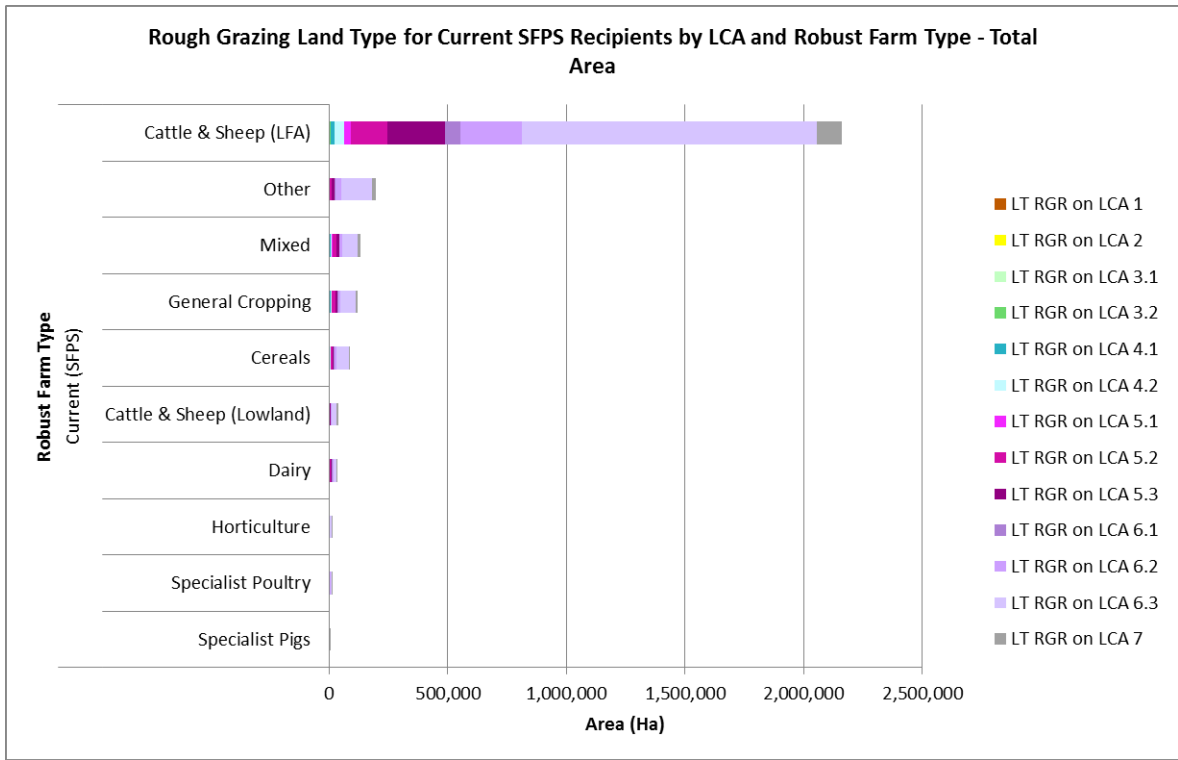


Figure 9

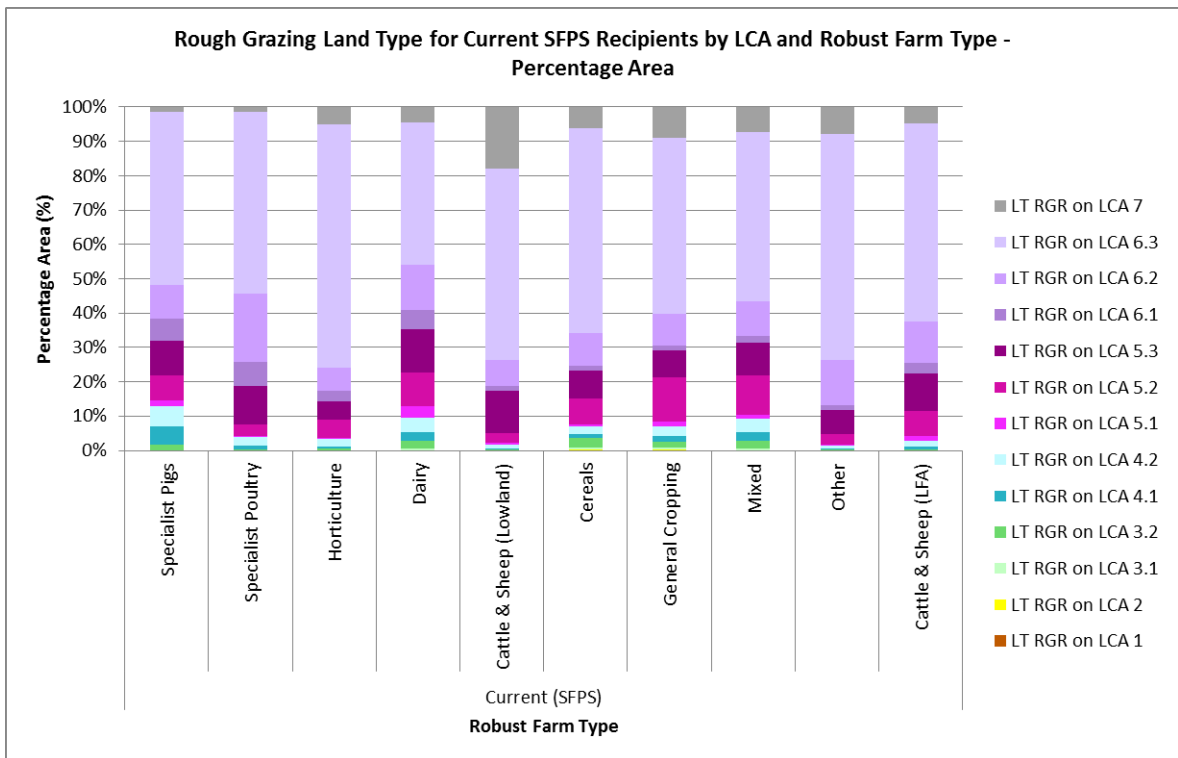


Figure 10

3.2.3 Current SFPS area by Main Farm Type

The analysis shown in section 3.2.2 can be broken down further into constituent Main Farm Types. Table 11 again sets the context by presenting the total area of RGR per main farm type and the share of the overall RGR area. The top three classes make up 77.5% of the total RGR land type area. Figure 11 shows the LCA mix by area for each of the main farm types and Figure 12 the same data in percentage terms. Care should be taken when interpreting this chart since many of the farm types account for less than 5% of the total area within the Rough Grazing Land Type as seen in Table 11. If the option of including LCA classes 6.1 and 6.2 into the better quality RGR land type were implemented it is clear from Figure 11 that the farm types that would benefit most substantially would be specialist sheep and mixed cattle and sheep, while specialist beef would see a lesser benefit. The option would at an aggregate level tend to benefit the more marginal cattle producers where better quality rough grazing makes up a significant proportion of their rough grazing land.

Table 11

Main Farm Type	Total RGR Area (Ha)	% of Total RGR Area
Specialist sheep (SDA)	874,672	31.4%
Mixed cattle and sheep (SDA)	821,213	29.5%
Specialist beef (SDA)	461,788	16.6%
Specialist grass and forage	141,651	5.1%
General Cropping	121,455	4.4%
Cropping, cattle and sheep	104,484	3.8%
Cereals	87,435	3.1%
Non-classifiable - fallow	52,438	1.9%
Cattle and sheep (Lowland)	39,356	1.4%
Dairy (LFA)	30,950	1.1%
Cropping, pigs and poultry	12,094	0.4%
Mixed livestock	10,915	0.4%
Specialist poultry	9,489	0.3%
Other horticulture	5,973	0.2%
Cattle and sheep (DA)	3,216	0.1%
Cropping and mixed livestock	2,866	0.1%
Specialist glass	3,018	0.1%
Cropping and dairy	936	0.0%
Dairy (Lowland)	83	0.0%
Non-classifiable - other	994	0.0%
Specialist fruit	43	0.0%
Specialist horses	41	0.0%
Specialist pigs	544	0.0%
All Main Farm Types	2,785,653	100%

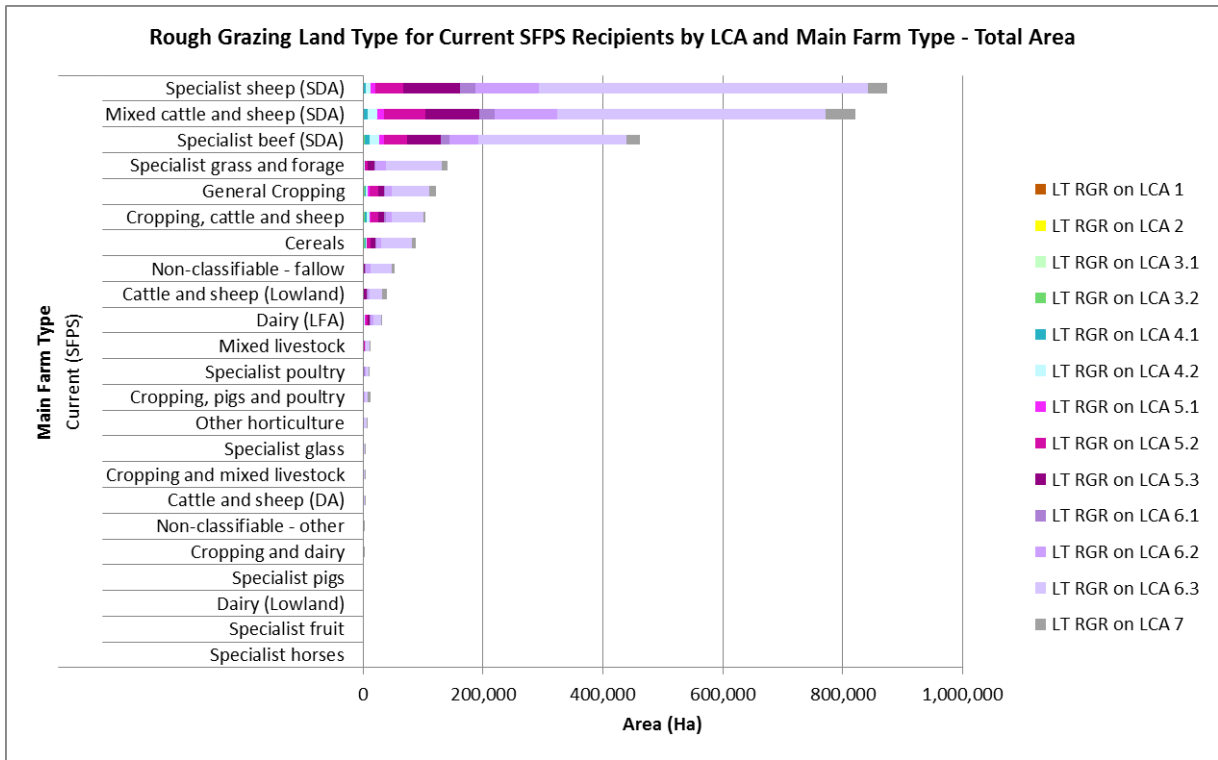


Figure 11

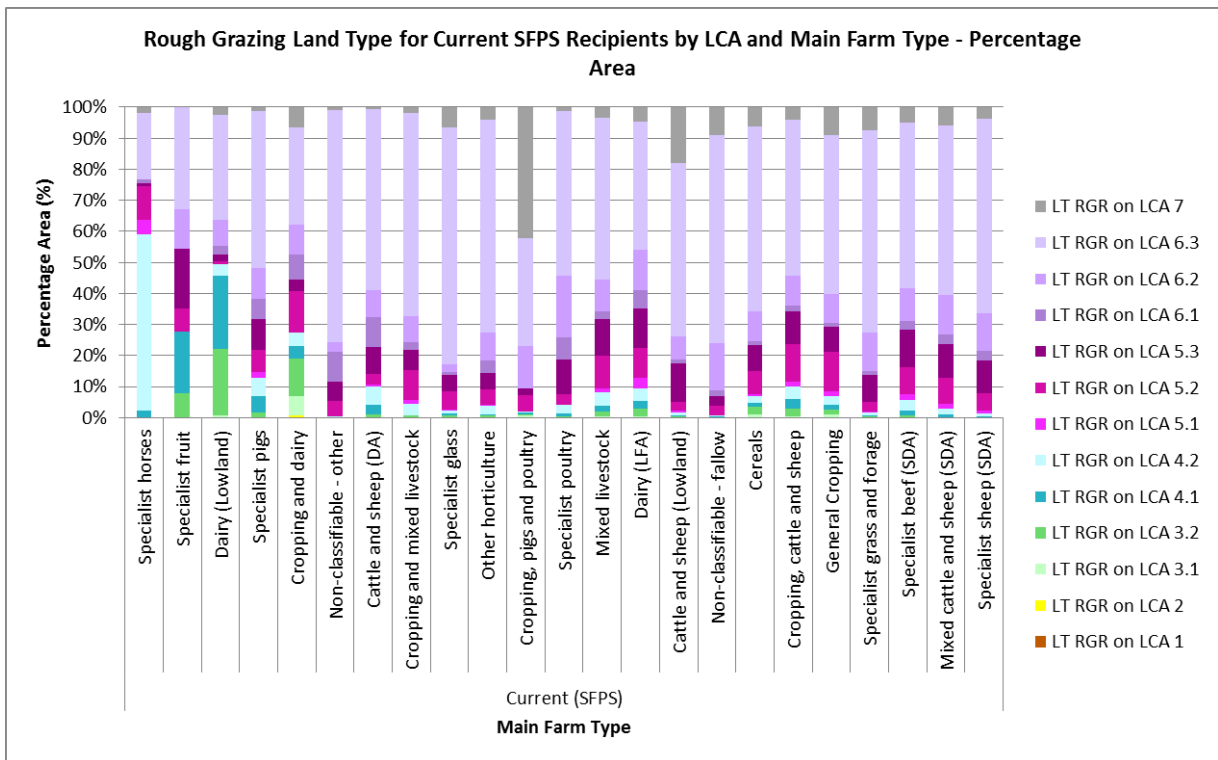


Figure 12