

A greener CAP?

– An analysis of the Commission's greening proposal for the Common Agricultural Policy



- The environmental impact of greening will be minor in relation to the costs incurred and the administrative consequences.
- The greening requirements are too broad, which can lead to compulsory adjustments in forest districts with negligible or negative environmental impact.
- If the more effective measures within the Rural Development Programme must be changed due to greening, the programme's environmental benefits may be reduced.

A greener CAP?

This report is part of the project “Environmental effects of the CAP” which is a government mandate to the Swedish Board of Agriculture that, together with the Swedish Environmental Protection Agency and the Swedish National Heritage Board, will continually monitor and assess the environmental impact of the EU’s Common Agricultural Policy.

The report discusses the implications that the proposed “greening” initiative may have on the rural economy and the extent of its environmental impact. The report is of a technical nature and is aimed primarily at the relevant institutions, authorities and departments.

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Summary

On October 12th, 2011, the Commission presented a proposal for reform of the EU's Common Agricultural Policy, CAP. Perhaps the most significant change in the reform is the proposal to introduce additional environmental requirements, the so-called "greening" initiative, in order for farmers to receive funds from the Single Payment Scheme. Three requirements must be met for the support to be paid. Assessments of the impact are uncertain as the effects on agriculture depend on the detailed design of the requirements, where significant parts have been left open in the proposal. Nevertheless, some adjustments to agriculture due to the requirements of greening are identified and possible environmental impacts are discussed.

1. Crop diversification: each farmer must cultivate at least three crops and no one crop may account for more than 70 per cent of the area. Adjustments will be particularly required in the forest district and northern Sweden where cultivated grasslands are predominant and poor growing conditions limit the number of crops. In the plain districts, the requirements are mostly met, but problems may arise with variation between years. Just ten per cent of the farms in Sweden in 2009 cultivated predominantly cereals. Problems can arise especially on small farms where it is costly to have a certain crop mix every year. The mandatory adjustments in the forest districts generally lead to a deterioration of the environment due to, amongst other things, increased nitrate run-off. This results from cereals crowding out parts of the necessary cultivation of grass for forage for live-stock. It is difficult to see that the net effects of the greening requirements could be positive.

2. Permanent grassland: areas that have been grassland for at least five years must be preserved. For semi-natural pastures, it means no adjustment beyond current requirements since the land has none alternative use, i.e. annual crops. Neither have the requirements much impact on the suspension of maintenance on land that is deemed unprofitable and afforested. For arable land, it means that areas that have been grassland for more than five years are not to be rotated, but must be left as they are. Farmers who do not want to see their land deadlocked can minimize the area with long-established grassland. This can have a detrimental environmental impact since the long-established grassland is ploughed up. The total area of grassland is unlikely to be affected very much. It is mainly the forest districts, where negative environmental impact is already low, that will be affected.

3. Ecological focus areas: each farmer will allocate 7 per cent of their arable land for environmental efforts. The adjustment is entirely dependent on what will count as the "focus area". If it involves production constraints, i.e. in the form of fallow, then the plain districts will be affected most with reduced production as a result. Reduced grain production in the intensive farming of the plain districts leads to reduced environmental impact, but comes at a high cost (The Swedish Board of Agriculture 2011). For cross-border environmental problems such as greenhouse gas emissions, reduced production in high yield areas can inevitably lead to higher global emissions. Even companies in the forest districts may be forced to turn part of their grasslands fallow. This may result in a reduced number of grazing livestock or reduced grain production with negative effects on biodiversity.

Many of the requirements of greening produce only small environmental benefits and, in some cases, are detrimental to the environment. The application of the new greening requirements is shown to primarily affect companies in forest districts and northern Sweden. This is unfortunate as the overall aim is to limit the negative environmental impact of intensive and one-sided production. In forest districts, the current problem is rather a decrease in biodiversity due to plant closures and extension of agriculture.

In Sweden, the majority of landscape elements are situated in the semi-natural pastures. The management of these environments is dependent on grazing animals. The analyses of the greening proposal show that grassland cultivation, and indirectly livestock production, may be negatively affected. A reduction in livestock production may lead to reduced cultivation, overgrowth, afforestation, and the non-management of our cultural environment. This means that the greening proposal can have a noticeable effect on the cultural environment and change the appearance of the landscape.

The requirements that the measures in Pillar 1 (direct support) should be annual, simple and common to all member states limits the opportunity to impose requirements in a cost effective and environmentally positive way. This is especially true when comparing that the corresponding objectives and goals can be applied instead in Pillar 2 and the Rural Development Programme. Many of the administrative burdens and cost connected with greening will be absent here.

In the concluding parts of the report, a scenario calculation is implemented in an attempt to highlight the effects of the greening requirements on Swedish agriculture up until 2020, as well as discussing some alternative greening measures and their environmental benefits.

As this report is published (May 2012) negotiations regarding the reform proposal and alternative designs are on-going. According to most observers, no decision will be taken before 2013. Many member countries are suggesting a greater choice for farmers through an expanded menu of measures within the greening initiative. A larger selection of more regionalized environmental efforts is more likely to result in positive environmental impact. At the same time, further complex links to the Rural Development Programme may arise.

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1 Background and purpose

In October 2011, the European Commission submitted a proposal for reform of the CAP for the period 2014–2020. The reform includes a proposal for the “greening” of the CAP.

The purpose of this report is to analyse and describe the impact which the Commission’s proposed greening measures may have on Swedish agriculture – which farms are affected, the actions that will need to be taken and the regions in which the impact will be greatest. The report also includes an estimate of how much the measures may cost and how environmentally effective the different proposals will be.

1.1 Environmental effects of the CAP – a government mandate

Since 1996, the Swedish Board of Agriculture, in cooperation with the Swedish National Heritage Board and the Swedish Environmental Protection Agency, has evaluated the environmental impact of the Common Agricultural Policy (CAP) in an on-going government mandate. The work has been conducted in project form under the title *Environmental effects of the CAP* and with project management from the Swedish Board of Agriculture.

This report is consistent with the CAP’s environmental impact in recent years, which has shifted towards focusing more on forward-looking analyses with an increasingly holistic take on environmental issues and a greater consideration for socioeconomic aspects.

Project workgroup

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2 How is the current CAP constructed?

The EU's Common Agricultural Policy has its origins in the need to secure access to food, to increase agricultural productivity and to provide farmers in member countries with a fair income (Rome Treaty, Article 37, 1957).

A qualitative shift away from market regulation began with the 1992 reform (Mac-Sharry Plan). Reduced market regulations were offset by production-coupled income support that was distributed based on the area's cultivation of various crops and its production of certain livestock. Further production curtailments were introduced in the form of a set-aside obligation (the obligatory fallow). The Mac-Sharry Plan introduced for the first time environmental objectives and Agri-Environmental Payments as part of the policy.

Agenda 2000 was the name given to the 1999 reform that continued on this path. There was an increase in direct income support along with further abolition of market regulations. Rural Development was introduced as a new policy area within the common policy. Nationally designed Agri-Environmental Payments were also introduced in concert with this programme package.

The next major reform came in 2003. This reform converted most of the direct production-coupled income support to one Single Payment Scheme, which is paid without production requirements (decoupled support). The basic idea is that production is adapted to the market and then guided by market demand and not politics. The Single Payment Scheme also became decoupled from production requirements.

1. Competition (research and infrastructure)	9 %
2. The Cohesion Policy (structural funds)	29 %
3. Conservation and management of natural resources (CAP)	47 %
comprising	
Market support	6 %
Direct support (Single Payment Scheme and certain production coupled support) (pillar 1)	33 %
Rural development (The Rural Development Programme) (pillar 2)	8 %
4. Legal and domestic issues/citizenship	2 %
5. External politics	7 %
Administration	6 %

Figure 1. Show the total budget for 2009 and the five policy areas within the EU, including CAP. Source: European Commission.

Figure 1 show how the EU's budget has been allocated between the various policy areas in 2009. Of the total budget of just over 118 billion Euros (SEK 1,060 billion), 47 per cent was used within the CAP (approximately 500 billion).

The distribution of money in the 2009 budget

The member states (MS) have slightly different budgets for the current farming subsidies, to some extent linked to when the country joined the EU and also depending on how much national money was added. Figure 2 shows the distribu-

tion of direct support (Single Payment Scheme, etc.) and the compensations in the programme for rural development in the 27 EU member states.

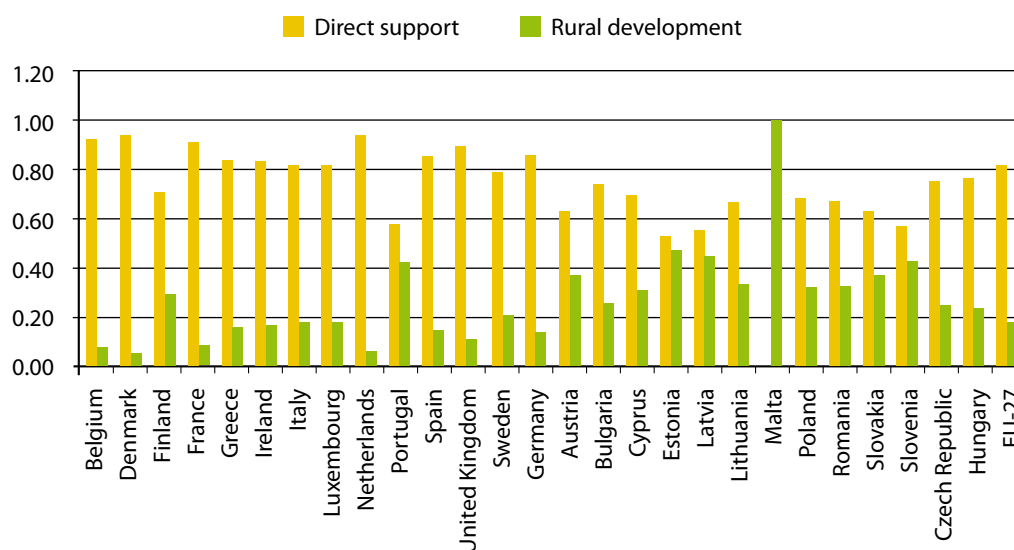


Figure 2. Allocation of budgetary funds for direct support (income support) and rural development support in the EU's 27 member states for 2007–2013. Source: OECD.

2.1 The first pillar – direct support

The Single Payment Scheme that is decoupled from production is paid out to agricultural land, all eligible arable and semi-natural land. The support is regionalized in Sweden to five support regions. This support takes the form of income support and is paid per hectare with slightly different amounts for each region. Support rights for semi-natural pastures have a lower support level than for arable land.

The 2003 reform (Single Payment Scheme), which was introduced in Sweden in 2005, linked cross compliance with the EU's agricultural support. Cross compliance is statutory provisions related to environment, public health, plant protection, animal health and animal protection, as well as rules on how arable land, semi-natural pastures and mown meadows should be managed. These regulations must be followed to ensure that farmers receive full payment from the Single Payment Scheme.

A modulation was also carried out as part of the 2003 reform. This meant that budgetary funds were transferred from Pillar 1, which primarily funds the Single Payment Scheme, to Pillar 2, which funds the Rural Development Programme including the Agri-Environmental Payments.

2.2 The second pillar – rural development

Sweden has, in the 2007–2013 Rural Development Programme, adopted the following structure:

- One programme for the whole country
- 52 % co-financing
- The programme includes approximately 40 measures
- The environment features heavily, there are links to ten of the sixteen national environmental quality objectives

Every member state (MS) has selected (within specified limits) the distribution of funds they would like between the Rural Development Programme's four sanctioned axes. Table 1 shows seven different budgets for some of the older member states' (EU 15) investments in the Rural Programme.

Table 1. The distribution of budgetary funds between the Rural Development Programme's (2007–2013) four axes for seven of the member states (EU 15), including Sweden.

	Competition	Environmental	Rural project	LEADER	Technical assistance
	axis 1	axis 2	axis 3	axis 4	TA
Belgium (only Flanders)	60 %	25 %	8 %	5 %	2 %
Denmark	20 %	63 %	5 %	10 %	2 %
Finland (except Åland)	11 %	74 %	14 %	0 %	1 %
France (except colonies)	34 %	54 %	6 %	5 %	1 %
Greece	43 %	35 %	14 %	6 %	2 %
Ireland	10 %	80 %	0 %	10 %	0 %
Sweden	16 %	71 %	12 %	0 %	2 %

Source: European Commission.

Sweden, together with mainly France and Ireland, has chosen to allocate a significant part of the Rural Development Programme's budget to environmental measures (71 %, 74 % and 81 % respectively). Of the member states within the EU 15, Sweden, along with Finland, Austria and Portugal chose to allocate over 20 per cent of its total CAP budget to the Rural Development Programme (see Figure 2).

3 Proposal for CAP greening after 2013

For Pillar 1 (direct support), the Commission (COM) proposes an equalization of support levels within and between the member states (MS). There is also a proposal for the mandatory greening of direct support (Single Payment Scheme). Furthermore, there is a proposal which gives the farmers of smaller farms to choose a simplified form of support for small farms, instead of base support plus greening.

The Commission also proposes that direct support in Pillar 1 changes its focus to more redistribution and equalization, to more targeted actions (greening) and that they are solely directed to active farmers.

Direct support is proposed to be paid hereafter at three different levels:

- Base level – decoupled income support (Single Payment Scheme), single farm payment per hectare within the MS/region.
- Green level – greening, simple one-year and universal obligatory Agri-Environmental Payment.
- LFA-level – additional income support to areas with specific natural constraints.

3.1 Requirements of greening

Greening is intended to be a special, but mandatory, part of direct support. Farmers shall be required to use environmentally friendly farming methods such as perennial pastures, green land, crop rotation, ecological farming and ecological fallow. These are measures that already exist in the management requirements of some member states (GAEC) or as an Agri-Environmental Payment within the Rural Development Programme. However, the greening measures shall be annual. In the new reform there is a greater focus on capturing both climatic and environmental issues in direct support, as well as the integration of the Natura 2000 areas. The greening measures within Pillar 1 (direct support) will be compulsory, simple, universal, will not be agreements and will be annual efforts. This is to clearly differentiate them from the various measures in Pillar 2 (Rural Development Programme).

The Commission's aim with the greening measures is that all farmers in the Union achieve environmental and climatic benefits through carbon sequestration in the soil and grassland habitats that are associated with "permanent grassland", through the protection of water and habitat resulting from the implementation of "ecological focus areas" as well as through the improved conservation of soil and ecosystems associated with "crop diversification" (European Commission, 2011).

The proposed greening measures mean much extension of production. This leads to the compensation for greening being in reality a compensation for loss of profits or reduced profitability. Extension also means that the environmental impact is likely to be shifted to other places and countries.

4 Analytical method for evaluation of the CAP greening proposal

The report analyses the resulting consequences in Sweden of the expected greening support design. The real consequences will be entirely dependent on the detailed design of the system. The Commission's intentions for this design are still only partially known (see chapters 5 and 6).

4.1 The cross compliant requirements

The reference option for analysis will be a single universal system for greening throughout the entire EU-27. The objective has been to analyse the effects and consequences of a system similar to that of cross compliance. The aim is to show the effects when a strict "Pillar 1 approach" is selected. From this, further variations are then discussed.

4.1.1 Conditions and assumptions

The greening conditions have yet to be established. On one hand, the Commission has left much of the design and regulatory details open, and on the other hand there are still many negotiations between member states, the Parliament and the Council of Ministers before all the conditions have been established.

Some unanswered questions regarding the greening requirements

There are still therefore a number of overriding questions regarding the Commission's proposal that have not been fully answered and which are relevant to the environmental impact of greening.

1. Do all member states/regions need to meet all the requirements? We conduct the analyses on the basis that all must meet the full requirements if they are unable to take advantage of the Commission's proposed exemption.
2. Does every farmer need to meet all the requirements? We have conducted the analyses on the basis that every farmer must meet the Commission's requirements based on the farms' production line for 2009.
3. To what extent are similar environmental measures permitted within Pillar 1 and Pillar 2? The analyses have been conducted on the basis that they are not permitted. Compensation within Pillar 1 cannot be given for costs arising from requirements in Pillar 1.
4. To what extent may member states adjust respective greening measures for national or local conditions? The analyses have been conducted on the basis that such adjustments are not possible.
5. What will happen to the farms that do not meet the greening requirements? Will there be a deduction in the greening support? Or a deduction from all direct support, in the form of cross compliance sanctions? It will be, in all probability, a combination of different sanctions; however this is as yet unknown.

Clarification of these and other questions can be expected in 2012 and, only then, will it be possible to more precisely predict the environmental impact.

Evaluation of the consequences of greening, based on different aspects

The report will address and evaluate the following aspects in order to assess the impact of greening, consequences, costs and environmental efficiency:

- Production costs (for operators, tax payers).
- Administrative consequences for farmers and authorities.
- Other consequences for agriculture (production impact, structural change, operators' attitudes).
- Environmental impact.
- The ability to release funds in the Rural Development Programme (Pillar 2). This can provide increased opportunity for alternative environmental actions.
- Control and sanction aspects.
- Connections (cooperation, conflict, compatibility) to legislation, cross compliance, the Rural Development Programme's measures and the WTO.

4.2 Methodology

The diagram shows a part of what has been considered in the analysis. Firstly, the factors, in addition to CAP, that may affect Swedish agriculture, the type of production currently prevalent in Swedish agriculture and, finally, the outcome and consequences in terms of revenue, products and environmental impact.

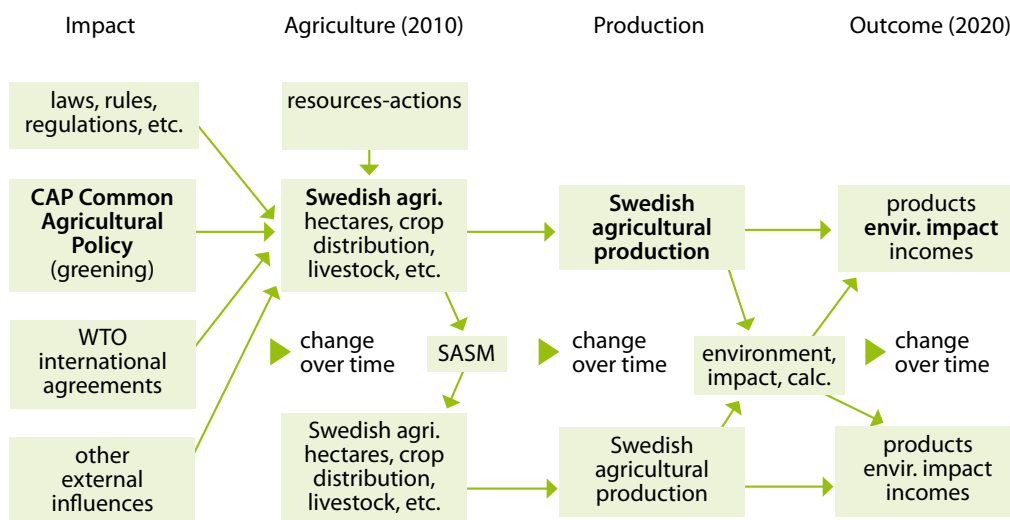


Figure 3. The analytical steps in analysing the European Commission's proposal for the greening of CAP. Source: Own calculations.

Some of the analysis has been conducted with a ten year perspective and predicts change over time based on calculations with SASM (see chapter 8). The analysis also includes a review of how the current regulations for greening measures (Spring 2012) would impact the farmers' production line if they were to be forced to abide by these regulations before the 2010 application for agricultural support (SPS).

Essentially, the Swedish Board of Agriculture's support databases, IAKS support database and DAWA database for the Rural Development Programme, are used to collect information on Sweden's agriculture for the analyses. These databases have

been linked together as a single database containing all the farms that receive single farm payment, Agri-Environmental Payments, etc. This database also contains all farms' total agricultural support, crop divisions, pasture area, Agri-Environmental Payments, livestock counts, etc.

Based on the material, some general limitations have been employed. For example, only farms that have applied for Single Payment Scheme for arable land and/or semi-natural pastures have been taken into account. A lower area limit of 4 hectares of agricultural land has also been inputted. An agricultural area of at least 4 hectares is required in Sweden for a farmer to receive single farm payment.

The Swedish Board of Agriculture's support database has been used in the analyses where different greening conditions have been entered as limitations. The result of the analysis will be the number of farms and areas receiving single farm payment that are affected by the greening measures.

4.3 Conditions for Swedish agriculture

As a starting-point for the analyses of greening, the Swedish Board of Agriculture's support database for 2009 has been used. Table 2 shows the number of farms in 2009 that received single farm payment and that had more than four hectares of agricultural land. It also shows which crops were grown and how the land was utilized in 2009.

Table 2. Show Swedish agriculture in 2009, the number of farms and areas with different land and crop types and the number of farms receiving single farm payment with more than 4 hectares of agricultural land.

	Number of farms	Hectares agric. land	Hectares annual crops	Hectares fallow	Hectares arable grassland	Hectares semi-natural pasture	Hectares grassland
Farms receiving single farm payment	65,085	3,060,951	1,056,395	149,892	1,107,325	400,347	1,507,672
Cropping farms with more than 70 % cereals	6,477	492,561	389,746	17,512	27,098	16,388	43,486
Dairy farms	6,022	640,010	152,426	9,102	330,179	99,670	429,849
Farms tied to ecological production	10,275	671,689	157,111	19,883	321,692	109,748	431,440

Source: Swedish Board of Agriculture support database 2009

There are, in total, 65,000 farms that, in one way or another, may be affected by the greening requirements (table 2). Among these farms there are a variety of production approaches, both within and between support regions.

Sweden's agricultural land is, in the context of Single Payment Scheme, divided into five regions. The division is based on historical yield levels of cereals, with the highest yield in region 1 and the lowest in region 5. The map of the regions highlights quite well the most fertile agricultural regions in Sweden.

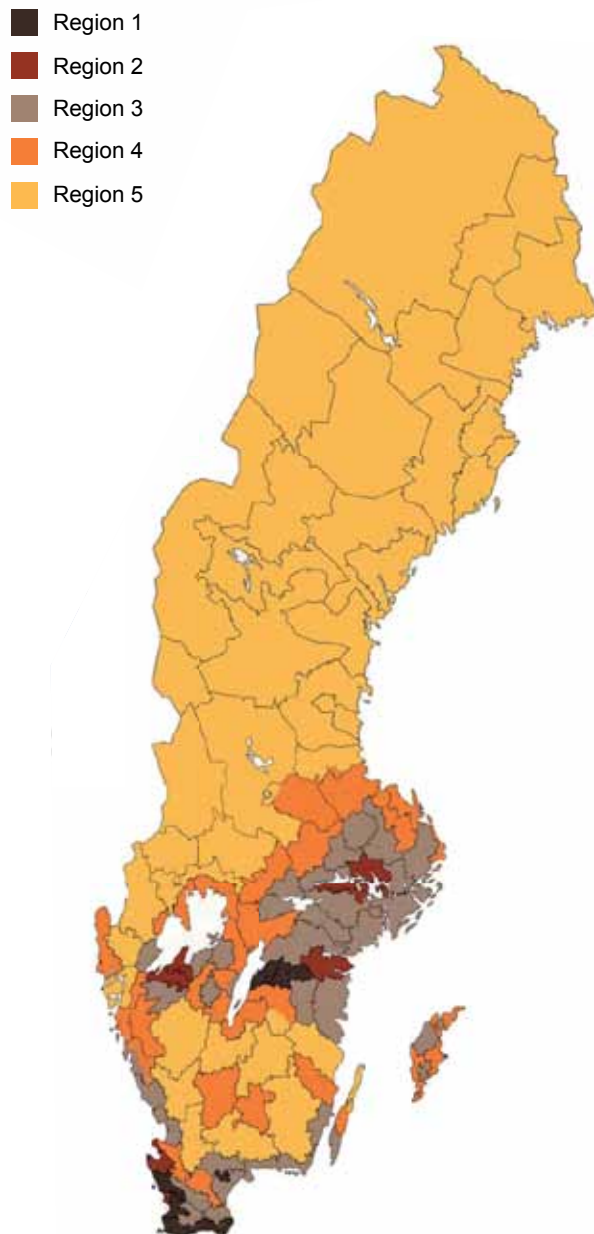
The brown parts show where the agricultural plains are located. The orange areas are central districts and the yellow areas are forest districts.

The different coloured areas show the same distribution as above, where the proportion of agricultural land is greatest.

The proportion of agricultural land in Sweden is 7 %. In the southern plains the proportion of agricultural land in some areas is more than 50 % whilst in Norrland it is often just a few per cent.

Since Sweden stretches out in a south-north direction, there are vast differences in what can be grown in different regions. As the requirements of greening generally determine what crops should be grown, there are large discrepancies in impact between the different regions.

Gårdsstödsregioner



Map 1. Sweden's five regions receiving single farm payment.
Source: Swedish Board of Agriculture.

4.4 Calculation of the environmental impact

The extent of the environmental impact will depend on how much the farmers will need to adapt to the different requirements of greening. If the requirements entail that their line of production or cultivation needs to be drastically changed, then it is likely that the environmental impact will be great. However, it is not definite that a significant change in production would mean a specific environmental impact. Consequently, any change in production should be assessed based on local conditions and local impact.

Cost of measures versus environmental benefits

In order to assess the environmental efficiency of the different greening measures, an evaluation of environmental benefits are required. Furthermore, a calculation of the cost of the measures for farmers must be carried out (see section 7.3).

The costs of measures can be calculated from the revenue the farmers lose when they have to adapt to the greening requirements. An evaluation of environmental benefits is more difficult to carry out. By using previously calculated costs of measures (Agri-Environmental Payments made, etc.) an acceptable estimation can be achieved as to the political willingness to pay and thus an overall evaluation of environmental benefits (see section 7.4).

If the calculated costs of the environmental measures exceed the calculated environmental benefits, then the environmental efficiency is questionable (see section 7.4). The value of biodiversity is not included in this cost/benefit analysis as biodiversity has proven very difficult to evaluate, and there is currently no sufficiently useful model available for evaluation. The analysis is therefore not complete.

Reading orientation

The analysis is based on the European Commission's proposal (12 October, 2011) for new common agricultural policy (chapter 3). We describe in chapter 4 the analytical methods we have used and what the conditions are for Swedish agriculture. We then analyse how individual farms, based on 2009 production, would cope with the three greening measures (chapter 5). In the next chapter (chapter 6) we give an account of the exemptions from greening proposed by the Commission. This is followed by an investigation of the costs and consequences for Swedish agriculture and the environmental impact which the proposed greening conditions will have (chapter 7). We also conduct an analysis of how Swedish agriculture (changing over time until 2020) would adapt to the greening requirements (chapter 8). We then discuss alternative greening measures for, primarily, Sweden (chapter 9). The report finishes with summary conclusions regarding the outcome of the Commission's proposal (chapter 10).

5 Analysis of the Commission's three proposals for greening measures

The Commission intends to increase environmental benefit by introducing environmentally adapted measures (greening) as direct support. These measures will be obligatory and applicable throughout the EU. The measures shall apply to all agricultural land authorized to receive support. They should be simple, general, non-contractual and annual measures which go further than cross compliance and which are connected to agricultural activity. To do this, the Commission proposes measures such as crop diversification, the maintenance of permanent grasslands and the establishment of areas with an "ecological" emphasis.

5.1 Crop diversification

Design

According to the Commission's proposals, each farm shall have at least three different crops and no crop shall constitute more than 70 % of the farm's total agricultural area. Permanent grasslands are not to be included in the basis for calculation of the total agricultural area of the business. On the other hand, grasslands in crop rotation shall be included.

Additional conditions

Another requirement is that each of the three chosen crops must constitute at least 5 % of the total area. Furthermore, a definition of 'separate crop' must be established. For example, should spring wheat and winter wheat be reckoned together as wheat cultivation or as two different crops? In the analyses, the spring and winter variants have been reckoned as one crop. The different types of cereals have been reckoned as separate crops in the analysis, i.e., oats, barley, and wheat, which is the most lenient interpretation of the proposal.

Conditions in Sweden

Crop rotations in Sweden vary greatly depending on whereabouts in Sweden the cultivation is taking place. When Sweden's plant cultivation is divided up into the five farm support regions (see page 10), a clear difference can be seen in the division of crops between region 1 (southern Skåne and western Östergötland, which have the best soil for cultivation) and region 5 (Norrland and the highlands of Småland, which have the worst soil for cultivation).

When the conditions for cultivation are good, as in region 1, a number of crops such as sugar-beets and oilseeds can be profitably cultivated and crop rotation can be easily varied. When the conditions for cultivation are worse, as within region 5, only a few crops such as hayfields and spring barley can be profitably cultivated and crop rotation can easily therefore become one-sided (see figure 4).

At the same time, this is no great problem within region 5 since its hay is used for animal feed, which is the most profitable crop, and the barley or oats, which is more affected by the environment than hay, is therefore never the dominating crop.

5.1.1 The elements that have been analysed

The Swedish Board of Agriculture’s support database is used to analyse the possible consequences of the Commission’s proposals regarding crop diversification for Swedish farmers and the environment. The results based on the conditions given below have been sorted from the Board’s support database and evaluated.

1. At least three different crops shall be grown on an annual basis.
2. All crops that occur in a repeating crop rotation shall be included, including grasslands.
3. Maximum of 70 per cent of one crop.

Figure 4 shows the division of crops in the five Swedish farm support regions in 2009. The best prerequisites for diversification could be found in region 1 (southern Sweden and plain land), the worst prerequisites in region 5 (northern Sweden and forest land).

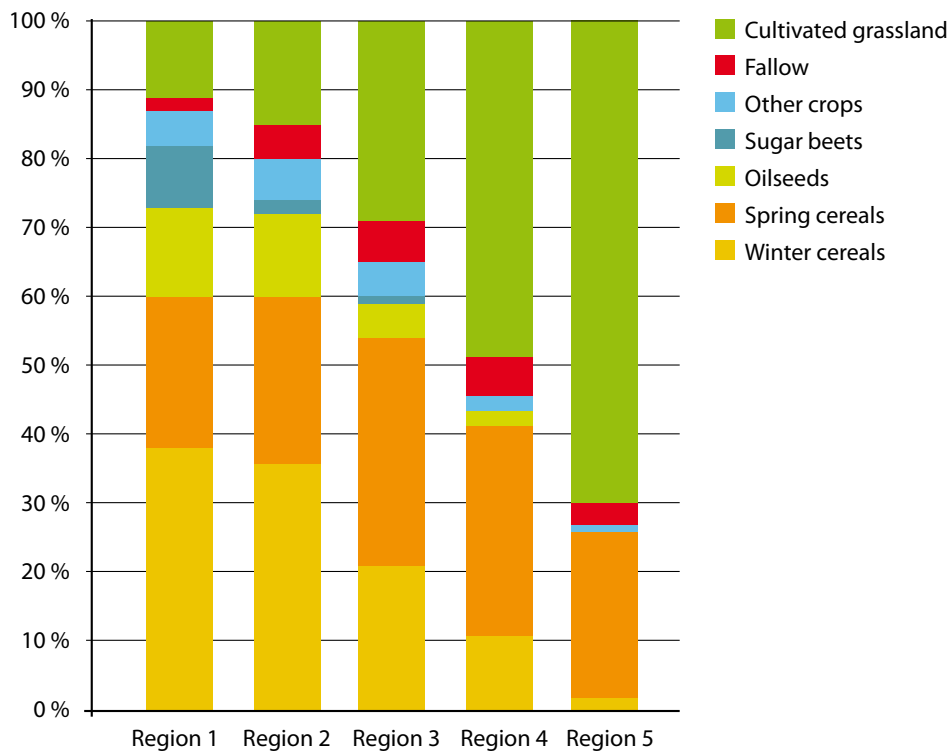


Figure 4. Distribution of crops within the five farm support regions. The bars reflect the regional division of crops during 2009. Source: The Swedish Board of Agriculture’s support database.

There can even be differences in crop division between two closely related areas such as milk and beef production. Crop distribution differs as farms with beef cattle tend to only cultivate grassland, whilst farms with milk cows often cultivate course grain as well.

5.1.2 Results

The starting point for the analyses has been the total agricultural area of just over 2.6 million hectares in Sweden which received single farm payment during 2009. If the land which was lying fallow in 2009 is removed from the equation, the area constitutes nearly 2.5 million hectares. It is primarily this area that can be affected by the diversification requirements of greening.

Table 3. Sweden's agricultural area receiving single farm payment, and less than 30 % fallow or grassland.

Type of farm	Fields, hectares
farms with single farm payment	2,610,790
farms with less than 30 % fallow	2,482,958
farms with less than 30 % grassland	1,091,453

Condition 1: > 4 hectares agricultural land.

In Sweden, a great deal of grassland is cultivated and if all of the farms that have less than 30 % grassland are filtered out, only a million hectares are left. It is in these areas that crop diversification requirements can have a positive environmental impact.

Table 4. The number of farms receiving single farm payment and with at least 70 % grassland.

With at least 70 % grassland	Number of farms	Fields, hectares	Per cent of farms
Sweden	35,179	750,363	0.53

Condition 2: condition 1 plus > 70 % grassland

In 2009, over half of the farms in Sweden cultivated more than 70 per cent of their grassland. On these farms, the crop diversification requirements are likely to have little positive environmental impact.

Table 5. The number of farms receiving single farm payment which have over 70 % cereals.

At least 70 % cereals	Number of farms	Fields, hectares	Per cent of farms
Sweden	6,486	476,058	0.10

Condition 3: condition 1 plus > 70 % cereals.

There are considerably fewer farms that cultivate more than 70 per cent cereals than farms dominated by grassland cultivation. Only ten per cent of the farms in Sweden in 2009 had a significant level of grain field.

Table 6. The number of farms receiving single farm payment with over 70 % cereals and fewer than three crops.

With at least 70 % cereals and less than three crops	Number of farms	Fields, hectares	Per cent of farms
Sweden	2,281	46,149	0.03

Condition 4: condition 3 plus less than three crops.

The condition that at least three crops shall be cultivated and that no single crop shall exceed 70 per cent reduces the number of farms with significant grain field to just a few per cent or to just over 2,000 of Sweden's 65,000 farms that received single farm payment in 2009. It is mostly a few small farms that are affected.

The relationship between cereals and grassland cultivation in Sweden

Crop distribution changes noticeably from being dominated by cereals in southern Sweden to being dominated by grassland in northern Sweden. Regions 1–3 are predominantly plain districts whilst regions 4–5 are forest districts (figure 5).

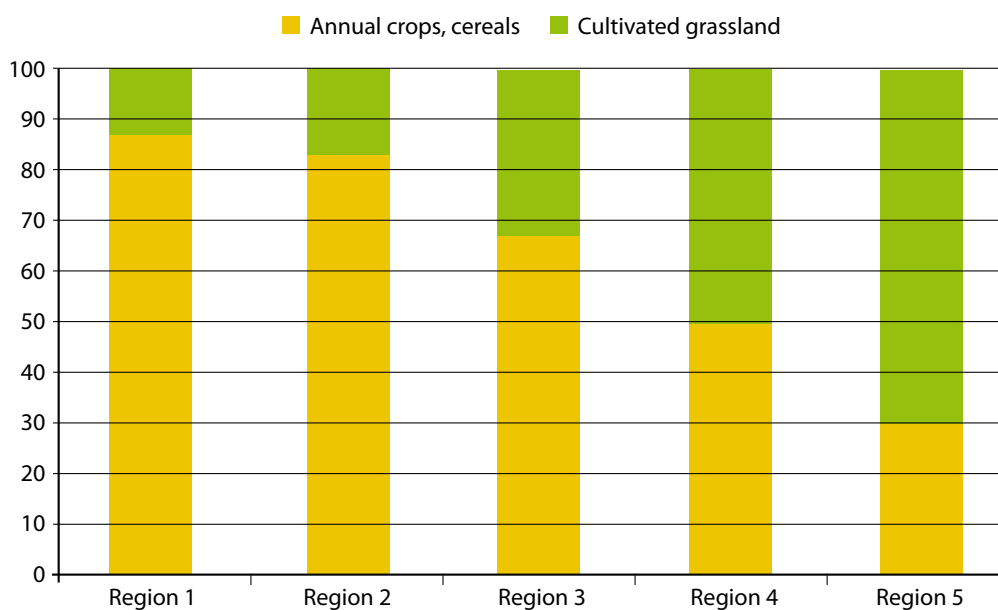


Figure 5. Division of areas cultivated with annual crops, cereals or grassland in the different farm support regions. Source: The Swedish Board of Agriculture's support database.

Crop distribution in farm support region 3

Farm support region 3 mainly comprises the plain land of Svealand and is Sweden's largest agricultural region, in terms of sheer area. The plain land of Svealand is dominated by cereals and the cultivation of other crops is limited in comparison with the plain land of southern and northern Götaland (farm support regions 1–2). If the proposed conditions of the "crop diversification" measures were implemented on a farm-by-farm basis (see sections 5.1 and 8.3) for farm support region 3, the distribution of crops would change in accordance with figure 6.

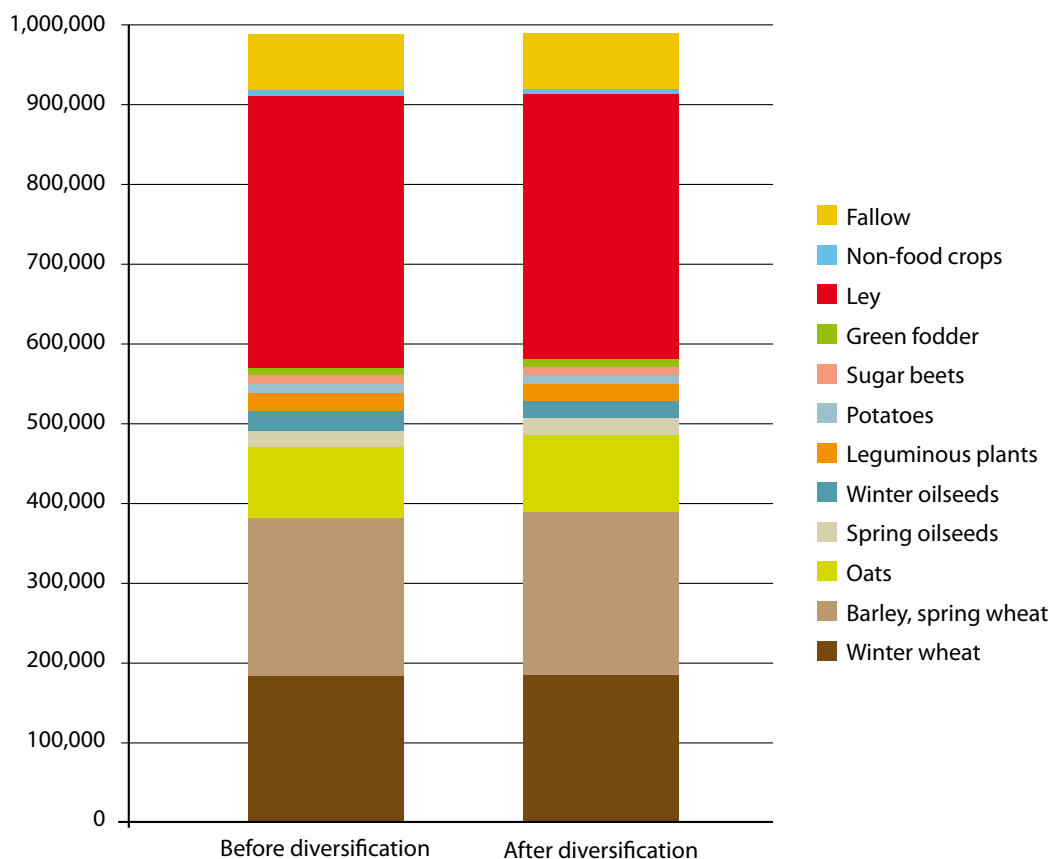


Figure 6. Crop distribution for 2009 in farm support region 3, before and after the satisfaction of the conditions for the Crop Diversification measures, hectares of cultivated crops. Source: The Swedish Board of Agriculture's support database.

On a regional level, crop distribution is altered only marginally, whilst the effect on individual farms can be great. The impact in Sweden is thus minor, even within the area (northern plain lands) that should be most affected by the measures and should therefore see the greatest environmental benefits.

Farms that would be affected by the crop diversification requirement

Figure 7 shows the number of farms that would be affected, should the assumed conditions of the crop diversification measures be introduced (chapter 5.1). The diagram also shows the number of farms per farm support region that could be affected. In all of Sweden, just over 20,000 farms would be affected by the requirement. That is approximately one third of all the farmers in Sweden.

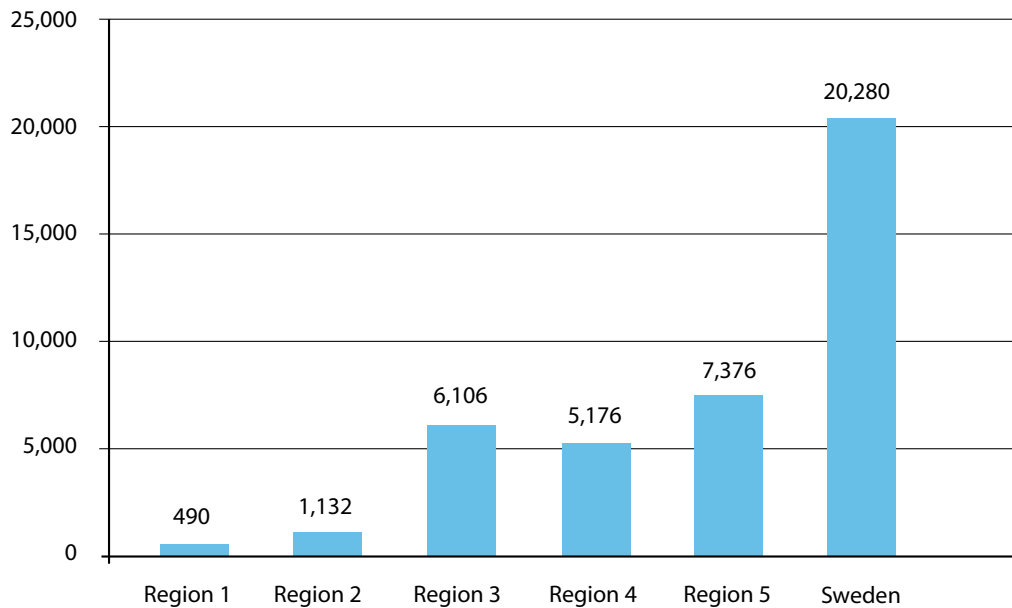


Figure 7. The number of farms in the different farm support regions in 2009 that would be affected by the conditions of the crop diversification measures. Condition 5: < 3 crops, < 100 % grassland and > 3 hectares fields. Source: The Swedish Board of Agriculture's support database.

5.1.3 Consequences for farming

A reasonable assumption would be that farmers by and large already employ the most commercially advantageous crop rotation system possible. Therefore, the motive behind the proposal should be that, from a societal perspective, a different crop distribution would be desirable from the point of view of biodiversity. The motive can take one of two forms: there is a desire that no single field should be used for the cultivation of just one crop, "annual variation"; or, that there is a desire to increase the number of crops which otherwise would not be cultivated to the same extent.

It is not certain how the farmers will adapt their cultivation due to the crop diversification requirements. Should the design of the requirements encompass grassland cultivation, then milk and beef producers with "one-sided" grassland cultivation will be forced to increase the areas they use for open crop cultivation, for example to increase their cultivation of cereals. This can be brought about through a reduction in the number of cattle, intensification or additional grassland. For businesses that have a large area of grassland or little annual crops, problems may occur if they are forced to increase the number of crops. For example, should a business with 50 hectares of grassland and 5 hectares of cereals be forced to increase the area employed for annual crops? There can also be problems for small businesses with just a few fields or for garden companies. If the farms are small enough, they can avoid all the greening requirements by instead choosing aid to small and medium-sized enterprises (see section 6.1.1). Possibilities for the additional leasing of available agricultural land for open crop cultivation can be limited in certain regions, especially in parts of Norrland. Should the design of the measures exclude grassland cultivation, as is described in chapter 9, then this problem would naturally not be as accentuated.

For cropping farms, the need to adapt will to a large degree will be decided by the design of the conditions and the stipulations regarding the minimum area for a single crop, crop definitions, etc. A less strict design should not require any major adaptations on the part of the majority of farms.

It is unlikely that the proposal will have any considerable effect on the total production volume of Swedish farming. In the event that a noticeable change should occur in one region, it is likely that adjustments will be seen in another region, via price signalling.

Certain farms, primarily those involved in milk production where the majority of their land is used for grassland cultivation, may experience considerable cost increases if the conditions regarding diversification are introduced. For other businesses, their costs should not increase to any major extent, as long as the details of the conditions are not severe. Food consumers and taxpayers are only slightly affected if this requirement is linked to Single Payment Scheme.

Adaptation of the Rural Development Programme

Sweden's Rural Development Programme does not contain any general requirements for crop rotation since this has not been deemed to be an effective way of achieving environmental effects. The extent to which the measures will affect the Rural Development Programme, should the conditions of the "crop diversification" greening measure be introduced, is largely dependent on the environmental effectiveness of the conditions in question. The effect will probably be extremely small.

Administrative consequences

The requirement entails increased monitoring of crop codes and the control of crops for all businesses. The administrative consequences for the authorities can be considerable if the controls are to encompass many different businesses since field inspections may be necessary. The farmers will not incur any notable transaction costs, other than possibly in the event of control procedures.

5.1.4 Environmental impact

Increased crop diversification can affect the leakage of insecticides, plant nutrient run-off, the biodiversity of the cultural landscape and the arable soil's choline storage and humus content. The whole visual image of the landscape can change through more open/farmed areas and more crops. By avoiding having the same crops for several years in succession or spread uniformly over large areas, the risk of specialized weeds and plant diseases is reduced. Consequently, the need for insecticides is also reduced, along with the health and environmental problems associated with their use. However, it is not certain that an annual crop mixing requirement causes this, since it is possible to grow the same crop on the same field year after year, as long as the farm mix is OK. The secondary effect, of control over other crops, is positive if, for example, it means that the grassland area increases (which leads to a lower usage of insecticides and higher choline storage). If this instead means increased cultivation of cereals and oilseeds, then it probably also means increased usage of insecticides. This probably also leads to increased elution of plant nutrients and insecticides.

The requirement can be positive for the biodiversity of the cultural landscape, but probably only marginally at best. An enlarged area of one-year old crops in a district dominated by grassland and increased areas of fallow land or grassland in a cropping dominated district can improve conditions for certain insects and birds. There should also only be minor effects as far as the run-off of plant nutrients is concerned, although this may have some significance on a local level, either positively or negatively.

A deeper analysis is required in order to see which businesses will be forced to make changes to their crop rotation as a result of the greening requirement. At the same time, it is difficult to analyse the effects of the crop rotations based on an annual requirement for crop composition since the distribution can be one-sided one year but vary over time. Even if the requirement should lead to more varied crop rotation, it is not evident that this will have a positive environmental impact. It is possible that a crop that requires more insecticides or leaks more plant nutrients has to be cultivated due to the crop diversification conditions – for example, if farms with significant grassland cultivation (beef and milk producers) should need to increase their cultivation of cereals or oilseed crops.

It is important for the cultural environment that the percentage of agricultural land is not reduced in forest or semi-forest areas and that the diversity of crops remaining in these areas does not disappear, even if it is only two crops. The effect of this requirement can therefore be negative, especially in these areas. Even small farms in plain land areas can have problems as it can be expensive to maintain three crops. Depending on how the proposal affects access to grassland, a large number of grazing animals may also be negatively affected, and this will in turn lead to reduced cultivation. The above assumption could possibly affect the cultural environment and our image of the countryside due to reduced cultivation, overgrowing, afforestation and lack of management.

The diversification requirement will probably have relatively minor effects, primarily as only a few businesses will need to make any drastic adjustments. Where businesses have to change their crop rotations, the effects on the ecosystem will in general be gently positive.

5.1.5 Conclusions and proposals

The main conclusion is that, on the whole, the environmental benefit will be minor in Sweden, at the same time as certain businesses will be severely affected financially. For the majority of businesses, the proposal implies no major costs. Together with the authorities' increased transaction costs, this means that the proposal must be viewed as being inefficient, from an environmental point of view.

Current crop rotation is often quite “flexible”, which means that a farm's crop distribution can vary from year to year. This makes it difficult to make the use of land beneficial in one particular year. This is mentioned in the study “Miljöeffekter av träda och olika växtföljder” [The environmental impact of fallow land and other crop rotations] (The Swedish Board of Agriculture's report 2006:4). The results there indicate that it is difficult to achieve cost-effective environmental impact with means of control that attempt to affect crop rotations. A less strict requirement would therefore be better, for example, the annual production of a cultivation plan or participation in counselling. Furthermore, effective crop rotation is in the

farmer's own interest as it can increase the harvest or reduce plant diseases and pests, so other measures aimed more at the environmental problem itself would probably be more effective.

If the crop diversification measure is introduced, the proposal would need to be accompanied by the possibility to make exceptions and limitations to the requirement, so that businesses are not affected without any tangible environmental effect being achieved (chapter 9). This applies especially for farms with a great deal of grassland or fallow land, small businesses and garden companies. There should, for example, be no limitation to the percentage of grassland; on the contrary, the requirement for the number of crops should be reduced when there is a high percentage of grassland, since an environmentally-friendly cultivation already exists.

5.2 Permanent grassland

Design

Every farm shall retain a fixed area of permanent grassland which shall be at least the size of the area in existence during the reference period (1999–2003).

Additional conditions

The EU's definition of permanent grassland refers to pastures on arable or semi-natural land that are at least 5 years old.

Conditions in Sweden

In Sweden, a reference area of 564,000 hectares of permanent grassland was established in 2005. Sweden reported a figure of 702,000 hectares of permanent grassland for 2009. It is these long-established grasslands that, according to the current Single Payment Scheme requirements (cross compliance), may not be changed to, for example, grain field, so that the total area of grassland falls below the reference area of 564,000 hectares (there is a 10 % margin) (see figure 8 on the next page). The original purpose of the retained reference area requirement was to prevent grain field from increasing at the cost of long-established grassland, in connection with the disengagement of the MTR reform.

5.2.1 The elements that have been analysed

The Swedish Board of Agriculture's support database has been used in the analysis of the Commission's permanent grassland greening proposal. The economic or environmental consequences of the greening measures have then been evaluated. The results of the following conditions have been filtered from the support database.

1. Reference areas on a farm and national level
2. Farms receiving single farm payment for ley or pasture on arable land
3. Farms with semi-natural pasture
4. Farms with grassland on arable land and conditions of 10 per cent or 20 per cent permanent grassland
5. All milk-producing farms

Prerequisites based on the Swedish reference area

With an established reference area at farm level, the locking-up effects affecting grassland can be a problem if/when the operation is reorganized or the ground is leased out. The “locking-up” of agricultural land occurs when the land, due to restrictive rules and/or financial conditions that are advantageous for passive ownership, becomes unavailable/unprofitable for cultivation (is lost as a production resource).

Every year, Sweden reports the national reference area for permanent grassland to the European Commission. The table below shows the reference areas together with the grassland per county. The permanent grasslands consist partly of semi-natural pasture which, in Sweden, may not be ploughed, and partly of long-established arable grassland. In 2009, there was approximately 400,000 hectares of semi-natural pasture and 300,000 hectares of long-established arable grasslands.

Out of the slightly more than 700,000 hectares of permanent grassland, it is primarily the long-established ones that will probably be affected by the conditions in the greening measures for permanent grassland.

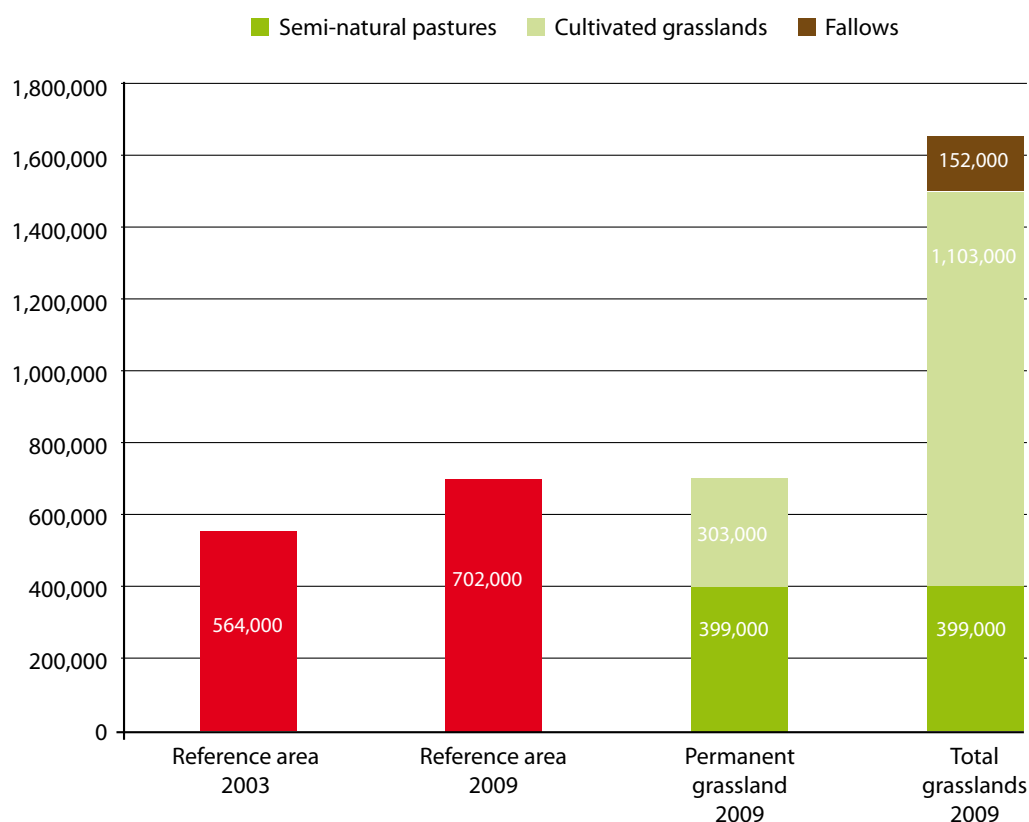


Figure 8. The established reference area for 2003 and the reference area for 2009, divided up into semi-natural pasture and long-established grasslands and the possible total area of grass-covered land in 2009, Sweden and in hectares. Source: The Swedish Board of Agriculture’s support database.

Most of Sweden’s semi-natural pastures are included in the reference area. For 2005, applications for farm payments had been received in respect of approximately 480,000 hectares of natural pasture. The remainder of the grassland was long-established arable grasslands. The total reference area of 564,000 hectares

for 2003 therefore includes approximately 80,000 hectares of long-established arable grasslands. At the 2009 control the actual area of long-established arable grasslands (the reference area) had increased to just over 300,000 hectares (approximately 30 % of Sweden's grassland area).

Since there is currently (2012) approximately 400,000 hectares of semi-natural pastures eligible for single farm payment, the enforcement of a reference area (enforced at farm level however) would imply that just over 160,000 hectares (15 %) of the grasslands would have to be long-established. This must be borne in mind when an analysis is made of the financial and environmental effects of a requirement to extend the permanent grasslands eligible for Single Payment Scheme, on a farm level instead of on a national level.

Table 7. Composition of Sweden's semi-natural pastures and reference areas for 2009.

County	Permanent grassland	of which is semi-natural pastures	of which is long-established grasslands
Stockholm	23,330	10,915	12,415
Uppsala	26,127	15,789	10,338
Södermanland	28,682	17,429	11,253
Östergötland	62,018	41,879	20,139
Jönköping	60,429	40,278	20,151
Kronoberg	38,801	21,278	17,523
Kalmar	67,931	50,591	17,340
Gotland	23,070	16,055	7,015
Blekinge	17,231	11,126	6,105
Skåne	85,330	57,001	28,329
Halland	25,512	15,684	9,828
Västra Götaland	101,902	58,949	42,953
Värmland	24,148	6,363	17,785
Örebro	19,002	8,800	10,202
Västmanland	11,848	8,337	3,511
Dalarna	14,657	5,215	9,442
Gävleborg	16,440	4,136	12,304
Västernorrland	14,180	2,186	11,994
Jämtland	14,718	4,143	10,575
Västerbotten	16,961	1,542	15,419
Norrbottn	9,717	1,449	8,268
Sweden	702,036	399,145	302,891

Note: Areas selected in 2009 as national reference areas for cross compliance permanent grasslands.

Table 8 below has been produced based on the above composition and information regarding the percentage of long-established grassland per region (Statistics Sweden's Statistical Messages, 2011a). Of the 300,000 hectares of long-established grasslands, 180,000 hectares is considered to remain as permanent grassland.

Table 8. The estimated area of long established grasslands remaining.

Area	Number of farms with grassland	Long-established grasslands, hectares
region 1	2,562	5,687
region 2	2,702	8,112
region 3	16,694	52,347
region 4	13,314	44,401
region 5	20,449	72,368
Sweden	55,721	182,915

Condition 1: Single Payments Scheme, > 4 hectares agricultural land, has grasslands and/or pastures, percentage long-established grasslands.

5.2.2 Results

The fundamental prerequisites for sampling and analysis of farms are that they receive single farm payment and that they have more than 4 hectares of agricultural land. This analysis only encompasses those farms and farmers who receive farm payments and, furthermore, had applied for Single Payment Scheme in respect of grasslands or semi-natural pastures.

All farms in Sweden that has arable grasslands or semi-natural pastures

Table 9 shows that most of the farms that have agricultural land also have arable grasslands or semi-natural pastures. When only farms with more than 30 per cent arable grasslands are included, 70 per cent of all of Sweden's farms remain. It has not been possible to connect the long-established grasslands to specific farms. Therefore, only those farms with a grassland percentage of over 30 per cent have been included in this first analysis.

Table 9. All farms with grassland in 2009.

Type of farm	Number of farms	Hectares agricultural land	Hectares grasslands	Hectares pastures
farms with agricultural land	65,085	3,060,951	1,103,340	453,984
farms with grasslands	58,735	2,854,731	1,103,340	453,984
farms > 30 % grassland	46,593	1,791,868	1,006,578	373,304

Condition 2: Single Payments Scheme > 4 hectares agricultural land

If there should be a requirement for ten per cent permanent grassland

The next stage is to set a requirement that these farms with over 30 per cent grasslands, shall keep at least ten per cent of it as permanent grassland. Farmers whose semi-natural pastures have constituted more than ten per cent of their total agricultural land will be exempt from this requirement. The semi-natural pastures are automatically reckoned as permanent grasslands.

Table 10. All farms with more than 30 % grasslands and a requirement of 10 % permanent grassland.

Area	Number of farms	Hectares agricultural land	Hectares grass-lands	Hectares semi-natural pastures	Req. 10 % hectares perm grasslands	Req. area with grass-land
milk farms	2,684	257,710	163,379	8,912	25,771	16,859
region 1	404	12,868	6,773	336	1,287	951
region 2	787	31,822	18,183	906	3,182	2,276
region 3	6,130	231,284	136,046	7,270	23,128	15,858
region 4	5,129	161,248	104,366	4,824	16,125	11,301
region 5	10,405	295,071	234,804	5,495	29,507	24,012
Sweden	22,855	732,293	500,172	18,831	73,229	54,398

Condition 3: condition 2 plus > 30 % grassland, <10 % semi-natural pasture.

Should the above conditions be introduced, approximately 23,000 farmers in Sweden would be affected and they would have to allocate around 55,000 hectares of their grasslands as permanent grassland. Many milk farmers (2,700) would be affected by these conditions and they would be forced to allocate at least ten per cent (17, 000 ha) of their grasslands acreage as permanent grassland (see milk farms, table 10).

If there should be a requirement for twenty per cent permanent grassland

This alternative also encompasses a requirement for over 30 per cent grasslands but in this case, at least twenty per cent of the farmers' grasslands shall be kept as permanent grassland. Farmers whose semi-natural pastures have constituted more than twenty per cent of their total agricultural land will be exempt from this requirement.

Table 11. All farms with more than 30 % grassland and a requirement of 20 % permanent grassland.

	Number of farms	Hectares agricultural land	Hectares grass-lands	Hectares semi-natural pastures	Req. 10 % hectares perm grasslands	Req. area with grass-land
milk farms	3,909	391,820	234,550	28,529	78,364	49,835
region 1	528	21,787	10,692	1,728	4,357	2,629
region 2	996	49,068	26,226	3,461	9,814	6,353
region 3	8,085	348,080	197,756	24,375	69,616	45,241
region 4	6,920	257,198	158,213	19,073	51,440	32,367
region 5	12,307	361,275	281,206	15,301	72,255	56,954
Sweden	28,836	1,037,408	674,093	63,938	207,482	143,544

Condition 4: condition 2 plus > 30 % grassland, <20 % semi-natural pasture.

Should the above conditions be introduced, approximately 29,000 farmers in Sweden would be affected and they would have to allocate around 144,000 hectares of their grasslands as permanent grassland. Many milk farmers (3,900) would be affected by these conditions and they would be forced to allocate at least twenty per cent (50,000 ha) of their grasslands as permanent grassland. This alter-

native (20 % permanent grassland) comes closest, purely in terms of area, to the probable outcome in Sweden of the commission's proposal for permanent grassland greening measures. The established reference area from 2003 implies that approximately 160,000 hectares of grasslands must be allocated as permanent grassland. The alternative with 20 % of grasslands as permanent grassland shows that milk and beef producers in Sweden can be quite seriously affected by the greening measures and the requirement for permanent grasslands.

The farms in Sweden that is likely to have a reference area

An alternative method for finding out which farms and areas may be affected by the permanent grassland greening measures is to analyse the types of grasslands that can be found in the various farms.

When the area of grassland dictates which farms will have a requirement for permanent grassland

In total there are approximately 59,000 farmers who have grasslands (arable grasslands, semi-natural pastures or meadowlands). Out of these farmers, just over 25,000 (42 %) are located in farm support region 4 or 5 (semi-forest or forest districts, or Norrland). In these regions, grasslands account for at least 65 per cent of the total agricultural land.

Table 12. The number of farms, hectares of agricultural land and other types of grasslands in the five regions.

	Number of farms	Hectares agricultural land	Hectares grasslands	hectares FS ¹ grazing	hectares HNV ² pastures	% SPS grazing	% SPS grassland
farms with grasslands	58,735	2,854,731	1,103,340	400,347	453,984	0.14	0.53
region 1	2,742	278,908	34,609	18,397	18,488	0.07	0.19
region 2	2,935	251,076	49,542	19,154	19,516	0.08	0.27
region 3	17,768	1,074,084	339,292	131,785	153,898	0.12	0.44
region 4	14,020	594,343	272,018	113,342	124,882	0.19	0.65
region 5	21,270	656,320	407,879	116,599	137,200	0.18	0.80

¹SPS= Single Payments Scheme ²HNV= includes agricultural (pastures) land with high natural value outside of the area applicable for the purposes of Single Payments Scheme.

The farms and regions can be roughly divided into three groups. Farm support regions 1–2 consist of agricultural plain lands where relatively few farms have grasslands. Farm support regions 4–5 consist of forest agricultural land where a relatively high number of farms have grasslands. Farm support region 3, which is the largest in terms of area, is more or less a cross between the other two.

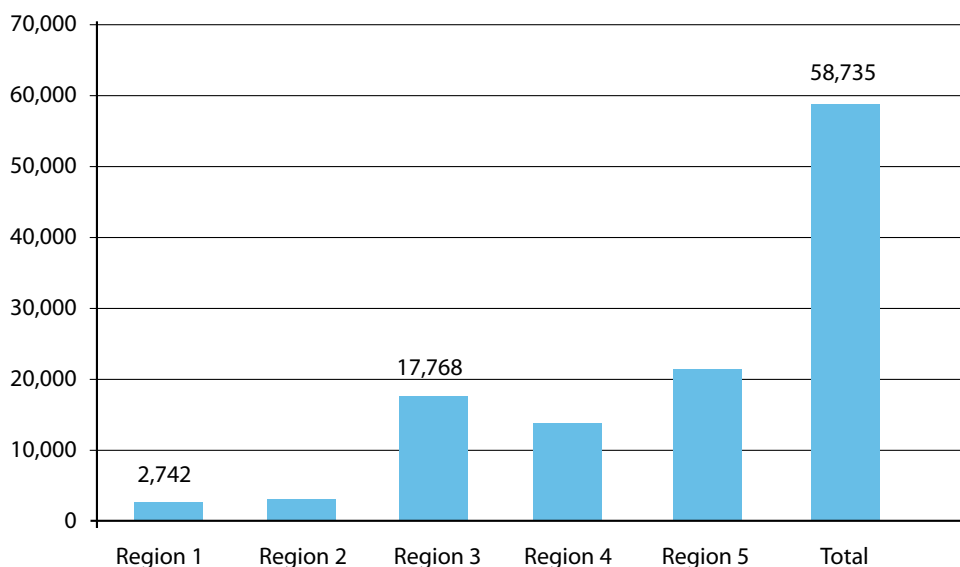


Figure 9. The total number of farms per farm support region which have grassland area subject to Single Payments Scheme. Source: The Swedish Board of Agriculture's support database.

When the area of semi-natural pasture dictates which farms will have a requirement for permanent grassland

In total there are approximately 37,000 farmers who have and tend to semi-natural land (pastures or meadows). Out of these farmers, just over 22,000 (60 %) are in farm support region 4 or 5 (semi-forest or forest districts, or Norrland). In these regions, grasslands account for at least 68 per cent of the total agricultural land.

Figure 9 suggests that a major part of the reference area will be in northern Sweden and in the forest districts where there is already a great deal of grassland. On the other hand, a very small amount of permanent grassland will end up in the southern plain lands where, from an environmental point of view, there is actually a greater need for it.

Table 13. The number of farms with semi-natural pastures, hectares of agricultural land and other types of grasslands in the five regions.

	Number of farms	Hectares agricultural land	Hectares grasslands	Hectares SFP ¹ grazing	Hectares HNV ² pastures	% SPS grazing	% SPS grass-land
farms with pastures	36,961	2,050,982	802,247	400,347	451,613	0.20	0.59
region 1	1,334	138,511	21,882	18,397	18,475	0.13	0.29
region 2	1,644	161,933	34,747	19,154	19,503	0.12	0.33
region 3	11,295	792,193	260,350	131,785	152,794	0.17	0.49
region 4	9,805	486,142	218,639	113,342	124,253	0.23	0.68
region 5	12,723	467,563	265,021	116,599	135,478	0.25	0.82

¹SPS= Single Payments Scheme ²HNV= includes agricultural (grazing) land with high natural value outside of the area applicable for the purposes of Single Payments Scheme.

Figure 10 shows the total number of farms which have grasslands and the number of farms with semi-natural pastures. The bar diagram indicates the regions in which the permanent grassland greening measures will have the greatest consequences for the profitability and competitiveness of agriculture. It is more difficult to predict where the environmental impact will be greatest, but this will probably be in the areas where there is a high percentage of long-established grasslands, which is currently (2012) farmed more intensively.

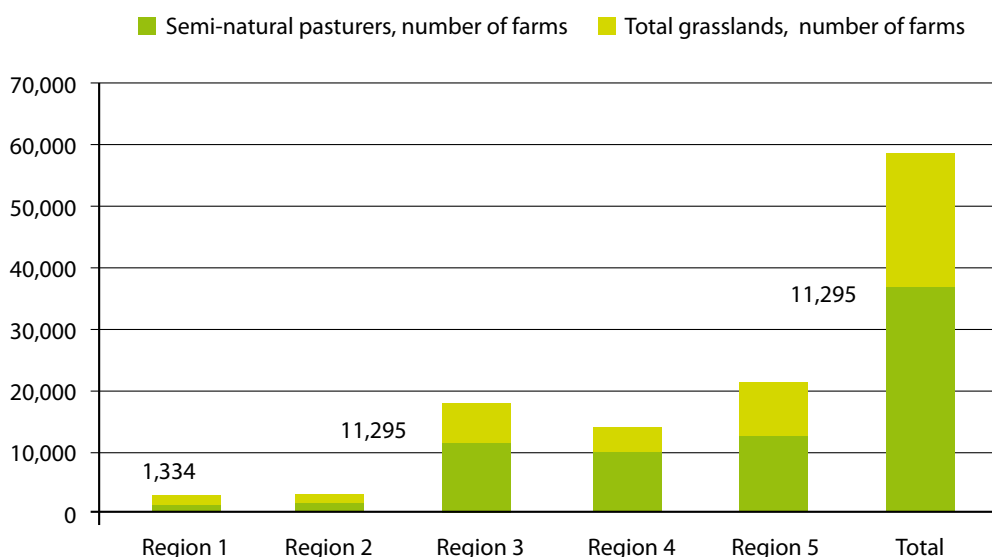


Figure 10. The total number of farms per farm support region which have semi-natural pastures receiving single farm payment, compared with the total number of farms that have grassland. Source: The Swedish Board of Agriculture's support database.

5.2.3 Consequences for agriculture

There are many potential problems associated with a historical reference period. For example, a business may have changed its operation from milk to cereals production since 2003, the year in which the reference period commences, which would make it difficult for it to satisfy the requirements. Furthermore, the crop rotation on milk or beef farms can be detrimentally affected as there is a constant demand for a certain percentage of grassland, which has been undisturbed for at least five years. The current requirement at national level provides greater flexibility since areas that are ploughed up can be replaced by areas on another farm, whilst the total area remains unchanged.

The businesses that had permanent grasslands (pastures) during the reference period receive support without any extra requirements, whereas cultivating grassland (crop rotation grasslands) could result in more land becoming deadlocked (locked in) and further requirements if they have had long-established grasslands.

The requirements may be perceived as being unfair (see below) or unjustified, with respect to the limited environmental benefit. It seems likely that the proposed greening requirements will not make the farmers any more positive towards the EU, the CAP or the other authorities involved.

Since the farmers are prevented from freely choosing the best commercial solu-

tion, the requirement can bring about increased prices. Arable land that would provide more profit, with other crops or as short-term grassland, will remain as long-established grassland. Cultivated pastures and semi-natural pastures that are not commercially profitable must still be grazed on. How great the costs will be is difficult to calculate, but they will probably be relatively minor. Far from all the businesses will be affected. It is primarily milk and meat producers who wish to wind up or have to reduce their roughage area who may suffer increased costs. Their costs are affected by their opportunities to lease grasslands that qualify for Single Payments Scheme.

The costs will primarily be incurred by those livestock producers who are forced to adapt their operation as a result of the requirement. Given that single farm payment will be paid anyway, taxpayers should not be affected. Consumers will probably see negligible price increases since other more dominating forms of production will compensate for the effects via the various pricing mechanisms.

Adaptation of the Rural Development Programme

Since support is already provided within the Rural Development Programme for ley or pasture on arable land and semi-natural pastures, this may need to be reviewed when greening requirements are applied. Any possible changes will depend on the formation of the greening conditions.

One aim of the permanent grassland measure is to provide more time for grasslands to establish themselves, e.g., with a view to choline binding. The requirement for longer establishment times does not affect semi-natural pastures since there are already legislative limitations to prevent them from being ploughed.

If the preservation of biological values through cultivation becomes a greening requirement or cross compliance requirement (management requirement), this means that the cultivation requirement that previously applied for Agri-Environmental Payments in respect of pastures will instead be found within the greening support (or as Baseline). This will probably lead to general decreases in Agri-Environmental Payments for pastures, regardless of whether or not the land is permanent grassland. If a lower level of compensation is introduced instead, for “the locked in land” (permanent grassland), the complexity and the administrative costs increase substantially.

Administrative consequences

The Swedish Board of Agriculture’s experience of reference periods is not entirely positive, since they bring about significant administrative problems. If the original level or area has to be established on a farm level, there is a risk of errors occurring. This creates assessment problems which increase the further away from the reference year the areas per farm are established. Reference periods also tend to be troublesome from an administrative point of view.

It is tempting to use fallow areas to satisfy the requirement since these can look the same and have the same environmental impact as extensive grasslands. The Commission may make demands here in respect of grazing animals or harvests. This is not justified from an environmental point of view and such a requirement could lead to complicated control procedures.

In conclusion, the proposal will not imply markedly increased transaction costs for farmers. The authorities may on the other hand incur considerable costs in the introduction of the requirement and in the verification of compliance.

5.2.4 Environmental impact

The purpose of the requirement is to limit the number of meadows/arable grasslands that are converted into annual crops or which are more intensively farmed as crop rotation grasslands. Long-established grasslands, cultivated pastures and, first and foremost, semi-natural pastures have a positive impact on biodiversity, plant nutrient run-off, choline storage and insecticide run-off, compared with the cultivation of cereals and oilseeds.

For Sweden, a positive impact can be expected primarily in terms of biodiversity and, more specifically, in the preservation of semi-natural pastures. At the same time, this impact is limited by the fact that it is the total arable pasture/grassland (established for over 5 years) and semi-natural pasture that is to be preserved. If a business risks falling short of its quota for a certain year, adjustments must be made or the support payment reduced. The simplest way is probably to allow leased grassland to establish itself for five years or more, e.g., as fallow areas. The environmental impact can be detrimentally affected, if requirements are made of the harvest or grazing on such arable land (which could be an EU requirement, cf. the 50 tree discussion), for example if animals being moved from semi-natural pasture to arable land. It is not likely that the requirement for permanent grassland will prevent unprofitable semi-natural pasture from being closed down – it is more likely that more long-established grassland will be found on arable land, since this should generally be cheaper.

If the requirement for permanent grassland on a national level is to remain, the requirement on farm level will probably not have any major environmental impact. The farmers who do not want their arable land to become deadlocked will probably reduce their areas of permanent grassland. They can do this until the national reference area has been reached. The area of permanent grassland finally reported will probably end up being similar to the current national reference area. A larger area of permanent grassland can probably be achieved more easily through stricter requirements at national level, although these would be less onerous for individual farmers.

In forest districts that are totally dominated by cultivated grassland, the requirement can be slightly negative in terms of biodiversity. The reason for this is that biodiversity in these areas would benefit from a somewhat larger of annual crops, since some plants, insects and birds need this kind of habitat.

It is primarily in grain-dominated areas that the reduced usage of insecticides will have certain positive impacts on biodiversity, to the extent that the requirement actually leads to the (relatively few) permanent grasslands that can be found in grain-dominated areas preventing an increased level of open crop production. If anything, there is a risk of a further reduction of grassland areas before 2014, in order to avoid locking arable land into permanent grassland in these areas.

The proposal for permanent grassland does not strengthen the cultural environment and it does not entail any adaptation of semi-natural pastures over and above

current requirements. It is also assumed that the proposal will not counteract the discontinuation of cultivation on unprofitable natural pastures and that these will, over time, become afforested. This greening proposal can also have an adverse effect on the cultural environment and the appearances of the landscape; since the proposal can mean that more land becomes deadlocked (locked in) which in turn prevents farmers from freely choosing the optimal commercial solution. It is primarily the milk and meat producers who are forced to reduce areas used for forage production that may experience increased costs or be forced to cut down the number of cattle or even to completely wind up their livestock operations.

5.2.5 Conclusions and proposals

When the greening requirement for permanent grassland encompasses both arable grassland and semi-natural pastures, there is a risk that on one hand, more arable land must become grassland when the semi-natural pasture is no longer grazed upon and, on the other hand, that long-established grassland will be ploughed, to avoid the requirement for permanent grassland.

The ideal system would be able to provide a financial incentive to increase the area of semi-natural pasture and raise the quality of the grassland from a natural and cultural point of view. It is neither effective nor fair to only preserve areas that happened to be located on a farm during a certain reference period. An increased maintenance requirement (support conditions/cross compliance) can be detrimental to the promotion of biodiversity and lead to lower Agri-Environmental Payments in respect of grasslands and semi-natural pastures.

Sanctions similar to cross compliance, which have a historic reference period for grassland areas, lead to extensive administration and a risk of production deadlocks. If the greening premium was instead paid per hectare of applied permanent grassland, it would present considerably fewer problems for farmers and have a more direct connection with the environmental impacts. It would then also be possible to release funds within the Rural Development Programme. The effectiveness of the requirement is compromised as it refers to the total of all grasslands and pastures that has been left for at least five years. It would have been better if the requirement for a long period of establishment had applied to pastures (not arable), or if there had been a separate requirement for arable grassland that applied regardless of whether the grassland had been left to establish itself for two or at least five years.

5.3 Ecological focus areas

Design

The proposal is that each farm with more than four hectares of agricultural land (farm support area) shall convert at least seven per cent of this area to an area with an ecological focus. This ecological focus area can encompass, for example, fallow land, landscape elements, buffer zones, etc.

Additional conditions

The areas that are to remain as permanent grassland do not need to be included in the farm/base area. The Commission has not yet decided which areas, elements or

land types will finally be included in the proposed seven per cent ecological focus areas.

In major parts of Sweden there are comprehensive areas of extensively farmed grasslands. If these have not already been assigned as permanent grassland, they can instead be partially used to satisfy the requirements for ecological focus areas. Furthermore, there is approximately 150,000 hectares of fallow land which can be partially used as environmental fallow. Unfortunately, much of the land containing the major landscape elements is, for administrative reasons, no longer classified as agricultural land eligible for support. This land is, therefore, no longer relevant to the environmental areas. There are greater problems with available areas, primarily in the plain lands of the south where the vast majority of the area is actively farmed and there is little fallow land and extensive grasslands. Furthermore, landscape elements are few in number there.

5.3.1 The elements that have been analysed

The Swedish Board of Agriculture's support database has been used in the analysis of the Commission's greening proposal and ecological focus areas. The economic or environmental consequences of the greening measures have then been evaluated. The results of the following conditions have been filtered from the support database.

1. all cropping farms
2. all farms with less than 20 per cent grassland
3. all farms with fallow areas
4. at least 5 or 7 % of the farm's fields are to be ecological focus areas

The opportunity for farmers to set aside part (5–7 %) of the support-eligible arable land as ecological focus areas can be found primarily through the available fallow areas. Furthermore, several extensively managed grasslands are also available. The problem is that these areas are unevenly distributed throughout Sweden. For example, in the plain lands of southern Sweden, regions 1–2, 31,000 hectares of arable land is required (see table 15) in order to satisfy the requirements of seven per cent ecological focus areas. But there are only approximately 4, 000 hectares of fallow land available to the farmers affected by this requirement (table 15).

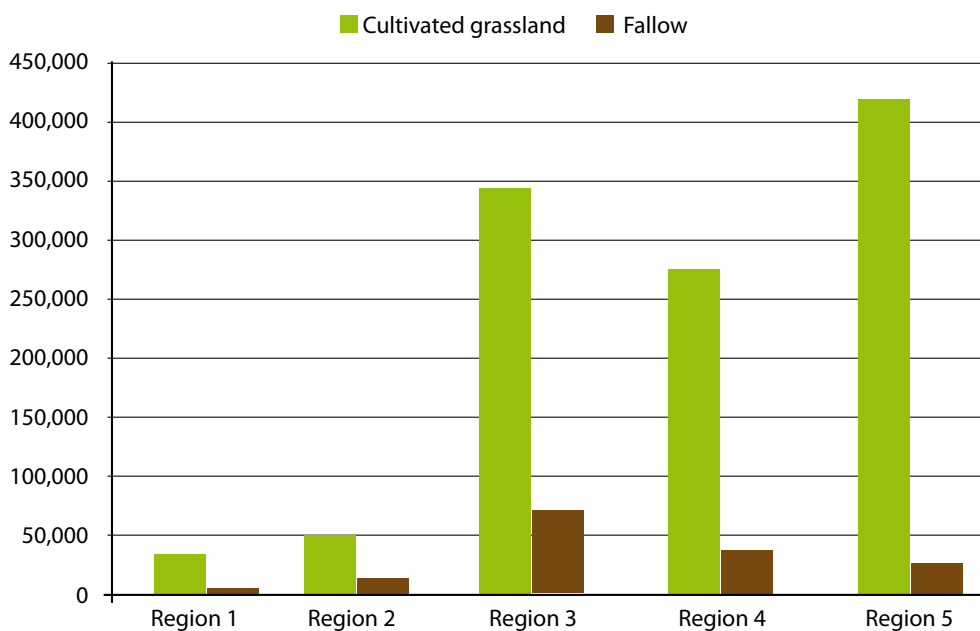


Figure 11. The total fallow and grassland areas in hectares within the different supported regions. Source: The Swedish Board of Agriculture’s support database.

Even if the farmers were to utilize the perennial grasslands to satisfy the requirement of, for example, seven per cent ecological focus areas, the perennial grassland and fallow land areas would not suffice, with the exception of regions 3 and 5 (figure 12). The areas would probably not suffice in these regions either if the farmers also have to satisfy the permanent grassland requirement.

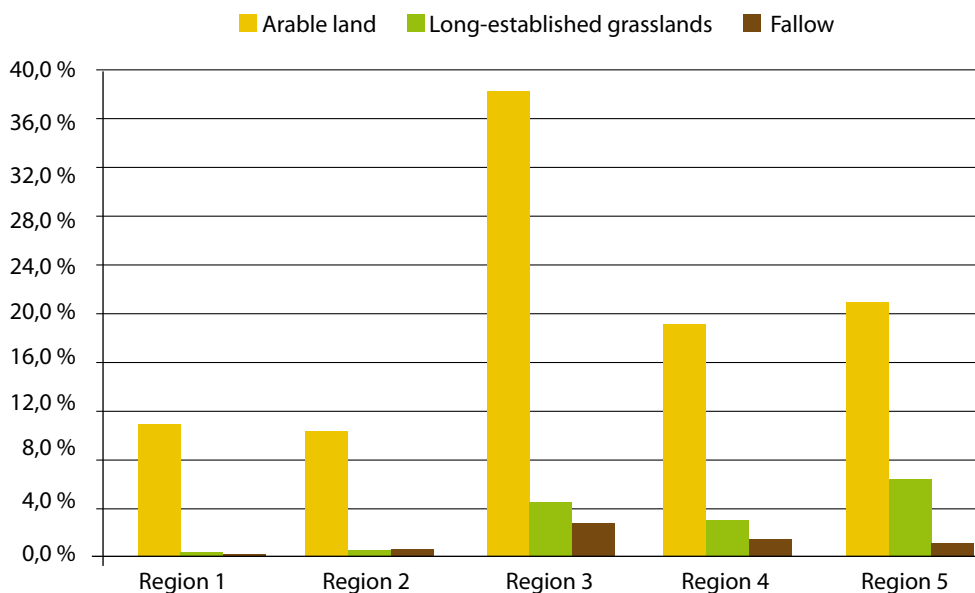


Figure 12. The percentage of long-established grasslands fallows (extensive land) and arable fields out of Sweden’s total arable area per support region. Source: The Swedish Board of Agriculture’s support database and its report 2006:4.

5.3.2 Results

The requirements of the greening proposal with ecological focus mean that 30,000 farmers will have to set aside agricultural land. The farmers who are affected are those who grow crops in rotation, receive single farm payment and have applied for support for more than 4 hectares of agricultural land. Farms with 100 % grassland or fallow land are excluded since they do not need to satisfy the requirement. The requirement that seven per cent of support-authorized land shall be an ecological focus area means that there will be a shortfall of 106,000 hectares of this type of arable land.

Table 14. Number of farms and the area affected by the ecological focus area measure.

Area	Number of farms	Fallow area, hectares	Arable area, hectares	Affected area
Sweden	29,429	17,979	1,789,409	105,803

Condition 1: Single Payments Scheme, > 4 hectares agricultural land, < 100 % grassland, < 100 % fallow, requirement 7 % focus area.

Since all arable land is to be included in the data, apart from permanent arable grassland, the requirement in northern Sweden and forest districts will be roughly as comprehensive as in the plain lands of the south. This means, for example, that in regions 4 and 5, farmers will set aside just over six per cent of their arable land for primarily environmental fallow.

Table 15. The area per region affected by the ecological focus measure.

Area	Number of farms	Fallow area, hectares	Arable area, hectares	Affected area
region 1	2,471	1,483	256,834	16,057
region 2	2,167	2,461	196,168	10,943
region 3	9,671	8,056	659,717	37,580
region 4	6,537	3,491	328,663	19,420
region 5	8,583	2,488	348,027	21,803

Condition 2: condition 1 plus < 7 % fallow, requirement 7 % focus area

If we filter out all the farms that cultivate cereals, less than twenty per cent grassland and less than five per cent fallow, we get the result below, which reflects the places where more intensive cultivation occurs in Sweden. These farms and farmers will, with a requirement of five per cent ecological focus area, lose just over 27,000 hectares of arable land. With a seven per cent requirement, the loss will be 41,000 hectares. This applies if the farms' fallow areas are included in the required ecological focus area.

Table 16. The effect of ecological focus areas on farms with cereals and less than 20 % grassland.

Area	Number of farms	Number of hectares	Hectares fallow	Loss with a 5 % req. focus area	Loss with a 7 % req. focus area
region 1	1,840	216,856	958	10,843	15,180
region 2	1,303	136,262	1,454	6,813	9,538
region 3	2,926	261,098	2,898	13,055	18,277
region 4	650	39,476	439	1,974	2,763
region 5	303	10,703	102	535	749
Sweden	7,022	664,395	5,851	33,220	46,508

Condition 3: condition 1 plus < 5 % fallow, < 20 % grassland

5.3.3 Consequences for agriculture

Most farmers will not need to adapt their cultivation in order to satisfy the requirement for areas with environmental focus. Many farmers can probably satisfy the requirement since there is marginal land available in all regions (however, it could be small amounts, depending on the regional demarcations that are introduced). Adaptation problems will arise, for example, for milk producers (even in forest districts) with limited land, until they can lease new agricultural land.

In the plain areas where cultivation is more intensive, the requirement may, however, lead to a reduced level of cultivation and reduced incomes. A negative attitude to the system can be expected from the farmers since the rules have already been altered a number of times. Some businesses have even paid for and or relinquished their rights to set aside areas, in order to avoid the set-aside obligation so as to not need to set aside fallow land. Farmers have done this, for example, to gain access to more forage area for their livestock. High cereals prices and the global demand for foodstuffs can also reduce acceptance of the system.

Adaptation of the Rural Development Programme

If the requirements for environmental impact from ecological focus areas have little scope, the ecological focus measures do not replace any directed measures which exist within the Rural Development Programme. On the other hand, if the greening measures prescribe protection zones, landscape elements, fallow diversity etc., the Swedish Rural Development Programme could be seriously affected.

Administrative consequences

In principle, the greening requirement for ecological focus areas means that a system similar to set-aside obligation will be reintroduced. This will bring about, amongst other things, an increased control down at plot level regarding the location of the areas subject to the conditions, what they contain and how large they are.

5.3.4 Environmental impact

Previous studies (Report 2008:13 "Miljöeffekter av slopad uttagsplikt" [The environmental impact of abolished set-aside obligation]) within the project regarding the environmental impact of the CAP indicated that the environmental impacts (elution, biodiversity, use of insecticides) of set-aside obligation were minor. Fur-

thermore, this proposal sets a lower area requirement than the set-aside obligation had, which suggests that the environmental impact would be even smaller than with a set-aside obligation. If the possibility of exceptions for non-food crops (which existed within the set-aside obligation) does not exist within greening, the environmental impact will increase, however, so will the costs (less income). The crops that were primarily grown as non-food crops within the set-aside obligation were oilseeds and winter wheat. This implies that these areas were farmed just as intensively and produced the same incomes as the cultivation of foodstuffs and feedstuffs.

In forest districts, the impact can be negative since biodiversity is coupled to activities and a varied landscape. In plain lands where cultivation is intense, a positive but limited impact can be achieved, through a greater area being farmed extensively or not at all. It is not certain that the reduction of production in plain lands is a cost-effective environmental measure. The cost of achieving an impact is high since a uniform requirement is made of all businesses, regardless of the environmental impact that the requirement will have on the business in question.

The outcome for the cultural environment and the appearance of the landscape depends to a large extent on what will be included in a – focus area –. For the ecological focus areas, discussions regarding the cultural environment in forest districts will be similar to that regarding crop diversification, i.e., that the proposal can have a negative affect through a reduction in the number of grazing animals, a reduction in cultivation, increased overgrowth and a lack of management of the area.

If landscape elements are included in the ecological focus areas, and this implies better protection of those landscape elements, then this is positive. But the possibility must exist to compensate management of the landscape element through the Agri-Environmental Payments. Management measures are required so that the landscape elements can be seen and be an important feature of the cultural environment, but also in order to preserve the biodiversity which is often present in and alongside these landscape elements.

5.3.5 Conclusions and proposals

A general requirement for the ecological focus areas (environmental fallow), for all farms regardless of the environmental preconditions, would be an expensive way of achieving environmental impact. It seems unreasonable to make such demands of areas of environmental focus in semi-forest and forest districts or that businesses with cultivated grassland in plain lands should be subject to such a requirement. One way to solve this problem would be for the requirement for ecological focus areas to only encompass open cultivation. The possibility of utilizing the greening premium for targeted payments per hectare, for certain regions, soil types and measures such as protective/border zones alongside streams or fallow diversity, would increase efficiency and release funds from the Rural Development Programme.

6 Less effect through exemption from greening requirements

6.1 The Commission's additional conditions

In its greening proposal, the Commission has also mentioned that certain farmers may be exempt from the greening requirements. The majority of those exempt from the requirements are small farmers. The idea is for the Commission to simplify the administration and payment of support for farms that receive a low total single farm payment by paying a lump sum for support and relieving their obligations in respect to environmental adaptations, cross compliance and controls.

Another group of farmers who will be exempt from the greening requirement are those who farm ecologically. The Commission's idea in this case is that the ecological farmers should be exempt from the requirements, bearing in mind the well-documented environmental benefits associated with ecological agricultural systems. Finally, farmers who operate within Natura 2000 areas will be exempt from the greening requirement to the extent that the greening measures are not consistent with the rules for the area.

6.1.1 Support for small farms

The Commission proposes that farms that have received single farm payment of less than SEK 9,000 per year (1,000 Euros) should be able to opt out of greening and instead choose "a uniform farm support" without any greening requirements at all. When it comes to Sweden, the farms must also have more than 4 hectares of agricultural land in order to be eligible for the "Simple Farm Payments".

Table 17. The number of small farms in 2009 that received less than SEK 9,000 (1,000 Euro) in single farm payment.

Area	Number of farms	Arable land, hectares	Number of farms	Arable land, hectares	Agric. land, hectares
Sweden	18,414	66,023	6,809	26,156	36,716

Condition 1: less than SEK 9,000 in single farm payment, more than 4 hectares of agricultural land.

In 2009 there was a total of just over 18,000 farms receiving less than SEK 9,000 in single farm payment. The number of farms that had more than 4 hectares of agricultural land was approximately 6,800, and these encompassed just over 26,000 hectares of arable land.

Table 18. The number of small farms that would be affected by "the crop diversification" measure.

Area	Number of farms	Arable land, hectares	Affected area
Sweden	820	4,145	207

Condition 2: As 1 plus > 4 hectares agricultural land, > 3 hectares arable land, less than 3 crops, not 100 % grassland or fallow.

“The crop diversification” greening measure would affect approximately 800 of the small farmers who satisfy the requirements for simplified support. If these farmers were instead to embrace greening, they would need to change crops in just over 200 hectares of their arable area.

Table 19. The number of small farms in 2009 which would be affected by “the ecological focus areas”.

Area	Number of farms	Fallow, hectares	Arable land, hectares	Affected area
Sweden	1,021	629	4,824	201

Condition 3: As 1 plus > 4 hectares agricultural land, < 100 % grassland or fallow, 7 % of available arable land for environmental measures.

If the conditions of the “ecological focus areas” measure were to be incorporated for the small farmers who have more than 4 hectares of agricultural land, approximately 200 hectares out of a total of 4,8000 would need to be adapted in some way. The greening requirements would apply for just over 1,000 small farms.

Conclusion

Most farmers would be able to manage the conditions with already available unfarmed land (fallow land, etc.) or they have no arable land or just permanent grasslands (semi-natural pastures) and are therefore not affected by the measure.

6.1.2 Ecological farming

Design

All farms conducting EU certified ecological cultivation should be able to receive greening support without any further requirements. The aim here is completely different from the other requirements.

Conditions

The whole area must be certified in order for greening support to be paid unencumbered for all agricultural land within the farm.

The elements that have been analysed

1. All farms that in 2009/2010 had certified ecological areas
2. The ecological areas that do not need to satisfy
3. the requirement for permanent grassland
4. the requirement for a seven per cent ecological focus area
5. the requirement for crop diversification on farms with less than 3 crops

Table 20 shows the number of farms in 2009 that were in some way connected to Agri-Environmental Payments, *ecological forms of production* and the total areas of these farms.

Table 20. The number of farms in 2009 that were involved with ecological forms of production.

Area	Number of farms	Arable land, hectares	Ecological arable land, hectares
Sweden	10,275	537,521	267,243
org. area > 95 %	4,963		143,224

Condition 1: farms with areas committed to ecological forms of production and farms with > 95 % ecological area.

According to official statistics, there were approximately 439,000 hectares of ecologically cultivated arable land under conversion in 2010. This means that during 2009 there were probably just over 160,000 hectares of arable land under conversion. In 2009 there were a total of approximately 5,000 farms where more than 95 % of their cultivation was ecological. This equates to a certified ecological area of approximately 143,000 hectares.

Table 21 shows the ecological farms that, in 2009, had less than 100 per cent grassland and seven per cent fallow land and which would have been able to satisfy a requirement of a seven per cent ecological focus area. In total, nearly 3,000 farms with 7,000 hectares would have been affected.

Table 21. Ecological farms in 2009 which would have been affected by “the ecological focus areas” measure.

Area	Number of farms	Hectares affected
Sweden	2,943	7,089

Condition 2: As 1 plus < 100 % grassland and < 7 % fallow.

Table 22 shows the farms in 2009 which were completely involved with *ecological forms of production* and which would have satisfied the greening requirement for crop diversification. This would have affected 2,200 farms with 4,400 hectares.

Table 22. Ecological farms in 2009 which would have been affected by “the crop diversification” measure.

Area	Number of farms	Hectares affected
Sweden	2,208	4,377

Condition 3: As 1 plus < 3 crops or 3crops > 70 % grassland. And < 100 % grassland or < 100 % fallow.

Conclusion

There will probably be issues with measures that have conditions which affect both pillars. If the compensatory amount for Agri-Environmental Payments has to be adjusted due to the Baseline changing (a limit for how much compensation can be paid out) the adjustment should apply to the areas on the farms that have to satisfy the requirement for greening support. If a farmer cannot get, or does not want greening support, or wants a larger area to receive Agri-Environmental Payment than is required by the greening requirement, the Agri-Environmental Payments should be set at a higher level of support. This process becomes complex and administratively complicated compared to what happens if the Agri-Environ-

mental Payments are designed in pillar 2 (the Rural Development Programme) without any connections to pillar 1 (direct support).

6.1.3 Farms with agricultural land within Natura 2000

Design

All farms that include a Natura 2000 area within their agricultural land should be able to receive greening support without having to follow all of the greening requirements. This requirement differs a little from the other requirements, however. The exemption only applies to the requirements that are at variance with the requirements for the Natura 2000 area, and only for this area. It is therefore necessary to follow the requirements relevant to the other agricultural land in order to receive greening support.

Conditions

All or part of the farm's agricultural land must lie within a Natura 2000 area and this area must be eligible for Single Payment Scheme. The condition covers meadow and semi-natural pasture as well as arable land.

The elements that have been analysed

1. All farms that in 2010 had some part of their agricultural land within a Natura 2000 area.

Agricultural land located within Natura 2000 areas

In 2010, there were nearly 50,000 hectares of meadow and semi-natural pasture in Sweden receiving single farm payment, which were located within a Natura 2000 area. These hectares were distributed between nearly 10,000 different fields, about half of which were in the counties of Skåne, Kalmar or Västra Götaland. Natura 2000 land constitutes 12 per cent of Sweden's pastures, with the smallest shares located in the counties of Jönköping and Kronoberg (3 %) and the largest being in the counties of Västerbotten (27 %) and Norrbotten (54 %). There is also just over 20,000 hectares of arable land, located in nearly 1,700 fields within the Natura 2000 areas, and these are often in the vicinity of these meadows and pasturelands.

Table 23. The area of Natura 2000 land located on agricultural land.

Type of land	Hectares	Number of fields
meadow and semi-natural pasture	48,500	9,600
arable land	21,300	1,700

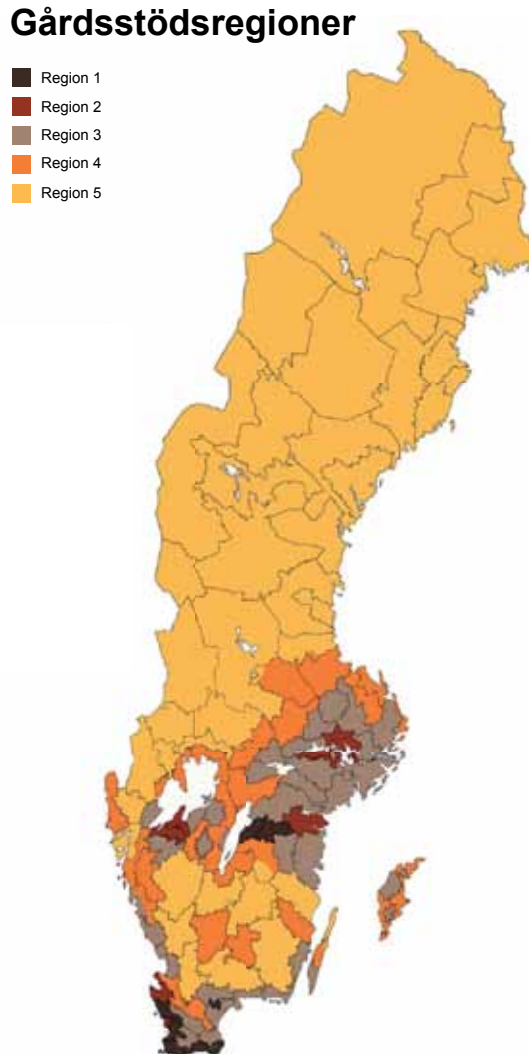
Note: GIS sample of Natura 2000 layers from the Swedish Board of Agriculture's block database and its support database.

Conclusion

It is probably only in the Natura 2000 areas with arable land that the greening requirement will have any significance. If the rules differ, the Natura 2000 rules shall apply. When the greening requirement is introduced, there will therefore be no change, in principle. In total, there are approximately 70,000 hectares of agricultural land, 20,000 of which consist of arable land, which may be affected by the greening conditions in the Natura 2000 areas.

7 Cost and benefit calculations based on greening

7.1 Agriculture in Sweden



Map 2. Sweden's five supported regions.

The prospects for farming in Sweden are highly varied. Firstly, there are five geographical regions in the country that vary mainly in a south-north direction. Southern Sweden belongs to the nemoral region whilst northern Sweden belongs to the northern boreal region (Appendix 12.1).

To begin with, there are large differences in soil, the plains being composed of sedimentary soil whereas the soil in the forest and semi-forest districts is predominantly composed of moraine.

This relationship is reflected in the map (Map 2), where the darker regions have the highest yield potential with that potential decreasing in the lighter regions.

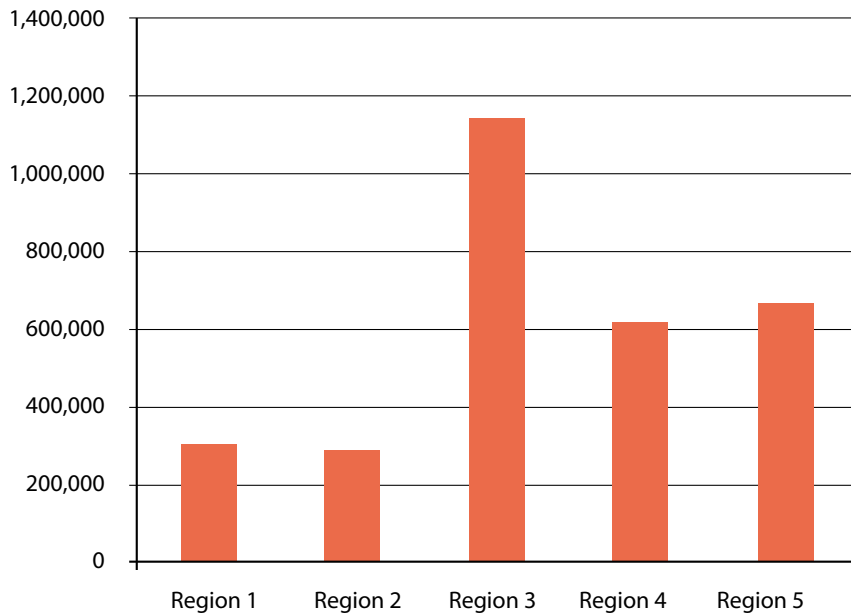


Figure 13. The supported regions arable land area, in hectares.

Source: Agricultural statistic JO10SM1101.

Figure 13 shows how many hectares of arable land there are in the respective regions. By combining the yield potential (Map 2) with the region's area (Figure 13) one can get an idea of the impact that greening requirements may have on farming operations, partly as far as agricultural profitability is concerned, (Figures 16 and 17) but also in terms of environmental impact (Figure 19).

7.2 How does greening impact on agriculture?

The extent to which the greening requirements can affect agriculture depends on the details stipulated in the greening conditions and how the focus on production looks for each individual farm in the country. It is the extent of this impact that the analysis will bring to light.

The number of farmers who may be affected

Almost 65,000 farmers in 2009 had more than four hectares of eligible agricultural land. Most of these farmers would be affected by one or more of the proposed greening requirements (Figure 14). According to the analysis, the crop diversification measure affects approximately 24,000 farmers. The environmental focus area measure affects more than 50,000 farmers and the permanent grassland measure, if only semi-natural pastures are included, affects approximately 36,000 farmers. If all the farmers who have grassland were to be included, then almost 60,000 would be affected. The analysis has been unable to project the percentage of farmers affected by more than one of the greening requirements. If the total number of measures is added to the impact of those three measures and then divided by the total amount of farms, an average of 1.7 greening measures per farm is achieved.

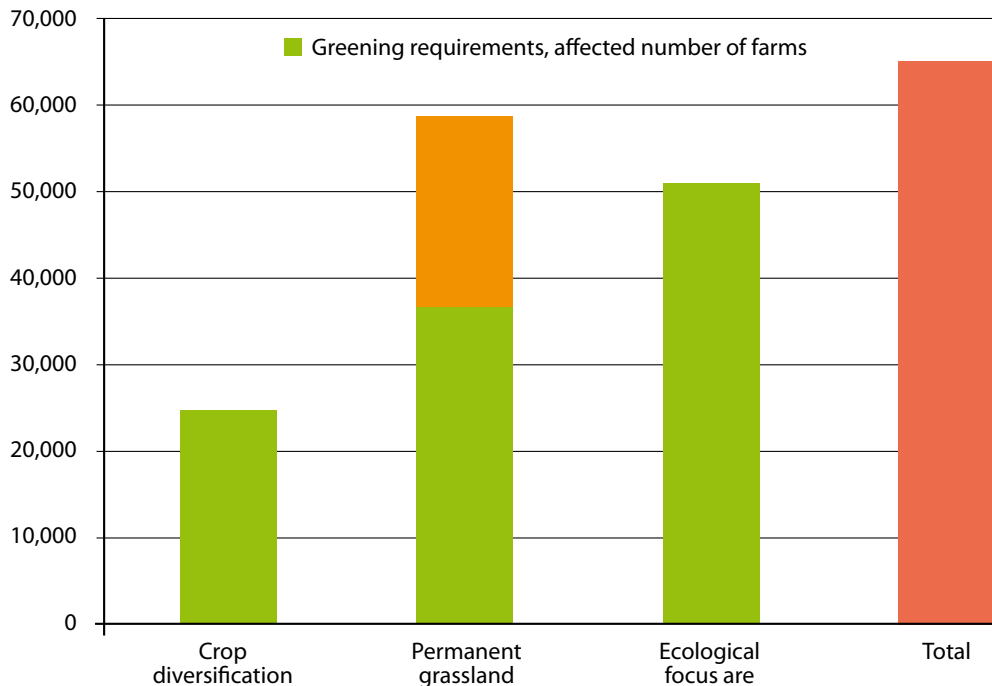


Figure 14. The number of farms in 2009 which would be affected by greening requirements. The red bar shows the total number of farms (> 4 hectares) that may be affected by one or more of the measures. The orange section in the bar for permanent grassland represents those farms in 2009 which had grassland on arable land, in addition to semi-natural pasture, which could possibly be required to preserve some of their grassland area as permanent grassland.

Source: The Swedish Board of Agriculture's support database.

The number of hectares which may be affected

The total area affected by the greening requirements will be approximately 370,000 hectares. This is almost 13 per cent of the total eligible agricultural area (Figure 15). Since the measures cannot overlap, this is, according to the model assumptions, the maximum area which may be affected.

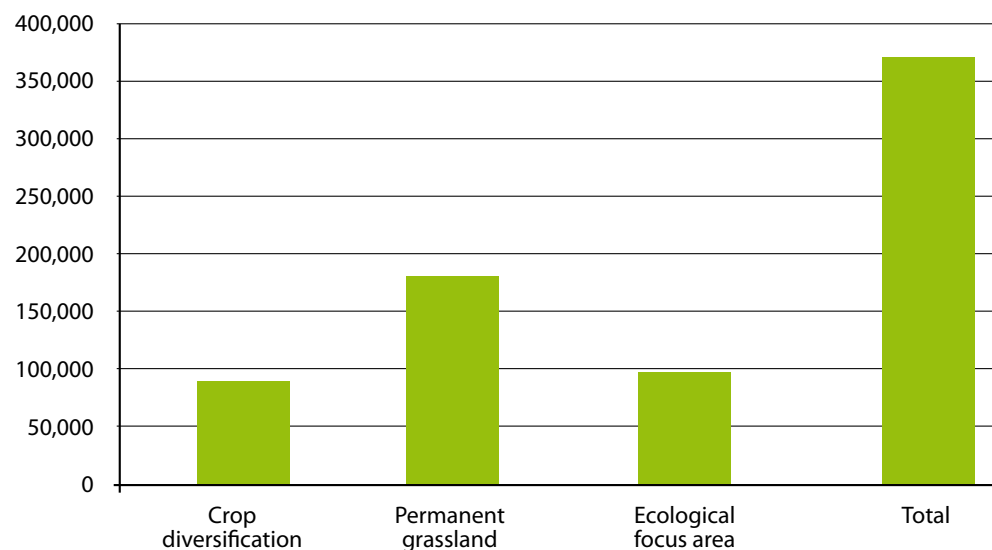


Figure 15. Agricultural land in hectares that may be affected by the greening requirements.

Source: The Swedish Board of Agriculture's support database.

7.3 What will be the costs for agriculture?

7.3.1 Conditions, assumptions and methodology

The calculated costs are the expected expenditure by the farmers to satisfy the conditions imposed by the greening measures. The costs are calculated for each support region and it is assumed that the farmers always choose the most economical alternative within the region.

Crop diversification

The demarcation in the calculation is the arable area planted with crop rotation crops, farms that have less than three crops as well as those with three crops where there is more than 70 % of one crop grown. The cost is calculated on the crop area in the region which, according to conditions, must rotate crop type (area * difference in gross margin (TB2) between those crops that must be rotated).

Permanent grassland

This demarcation applies only to leys and pastures on arable land. The semi-pastures remain where they are found and are not directly affected (however, Agri-Environmental Payments may need to be lowered). For arable land, the requirement applies to those extensive grasslands (predominantly pastures) that have been established for at least five years. The cost is calculated on the reference area where grassland has been left to grow for at least five years (area * difference in gross margin (TB2) between extensive and intensive ley).

Ecological focus areas

This demarcation means that all grasslands, except for ecological ones, are included but the permanent grasslands are not removed. Seven per cent (7 %) of the remaining area shall be an ecological focus area. The costs are calculated on that area where crops cannot be grown but which will instead be ecologically focused (area* average of the gross margin (TB2) for the farm's cereals or cereals/grassland cultivation).

7.3.2 Results

Calculated costs for Swedish agriculture

The cost for agriculture per greening measure and the total figure for Sweden are shown in Figure 16. The lowest costs are found for the “permanent grassland” measure, although this is the largest affected area. The reason for this is that these areas are mainly located in regions with lower yield. The potential alternative revenue will be correspondingly low. The highest costs are found for the “ecological focus area” measure. The reason for this is that this measure affects all arable land, even the most fertile which has very high alternative revenue. In total, the cost for the three greening measures is approximately SEK 500 million, including the potential cost of more than SEK 80 million for permanent grassland (the costs would arise only when a long-established pasture is used for crop rotation).

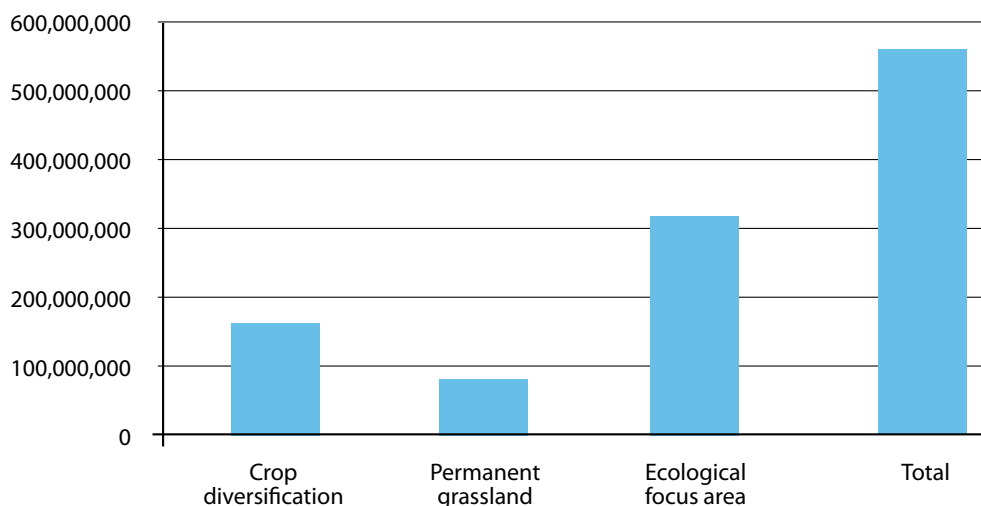


Figure 16. The total costs for agriculture, in SEK. Per measure and total for the greening initiative. Source: Own calculation.

The costs of greening are distributed throughout the entire agricultural area and the costs per hectare are shown in Figure 17 on the next page. It will of course follow the same pattern as Figure 16. The most expensive measure will be the “ecological focus areas” and the least expensive will be “permanent grassland”. Note however that these are average costs. The costs per hectare for an individual farmer may be significantly higher, particularly for the “ecological focus area” measure and for areas in Götaland’s southern plains. Furthermore, farmers may be affected by more than one measure.

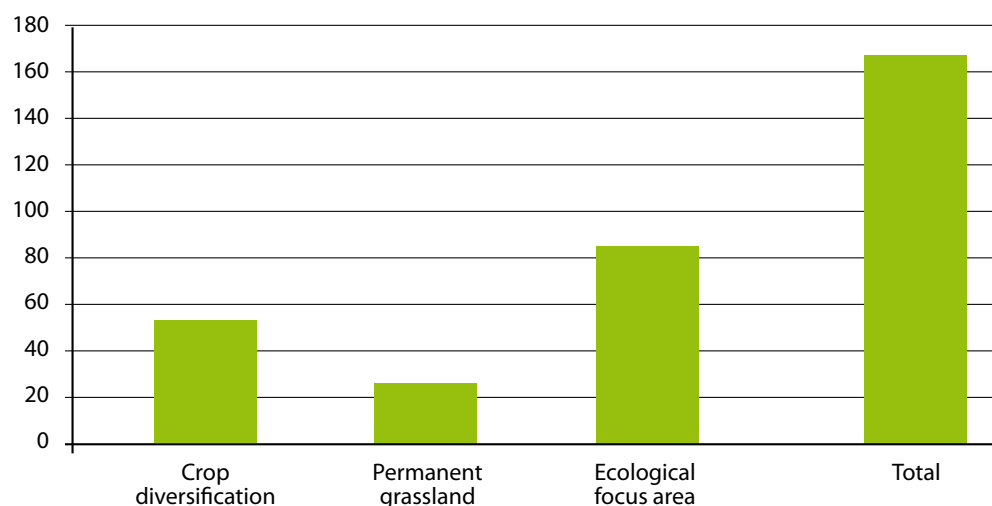


Figure 17. The calculated costs, SEK per hectare, distributed amongst the different greening measures and the total for Sweden. Source: Own calculation.

Distribution of income and greening support in direct payments

With greening, 30 per cent of the total Single Payment Scheme paid out per region is divided into greening support per hectare per region (Figure 18). Based on the Single Payment Scheme in 2011, the average figure for greening support would be

approximately SEK 500 per hectare with a variation of between SEK 350 and SEK 750 per hectare depending on the support region in which the land is situated. The highest amount is paid out in Götaland's southern plains and the lowest in Norrland. This means that Norrland and area 5, where greening measures will have a greater effect, will receive the lowest compensation for that effect, in the form of greening support.

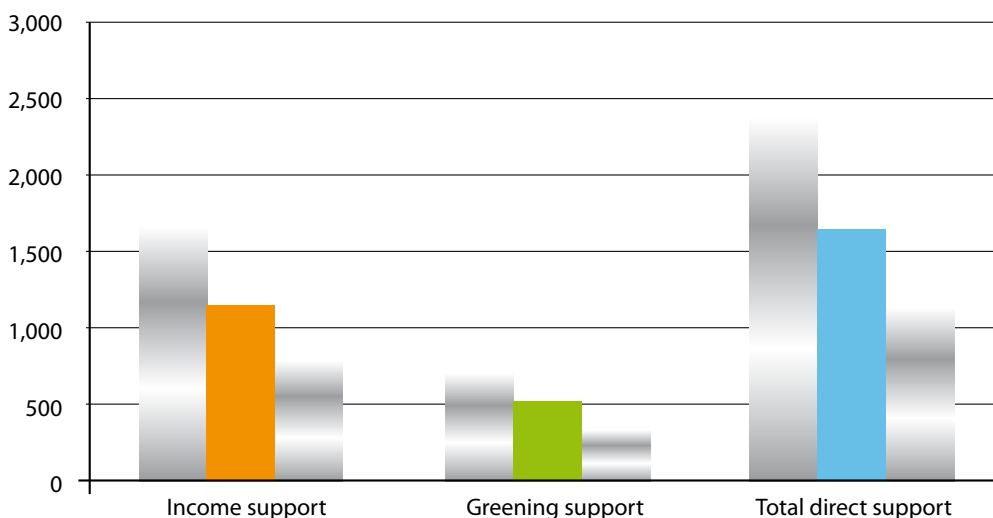


Figure 18. The approximate amount of support in SEK per hectare, in total and for basic support and greening support respectively. The variation (in grey) is between the five support regions with the highest figure in region 1 and the lowest in region 5. Source: The Swedish Board of Agriculture's support database and annual report 2011.

7.4 What are the environmental benefits?

To gain an understanding of how great the environmental impact could be, a simplified cost/benefit analysis has been conducted. **Measure:** the three greening measures, diversification, permanent grassland and ecological focus area.

Change: the areas which are affected by the respective measures, measured in hectares. **Scope:** How much and in what way production is changed.

Table 24. The proportion of affected areas and altered land use.

	Measure	Change	Scope
A	Diversification	% area	Pasture to oilseed/cereals
B	Permanent grassland	% area	% proportion of undisturbed grassland
C	Ecological focus areas	% area	7 % arable land minus fallow
TOTAL	Greening measure	% change	Total production affected

In order to obtain a value for the environmental benefit of the greening measures, the benefits used are those the Commission has linked to the respective greening measures (see page 9). **Environmental effect:** The expected predominant environmental impact for the respective measures. **Index:** the parameters by which the environmental effect is gauged. **Value:** the estimated value of the environmental

benefits, based on earlier political willingness to pay, cost of measures. (The use of plant protection products is based on the compensation to ecological farming). There is great potential for environmental benefits with permanent grassland, which is realized first when the land is more intensively cultivated.

Table 25. The estimated environmental effect and current environmental valuation.

	Environmental effect	Index	Value	Parameters
A	plant protection product	dose/ha	223 /dose	dose kg of active substance/ha
B	carbon dioxide emission	kg CO ₂ /ha	0.25 /kg	tonne CO ₂ /ha
C	nitrogen run-off	kg N/ha	119 /kg	kg/ha, ground run-off 12 kg/ha
C	phosphorus run-off	kg P/ha	1,125 /ha	kg/ha
SUM	environmental benefit	total index	SEK	Total environmental value of greening

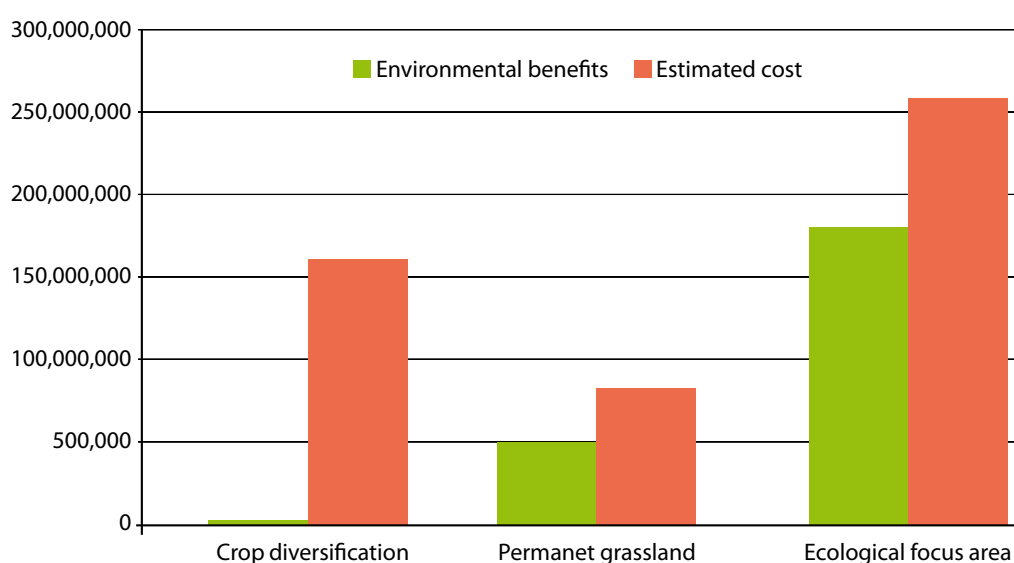


Figure 19. The estimated net environmental benefit against the cost of agriculture per measure. Note that biodiversity has not been taken into account. Source: Own calculation.

Figure 19 shows the estimated net environmental benefits alongside the estimated cost of the measures. This is implemented for the respective greening measures and within each of the five support regions. It is thus calculated from each farm but based on the conditions prevailing in each region. The chart shows the total figure for the country and the respective measures as well as the relationship between environmental benefits and the cost of measures (without accounting separately for differences between the regions). Note however that the environmental benefits of biodiversity could not be included.

The chart shows that the “ecological focus area” measure has the greatest projected environmental benefits, but also the highest cost. With the “crop diversification” measure, the analysis shows that the projected environmental benefits would be negligible. The measure which has been the most difficult to evaluate is “permanent grassland” as, due to time constraints, it has not been possible to obtain a reference area per farm. This too is also a potential environmental effect since the benefit comes from the farmer “not doing anything”. Preliminary calculations for “permanent grassland” are found in appendix 12.2.

8 What will be the effects of the proposal on Swedish agriculture?

8.1 A scenario for 2020

The scenario seeks to illustrate how the farmers, over a ten year period, could adapt to the conditions of greening. The analysis shows the farmers' adaptation to EU Agricultural Policy and the projected price and productivity development within the agricultural sector. Model results are comprised of the financial outcome and how those invested resources will be utilized and distributed, such as agricultural land and livestock. Based on these results, the different environmental effects of greening can be assessed and evaluated.

8.1.1 Conditions, assumptions and methodology

Presented below are preliminary data and the cursory results for two likely greening scenarios for Swedish agriculture up until 2020. The scenarios have been calculated using the data model SASM, Swedish Agricultural Sector Model (Apland & Jonasson, 1992).

The model technique, in brief, consists of subsidy calculations for different crops and livestock combined regionally to achieve the highest possible total margin. The model is built on the assumption that the farmers are fully informed about profitability relations between different branches of production and are continuously seeking to optimize profits.

The model results should not be interpreted as a prognosis but rather as an illustration of how the economic incentives may change. The benefit of model calculations is that one can simulate different scenarios for how the future might look and get an indication of how farmers might react if conditions for production change. It should be noted that the results are based on the model assumptions and that differences in results compared to other studies must be related to differences in the assumptions.

Since the model contains several simplifications, the model results will vary somewhat from the reality which is reflected in the statistics. This is dealt with by implementing the analysis in three steps. First, a base scenario is created which provides a model-based description of the starting position in 2010. Thereafter, a number of parameters (prices, productivity, etc.) in the model are changed to instead reflect a situation indicative of 2020. Finally, scenarios are created with projected political changes regarding greening, introduced in stages and compared to the scenario from 2020.

The greening measures and conditions apply at farm level whereas calculations with SASM can only be made at regional level. More detailed results on land use, livestock count, etc. are presented in a table summary. All prices and values reflect 2010 monetary values.

Price prognosis

The basis for the scenarios is the prognosis which OECD and FAO have created for agriculture in the world up until 2020, "Agricultural Outlook 2011". OECD

and FAO have, amongst other things, predicted the prices in the EU market for a number of agricultural products up until 2020. These prices have been adapted to the Swedish market by converting to SEK. The EU prices have been converted to Swedish market prices relative to how the Swedish prices have been relating to the EU average in recent years. Swedish prices have, where possible, been taken from the Swedish Board of Agriculture's official price statistics.

With regard to means of production, prognoses from FAO and OECD are less clear. However, there are a number of predictions that are closely linked to the means of production. Feedstuff price trends are based, for example, on the price prognoses for different vegetable-based products in the EU market. Another example is that wage growth is based on OECD's and FAO's prognosis for growth in BNP per capita. In the absence of guidance from Agricultural Outlook 2011, price trends are instead calculated on projections based on trends from the previous 10 years. However, price trends have been adjusted for the effects of exchange rate fluctuations.

Finally, the derived prices have then been converted to the 2010 monetary value and inflation rate which appear in the OECD and FAO prognosis. Historical prices have been recalculated with the current exchange rate, but therefore all predicted prices have been recalculated to the current exchange rate 9.00 SEK/Euro. The inflation rate is expected to be between one and two per cent per year and will total 21 per cent between 2010 and 2020.

Productivity development

Productivity development is reduced use of input per units of output. Within agriculture, however, development usually relates to the areas and number of live-stock. Productivity development will thus consist of the yield increases per hectare or per animal and the reduction of production means per hectare or per animal. Together this gives the productivity per unit of output.

8.2 The three greening measures

This scenario is designed to describe an outcome in 2020 with fully implemented greening. It should correspond to the most likely application of the Commission's greening proposal. Changes brought about by the requirements of greening are derived from comparisons with a base scenario (BAS 2020) which shows the 2020 outcome for Swedish agriculture with the current Agricultural Policy, but without the proposed requirements of greening.

Productivity development in the scenario has been adjusted to produce the production level that prevails today. A number of greening requirements for production similar to the Commission's proposals have been introduced. In brief, they are the following:

- Crop rotation should be varied and include at least three crops. No one crop may exceed 70 % of the area nor should one crop account for less than 5 %.
- Permanent grassland should be preserved as permanent grassland
- Ecological focus areas should be introduced by demarcating an area equivalent to 7 % of farmed arable land as an area of environmental orientation, for example fallow land, terraces, retention of landscape features and buffer zones

The proposed measures involve several problems in interpretation and application. There are also problems with reflecting the regulatory framework in the model as a great deal is done at farm or plot level whereas the model makes calculations based on a regional level. Since the directives are part of a package where there is a strong connection between the different parts, they have been treated simultaneously in one calculation.

8.2.1 Crop diversification

The requirement for crop diversification is difficult to interpret as the Commission's proposal does not even classify what exactly is to be considered a crop. Should the classification be set at individual cereals crops such as winter wheat, spring wheat, or simply as wheat? It creates several interpretation problems when the proposal is applied to a scenario that can only calculate at a regional level, but is intended to determine outcome and effect at farm level.

In the model calculation it has been interpreted that a crop is something which had a code in the support application. In this case the classification is winter wheat, spring wheat etc. By this interpretation, the directive has almost no influence on the crop producing farms. They have, in principle, always at least three different crops and rarely one crop that exceed 70 % of the total crop. Therefore, the directive can affect farms that produce milk, beef or sheep as these companies often have more than 70 per cent grassland.

Those that only have grassland are exempt from this directive since companies with only grassland or only fallow land are the exceptions. It is a little unclear what applies for those companies which only have grassland but who are forced to section off some fallow land as ecological focus area. If this fallow land is categorized as a new crop, then the farmer can be forced to reduce his grassland area to 70 % and introduce two new crops into the crop rotation. One way of avoiding this could be to have the grassland area as permanent grassland since it would then be exempt from the focus area requirements.

The measures are difficult to integrate correctly into the model calculations since they apply at a farm level whereas the model works at a regional level. In the model, it suffices that the region meets the requirements, which doesn't automatically mean that all individual companies do. It shows then that the better farming areas meet the requirements for crop diversification in the model calculations at a regional level. The calculations remain unaffected.

In forest districts and in northern Sweden however, the proportion of grassland is higher than 70 % at regional level, so there must be some adjustments made. One difficulty here is that the adjustment can go in two different directions. Companies that have mostly grassland but have little annual crops are forced either to reduce the grassland to 70 per cent or increase it to 100 per cent and possibly set it aside as long-established grassland. Here the choice will probably be different but it does not work in the model.

Due to this, a restriction has been entered in the model calculations that the proportion of grassland may not be higher than 70 per cent. Permanent grassland is thus exempt. Furthermore, there is a requirement for at least 10 per cent annual crops. This is thought to correspond to two different types of crops at 5 per cent

each. The decision to apply this requirement to cereals is due to the fact that cereals are closest to being part of the solution, from an economic point of view.

One possibility, that many will most likely take advantage of, is to have a forage crop that is not classified as grass or to harvest cereals as forage. This is something which might have been financially interesting even if this directive had not come about. It may become so if harvest increases are faster for grain crops than for roughage crops. This is one of the effects that arise when the production level is unchanged and on par with the prices projected in Outlook 2011.

8.2.2 Permanent grassland

The requirement that permanent grassland is to be preserved is difficult to model for a number of reasons. One reason is that it is unclear which land is to be classified as permanent grassland. It must relate to conditions in 2014. It is more or less given that semi-natural pastures are to be included. The issue is that of arable grassland. Can the operator themselves designate if they are permanent or will it be assessed historically, according to crop codes? In this case, will it be all the blocks that have had crop codes with any of the codes for grassland for the past five years? What is to be done with grassland that has been rotated then re-sown? Are they also considered permanent grassland? What do you do with blocks that have multiple plots where crop codes may be different? There are many questions to be answered.

In the model calculations the simple assumption is made that those fields classified as long-established grassland in the 2010 survey will be classified as permanent grassland. At least this much land must remain as long-established grassland when the measure is introduced. There is a total of 572,000 hectares which are mainly found in southern Sweden's forest districts.

For grassland, the assumption is that the land that was to be maintained in accordance with the calculations for 2010 will continue to be maintained. This is however an example of how the directive is easier to introduce in the model than in reality. The model allows no solution where the land is lost. In reality this should not work. Many marginal types of grassland are on short term leases. If the tenant does not want to continue maintaining them, they are returned to the owner who does not receive single farm payment. The directive then becomes ineffective.

One possibility would be to force the tenant to set aside another area as permanent grassland. Even this would be difficult however, since approximately every third company switches operators over a ten year period. Can the new operator of a property then be forced to have arable land as permanent grassland just because the previous operator had a lease which expired a long time ago? For this to work it requires special support rights that are linked to the land being permanent grassland. However, not even this is a guarantee that the land can be retained. These support rights can be sold to someone who is not seeking support for them.

A similar problem arises in relation to control of the area. It is common for parts of the land to be rejected on the grounds that there is no eligible area. It could be that there are too many trees or also that there is rock or an acidic area with vegetation that is not suitable for grazing. When this occurs it means that the reference area is wrong since it is no longer grassland (agricultural land). The question is

whether it is possible to adjust the area after the fact or, in one way or another, if the farmer can be required to arrange replacement land elsewhere. Whoever has had their land rejected and a reclaim that goes back ten years in time is not likely to be motivated to continue their pastoral activities on the same scale.

There are no greening requirements that can ensure that grassland is preserved or that a corresponding area is to be set aside as permanent grassland elsewhere in the region. If the land is unprofitable it becomes dormant. If production becomes unprofitable from some of the farm's grassland it is likely that that the same will occur at other grasslands in the region. In the model however the requirements for preserved grassland work and are thus added. There is no requirement regarding the maintenance of the land, which means in practice that even the model grasslands would be lost, in the long run, to overgrowth.

8.2.3 Ecological focus areas

The third requirement is that an area corresponding to 7 % of the farmed arable land shall be set aside as an ecological focus area. Even here it is unclear how this should be interpreted. To what extent will these areas be on arable land and to what extent can they be set in ditches, on non-arable outcrops, etc. In the model calculations it has been assumed that 7 % of all arable land which is not permanent grassland will be fallow land. The difficulty is that, even here, the calculation can just be made on a regional level where the full extent of the effect occurs only in the north (support region 1) and on the best arable land in the south (regional 9s). In other regions there is already enough land unprofitable to farm. However, problems can occur at a company level, especially for milk producers that have concentrated all their area on cultivating roughage. This is not reflected in the model solutions. If there was slightly better movement on agricultural land, without lock-in effects (see section 5.2.3) it would not cause problems in reality since those companies would acquire more land that they could lie fallow. This would be land that some other farmer had as fallow, exceeding the 7 % requirements for ecological focus areas.

8.2.4 Conclusion and summary of results

When the three greening measures have been entered into the model, the major impact is an increase in the number of livestock and this occurs mainly in south Sweden's forest districts. The model also shows an increase in cereals in the forest districts whilst there is a decrease in annual crops in the plains.

Outcome from SASM for fully implemented greening by 2020

	North Sweden	Forest districts	Northern plains	Southern plains
Ley/pastures	9.6	73.1	-1.4	-6.6
Winter cereals	2.8	12.3	1.1	-19.5
Spring cereals	3.5	19.4	-6.4	-9.2
Oilseeds	0.0	0.0	7.4	-3.6
Fallow/non-food	-15.9	-104.8	-0.8	38.9
Other crops	0.0	0.0	0.0	0.0
Total arable land	0.0	0.0	0.0	0.0
Semi-pastures	-0.6	8.9	0.0	0.0
Dairy cow	0.4	2.9	1.9	-0.2
Suckler cow	4.0	4.9	1.4	5,6

Note: Areas and livestock numbers, in thousands. The change is compared to Base 2020 (SASM calculated change in Sweden). North Sweden is an LFA area f, 1, 2a, 2b and 3. Forest districts are areas 4a, 4b, 5a, 5b and 5c. Northern plains (Svealand and northern Götaland) and southern plains (southern Götaland) are the largest white areas on the map (appendix 12.3).

The outcome is guided by three restrictions. The increase in cattle is mostly due to a great deal of arable land needing to be maintained as permanent grassland. Here it is quiet uncertain how large the reference area for permanent grassland actually is. In practise, it is also uncertain how intensively these permanent grasslands will be managed. For these reasons, the model results are most likely a significant overestimate of the effect on the number of livestock.

The increase in cereals in forest districts and northern Sweden is due to the requirement for crop diversification which, in the calculation, is applied to the ten per cent of the area in crop rotation which shall be annual crops. Here, you can suspect that the model overestimates the effect because at farm level there will be other customization options. Meanwhile, adjustments will be forced on individual farms but in different directions, which may not appear on the aggregate regional level. The decrease in production on the best land is due to the requirement that 7 % of the area should be an environmental focus area, which is applied as a fallow requirement in the calculation.

The model shows relatively small changes that in many cases can be less in reality. In some cases the effects may be reversed due to simplifications in the model and uncertainties in the proposal. There is considerable uncertainty in the model results which should be seen as an illustration of different contexts rather than a prognosis of effects.

9 Some alternative greening measures

The proposal submitted by the Commission on 12 October 2011 has endured sharp criticism from the member states. Even the European Parliament has been critical and intends to propose amendments in June 2012. There are many proposals and ideas for changes and additions to the Commission's proposal. Most are aimed at increased flexibility for member states, or operators, or expanded exemptions from the requirements. It is difficult to determine which will be seriously addressed in negotiations between member states and between the Council and the Parliament and it is currently impossible to analyse all the theoretically conceivable variants. Below are a few greening measures proposed in addition to those proposals submitted by the Commission in October 2011.

1. Broaden the area of exemption from the conditions of greening

All farmers that report more than a certain percentage of grassy land, ley, meadow, pasture and fallow, for example more than 80 per cent grassy area in their Single Payment Scheme application, would be automatically exempt from the obligatory measures. The proportion of grassy area may have to drop to 70 % to achieve a greater effect.

Advantages

In areas where there is most difficulty in finding alternatives to meet the crop rotation requirements, such a solution would be of great benefit. Environmental impacts would be largely the same, as the exemptions would only apply to companies that currently have a production with little environmental impact. It also means that farmers with extensive pastureland could avoid setting aside part of the area as fallow. Overall, this means that companies with a strong need for pasture (= many livestock) can continue with their livestock and thus keep pastures open. The proposal involves a major simplification for farmers as the number of farmers affected is reduced. Administration for the authorities is less affected as a complete system based on the Commission's proposal must be constructed anyway.

Disadvantages

There will be another category of companies which are treated differently. It also requires that the farmer is careful in his declaration of crop codes so that the agreed percentage of other crops is not exceeded.

2. Combine the requirements for permanent grassland and ecological focus areas

Existing greening requirements are replaced with a requirement that at least seven per cent of the company's area must consist of permanent grassland and/or ecological focus areas. The requirements for crop division are removed. The operator may then choose between an ecological focus area on at least 7 % of the arable area or permanent grassland on at least 7 % of the entire agricultural area (or a combination of the two).

Advantages

The plains are not completely unaffected and farms with arable grasslands and semi-natural pastures in forest districts receive better terms (the forest district is already green enough from the start). The proposal means a simplification for the farmers. Administration for the authorities is affected to some extent by the removal of the crop division requirement.

Disadvantages

One risk is that companies in intensive cultivation areas acquire land in less fertile areas, forest and semi-forest districts, if these are found in the region. The land there is often already fallow or grassland so the environmental impact is limited. Criticism may arise as ambition levels drop by, in effect, taking away two of the greening requirements for certain types of companies. Farms with a great deal of permanent grassland, more than seven per cent of the total agricultural land on the farm, avoid, in effect, other greening requirements. One possible way to gain acceptance of the proposal is to increase the requirement from 7 per cent to a somewhat higher level.

3. A combination of Rural Development Programmes and Greening

If a member state (MS) has the same environmental measures within their own Rural Development Programme as COM has on its greening list, then those farmers who participate in the Rural Development Programme would be exempt from the environmental measures in question. In Sweden there is support for grassland and protection zones which partly overlaps with the requirements COM has set for greening.

Advantages

All environmental measures can be grouped in Pillar 2, which is an advantage both for achieving the maximum environmental benefit and for reducing the administrative burden for both the farmers and the authorities. It would also be possible to link the active operator criterion to the measures in the Rural Development Programme, as the environmental measures within the Rural Development Programme require active action for eligibility.

Disadvantages

The measures in Pillar 1 and Pillar 2 are mixed together. For the greening part of Single Payment Scheme, the farmers must accept those terms for Pillar 2, which can be inconvenient. Tenants may find it hard to participate when they do not always know how long the land will be available to them. The sanctions incurred within the regulatory framework of Pillar 2 would also affect the support in Pillar 1. It would require that member states also provide the opportunity to take on the greening measures as per COM's proposal. The reason for this is that there may be farmers who, for some reason, cannot/do not want to adopt the environmental measures within the Rural Development Programme, and so an alternative option must be provided for these farmers. The compensation level for the measures in Pillar 2 may be reduced as the greening support indirectly reduces the operators' costs for fulfilling the terms of the Agri-Environmental Payments (as per the EU's rules for agricultural support).

The drawbacks can be mitigated through designing the greening requirements as a simple area requirement, for example, that at least 20 % of agricultural land is to be subject to a greening measure or an area-based Agri-Environmental Payment. In this way, the greening requirement is directed on this area and nothing else. The proposal calls for area-based Agri-Environmental Payments or area-based greening measures. Additional requirements would for instance be that two measures must be selected. Each MS has an arsenal of, for example, ten approved measures and Agri-Environmental Payments that the farmers can choose between.

4. Greening via measures in Pillar 2

The proposal is based on the farmers complying with greening by applying for certain Agri-Environmental Payments from the second pillar instead. This completely replaces the three greening measure requirements in pillar 1 which can be found in the proposed bill.

It may be an open question whether farmers can choose measures from a larger menu of Agri-Environmental Payments or if, within a certain region, there should be specific measures chosen in order for the greening requirements to be fulfilled. Some of the Agri-Environmental Payments may be common for the entire EU, such as ecological forms of production, permanent grassland on arable land or support for the Natura 2000 areas. Other measures may be more national in nature. Sweden, for example, could have more semi-natural pastures, fallow diversity, bird land, catch crops, (maybe a compensation for grassland), etc. The Agri-Environmental Payments in question must be area-based.

Advantages

Greening becomes better adapted to regional conditions and environmental problems, so that environmental benefits are greater and/or the socioeconomic cost of greening is lower.

Disadvantages

One risk is that many MS will have environmental measures available that cost the farmers less and have little environmental impact due to the political pressure to maintain its position as income provider. This can be reduced by the Commission approving the measures for a certain template. This probably risks reducing the compensation level for the Agri-Environmental Payments in question, in line with the greening support, since the greening support is, in effect, a compensation for the environmental measure(s) taken. Problems are likely to arise with respect to how cross compliance and the Agri-Environmental Payment rules will be controlled and distinguished from each other, and how any sanctions will be handled when support rules are linked in this way.

5. LFA- linkages

All farmers who are subject to the LFA would automatically be exempt from the requirements of greening.

Advantages

Farmers in the LFA-areas are those who can have most difficulty in meeting the crop rotation requirements as there are too few crops which can be grown. At

present, the farmers only contribute minimally to the negative environmental impact of agriculture as the crops are mostly comprised of hay and pasturage. Administration can be simplified in this area with regard to crop rotation requirements, since existing administration systems can be used.

Disadvantages

There can also be individual farmers within the LFA-area with more intensive production that do not need to take on measures in order to receive the greening part of the Single Payment Scheme. However, these companies as a rule can become caught up in the cross compliance requirements even today. Even with this option, different sanction systems must be linked together, and this increases administration. The proposed redefinition of the LFA means that virtually the whole of Sweden can become an LFA-area. Then the point of exemption for the LFA-area regarding greening would be redundant (if we do not want a total national exemption). In this case, there needs to be the option to choose another division, region, latitude, etc.

10 Summary of conclusions

In order to decide which greening requirements are effective, an exhaustive analysis of the production and administration costs for farmers, as well as the scope and effectiveness of the various environmental effects is required. The increased administrative costs for the authorities should also be borne in mind. A review of the proposed measures indicates that the environmental effects may be minor in relation to the costs incurred and the administrative consequences. This is the case if general greening requirements are chosen which are not suited to regional variations, or to the nature of the environmental problems, or to the conditions necessary for the operation of certain businesses.

In general in an efficient environmental compensation system, the design of the measures should be based on (aimed at) the nature of the local environmental problems; the measures should be prioritized and dimensioned in line with the environmental problem and the level of compensation should be related to the cost of the measures or the size of the environmental effect.

The three greening requirements analysed constitute the main thrust of the Commission's proposal. None of the three requirements that have been analysed in more depth are present in the current Swedish Rural Development Programme, nor can they be found in legislation. The reason for this is probably that the requirements were not previously considered to be sufficiently effective measures. If this is the case, it means that the farmers are being forced to implement measures at an unnecessarily high cost, which have little or no environmental effect. This may well affect the farmers' attitude to the system, cf. attitude investigations regarding cross compliance, (The Swedish Board of Agriculture's report 2011:5) but also the legitimacy of the measures in society as a whole. A positive approach from the farmers facilitates the implementation of the measures and brings about the desired positive effects.

If the farmers do not need to satisfy the requirements within all areas but, for example, two out of three instead, the already limited environmental effect will probably be reduced. At the same time, the costs of adaptation for the farms will be lower since many farms already satisfy some of the requirements. Increased administration and controls will therefore be the primary effects of the greening process. All of the greening requirements are intended to remedies environmental problems which are similar to those that can already be remedied through the Rural Development Programme. The principle that the member states should not pay for anything within the Rural Development Programme, which is required for Single Payment Scheme, a legal requirement or associated with cross compliance will probably still apply.

The greening requirement may involve the same type of measures as those funded by the national Rural Development Programme and this can mean that those measures have to be adapted. This will be difficult if, within the greening process, there is no clear connection between compensation and the measures undertaken. If measures which are effective within a nation's Rural Development Programme are removed, then this can have a derogatory environmental effect. Furthermore, this will probably mean that the administrative burden will be shifted to implement measures that are less effective. The Commission's current proposal is

thought to involve a relatively low level of environmental compensation, but this will ultimately depend on the details of the final design of the proposal.

It appears from the Commission's greening proposal requirements that the requirement for an ecological focus area will have the greatest environmental effect but also the greatest cost. The requirements for crop diversification and permanent grasslands seem to have mostly administrative consequences.

One way to create a more effective system would be to allow the member states to use greening in measures which they currently employ within their Rural Development Programme, where these measures are aimed at remedying environmental problems that are common throughout the EU. The latter could be an argument for measures within pillar one (Single Payment Scheme) also being adapted on a regional basis. The same requirements as those made within the Rural Development Programme could then be made within pillar one, which is reasonable if the measures are to be effective and competition-neutral between the member states. The most logical approach would be to move budget resources from pillar 1 to pillar 2, so that the environmental measures could be found in one location with a uniform design.

One alternative for the member state might also be to propose requirements which are as simple/lenient as possible, so as to minimize the costs of control and administration.

There are many potential problems associated with a historic reference period for permanent grasslands. The rule should be retained on a national level for those member states that fall under 95 per cent of the reference area. In most of the member states, the rules applicable for the maintenance of permanent grasslands work well. The original national reference areas for permanent grasslands can however be out-of-date; the member states therefore need to update these areas (see figure 8).

On the other hand, it seems unnecessary to change the rules for the reference area so that it applies to individual farms in the member states that satisfy, and have satisfied, the 95 per cent requirement for permanent grassland on a national level, as the national reference areas should mean that only those member states that lie under 95 per cent should be forced to undertake measures. For reference areas at farm level however, measures are required to be taken as soon as an individual farm drops under 95 per cent.

The advantage with national reference areas would be that the member states spare both the farmers and authorities from major administrative burdens in addition to the costs associated with paying agencies. However, the two other requirements of greening would still remain. Consequently, the problem remains that milk and meat farmers in forest districts could be forced to allocate fallow ground, or to cultivate additional crops, without this leading to any major environmental benefit.

It is unlikely that the Commission's proposal will be approved without any alterations, particularly as the European Parliament is involved in the decision-making process and many member states want to see changes. Possible changes are to increase the flexibility for farmers in respect of their choice of measures. More

exemptions for farmers and regions where the measures have no environmental effect have also been suggested, as has flexibility at member state level as far as application is concerned.

It is difficult to assess the effects of the type of changes mentioned above. The effects will be absolutely critical to the appearance of the details (which conditions or measures are to be added, how many need to be carried out, etc.). This means that each new proposal must be analysed based on its own specific design. Naturally, it is also important to analyse the environmental effects and costs for other EU countries, something which has not been possible in this study.

11 References

- Apland, J. and L. Jonasson, 1992. *The Conceptual Background and Structure of SASM: A Swedish Agricultural Sector Model*. Report 45. Swedish University of Agricultural Sciences, Department of Economics, Uppsala.
- The European Commission, 2011. Proposal for a Regulation of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy; Brussels.
- The Swedish Board of Agriculture, 2006. Miljöeffekter av träda och olika växtföljder [The environmental impact of fallow land and other crop rotations], The Swedish Board of Agriculture's report 2006:4. Jönköping.
- The Swedish Board of Agriculture, 2008. Miljöeffekter av slopad uttagsplikt [The environmental impact of abolished set-aside obligation]. The Swedish Board of Agriculture's report 2008:13. Jönköping.
- The Swedish Board of Agriculture, 2011. Miljöeffekter av tvärvillkoren [The environmental impact of cross compliance]. The Swedish Board of Agriculture's report 2011:5. Jönköping.
- OECD-FAO, 2011. *Agricultural Outlook 2011–2020*. Paris.
- Statistics Sweden's Statistical message, 2011a. Skörd av spannmål, trindsäd, oljeväxter, potatis och slåttervall [Harvests of cereals, dry pulses, oilseeds, potatoes and ley] 2010. JO16SM1101. Jönköping.
- Statistics Sweden's Statistical message, 2011b. Jordbruksmarkens användning [The use of agricultural land] 2010. JO10SM1101. Jönköping.

12 Appendices

12.1 Sweden's five geo-biological regions

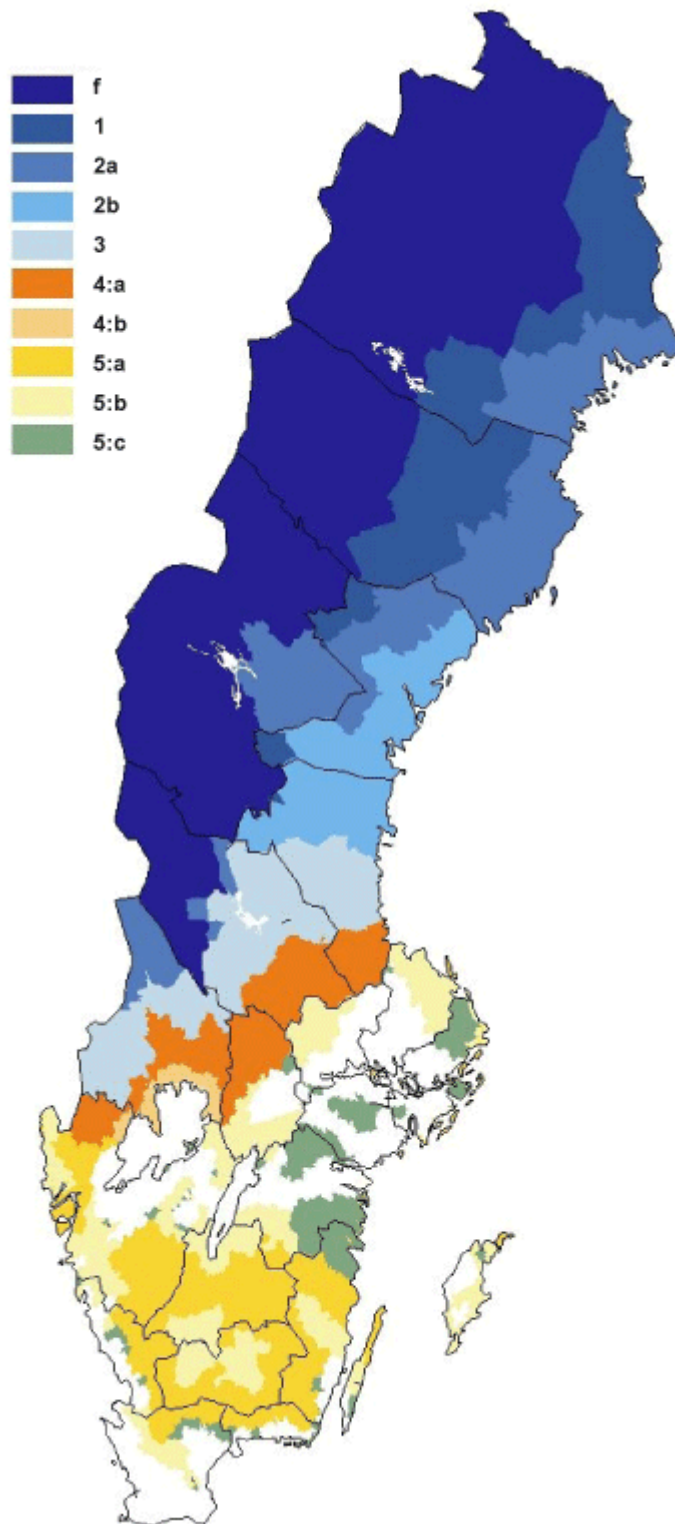


Source: The Swedish Environmental Protection Agency, Environmental data Portal

12.2 The data used regarding permanent grasslands in the cost/benefit analysis

Stöddata och officiell statistik för 2009		per hektar		(andel betesvall)
län	permanenta gräsmarker referensareal 2009	varav betesmarker	beräknade långliggande vallar	60 % andel av långliggande vall
Stockholm	23 330	10 915	12 415	7 449
Uppsala	26 127	15 789	10 338	6 203
Södermanland	28 682	17 429	11 253	6 752
Östergötland	62 018	41 879	20 139	12 083
Jönköping	60 429	40 278	20 151	12 091
Kronoberg	38 801	21 278	17 523	10 514
Kalmar	67 931	50 591	17 340	10 404
Gotland	23 070	16 055	7 015	4 209
Blekinge	17 231	11 126	6 105	3 663
Skåne	85 330	57 001	28 329	16 997
Halland	25 512	15 684	9 828	5 897
Västra Götaland	101 902	58 949	42 953	25 772
Värmland	24 148	6 363	17 785	10 671
Örebro	19 002	8 800	10 202	6 121
Västmanland	11 848	8 337	3 511	2 107
Dalarna	14 657	5 215	9 442	5 665
Gävleborg	16 440	4 136	12 304	7 382
Västernorrland	14 180	2 186	11 994	7 196
Jämtland	14 718	4 143	10 575	6 345
Västerbotten	16 961	1 542	15 419	9 252
Norrbottn	9 717	1 449	8 268	4 961
Sverige	702 036	399 145	302 891	181 735
Omräknat med andelar från länsstatistik till stödregioner				
(utifrån stöddata, officiell statistik och Jordbruksverkets rapport 2006:4)				
	maximala	vall på åker, hektar		
region	antalet gårdar	permanenta gräsmarker		
1	2 562	5 687		
2	2 702	8 112		
3	16 694	52 347		
4	13 314	44 401		
5	20 449	72 368		
Sverige	55 721	182 915		

12.3 The division of Sweden into LFA regions



Source: The Swedish Board of Agriculture.

The report can be ordered from

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