

Common Agricultural Policy: Cross-compliance and the Effects on Biodiversity

Results of a research project and recommendations for the
further development of the agricultural policy





Common Agricultural Policy: Cross-compliance and the Effects on Biodiversity

1. Introduction and aim of the project

In 2003 a fundamental remodelling of the Common Agricultural Policy (CAP) was begun in order to, in particular, reduce the agricultural production surpluses and simultaneously to maintain and improve the state of the environment. In this context the financial subsidies for the agricultural sector, previously coupled to the production, have been decoupled and replaced by payments for an agricultural use under safeguarding of certain environmental and animal protection standards by farmers, (Article 5 and Annex IV of Council Regulation

(EC) No 1782/2003). These so-called cross-compliance regulations led to a whole series of adaptation processes in the agricultural sector.

The aim of a comprehensive German research project was to study to what extent the existing cross-compliance regulations are suitable for, and contribute in practice to, guaranteeing the maintenance of biodiversity on farmland, and how the biodiversity of farmland develops under the actual cross-compliance regulations.



2. Material and methods

In order to study the effects of the cross-compliance regulations on the biodiversity of farmland, research (relevant literature, questioning of experts), analysis of existing data from long term trials and experimental studies were carried out and, in addition, the complex subject matter was discussed in national working groups and two international workshops.

The research and development project consisted in detail of the following modules:

- botanic and faunistic studies on sample areas in Northern, Eastern and Southern Germany
- avifaunistic studies on different types of farmland
- evaluation of long term studies of the vegetation of conservation management trial plots
- research into the development of grassland and set-aside areas, and the long term effects of different types of farming management on the agricultural biodiversity
- scientific inter-disciplinary exchange between experts on a national level in a concurrent project working group
- conduct of two international expert workshops (Ladenburg meetings of experts 2007 & 2008)

The project was conducted by a consortium of five institutes from Northern, Eastern and Southern Germany: BioConsult SH - Husum, Michael Otto Institute in NABU - Bergenhusen, Institute for Ecology and Nature Protection (IfÖN) - Eberswalde, Institute for Botany of Regensburg University and Institute for Agro-ecology and Biodiversity (IFAB) - Mannheim. The project was sponsored by the Federal Agency for Nature Conservation (BfN) with funds provided by the Federal Ministry for Nature Protection (BMU). (For the full German titles and contact details see 'Imprint' below)

A summary of the central, politically relevant results follows.

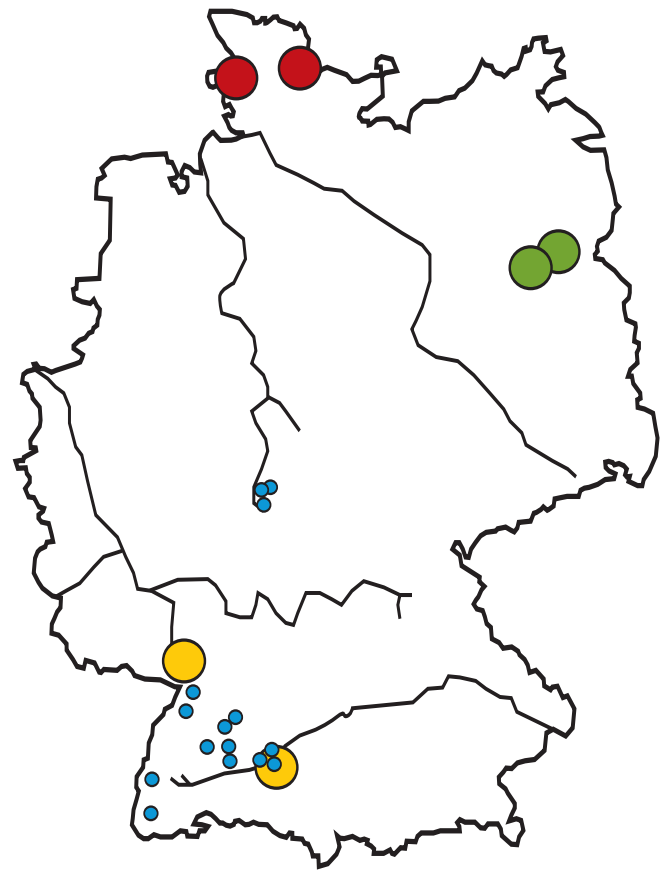


Fig. 1: Location of the study areas

- Northern Germany
Süderstapel
Lehmkuhlen
- Eastern Germany
Tuchen
Oderberg
- Southern Germany
Saalbachniederung
Federsee

- Location of the long term conservation management trial plots



3. Results

The results of the project prompt opinions on three subject complexes:

- Effects of the cross-compliance obligations for the Biodiversity of farmland
- Maintenance obligations for grassland and safeguarding of its ecological quality
- Safeguarding and maintenance of arable farmland with a high degree of biodiversity

These three subjects are presented as follows.

3.1 Minimum obligations for maintenance of good agricultural and ecological conditions (GAEC) of farmland

One main focus of the project was an examination of the set cross-compliance standard minimum obligations for safeguarding a good agricultural and ecological state of farmland areas¹. To this end comprehensive botanical, entomological and ornithological studies were carried out on sample sites in Northern, Eastern and Southern Germany. The studies included typically regional sites and very different area types (wet grassland, meagre and moderately nutrient-rich grassland and set-aside arable land with grassland characteristics) of average biodiversity (each of six parallel plots 50 m x 50 m in area, altogether six study sites each of approx. 2 ha) and six different types of land cultivation. In addition, extensive studies of the avifauna were carried out in the three different regions (each of about 100 ha in size). The following statements derive from the results of these field studies, as well as from the results of the evaluation of long term studies of the vegetation of conservation management plots:

1. On almost all grassland sites - with the exception of the meagre locations with a yield level of less than 30 dt/ha dry mass - the minimum laid-down maintenance measures, annual mulch, results tendentially in a decline in biodiversity (Fig. 2). This decline started as early as the first year of mulching. On the majority of the study plots the variety of insect life declined. The vegetation reacted with the formation of dominant growths of strongly competitive plant species, which suppress the weakly competitive, light-loving species. In the mid term, minimum maintenance leads to a sharp decline in the wildlife and plant groups studied.

2. The wide scale complete mulching of large areas prevents the development and settlement of biodiverse insect and spider populations, although it does not disadvantage most bird species. Bird and insect species populations rich in individuals can adjust when the area is not completely mulched, but when instead

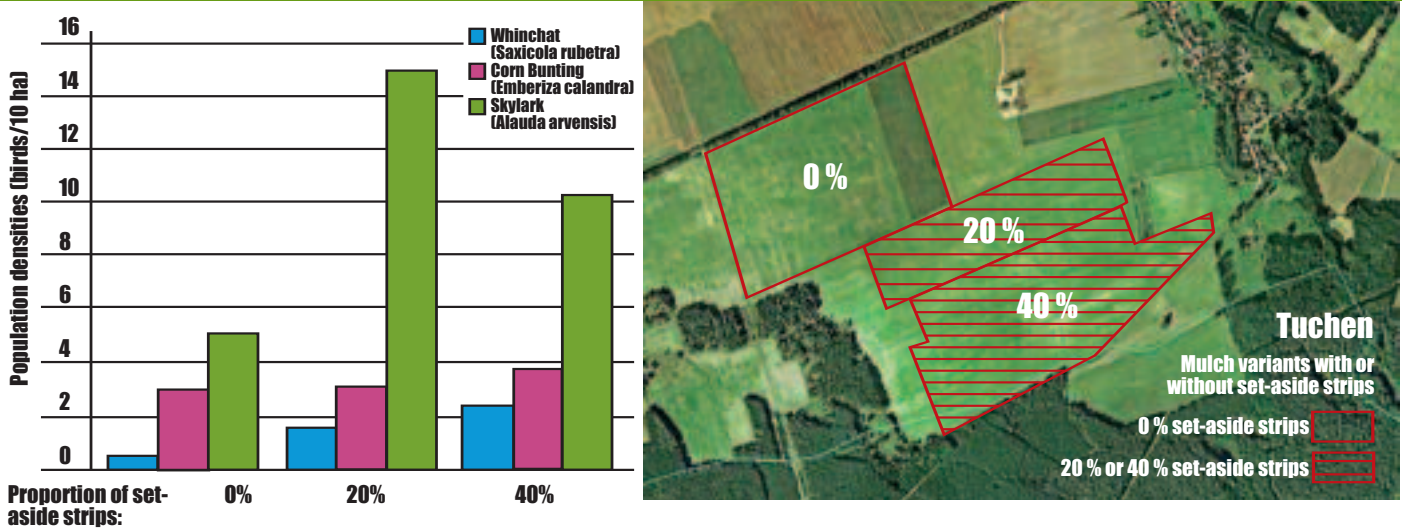
¹The cross-compliance regulations are based on Article 5 and Annex IV of Council Regulation (EC) No 1782/2003, and national implementation in Germany is regulated by the Direct Payment and Obligation Law. More information (in German) is to be found online at www.bmelv.de and in detail at http://www.bmelv.de/clin_045/nn_752304/SharedDocs/Gesetzestexte/D/Direktzahlungen-Verpflichtungengesetz.html or at http://www.bmelv.de/clin_045/nn_752304/SharedDocs/Gesetzestexte/D/Direktzahlungen-Verpflichtungenverordnung.html

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Fig. 2: Development of insect biodiversity in the herb layer on the study plots 2007 and 2008
relative changes in the number of species groups and the individual density of all individuals ≥ 5 mm



Fig. 3: Population densities of bird species of the open countryside on experimental strip mulch plots in Tuchen with dependence on the proportion of one year set-asides



one-year set-aside strips, distributed over the area, are left untended. On experimental mulched areas with untended strips, in comparison to completely mulched areas, higher population densities were recorded of Corn Bunting (*Emberiza calandra*) by a third, as well as Whinchat (*Saxicola rubetra*) and Skylark (*Alauda arvensis*) both twice to three times greater (Fig. 3). The number and individual densities of butterflies and grasshoppers also increased markedly.

3. Once-yearly mulching leads to an increase in plant species with rapid and high growth and a large seed mass, although the extent of the growth is dependent on the vegetation and the time of the mulch. This is demonstrated in the functional analysis of vegetation development of long term conservation management plots according to morphological characteristics. In this analysis particular attention was paid to the FFH habitats Semi-natural dry grasslands and scrubland facies on calcareous substrates (6210²), Species-rich *Nardus* grasslands (6230), *Molinia* meadows on calcareous, peaty or clayey-silt laden soils (6410), Hydrophilous tall herb fringe communities (6430), Lowland hay meadows (6510) and Mountain hay meadows (6520). In contrast, mowing and clearing favours slow and lower growing plant species with a small seed mass. The characteristic species profit correspondingly the most

from mowing and clearance, also in part from a second or a very early mulch (Fig. 4). The results of the evaluation show clearly that these are not exceptional phenomena but biological regularities.

In summary it can be determined that minimum care obligations (GAEC) imposed by the cross-compliance regulations suffice to keep the countryside open and retain the overall character of the landscape, but the biological diversity of the vegetation, as well as the spider and insect life studied, nevertheless decline. This is true of all sites with the exception of extremely meagre areas (e.g. oligotrophic sandy grassland). The bird life can in part make use of the attendant circumstances of minimum care obligations (ground litter = potential nest site) and are therefore less negatively affected than other wildlife guilds studied. In order to preserve the complete range of biodiversity, as a rule more comprehensive land management measures are required (e.g. annual or biannual mowing and clearing). In this respect however the sites studied differed very greatly from one another, so that uniform federal-wide land management guidelines are unrewarding. An adequate management of areas with a high degree of biodiversity must therefore be achieved site-specific.

²The numbers in brackets show the habitat type according to the FFH guidelines. These are in part protected habitat types.

Fig. 4: Development of the characteristic types of habitat on long term conservation management trial plots (Synthesis of changes in number of habitat types and vegetation cover across the whole study period - partly over 30 years)

Nature region / management trial plot	Semi-natural dry grasslands 6210			Species-rich <i>Nardus</i> grasslands 6230				Lowland hay meadows 6510				Mountain hay meadows 6520		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Set-aside/ undisturbed succession	→	↘	↘	↘	↘	→	↘		↘	↘	↘	↘	→	→
Mulch every 2 years		→	→			→			→	↘		↘	→	
One mulch late in the year (Sep/Oct)	→	→	→	→				→	→	↘		↘		
One mulch early in the year (end of June to mid-July)		↗	→		↗	→	→		→				→	→
Two mulches a year		↗	↗	↗					→			↘	→	
Mowing and clearance once a year	→		↗		↗	→	↗	↗	→	↘			↗	→

No. of the nature region / management trial plot: 1 - Schwäbische Alb - Filsenberg, 2 - Schwäbische Alb - Rangendingen, 3 - Schwäbische Alb - St. Johann, 4 - Hochschwarzwald - Bernau, 5 - Rhön - Landewiese, 6 - Rhön - Landewiese alt, 7 - Rhön - Stirnberg Borst, 8 - Oberschwäbisches Hügelland - Aulendorf, 9 - Schwarzwald - Ettenheim, 10 - Schwäbische Alb - Hepsisau, 11 - Schwäbische Alb - Melchingen, 12 - Tauberland - Oberstetten, 13 - Rhön - Grumbach, 14 - Rhön - Stirnberg

↗ general improvement → no significant change ↘ decline in characteristic habitat types



Case example ploughing-up of grassland: FFH area Obere Kyll and Kalkmulden in the Northern Eifel, Rhineland-Palatinate. From left to right: March, May and December 2007

3.2 Maintenance obligations for grassland and safeguarding of its ecological quality

According to the results of the research, and questioning of experts in different federal German states, not only has the grassland coverage decreased to a very great degree in some areas, but also its biodiversity quality. EU legislation stipulates that member states or regions must ensure that the values for the proportion of permanent grassland in relation to the complete area of farmland in use, as recorded in the reference year 2003, are preserved in principle. In Germany this regulation applies at regional (federal state) level. The federal government, in conjunction with the federal states, has implemented the guidelines in such a way that in the case of a decrease of up to 5 % in grassland in a single state (or more states), the farmer has no further obligations to meet (BMVEL 2006)³. In respect of the extent of grassland coverage, it can be seen that in the time-frame 2003-2008 the grassland coverage in some federal states has decreased by over 5 % (Schleswig-Holstein & Hamburg 7.54 %, Mecklenburg-Western Pomerania 5.61 %, Rhineland-Palatinate 5.16 %; source: BMELV 2008)⁴. This decrease in grassland lies over the permitted target figure and the states are therefore required to enact supplementary regulations in order to prevent a further decrease. Altogether,

the decrease in grassland for the whole of Germany in the time-frame 2003-2008 is some 3.4 % - a decrease from 5.02 Mn hectares to 4.82 Mn hectares. The loss due to ploughing-up frequently affects minimum yield areas, the use of which for arable crops had not previously been economic. Areas have been put under the plough e.g. in valleys and floodplains, in fenland and dry grassland with shallow or stony subsoil. These areas have not only great significance for the conservation of biological diversity, but also for the groundwater recharge and storage of new groundwater, the creation of cold and fresh air currents or as water retention areas.

The quality of species-rich grassland is not recorded statistically so that a quantitative statement on the development of species variety on grassland cannot be made. Many regions however report an increasingly intensive management of grassland. Such increasingly intensive management is legally acceptable as long as it is not carried out on specially protected areas, and reflects the technical possibilities which exist for optimising biomass production on grassland. Neither the agro-political instruments, nor the cross-compliance regulations contain guidelines or restrictions with regard to the intensity

³According to the Federal Ministry of Food, Agriculture and Consumer Protection (BMVEL) (2006) the following regulations apply: "a) If the respective currently recorded percentage of permanent grassland has decreased by less than 5 % of the base value (Note: grassland stock for the calendar years 2003 - 2005, refer there for a more detailed definition), the individual farmer has no obligation b) If on the other hand the respective currently recorded percentage of permanent grassland has decreased by least 5 % of the base value, the responsible federal state is obliged to enact a regulation which requires prior authorisation for ploughing of grassland."

⁴Figures according to statements by the BMVEL dated 3.11.2008 in answer to a parliamentary question to the Federal Chancellor's by Ms. Cornelia Behm MP for Brandenburg.

Tab. 1: Development of the percentage of permanent grassland of the declared total agricultural area. (Source: Federal Ministry of Food, Agriculture and Consumer Protection)

	Base value 2003		Value 2008		Development 2003 - 2008 change in the reference value
	Absolute (ha)	% of the whole area	Absolute (ha)	% of the whole area	
Brandenburg & Berlin	295,249	22.0%	282,865	21.2%	-3.48%
Baden-Württemberg	566,810	39.7%	548,714	38.7%	-2.52%
Bavaria	1,151,205	35.7%	1,121,930	35.0%	-1.94%
Hesse	299,457	36.9%	294,922	37.4%	1.32%
Mecklenburg-Western Pomerania	278,299	20.3%	260,692	19.2%	-5.61%
Lower Saxony & Bremen	763,890	29.0%	722,793	27.6%	-4.97%
North-Rhine Westphalia	462,643	29.9%	439,473	28.6%	-4.38%
Rhineland-Palatinate	250,720	37.6%	234,721	35.6%	-5.16%
Schleswig-Holstein & Hamburg	362,649	34.9%	334,577	32.3%	-7.54%
Saarland	41,522	51.1%	39,826	51.1%	-0.02%
Saxony	192,400	20.9%	188,590	20.7%	-1.23%
Saxony-Anhalt	178,918	14.8%	172,432	14.3%	-3.26%
Thuringia	180,728	22.4%	179,148	22.2%	-0.66%
Germany (total)	5,024,490	29.4%	4,820,682	28.4%	

Ploughing-up of grassland



of grassland management. There is no incentive to retain even a specific proportion of grassland areas as species-rich grassland.

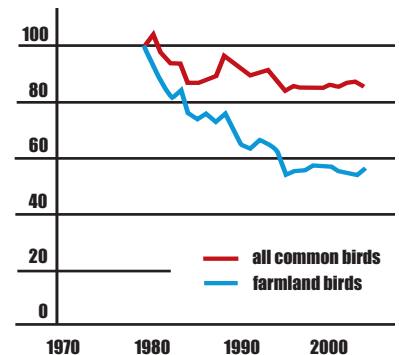
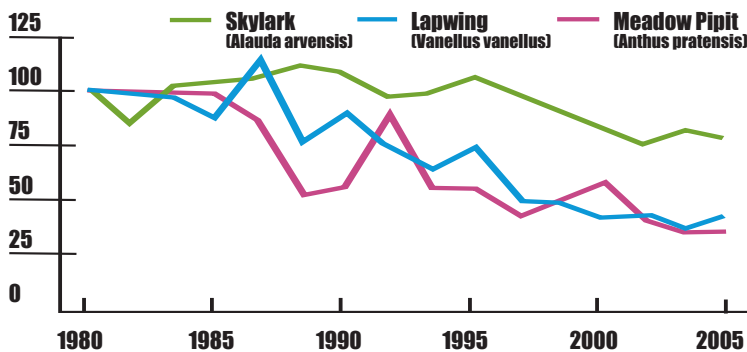
The cross-compliance regulations therefore neither prevent grassland being put under the plough, nor do they prevent an intensification of grassland use. They do not even stipulate the conservation of a minimal proportion of species-rich grass-

land. In this respect the cross-compliance obligations do not adequately contribute to the aim of halting and reversing the loss of biodiversity agreed in the framework of the biodiversity conference of EU member states. Since the agricultural reform in 2003 the loss of grassland has indeed accelerated and the biological quality further declined.

Intensification (earlier and more frequent mowing and use of liquid manure) leads to loss of such species-rich meadows



Fig. 5: Trend of the index values of typical farmland bird species (photo: Skylark) in Germany (left) and of farmland bird species/all common European birds (right) (Sudfeldt et al. 2007).



3.3 Safeguarding and maintenance of arable farmland with a high degree of biodiversity

The biodiversity on arable farmland has severely declined over the past decades due to intensification of land management. In the characteristic arable countryside, set-aside arable land assumed an ever-increasing role as a refuge for the typical farmland wildlife and plant species. A great variety of wildlife and plant species concentrated principally on these areas so that they came to represent the core elements for conservation of biodiversity in the typical arable countryside. This applies particularly to meagre soil (e.g. in large parts of eastern Germany). Following the abolition of the set-aside obligations these areas (not including areas with renewable raw material crops) have decreased very severely, from just 650.000 ha in 2007 by over the half to some 310.000 ha in 2008 (Federal Statistical Office Germany 2008). Cultivation of maize and cereals has increased. The result is likely to be a massive decline in biodiversity, as well as in populations of typical farmland species such as the red-listed Corn Bunting (*Emberiza calandra*), Grey Partridge (*Perdix perdix*), Quail (*Coturnix coturnix*) and European Brown Hare (*Lepus euro-*

paeus). Additionally, over the past few years an increasing number of agri-environmental measures and cooperation projects between, for example, conservationists and the hunting community were conducted on set-asides. These were designed, by the introduction of flowering plant strips and other greened areas, to enhance the biological diversity in the countryside to the benefit of a large variety of insects, birds and other wildlife. These cooperation projects have had the basis for their existence removed, as farmers are no longer legally required to set-aside farmland and therefore no longer provide land free of charge for ecological melioration projects.

The ecological function of set-aside areas is not explicitly part of the cross-compliance regulations, and biological diversity on farmland is not defined as a special aim in the agricultural reform. Nevertheless, the overall aim of the Common Agricultural Policy to preserve the environment in a good condition and improve its state has been clearly neglected in respect of arable farmland.

3.4 Results of the studies

The studies have demonstrated that the cross-compliance regulations are inadequate to ensure the maintenance of existing high biodiversity rates. This affects in particular the conservation of grassland with a high degree of biodiversity (e.g. on damp and dry sites and other minimal yield areas). Although the minimum care obligations (GAEC) keep the countryside open and retain the overall character of the landscape, they neither guarantee a good ecological state of conservation nor, due to the site-specific land management obligations, safeguard biodiversity.

In addition, the maintenance of biodiversity in those parts of the countryside used for arable farming is also not guaranteed, as a high degree of biological diversity has become concentrated on

set-aside areas as a final refuge. These sanctuaries of biological diversity have now in part either already disappeared or are acutely threatened because of the set-aside requirement was abolished. There is now no incentive for farmers to provide certain percentage of their farmland for the preservation of a high degree of biological diversity, which was the case when the set-aside obligations were still in force.

From the point of view of the institutes conducting the study, modifications and supplementary measures to existing agropolitical instruments are however available as a means to preserve biodiversity on farmland. These approaches towards a solution to the preservation of biodiversity are outlined below.

4. Approaches towards solutions for safeguarding biodiversity on farmland

In order to safeguard and preserve biodiversity on farmland the following modifications and additions to agro-political instruments are necessary:

1. Minimum obligations:

The regulations for maintaining a good agricultural and ecological condition of farmland (GAEC) should be changed. The new target should be that the minimum care obligation to carry out an annual mulching or mowing of grassland should

be restricted to 70 % of the area concerned (at present 100 %), whereby the 30 % of the area not mulched must be rotated annually. The same principle applies to areas to be mowed every two years. For areas smaller than 1 ha this requirement should be defined as a 'can not must' rule, so that set-aside strips need not be kept clear on all areas. This can guarantee the development of a site-specific high biological diversity. Such a regulation is advantageous also from the farmer's point of view because the minimum maintenance obligation can be fulfilled with less expenditure of time and mechanical effort.



8

One year unmown strips of 5-10 m in width promote across the parcel the biodiversity of extensive grassland and set-asides, as for example the populations of Corn Bunting (*Emberiza calandra*) (photo) and other birds of the open countryside (here the Tuchen trial plot, see also Fig 3).





Species-rich extensive grassland fulfils several functions (conservation of biodiversity, water, climate, identity etc. and provides habitats for a variety of flora and fauna (photo: Whinchat - Saxicola rubetra).

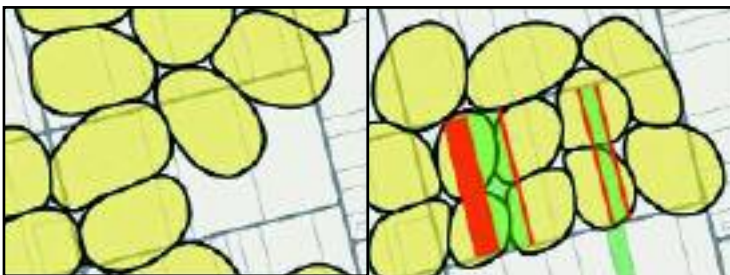
2. Requirement for approval for ploughing-up of grassland:

A general ban on ploughing-up of grassland should be introduced at farm level, as almost all areas well suited for arable farming are already used for this purpose and putting grassland under the plough often affects sensitive and ecologically vulnerable sites. To enforce this regulation an authorisation should be required for ploughing-up of grassland. This authorisation can be issued when the land to be ploughed possesses no particularly high degree of biodiversity and there are no

grounds anticipate problems arising in terms of water, soil and climate protection. In critical cases an authorisation to plough should not be approved. This form of regulation requires on the spot checks and controls. The proposed general ban on ploughing-up of grassland would not affect farmers, as the division of arable land and grassland would be laid down but further management of the area would not be restricted.

In order to prevent ploughing-up of grassland in particularly sensitive areas (which is the case at present) prior authorisation should generally be required in future.





- country road
- territory border of Skylark (*Alauda arvensis*)
- parcel border
- flower strips on arable land
- extensively utilised meadow

Klettgau

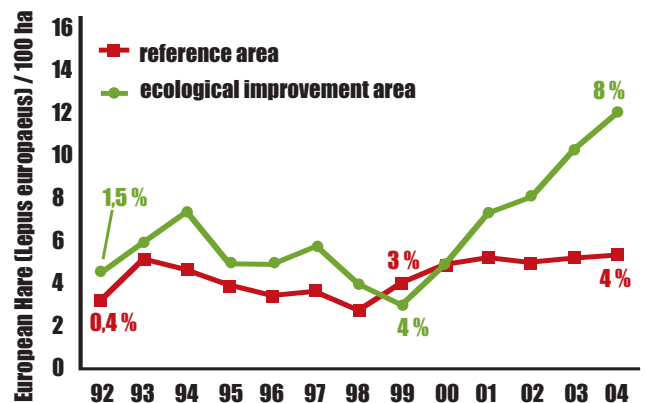


Fig. 6: With the help of 8 % ecological improvement areas on community level in Klettgau (Switzerland, Canton Schaffhausen), the populations of the Skylark, other open countryside birds and the European Hare were increased. Left, unimproved areas, right areas with improvement measures. (Diagrams: Jenny 2007 and Holzgang et al. 2005)

3. Definition of a minimum proportion of areas with ecological priority:

In order to guarantee biological diversity throughout the German countryside it is fundamental that a certain minimum proportion of priority ecological areas are allocated. This minimum proportion should be introduced compulsorily at farm level and should consist of 10 % of the available farmland (10 % of arable land and 10 % of grassland; for a basis see detailed studies by Oppermann et al. 2008). Such a minimum obligation should not impose specific types of management or detailed aims for maintaining a good ecological state, but only the allocation of such areas and the exclusion of negative management measures. Management of these priority areas on every farm that do not hinder the development of a good ecological state is indeed desired; a set-aside is neither intended nor necessary. The necessary appropriate nature protection management should be supported by agro-environmental measures or contract conservation. An appro-

priate financial incentive for specific management standards can guarantee that in every part of the countryside and on every farm receiving a direct payment, can be developed a minimum proportion of ecologically valuable arable land and grassland and management of low yield sites serving to preserve biodiversity, while at the same time remaining economically attractive. As almost every farm has low yield areas, except for those in prime arable regions, an adequate ecological management of priority areas will impose no basic restrictions on land management for the majority of farms. This is the case particularly on farms in mountainous areas, in fenland or low moor, or in lowlands characterised by grassland.

These three supplementary regulations to the cross-compliance obligations would be an important step towards making biodiversity a fundamental part of agricultural policy.



5. Summary and prospects

The results of the Research & Development project “Common Agricultural Policy: Cross-compliance and Effects on Biodiversity” show that the cross-compliance regulations are inadequate to maintain biodiversity in Germany’s agricultural countryside. This applies to the minimum obligations, the maintenance of quantity and quality of grassland and the safeguarding of biodiversity on arable land. It is therefore proposed to amend the cross-compliance regulations governing direct payments. In particular it is proposed that farms facilitate the development of biological diversity on at least 10 % of the farmland area (minimum percentage of ecological priority areas on every farm), and that the implementation of adequate farm management measures is supported by corresponding funding. It is further proposed that the cross-compliance

regulations are extended to include a ban on ploughing-up of grassland and to modify the all-embracing minimum maintenance requirement (leaving undisturbed set-aside strips). At the same time it is suggested that the potential for financially rewarding adequate farm management should be expanded. This could strengthen biological diversity on a federal German and, where applicable, on a Europe-wide scale. The new regulations should be applied as broadly as possible in order to integrate the maintenance of biodiversity as a management aim on the vast majority of farms, thereby safeguarding biodiversity in all types of natural and cultivated countryside in Germany. It is important in this context that the cross-compliance regulations and possible environmental farming measures are not mutually exclusive but are integrated.





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Institut für Agrarökologie und Biodiversität (IFAB)
Contacts: Dr. Marion Beil, Jessica Gelhausen,
Dr. Rainer Oppermann; Tel. 0049-621-3 28 87 90,
mail@ifab-mannheim.de, www.ifab-mannheim.de



Institut für Ökologie und Naturschutz (IFÖN)
Contacts: Dr. Ingo Brunk, Silke Haack, Christian Unsel
Tel. 0049-30-28 49 84-18 00, ifoen@ifoen.de
www.ifoen.de



Michael-Otto-Institut im NABU
Contacts: Angela Helmecke,
Dr. Hermann Hötker, Dr. Leonid Rasran
Tel. 0049-48 85-5 70, Hermann.Hoetker@NABU.de
www.Bergenhusen.NABU.de



BioConsult SH
Contacts: Jan Blew, Norbert Voigt
Tel. 0049-48 41-6 63 29 10, j.blew@bioconsult-sh.de
www.bioconsult-sh.de



Universität Regensburg, Lehrstuhl Prof. Dr. Poschlod
Contacts: Philipp Kollmar, Prof. Dr. Peter Poschlod,
Dr. Christine Römermann
Tel. 0049-941-9 43 31 07, peter.poschlod@biologie.uni-regensburg.de
www.biologie.uni-regensburg.de/Botanik/Poschlod/index

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