

Analysis of grassland conversion into arable land in Northwest Germany

Bernhard Osterburg, Birgit Laggner, Heike Nitsch, Norbert Röder, Wolfgang Roggendorf
vTI, Institute of Rural Studies; bernhard.osterburg@vti.bund.de

Introduction

Conversion of grassland to arable land is accompanied by a loss of ecological functions in terms of nature, soil, water and climate protection.

Between 1990 and 2006, the grassland area in Germany decreased at an annual rate of -0.8 %. These net figures at national level mask regional variations and do not give information about the characteristics of affected land and the types of farms involved in grassland conversion.

Data sources and methods

- Spatially disaggregated parcel data of the Integrated Administration and Control System (IACS) of four German Laender
- Protected areas according to nature- and water- related legislation, soil and slope information, administrative boundaries
- Analysis of land use change and grassland losses between 2005 and 2007 in a Geographic Information System
- Analysis of legislation implemented to limit losses of grassland

Results

Conversion of grassland to arable land

- 2.5% of grassland was converted into arable land between 2005 - 2007
- Grassland conversion could be observed even within environmentally sensitive areas, such as drinking water protection areas, flood plains, valuable grassland habitats and peatland (see fig. 1)

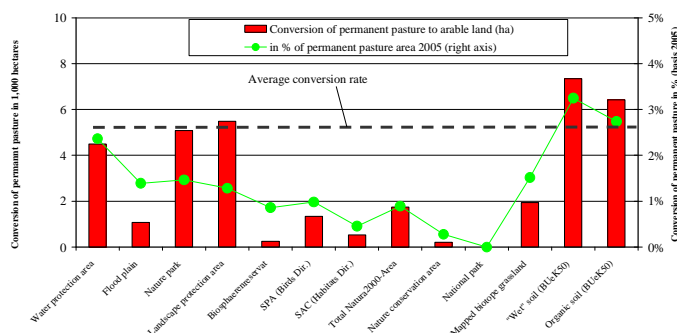


Figure 1: Conversion of permanent grassland into arable land in protected areas and specific soil classes. Source: Own presentation based on Osterburg et al, 2009

Important actors in grassland conversion

- More intensive dairy farms and farms involved in biogas production are the most important actors in grassland conversion.
- Also, farm structural change leads to higher conversion rates when grassland is rented to other farms (see table 1)

	number of farms	share of total grassland	share of total grassland loss	grassland loss in %*
without crops for biogas production				
Farms without livestock	5 371	3.5%	2.7%	2.7% a
... with non-grazing livestock	3 418	1.6%	2.5%	5.3% b
... with grazing livestock, no dairy	15 718	25.9%	11.3%	1.5% c
... with dairy (extensive)	4 553	26.2%	19.1%	2.5% d
... with dairy (intensive)	7 371	32.5%	40.2%	4.3% e
with crops for biogas production				
Farms without livestock	591	0.5%	1.8%	12.5% f
... with non-grazing livestock	766	0.4%	1.6%	12.8% f
... with grazing livestock, no dairy	1 145	2.1%	4.5%	7.7% g
... with dairy (extensive)	725	3.9%	8.3%	7.4% h
... with dairy (intensive)	901	3.4%	7.9%	7.9% h
total	40 559	100.0%	100.0%	3.5%

Table 1: Grassland conversion into arable land in Lower Saxony between 2005 and 2007 in different farm types. Source: Osterburg (2010).

*) Same letters indicate that the difference in the respective distribution is not significant ($P > 0.05$, Wilcoxon rank sum test). **) Dairy extensive: < 1.8 live-stock units (LU) per hectare main forage area (MFA), Dairy extensive: > 1.8 LU/ha MFA.

Regulations for grassland protection

- The German Cross Compliance rules that restrictions for grassland conversion at farm level are only implemented, if the ratio of "permanent pasture" in relation to the total agricultural area at Laender level drops by more than 5%, have been an incentive for a rapid conversion of grassland.
- Farm specific rules turn out to be less restrictive compared to parcel-specific requirements to maintain permanent grassland, as they still allow further spatial segregation of grassland and farmers quitting their business can convert grassland and rent it as arable land to other farms.
- Vulnerable areas are not consistently protected against grassland conversion.

Conclusions

- Cross Compliance rules should be more stringent concerning grassland protection on ecologically sensitive sites.
- Legal standards of nature and water protection could be strengthened.
- But, given the higher economic value of arable land, grassland conservation should not be an area-wide imperative