

High Nature Value Farmland in Central Europe

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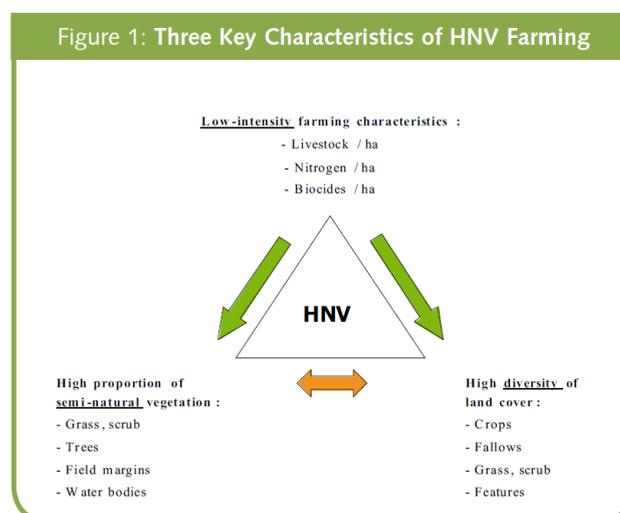
Summary

The conservation and maintenance of biodiversity on agriculturally used areas has become a special concern of agrarian and environmental policy in Europe. High Nature Value Farmland (HNVF) has been implemented as an important indicator referencing for biodiversity in cultivated landscapes. Species-rich semi-natural grassland seems to be the most important source of HNVF but is highly endangered by both intensification and abandonment all over Europe. Semi-natural grassland is the only existing natural source that also can provide seed and plant material for restoration and reintroduction of High Nature Value Farmland. The concept of HNVF has triggered a process in the political discussion. The values of certain low input/low output farming systems have moved into the public view and the concept of ecosystem services focuses on additional societal benefits of agriculture besides the agricultural production. In this context High Nature Value Farmland stands for valuable nature and bio-diversity.

Keywords: semi-natural grassland, biodiversity, ecological restoration

Relevance and definition of High Nature Value Farmland (HNVF)

Conservation of biodiversity on agricultural land is a core objective of the Pan-European Biodiversity and Landscape Strategy (PEBLDS), the Bern Convention, the Rio de Janeiro Convention, the European Landscape Convention, and at EU level, the Habitats and Birds Directives and Rural Development Policy (EU Strategic Guidelines for Rural Development, Programming Period 2007-2013). Since 2000 the agro-environmental indicator “High Nature Value Farmland” (HNVF) has been discussed and developed at the European scale, centred on the IRENA –Indicator No. 26 (EEA, 2006). Originally developed as an indicator referencing for the importance of certain farming practices for biodiversity in cultivated landscapes, it gained importance and relevance in 2005 as it was selected as an indicator for the Common Monitoring and Evaluation Framework (CMEF, 2006) of Rural Development Programmes (RDPS) according to Council Regulation (EC) No 1698/2005.



Member states are obliged to report on the national area and maintenance of HNV farming and forestry for the mid-term evaluation in 2010 as well as to the *ex-post* evaluation of the Rural Development Programmes in 2015 (EC, 2006). According to the CMEF, HNVF is used as a “Baseline Indicator” for reference at the beginning of the RDPs, followed by an interpretation as “impact indicator” and as “result indicator” (Table 1).

Table 1: HNVF indicators according CMEF, 2006

Indicator identifier	Indicator description	measurement
Baseline indicator 18	Biodiversity: high nature value farmland and forestry	UAA of HNV Farmland (ha)
Result indicator 6	Area under successful land management contributing to biodiversity and HNV farming/forestry	Total area of HNV farming and forestry under successful land management (ha)
Impact indicator 5	Maintenance of HNV farmland and forestry	Changes in HNV farmland and forestry defined in terms of quantitative and qualitative changes

Proposals for defining and mapping High Nature Value Farmland have been developed by the European Environment Agency (EEA, 2005) together with the Joint Research Centre (JRC) since 2003 (Andersen *et al.*, 2004; EEA, 2005; JRC/EEA, 2006). In 2007 a report and separate guidance document to the Member States on the application of the HNVF indicator was published on behalf of the European Commission, DG Agriculture (IEEP, 2007; EC, 2009). Following this document, the core of the HNVF concept is the link from management practices to biodiversity dependent on farmland habitats. Thus, the concept of HNVF can be seen as a two-fold approach: looking on the one hand to the state of the resource in terms of quantity and quality, and on the other hand to the driving forces, i.e. management practices that produce, influence and maintain the natural values.

The resource HNVF

From the ecological point of view, High Nature Value Farmland is a concept that may lead the focus on certain farmed areas, and which tend to be marginal in terms of their agronomic production capacity and to be outside of market-oriented policy interests. It raises the awareness to large areas of Europe used as extensive grassland, or in a diverse mosaic of small landscape elements and low intensity use. HNVF is defined as follows:

“High Nature Value farmland comprises those areas in Europe where agriculture is a major (usually the dominant) land use and

- where that agriculture supports or is associated with either a high species and habitat diversity, or
- the presence of species of European, and/or national, and/or regional conservation concern,
- or both.”

Those areas have high overall biodiversity and landscape value and are dependent on regular use, often in a traditional way. They have been seen as the ecological backbone of European cultural landscapes. Three types of HNVF are recognized (Andersen *et al.*, 2004; IEEP, 2007; EC, 2009):

- Type 1 – Farmland with a high proportion of semi-natural vegetation.
- Type 2 – Farmland with a mosaic of low intensity agriculture and natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, small rivers etc.
- Type 3 – Farmland supporting rare species or a high proportion of European or world populations.

However, because of their low agro-economic value, those farming systems resp. farmlands are prone to abandonment or - whenever possible – intensification for example, through irrigation and fertilizing. Both development paths would endanger their natural values. The concept of HNMF pulls those systems from behind the curtain and seeks to make them a topic in public discussion. The future agricultural policy is asked to pay attention to those extensive, large, and potentially threatened farming systems and areas. Policy should support agriculture in a way that those farming systems can be kept up and natural values can be maintained, even in a competitive agricultural surrounding.

Even there is still some contradiction in the final definition of HNMF there is no doubt that semi-natural grassland is one of its most important sources (EEA, 2005; BARTEL et al., 2010). Semi-natural grasslands are less productive than intensively used grassland types which often receive high loads of organic and/or mineral fertilisers and are cut and/or grazed at a high frequency. Several studies indicate that semi-natural grasslands provide a high level of diversity both of fauna and flora and are therefore of great importance in terms of biodiversity. It is evident that semi-natural grasslands are an important and essential source of biodiversity. Organisms associated with semi-natural grasslands include almost every group of species, mainly vascular plants, insects, birds, lichens and fungi (Grabherr and Reiter, 1995). In respect of vascular plants, semi-natural grasslands can be extremely rich in species and include a large number of Red List species (Bohner et al., 2002; Pötsch and Blaschka, 2003; Öster, 2006).

The total grassland area in the EU declined by nearly 13 % from 1990 to 2003 (FAO, 2006). There is an increasing pressure on more productive grassland by conversion to arable land driven by higher profitability of arable farming and by the rising production of biofuels. On the other hand, extensively used grasslands are endangered both by abandonment and afforestation. According to Annex 1 of the Habitats Directive (EEC, 1992) the most important types of grasslands in Europe are as follows:

- Natural grasslands including nine grassland habitats that thrive without direct human intervention and are limited by specific ecological-, soil- and climatic conditions, e.g. Alpine grasslands.
- Semi-natural dry grasslands and scrubland facies, including 12 grasslands habitats that are to some extent managed, ranging from Mediterranean grasslands to Pannonian steppe and Fenno-Scandinavian grasslands.
- Sclerophyllous grazed forests with only one grassland habitat known in Portugal as montado and in Spain as dehesas – semi-natural savannah-like open woodlands with scattered oak trees and extensive grazed grasslands.
- • Semi-natural tall-herb humid meadows represented by six grassland habitats that have some soil water presence.
- Mesophile grasslands with three grassland habitats all comprising meadows.

Currently, 76% of grasslands of European interest are assessed as being in an unfavourable conservation status (EU 2010 Biodiversity Baseline Report). Therefore, the protection of

natural grasslands containing regional sub-species and ecotypes in region-specific compositions is of top priority in nature conservation. To reach this goal, not only the high ecological and aesthetic values of species-rich grasslands should be acknowledged but also their potential as donor sites for regional seed mixtures. Natural and semi-natural grasslands can be used in ecological restoration, thereby contributing to the preservation and enhancement of regional biodiversity (Krautzer et al., 2011). As a main target, the project “Semi-natural Grassland as a Source of Biodiversity Improvement” (SALVERE) intends to contribute to the practical realisation of EU regulations regarding biodiversity by utilising semi-natural grasslands as potential donor sites of seed to be used for the establishment of HNVF areas (Scotton, 2009; SALVERE, 2011).

Since the 1990s, different methods for ecological restoration have been used successfully by several working groups all over Europe (for reviews see Walker et al., 2004; Kirmer and Tischew, 2006; Krautzer and Wittmann, 2006; Klimkowska et al., 2007; Krautzer and Pötsch, 2009; Kiehl et al., 2010,). Practically relevant restoration of semi-natural grassland has been successfully realised on the most differing sites for many years in different European countries (examples given in Kirmer and Tischew, 2006; Donath et al., 2007). The selection of a suitable method depends on the given aim (e.g. erosion prevention, development of extensive vegetation, compensation measures) and the site conditions of the receptor site. In general, the restoration method to be selected is that which enables the desired target community to can be developed with the least possible expenditure. Availability, practicability, costs, possible subsequent use and maintenance have to be taken into account. Fundamentally, the method should be adapted to the particular areas of origin to take into account climatic conditions and also the life cycle of insects, which are adapted to the regional blossoming period and special content material of plants local to an area. A lot of successful techniques and strategies for the establishment of semi-natural grassland have been developed during the last years. Semi-natural, species-rich grasslands are generally created over a very long period through extensive forms of use. Achieving the strived-for target state is therefore only possible through appropriately adapted utilization over a long period, sometimes after a decade or even longer.

The indicator HNVF – different approaches

In the Evaluation Framework HNVF is seen as an indicator, against which the effectiveness and efficacy of the Rural Development Programmes should be tested. This requires a more operational definition of HNVF and a decision about what HNVF is and what it is not. Although theoretically well elaborated in different studies, this separation is not easy in practice, and may it have great implications on the resulting HNVF area.

Due to the diverse situation in member states regarding data quality and availability, and important differences in ecological conditions as well as in farming practices, a number of different approaches for the implementation of this indicator have evolved. Each state has reported its own baseline figure using different information sources and applying adapted criteria for the generation of the required area numbers. But those numbers are not really comparable throughout Europe because they are based on diverse methodologies. Some states apply a mapping concept, e.g. Germany, which tries to calculate the HNVF area through the monitoring of a number of stratified random sample plots. Others like France and Finland use a typology of their farms and evaluate the farming systems. The area calculation is largely influenced by statistical analysis of farm data and modelling of relationships. If land-use data are available in sufficient detail and completeness, the area can be calculated drawing on information systems like IACS (Integrated Administration and Control System) or LPIS (Land Parcel Information System), e.g. is done in Austria and Greece. Thus the required

parcels can be selected through the application of criteria from land cover and management and summed up to the total area.

HNVF as a policy tool

At the policy level, HNVF has gained importance with its selection as an indicator for the evaluation of RDPs. The IRENA-process and studies done subsequently by the European Environment Agency (EEA) tried to determine the HNVF area for each member state. A map was produced showing the probability of HNVF throughout Europe. The intention of this map was to create an overview on the situation in Europe and more the kind of a target-identification for necessary policy support in those regions. When DG-Agriculture and regional development took over and defined the CMEF indicator in 2005, the understanding of its concept was still fuzzy and the method for implementation not well defined. Meanwhile it has developed towards a monitoring and evaluation approach, but there is still some obscurity on the target of the evaluation - farming practices at farm level, farming systems in terms of farm typologies, agro-environmental measures and RDPs, or the biodiversity at the landscape level? Therefore, as mentioned above the implementation in member states shows great differences according to what the national emphasis is on. The use of this HNVF indicator as a trigger for European policy measures such as financing would need a lot of harmonization and coordination work. It does not seem feasible to reach a Europe-wide integrated CMEF indicator within the next few years. Nevertheless HNVF, and in particular the reported changes over the programme period, will definitely serve as a reference for the programme evaluation and thus influence the development of the next RDP periods.

However, the concept of HNVF has triggered a process in the political discussion. The values of certain low input / low output farming systems have moved into the public view and the concept of ecosystem services focuses on additional societal benefits of agriculture besides the agricultural production. In this context High Nature Value Farmland stands for valuable nature and bio-diversity.

Impact of Agri-Environmental Programmes on HNVF

Agricultural policy (CAP, national, regional, local) not only influences food production, structure of farming and land management at different levels but also impacts the intensity of land use which is again of great relevancy for the maintenance and development of semi-natural grasslands respectively HNVF. By means of a questionnaire the impact of agricultural policy on HNVF has been investigated in the participating SALVERE-countries. The results of this questionnaire give an insight into the national activities and efforts to maintain and to develop HNVF as an important and unavoidable source of biodiversity. At the same time also deficits were addressed to improve the positive impact of different policies and activities on HNVF in future.

Only in some of the involved SALVERE-countries specific measures are included in the AEP which specifically focus on HNVF, even though this term is normally not used directly. Those measures still have a rather low proportion (mostly less than 10%) of the total donation of the AEP. The acceptance of such measures is in general low and there is a high potential of improvement. There is some effort to implement such specific measures in next future and to offer an incentive to increase the participation rate. The acceptance of AEP in general and of specific measures in detail is also depending on the information level (knowledge, rules, appreciation). The programmes have therefore to be brought closer to the farmers to convince and stimulate them to participate at a higher extent.

The majority of respondents think that the impact of AEP is too low and there are still some deficits. Only a few respondents are convinced that the impact of AEP on the support and

development of HNMF is good enough. In general the impacting measures should be more specified on the requirements of HNMF - probably this could improve the positive impact but at the same time reduce the level of acceptance. Even though some deficits were indicated concerning the impact of AEP on HNMF most of the respondents think that there has been a progress (e.g. reduced use of pesticides, avoidance of ploughing up grassland, less erosion). Aspects of nature conservation become more important and have led to a stepwise improvement of the AEP. In nearly all countries and provinces HNMF is already used as a baseline indicator for the Rural Development Programmes but there is still some lack of the right declaration of the HNMF area (e.g. in Austria, Poland).

In addition to AEP which partly contribute to HNMF, a number of other specific measures are available in the SALVERE-countries to maintain/improve HNMF of which Nature 2000 (according EU-habitats and EU-birds directive - EEC 1979 and EEC 1992) seems to be the most important and efficient instrument on an EU-level.

References

- Andersen E., Baldock D., Bennett H., Beaufoy G., Bignal E., Brouwer F., Elbersen B., Eiden G., Godeschalk F., Jones G., McCracken D.I., Nieuwunhuizen W., van Eupen M., Hennekens S. and Zervas G. (2004) Developing a high nature value farming area indicator. Internal report for the EEA. June. EEA, Copenhagen. Siehe auch <http://eea.eionet.europa.eu/Public/irc/envirowindows/hnv/library>
- Anonymus (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. European Commission, Brussels.
- Anonymus (1979) Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds. European Commission, Brussels.
- Bartel, A., E. Süssenbacher und K. Sedy (2010): Weiterentwicklung des Agrar-Umweltindicators „High Nature Value Farmland“ für Österreich zur Abschätzung der Maßnahmenwirkung des Programmes zur Entwicklung des Ländlichen Raumes 2007-2013 auf die Ressource HNMF, Endbericht, Umweltbundesamt Wien
- Bohner A., Sobotik M. and Pötsch E.M. (2002) The species richness of the Austrian grassland and the importance of grassland management for biodiversity. Proceedings of the 19th general meeting of the European Grassland Federation. Grassland Science in Europe, Volume 7, 766-767.
- CMEF (2006): HANDBOOK ON COMMON MONITORING AND EVALUATION FRAMEWORK, Guidance document for Rural development 2007-2013, Directorate General for Agriculture and Rural Development, Brussels, 15p
- Donath T.-W., Bissels S., Hölzel N. and Otte A. (2007) Large scale application of diaspore transfer with plant material in restoration practice - Impact of seed and microsite limitation. *Biological Conservation* 138, 224-234.
- EEA – European Environment Agency (2005) Agriculture and the environment in EU-15 – the IRENA Indicator Report. EEA-Report No. 5. http://reports.eea.eu.int/eea_report_2005_6.
- EEA – European Environment Agency (2006) The IRENA operations: <http://www.eea.europa.eu/projects/irena>. (Accessed June 2011).
- EEA – European Environment Agency (2010): Biodiversity Baseline Report. <http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline> (Accessed June 2011).
- EC– European Commission (2006) Rural Development 2007–2013. Handbook on Common Monitoring and Evaluation Framework, Guidance Document (Entwicklung des Ländlichen Raums 2007–2013. Handbuch für den gemeinsamen Begleitungs- und Bewertungsrahmen, Leitfadens). September 2006. Brussels. Generaldirektion Landwirtschaft.
- EC – European Commission (2009) Guidance Document: The Application of the High Nature Value Impact Indicator. Programming Period 2007-2013. Report prepared for DG Agriculture. http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_en.pdf
- Grabherr, G. und Reiter K. (1995) Die Erhaltung mitteleuropäischer Wiesen aus der Sicht des Naturschutzes. Expertentagung ‚Landwirtschaft und Naturschutz‘, BAL Gumpenstein, 3-7.

IIEP – Institute for European Environmental Policy (2007) Final Report for the study on HNV Indicators for Evaluation. Contract Notice 2006-G4-04. Report prepared for DG Agriculture. <http://ec.europa.eu/agriculture/analysis/external/evaluation/report.pdf>

JRC/EEA – Joint Research Centre/European Environment Agency (2006): Background document on the methodology for mapping High Nature Value Farmland in EU27. M.L. Paracchini, J.M. Terres, J.E. Petersen, Y. Hoogeveen. October. <http://eea.eionet.europa.eu/Public/irc/envirowindows/hnv/library>

Kiehl K., Kirmer A., Donath T.W., Rasran L. and Hölzel N. (2010) Species introduction in restoration projects - evaluation of different techniques for the establishment of semi-natural grasslands in Central and Northwestern Europe. *Basic and Applied Ecology* 11, 285-299.

Kirmer A. and Tischew S. (2006) Handbuch naturnahe Begrünung von Rohböden. Wiesbaden: Teubner B.G., 195 pp.

Klimkowska A., Van Diggelen R., Bakker J.P. and Grootjans A.P. (2007) Wet meadow restoration in Western Europe: a quantitative assessment of the effectiveness of several techniques. *Biological Conservation*, 140, 318-328.

Krautzer B. and Wittmann H. (2006) Restoration of alpine ecosystems. In: Restoration Ecology, the new frontier (edited by Jelte van Andel and James Aronson). Blackwell Publishing, pp. 208-220.

Krautzer B. and Pötsch E. (2009) The use of semi-natural grassland as donor sites for the restoration of high nature value areas. In: Proceedings 15th European Grassland Federation Symposium Brno, Czech Republic, 7-9 September 2009 (Cagas B., Radek M., Nedelnik J., editors). Grassland Science in Europe, 14, 478-492.

Krautzer B., Bartel A., Kirmer A., Tischew S., Feucht B., Wieden M., Haslgrübler P., Rieger E. and Pötsch E.M. (2011): Establishment and use of High Nature Value Farmland. In proceedings of the 16th EGF-Symposium “Grassland farming and land management systems in mountainous regions”, AREC Raumberg-Gumpenstein, 457-469

Pötsch E.M. and Blaschka A. (2003) Abschlussbericht über die Auswertung von MAB-Daten zur Evaluierung des ÖPUL hinsichtlich Kapitel VI.2.A ‘Artenvielfalt’. Gumpenstein, 37 pp.

SALVERE (2011) Semi-natural Grassland as a Source of Biodiversity Improvement: www.salvereproject.eu. Last visit August 2011

Scotton M. (2009) Semi-natural grassland as a source of biodiversity improvement – SALVERE. Proceedings of the international Workshop of the SALVERE-Project 2009, Agricultural Research and Education Centre Raumberg-Gumpenstein, pp. 2-5

http://www.salvereproject.eu/sites/default/files/SALVERE_Proceedings_May_2009.pdf (accessed July 2011)

Walker K.J., Stevens P.A., Stevens D.P., Mountford J.O., Manchester S.J. and Pywell R.F. (2004) The restoration and re-creation of species-rich lowland grassland on land formerly managed for intensive agriculture in the UK. *Biological Conservation*, 119, 1-18.