



## MAPPING HNV FARMLAND IN GERMANY FROM 2009 - 2015

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### MAPPING HIGH NATURE VALUE FARMLAND IN GERMANY

Farmland covers roughly 50% of the total area of Germany. Agriculture therefore has a considerable influence on the biodiversity of the open landscape. Progressive agricultural intensification has led to a dramatic decrease of agricultural biodiversity after the mid-20th century. To survey the trends of the remaining HNV farmland in Germany, the following framing of conditions should be considered:

- High Nature Value (HNV) farmland occurs primarily in small patches of extensively used agricultural land within the intensively managed agricultural area. With some minor exceptions, e.g. alpine farms in Bavaria, there are no farming systems in Germany, which support the occurrence of HNV farmland. HNV farmland cannot be simply identified through a classification system as rudimentary as farms supporting or not supporting HNV farmland.
- Available data on the landscape and habitat structure have proven too disparate and incomplete for use in assessing the HNV farmland indicator for Germany, and have failed to cover important habitat types (e.g. species rich arable land or traditionally used orchards). Furthermore, data are gathered too infrequently for regular updating of the indicator value.



### MONITORING HNV FARMLAND: A TARGETED COST EFFICIENT APPROACH

Taking these factors into consideration, the Federal Ministry of Food and Agriculture (BMEL), the Federal Environment Ministry (BMUB) and the Federal States have agreed to establish a new, targeted and cost-effective concept for HNV monitoring, which was developed by the Agency for Nature Conservation (BfN) in cooperation with private consultants. The following prerequisites have to be met:

- Statistical reliability should be ensured.
- HNV farmland monitoring should provide adequate data which is sensitive to the changes in farmland biodiversity.
- The temporal resolution should be sufficient, at a minimum the reporting requirements of the CAP should be met.
- Not only the extent of HNV farmland should be monitored, but also its quality.
- Small areas of HNV farmland should be detectable.
- Costs should be reasonable compared to other existing monitoring programmes.



### FURTHER INFORMATION

- Armin Benzler, Federal Agency for Nature Conservation
- Daniel Fuchs, PAN Planungsbüro für angewandten Naturschutz GmbH
- [https://www.bfn.de/0315\\_hnv.html](https://www.bfn.de/0315_hnv.html)



- The monitoring approach should be harmonized at the national level.

With these prerequisites in mind, the Federal States and the Federal Government have established a joint monitoring scheme for the HNV farmland indicator.

The Federal States commission experienced field ecologists to conduct fieldwork within sample plots on a regular basis.

The Federal Agency for Nature Conservation is responsible for data management, conducting quality management and extrapolating the data from the samples in order to calculate the indicator values at the national and Federal States level.

The method used is based on an existing stratified random sample design, which was originally developed to implement an advanced biodiversity monitoring programme. More recently it has been used by the German Common Breeding Bird Survey. This method consists of a base sample, comprised of 1,000 sample plots of 1 km<sup>2</sup> each. For more detailed results, an extended sample consisting of about 2,600 plots can be used. Monitoring started with 11 Federal States using the base sample and 2 Federal States using the extended sample. Plots comprising 95% or more of forest or urban area were excluded to keep the costs for field mapping at a moderate level. Presently, more Federal States have implemented the extended sample. To date, about 1,200 plots are mapped nationwide on a regular basis.

The first complete survey took place in 2009 (first baseline for the state of HNV farmland in Germany). Up to now, roughly ¼ of the total sample is re-surveyed every year. A second complete survey was completed (second baseline) in 2013.

HNV farmland in Germany consists of species-rich grassland, extensively managed arable land, traditional orchards, vineyards and temporary set-aside. Landscape elements, which provide habitats for many species, will also count as HNV elements. The following area types and landscape elements, depending on their quality, are regarded as HNV farmland in the above mentioned surveys:

**Area types of HNV farmland:**

Arable land, Set aside, Grassland (extensively farmed pasture and meadows), Agriculturally used habitat types according to Annex I of the Habitats Directive, Orchards, and Vineyards.

**Landscape elements counting as HNV farmland:**

- Tree rows, tree avenues, single trees,
- Hedges, scrub including fringe vegetation, and copses (up to 1 ha size) including fringe vegetation,
- Complex elements like field margins and banks with woody vegetation,
- Natural stone and other dry stone walls, stone, rock, sand, clay and loess walls,
- Ruderal and herbaceous plots and fringes, including tall herbaceous perennials and tall grasses,
- Sedge and reedbeds, herbaceous waterbody fringes, wetland elements (e.g. reed beds) up to 1 ha size,
- Pools, ponds and weirs, eutrophied oxbows up to 1 ha size,
- Ditches, standing and flowing,
- Waterways, springs, streams including associated alder and ash woodlands up to 5 m breadth,
- Unsurfaced farm lanes/sunken lanes.

To make changes in the quality of HNV farmland visible, three quality levels of HNV farmland are assessed during field work.

Quality levels of grassland, arable, set aside, orchards and vineyards are assessed using plant character taxa. For arable land and vineyards, character species are defined on the national level. Grassland character species are defined on the regional level, resulting in seven different character species lists for Germany due to the fact, that species composition in grassland differs between the regions. In all potential

HNV plots, character taxa are counted on a standardized transect of 30 m length and 2 m width. Assignment is as follows:

Quality levels of HNV are measured in 30m x 2m transects

4 to 5 character taxa:	moderate HNV	HNV III
6 to 7 character taxa:	very high HNV	HNV II
8 character taxa and above:	extraordinarily high HNV	HNV I

Plots with less than 4 character species are regarded as having no high nature value. Landscape elements are assigned to one of the quality levels using structural criteria specific to each type, which are laid down in the field manual.



Aerial photo: © GeoBasis-DE / BKG 2016, HNV Farmland data: © Federal States of Germany



Send your questions to:

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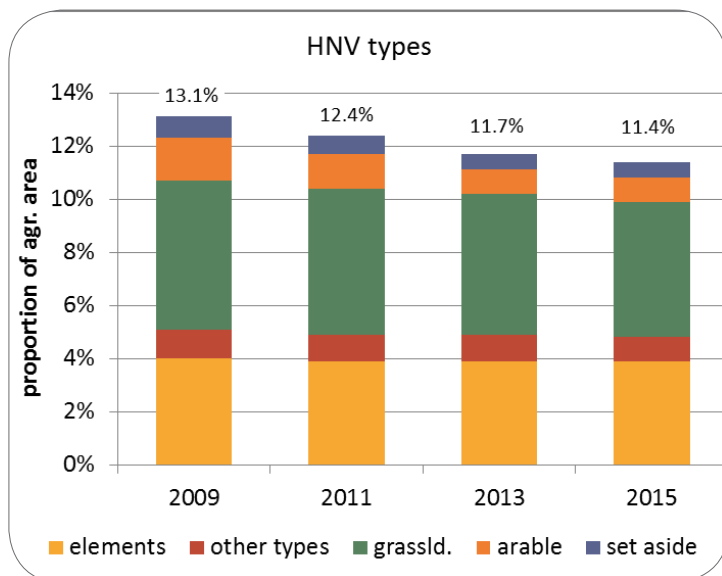
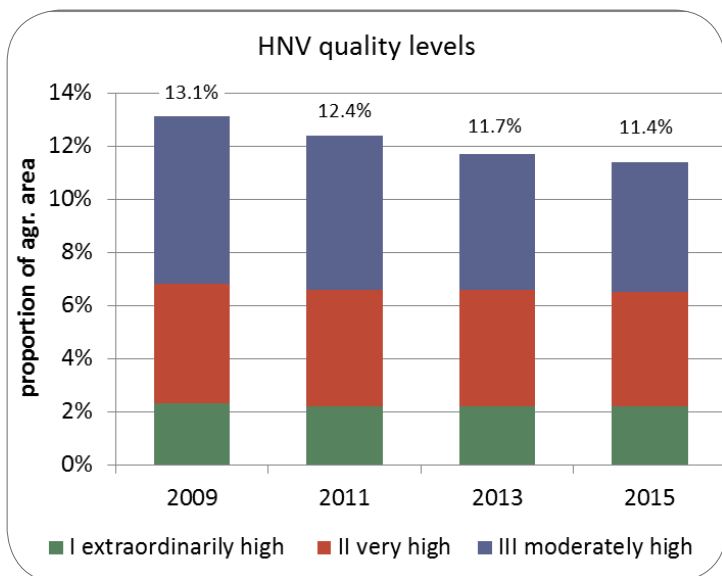


### Quality Management:

Incoming data is subject to an exhaustive control procedure and quality evaluation, including checks for topological correctness, completeness, correct assessment of quality levels and completeness of documentation. Additionally, all mapping results are checked against the latest aerial photographs. Furthermore, control mappings are conducted to assess the quality of the field mapping. Surveyor trainings are undertaken annually to harmonize fieldwork and assessment on the national level.

### Results:

As of December 2015 data for the baseline survey of 2009, the subsequent complete survey of 2010 to 2013 and of the partial surveys in 2014 and 2015 are available. Some of the extrapolated results for the national level are shown in the diagrams below. Since 2009 the indicator value was constantly decreasing at the national level with strongest decrease in the lowest quality level. Decrease is caused mainly by the loss of HNV arable, grassland and set aside, whereas no noteworthy changes occur in the extent of HNV landscape elements.



### FUTURE PROSPECTS TO ACHIEVE BETTER RESULTS

Although HNV farmland monitoring to date has been purely descriptive and thus limiting the potential for an impact assessment, the practised methodology resulted in the delivery of statistically sound results. The HNV indicator supplies solid data on the status and development of biological diversity in the agricultural landscape in an economical manner on NUTS 0 and NUTS1 level. It further contributes essentially to the evaluation of national and European agricultural policy measures. With the implementation of HNV farmland monitoring, a new, valuable data basis with a high potential for various advanced research approaches and queries on biological diversity within the agricultural landscape is now available. Meanwhile the HNV farmland indicator is integrated within the National Strategy on Biological Diversity of the German government. The most important methodological extension for the next years would be the inclusion of IACS data in order to better evaluate the impact of CAP funding on the HNV quality of the agricultural landscape.

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