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BioBio indicator factsheet

## Percentage of Farmland with Shrubs (ShrubHab)

Refers to Chapter 5 'Habitat indicators' of the Guidebook 'Biodiversity Indicators for European Farming Systems'



Schweizerische Eidgenossenschaft  
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## Percentage of Farmland with Shrubs (ShrubHab)

### Description

Percentage of the total farm area covered by shrubs. The **unit** of measurement is the percentage of the Utilized Agricultural Area (UAA).

### Surveyor skills

The indicator is based on habitat mapping, which requires basic GIS, ecological and botanical skills.

### Data collection method

The habitat mapping method is described in [Deliverable 2.2<sup>1</sup>](#). Alternatively, shrub habitats can be recognized and mapped from aerial photographs.

### Calculation method

ShrubHab is obtained by dividing the sum of the area of shrub habitats by the size of the farm and multiplying by 100 to obtain the percentage:

$$\text{ShrubHab} = \frac{SH}{UAA} * 100$$

in which *ShrubHab* is Shrub Habitats (in %), *SH* the sum of the area of the shrub habitats on the farm and *UAA* the farm size (Utilized Agricultural Area in hectares).

### Results from BioBio case studies

The graph shows the mean values and their distribution across the 12 BioBio case study regions. Values tend to be low in intensively used farming regions such as the arable, horticultural and mixed farming regions of Austria, Germany, The Netherlands and France (except for one or two farms with higher values) as well as on Italian wine farms and on the Swiss and Norwegian grassland farms. The values are higher on the Mediterranean Dehesas, and on the grassland farms in Bulgaria and Wales. Rather than average values across all farms, values for individual farms are of interest because high values may indicate a trend of land abandonment.

Four BioBio farms (a Dehesa and an olive farm in Spain, and two grassland farms, one in Bulgaria and one in Wales) have values close to 50% of the farmland being shrubs. This indicates a trend towards land abandonment, as may occur in marginal regions.

### Estimated effort and costs (labour effort required, analysis)

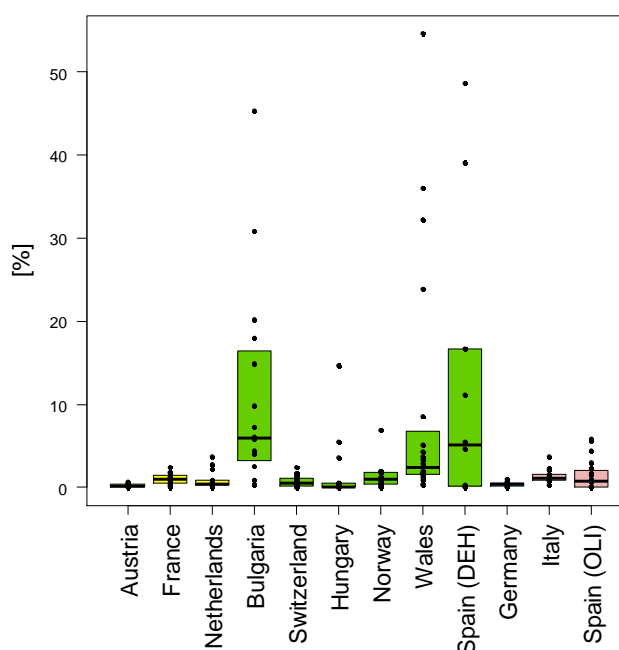
The indicator measurement requires habitat mapping and subsequent GIS analysis. Medium effort.

### Shrub Habitat change as an indicator

From a biodiversity point of view ShrubHab is of interest in marginal regions where the abandonment of agricultural land threatens farmland biodiversity. In the short term, shrub habi-



Abandonment and shrub growth in the southern Swiss Alps. Photo: Felix Herzog, Agroscope



### Distribution of indicator 'Shrub Habitat'

Each point displays the indicator value of a farm. Farms are grouped in the respective case studies. Yellow: field crops & horticulture in Austria, France and the Netherlands, green: specialist grazing livestock in Bulgaria, Switzerland, Hungary, Norway, Wales and Dehesa in Spain, blue: mixed crops & livestock in Germany, pink: permanent crops in Italy and Olives in Spain. The colored box contains the values of 50% of the farms of a case study. The line marks the median.

tats are new (additional) habitat types and thus will tend to increase biodiversity. In the long run, however, depending on natural conditions, many patches of shrubs will evolve towards forest stands. Farmland biodiversity will then gradually be lost and the fields will lose their status as farmland.

### Interpretation

'Shrub Habitat' is classified as semi-natural and a certain share may be beneficial for farmland species diversity. Nevertheless, it is also an indicator of land abandonment, which is a major threat for wildlife on farms in Europe. Interpretation therefore requires consideration of the wider landscape context.

<sup>1</sup> Dennis P. et al. 2012. *Biodiversity in organic and low-input farming systems*. ALTERRA Report 2308.

**Strengths and weaknesses**

The indicator is easily computed once the habitat map is available. Indicator values depend strongly on the definition of shrub habitats and on the habitat mapping method, so comparisons between farms/countries require standardization (as in BioBio). A particular challenge relates to the definition of which fields to map on a farm. If only the active agricultural land is mapped, shrub habitats that have been abandoned will quickly disappear from the statistics, reflected in a decline in total agricultural area, but also, less intuitively, a decline in ShrubHab. Similarly, rules on how to delineate polygons may mean that bushes encroaching from field edges are excluded from the mapped area and therefore not reflected in the ShrubHab statistics.

This factsheet is part of the Guidelines **Biodiversity Indicators for European Farming Systems**.

More detailed information on the set of indicators developed in the EU FP7 research project BIOBIO (Biodiversity indicators for organic and low input farming systems, KBBE-227161) is given in a printed report, published as ART Publication Series Nr. 17. The report can be downloaded from the [BioBio website](#).

Printed versions can be ordered at [www.agroscope.admin.ch](http://www.agroscope.admin.ch) or at Agroscope, Reckenholzstrasse 191, 8046 Zurich, Switzerland

## BioBio Indicator Factsheets

### Genetic diversity

Breeds: Number and amount of different breeds

CultDiv: Number and amount of different varieties

CropOrig: Origin of crops

### Species diversity

Plants: Vascular plants

Bees: Wild bees and bumblebees

Spiders: Spiders

Earthworms: Earthworms

### Habitat diversity

HabRich: Habitat richness

HabDiv: Habitat diversity

PatchS: Average size of habitat patches

LinHab: Length of linear habitats

CropR: Crop richness

ShrubHab: Percentage of farmland with shrubs

TreeHab: Tree habitats

SemiNat: Percentage of semi-natural habitats

### Indirect management indicators / parameters

EnerIn: Total direct and indirect energy input

IntExt: Intensification/Extensification - Expenditure on inputs

MinFert: Area with use of mineral nitrogen fertiliser

NitroIn: Total nitrogen input

FieldOp: Field operations

PestUse: Pesticide use

AvStock: Average stocking rate

Graze: Grazing intensity