

BioBio indicator factsheet

Intensification/Extensification – Expenditure on Inputs (IntExt)

Refers to Chapter 8 'Management related indicators' of the Guidebook 'Biodiversity Indicators for European Farming Systems'

Intensification/Extensification - Expenditure on Inputs (IntExt)

Description

Annual expenditures on fertiliser, crop protection, pesticides and concentrate feed stuff. The **unit** of measurement is Euros (€) per ha utilized agricultural area (UAA).

It is a **pressure indicator**. This indicator was proposed to distinguish between farms of low, medium or high farming intensity by IRENA (indicator No.15). The intensification of agricultural production is characterised by increases in farm production (yields) based on higher inputs of fertiliser, crop protection, machinery, water and energy.

Surveyor skills

Data collection can be implemented by technical staff (farm interviews, retrieval from databases). No specific expert knowledge is required for indicator calculation.

Data collection method

In farm-level surveys, farmers must be interviewed using a structured questionnaire provided by the BioBio field handbook (farm visits or telephone).

Calculation method

Input variables:

Expenditures in Euro (€) for

- Fuel (F)
- Fertiliser & pesticides (FP)
- Concentrate fodder (CF)
- A_{UAA} : Utilised agricultural area

To even out major differences between years (e.g. bulk purchases in times of low prices), data were recorded for the previous 3 years. The average for each input variable was calculated, if data for 2 or 3 years were available.

$$\text{IntExt} = (F + FP + CF) / A_{UAA}$$

Results from BioBio case studies

In grazing systems, a main cost factor is the purchase of concentrate fodder. The least expensive farming system with regard to external inputs was the Spanish Dehesas (see graph). The grazing systems in Wales and Hungary had low to moderately high expenditures, whereas some of the German, Bulgarian, Swiss and Norwegian livestock systems spent considerable amounts on fodder purchase. There was a wide range within individual case studies.

Synergies with other indicators

There are no synergies with other indicators in data collection.

Estimated effort and costs

(labour effort required, analysis)

An average of 8 hours per farm must be calculated for the collection of the BioBio farm management indicators. This includes the interview, data processing and data check. However, there is considerable variation in time effort depending

on the complexity of farms and the implementation (telephone interviews or farm visits).

Correlation with other indicators

For almost all BioBio case studies, the indicators of expenditures and of 'Energy Input' showed similar trends and were positively correlated. No such correlations were found for the Bulgarian and Italian case studies.

Negative correlations with almost all species indicators were identified for the German mixed and the Spanish olive farms. Furthermore, negative relationships were established for the 'Wild Bees and Bumblebees' in France and 'Spiders' in Norway.

Change in expenditures as an indicator

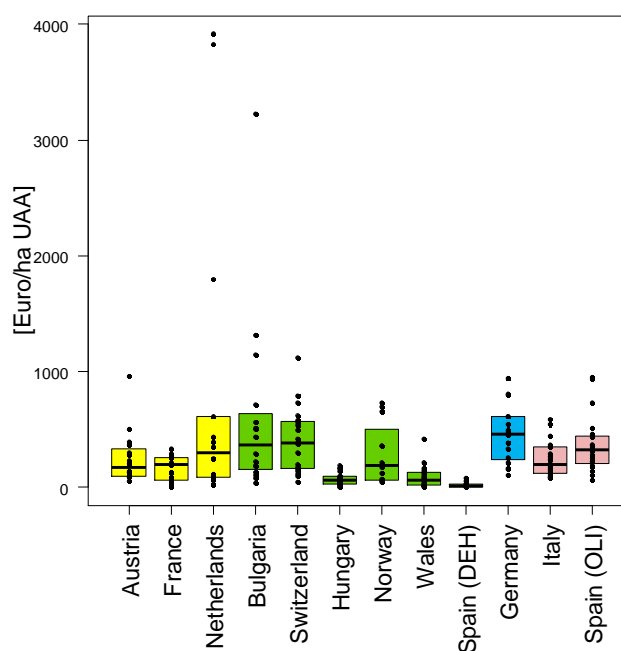
In extensive regions, rising expenses for external inputs suggest a trend towards more intensive forms of farming. Purchases of external fodder sustain higher livestock densities. Additional mineral fertilizer input raises nutrient levels over the agricultural area.

Interpretation

Interpretation needs to take into account that the indicator value can be affected by e.g. exchange rate (for countries outside the Euro zone) and fluctuations of prices. The indicator value may thus change whilst farm practices actually remain the same (or vice versa).

Strengths and weaknesses

The original assumption was that farmers would have data documented in their books because external inputs are an important cost factor. This was not necessarily the case and it was difficult to get reliable data from farmers. For fuel, both the consumption in litres and the expenditure for the year 2009 was recorded, for cross-checking. Frequently, this data was found not to match properly.



'Expenditure on fertiliser, crop protection and concentrate feed stuff' in BioBio case study farms (€ per ha utilized agricultural area).

Particularly high costs accrued for fodder purchase in Bulgaria and certain intensive cropping systems in the Netherlands (orchards, field strawberries).

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 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