



# A MULTI-FACTORIAL SUSTAINABILITY ASSESSMENT OF FIVE EUROPEAN AGROFORESTRY FARMS

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## Public Goods Tool (PGT)

The Public Goods Tool (PGT) assesses the agriculture-related “public goods” provided by a farm. These dimensions (“spurs”) include:

- soil management,
- agri-environmental management,
- landscape and heritage,
- water management,
- fertiliser management and nutrients,
- energy and carbon,
- food security,
- agricultural systems diversity,
- social capital,
- farm business resilience,
- animal health
- welfare management
- governance.

## Material and Methods

Each spur is assessed on a 1-5 scale by asking questions to farmers based on a number of key “activities”. Each activity has at least one corresponding question, mostly about farm management practices, and these allow a researcher or advisor to evaluate the detailed ways in which the farm provides each public good. Within the SustainFARM project, the existing PGT has been adapted to also include agroforestry systems.

Individual criteria relevant for agroforestry systems and their associated indicators were identified through a comprehensive literature review. In a second stage of work the new assessment criteria were subjected to a series of online surveys and workshops with national stakeholders from Denmark, Italy, Poland,

Romania and the UK. The workshops aimed to identify the criteria and indicators that were the most “appropriate” for an assessment of agroforestry systems in Europe, with “appropriateness” defined in terms of each indicator’s relevance, comprehensiveness, interpretability, data quality, efficiency and the degree of overlap with existing criteria within the PGT. The narrowed down list of 91 to 50 was incorporated within the PGT to carry out assessments on selected agroforestry farms (Table 1).

Table 1. Agroforestry farms within the study.

No.	Agroforestry farm	Study location	Size
1.	Organic farm: hazel and willow <b>alley cropping systems</b> , mixed species timber and apple system, <b>hedgerows</b>	Wakelyns Farm, Suffolk, UK	22 ha
2.	Experimental farm: <b>alley cropping system</b> (willow and cereals)	Taastrup, Denmark	11 ha
3.	Organic farm with <b>intercropped orchard</b> with vegetables and forest	Opolskie Voivodship, Poland	45 ha
4.	Livestock farm with <b>wooded grasslands, hedgerows</b> and forest	Beskid Mountains, Poland	200 ha
5.	Organic farm: <b>olive orchard</b> with natural weed between the tree rows, fruit orchard and forest	Orvieto Municipality, Italy	7 ha
6.	Conventional farm, of which 22 ha are managed as <b>olive orchards</b> with periodical soil harrowing	Orvieto Municipality, Italy	207 ha
7.	Livestock silvopastoral system with <b>wooded grasslands</b>	Petrova Municipality, Romania	94 ha

## Results and discussion

Results from an initial pilot assessment of seven agroforestry farms from the five countries with the updated PGT tool have revealed that it can provide a useful learning framework; Strong areas of performance were Farms Business Resilience, Social Capital, Systems diversity, Food Security, and Soil Management as a result of the diversity in marketing outlets, the high species/varietal diversity, importance of the farm for social involvement, local sales and a range of measures for enhanced soil protection.

Weaker areas of performance were fertiliser management and agri-environmental management due to an absence of written plans for nutrient/water management and conservation.

Further improvements are needed to capture the future aspirations of the farm-manger and introducing a weighting factor to account for region/system specificity.

The results from the assessment itself have also revealed the benefits that diverse agroforestry systems can provide across a range of sustainability criteria.

