Using farm sustainability assessment tools to assess the impacts of diversification

**Problem**

The agricultural sector faces global sustainability challenges, including overuse of agro-chemicals, rising greenhouse gas emissions, degraded soils, simplified landscapes, poor working conditions, waning profitability and loss of livelihoods (IAASTD 2009, Poore and Nemecek 2018).

**Solution**

Several farm-based “Sustainability Assessment Tools” (SATs) have been developed to address these challenges by allowing farmers to assess their performances and support better management decisions.

**Current state of Sustainability Assessment Tools**

A farm sustainability assessment can illuminate challenges (e.g., agrobiodiversity conservation) and highlight strengths (e.g., high productivity). The results can be used for learning, improvement, communication, monitoring or benchmarking. SATs should be easy to use, cover all sustainability dimensions, use qualitative and quantitative data and support strategic decisions (Pintér et al. 2012). At least 19 free SATs emerged in the past decade for farm decision-making (Arulnathan et al. 2020). They differ in goals, criteria, level of detail and ease of use (Coteur et al. 2020). Four examples are shown in Table 1. SATs can facilitate system comparisons and generate useful datasets for research, such as assessing the benefits of farm diversification (Figure 1).

**Practical recommendation**

- **Goal of assessment and tool choice (Table 1):** Simple self-assessments (e.g. FSA) can raise awareness. Third party assessments (e.g. SMART-Farm) can be used to compare systems and communicate. Detailed farm-specific assessments (e.g. RISE) can guide farm improvements. Purpose is key in choosing a tool.

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**Figure 1:** Results of the SMART-Farm Tool comparing farm types (left; Ssebunya et al. 2019) and indices of crop diversity and agro-biodiversity across a sample of EU farms (right; unpublished data, SMART-Farm database).

FiBL. Farm sustainability assessment.
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Practice Abstract

- **No one-size-fits-all**: The more in-depth the assessment, the more information and time is needed. If only one issue is of interest (e.g. CO₂ or biodiversity) a purpose-built tool is preferable to a general SAT.

- **Different tool, different results**: Each SAT carries assumptions and subjective choices (e.g. of criteria, indicators or stakeholder participation). Indicators of cultural value for England (e.g. using the Public Goods Tool) are not relevant for farmers in France (de Olde et al. 2016). The expectations of the end user should influence the tool choice to maximize impact. In order to support end user in their tool choice, DiverIMPACTS developed a specific toolbox (https://www.diverimpacts.net/toolbox.html).

<table>
<thead>
<tr>
<th>Tool</th>
<th>Goal</th>
<th>Application</th>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Sustainability Assessment (FSA) Tool</td>
<td>Basic assessment for benchmarking, compar-</td>
<td>Web and excel based self-assessment; ca. 2 hrs data entry</td>
<td>Simple and fast, wide scope, hotspot detection</td>
<td>Lack of detail, limited support for strategic improvements</td>
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<td>Public Goods (PG) Tool</td>
<td>Basic assessment of public goods for compa-</td>
<td>Excel tool requiring training; ca. 2 hrs data entry</td>
<td>Simple and fast, overview of societal benefits generated by a farm</td>
<td>Public goods tend to reflect UK values, bias towards environmental dimension</td>
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<tr>
<td>Sustainability Monitoring and Assessment</td>
<td>Basic to moderate assessment for benchmar-</td>
<td>Stand-alone software requiring training; ca. 2-3 hrs data entry</td>
<td>Wide scope, recognised assessment framework from the FAO (SAFA)</td>
<td>Varying levels of detail depending on the theme, difficult to interpret results</td>
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<tr>
<td>and Assessment RouTine (SMART)-Farm Tool</td>
<td>king, comparison and research</td>
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<td>Response Induced Sustainability Evaluation</td>
<td>Moderate assessment for education and farm</td>
<td>Stand-alone software requiring training; ca. 3-6 hrs data entry</td>
<td>Farm-specific, detailed analysis; designed for extension</td>
<td>High data requirements, limited ability to compare farms</td>
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<td>(RISE) Tool</td>
<td>improvement</td>
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Table 1: A description of some common SATs (source: de Olde et al. 2016, Coteur et al. 2020). A complete list can be found in Arulnathan et al. (2020).

Further information

**Video**

- SMART (DE/FR): https://www.youtube.com/watch?v=nPYJauHnmeA/

Further readings


Weblinks

- Toolbox for crop diversification: https://www.diverimpacts.net/toolbox.html

About this practice abstract and DiverIMPACTS

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DiverIMPACTS: The project is running from June 2017 to May 2022. The overall goal of DiverIMPACTS - Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains towards Sustainability - is to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains.

**Project website**: www.diverimpacts.net

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