RISE: making sustainable development measurable and tangible at the farm level

Dr. Jan Grenz, Fritz Schneider
Swiss College of Agriculture SHL
Bern University of Applied Sciences
Sustainable agriculture – lost in the jungle…?

SA is demanded by policy (Agenda 21, national laws etc.) and consumers (e.g. LOHAS), claimed by private and public stakeholders (see below), investigated by scientists…

…but has to be implemented by farmers. How?
What is relevant? What has priority? How to bring sustainability „down to Earth“?
What is RISE?

Response-Inducing Sustainability Evaluation: An indicator-based method for holistic sustainability assessment of agricultural production at farm level, attempting to make sustainability measurable, communicable and tangible. RISE is no control or certification system.

“RISE is like a mirror of my farm.” (a farmer)
„RISE conveys the idea of sustainability to farmers.“ (FOAG official)
Why measure sustainability?

a. Sustainable development is mandatory. b. Can an enterprise be managed without reliable information on its performance?

Why rely on an interview?

Of >400 million farms, maybe 20 million keep account of their financial performance. Environmental parameters are measured for even less. Sustainability is monitored nowhere.

Why not do a certification?

There are enough control-based systems. Motivated farmers need a supportive analysis, complementary to certifications.
How is the RISE analysis done?
Steps of the RISE analysis

① Preparation and interview-based data collection – „best available data“ (ca. 3 hrs per farm)

② Data entry, evaluation, plausibility check (3 hrs)

③ Feedback discussion, identification of measures & contact persons (2-3 hrs)
### 11.6 Energy use

11.6.1 Is energy use monitored (consumption, change in consumption)?
- Yes
- No
- Not yet answered

11.6.2 Energy saving measures
- Farm: Heat recovery, heat exchanger
- Field: Electricity Switzerland

11.6.3 Energy source

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Quantity (kWh (elec.); l (liquids) kg (coal); m³ (wood))</th>
<th>Share from renewable sources (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass (wood)</td>
<td>m³ 106.09</td>
<td>%</td>
</tr>
<tr>
<td>Electricity</td>
<td>kW 50.00</td>
<td>%</td>
</tr>
<tr>
<td>Liquid: Diesel</td>
<td>Lte 0.00</td>
<td>%</td>
</tr>
</tbody>
</table>
The RISE 2.0 polygon (Swiss farm)
A closer look at parameter scores

<table>
<thead>
<tr>
<th>5.1</th>
<th>Energy management</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>Energy intensity of agricultural production</td>
<td>57</td>
</tr>
<tr>
<td>5.3</td>
<td>Share of sustainable energy carriers</td>
<td>18</td>
</tr>
<tr>
<td>5.4</td>
<td>Greenhouse gas balance</td>
<td>35</td>
</tr>
</tbody>
</table>

Farmer tracks energy use, diverse energy saving measures: direct seeding of some crops, use of slow power take-off etc.

Farm = 8.92 GJ/ha. CH reference = 9.9 GJ/ha. Ratio = 0.9.

Total energy use = 156 GJ. Sustainable = 28.1 GJ (Swiss Hydropower). Ratio = 18%.

Farm = 3.54 t CO₂-eq/ha. Global reference = 2.4 t CO₂-eq/ha. 54% of GHG from livestock, 46% from fuel combustion.
Switzerland (BE & AG, 2009)
10 organic farms (RISE 1.1)
Holistic thinking „on the ground“: Armenia (213 farms)
Sustainability of Chinese dairy farms (2009)

**HULUNBEIR (21 FARMS)**
- 45 ha
- 12 LLU
- 1.2 WF

**LAIXI (20 FARMS)**
- 1 ha
- 48 LLU
- 4.6 WF

**SHUANGCHENG (20 FARMS)**
- 2.4 ha
- 30 LLU
- 2.5 WF
Holistic thinking „on the ground“: Torreón, México (7 farms)
Global track record of RISE

More than 800 farms analysed
Lessons learned… and the way forward

- Farmers appreciate the sustainability principle; an overwhelming majority was willing and capable to provide useful information in the interview.
- Thorough analysis of typical farms, with sufficient investment in the discussion of possible improvements, can be more useful than striving for big sample sizes.
- Isolated analyses are „l‘art pour l‘art“. Action will only be taken where a follow-up exists and stakeholders are involved.

- Programming of RISE 2.0, including offline version and output templates, to be finished until January, 2012. Dissemination via training and license-based model. Please contact me for details.
Thank you for your attention

Fritz Schneider  
Head Agriculture  
Swiss College of Agriculture  
+41 31 910 21 72  
+41 78 806 44 50 mobile  

Dr. Jan Grenz  
Professor for Sustainability Assessment  
Swiss College of Agriculture  
+41 31 910 21 99  

fritz.schneider@bfh.ch  
jan.grenz@bfh.ch