Application of a framework and protocol to assess the farm-level performance of agroecology: Push-Pull contrasted with conventional maize farmers in Western Kenya

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Who developed the methodology?
Where? Why? How?

The framework has been developed by a team:
- **Barbara Gemmill-Herren**, World Agroforestry Centre, Kenya
- **David Amudavi**, Biovision Africa Trust, Kenya
- **Hudson Shiraku**, Biovision Africa Trust, Kenya
- **Daniel Owino**, Maseno University, Kenya
- **Lucas A. Garibaldi**, Universidad Nacional de Río Negro and Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina
- **Raffaele D’Annolfo**, Università Cattolica del Sacro Cuore, Italy
- **Benjamin E. Graeub**, Mercator Fellow, Switzerland
- **Saul A. Cunningham**, The Australian National University, Australia
Framework: Assumptions

Note: Based on Garibaldi et al. (2017).

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Implementation: Push-Pull technology in Western Kenya

‘Pull’
Volatile chemicals produced by border trap plants attract moths to lay eggs

‘Push’
Volatile chemicals produced by intercropped plants repel moths and attracts natural enemies

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<table>
<thead>
<tr>
<th>ASSETS</th>
<th>INDICATORS</th>
<th>DESCRIPTIONS/QUESTIONS</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household members</td>
<td>Number of people who are part of the farm household</td>
<td># of people</td>
</tr>
<tr>
<td></td>
<td>Educational level</td>
<td>What is the highest level of education attained?</td>
<td>1 = no formal education; 2 = lower primary ... 5 = tertiary college</td>
</tr>
<tr>
<td></td>
<td>Availability of extension services</td>
<td>Existence (presence) vs. no existence</td>
<td>1 = exist; 2 = do not exist</td>
</tr>
<tr>
<td>HUMAN/SOCIAL</td>
<td>Health status</td>
<td>Has any member of this household been ill in the last 6 months?</td>
<td>1 = yes; 2 = no</td>
</tr>
<tr>
<td></td>
<td>Membership</td>
<td>Membership of registered groups and associations</td>
<td>1 = yes; 2 = no</td>
</tr>
<tr>
<td></td>
<td>Crop diversity</td>
<td>List of crop species</td>
<td># of crop species</td>
</tr>
<tr>
<td></td>
<td>Livestock diversity</td>
<td>List of animal species</td>
<td># of animal species</td>
</tr>
<tr>
<td></td>
<td>Presence of animal or crop of cultural importance</td>
<td>Local crop and animal species</td>
<td>1 = yes; 2 = no</td>
</tr>
<tr>
<td>NATURAL/ECOLOGICAL</td>
<td>Agroecological practices</td>
<td>Number of agroecological practices applied at landscape level</td>
<td># agroecological practices</td>
</tr>
<tr>
<td></td>
<td>Use of living fence posts and hedgerows</td>
<td>Field demarcation</td>
<td>1 = yes 0 = no</td>
</tr>
<tr>
<td></td>
<td>Presence of fruit trees</td>
<td>Diversification with fruit trees</td>
<td>1 = yes 0 = no</td>
</tr>
<tr>
<td>ECONOMIC</td>
<td>People employed on the farm</td>
<td>Number of people employed on farm</td>
<td># of people employed</td>
</tr>
<tr>
<td></td>
<td>Farm profitability</td>
<td>Overall profitability per hectare</td>
<td>revenues - expenses</td>
</tr>
<tr>
<td></td>
<td>Yield</td>
<td>Maize yield per hectare</td>
<td>kg per hectare</td>
</tr>
</tbody>
</table>
Statistical analysis

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Results

Number of crops

Number of agroecological practices

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Conclusions

1. Push-Pull farmers are able to generate environmental benefits without sacrificing yield or profitability.

2. Finding a common methodology to assess farming system performance is always a balance between simplicity and complexity.

3. Users should be free to adapt the framework to local circumstances (e.g. add or eliminate indicators).

4. This framework is useful for comparing a range of different agricultural systems (two or more farming system categories).
Lessons learnt

I. Having focus group discussion helps a common understanding.

II. Facilitation of focus group meetings to refine the questionnaire is best done by someone trained in this role.

III. Narrowing down the survey to a smaller number of questions is a good idea.
Further reading


Merci de votre attention!

For any further information please send me an email to: raffaele.dannolfo@unicatt.it

Thank you for your attention!