Assessing the impact of forages at the farm level

Peter Kerridge[1] and Sam Fujisaka[2]

Farmer participatory evaluation of forages in the FSP is usually taking place where farmers have expressed a need for improving feed supply for livestock and expressed an interest in evaluating new forage technologies. At some sites, other farmers have joined in the evaluation. There is now a need to move beyond evaluation and determine the impact of new forage technologies on various aspects of farmers' livelihoods.

The FSP on-farm sites represent different farming systems ranging from agroforestry, upland, plantation, and grasslands to lowland. Different forage varieties and uses for grasses and legumes are being tested at each site. There is considerable diversity in systems, in the particular, the needs of individual farmers and the potential uses for improved forages. Can we take this into account and still assess impact at the farm level?

We are currently using a three-step framework in evaluating forages in the FSP:

Step 1. Identification of potential sites using PRA

Method: We use secondary information such as data on livestock numbers and livestock production, look at maps, and make own observations. This includes discussions with our collaborators, the provincial and district officers as to how they perceive a need. Potential sites are visited and we may interview some farmers or groups of farmers.

Output: The output of this PRA is a brief description of climate, soils, landscape and land use, a description of the farming system and an assessment as to whether the site has a need and is suitable as an FPR site for evaluation of forages. That is, there needs to be a clear indication that there is a real problem that can be solved with new forage technologies, there are farmers trying to solve the problems and local partners able to support work in the area.

Step 2. Diagnosis of problems and possible solutions using PD

Method: Participatory diagnosis.

Outputs: The outputs are:

1. Detailed description of the farming system.
2. Problem diagnosis with farmers individually and as a group.
3. Understanding of the causes of problems.
4. Suggestions of possible solutions.
5. Decision to work together (or not).
6. Commitment by farmers and the project.

Step 3. Planning and working with farmers

Method: Participatory planning with farmers.

Output: Agreement on activities and commencement of work.

We are suggesting that there should be another step in which there would be an assessment of the impact of forage technologies. This might be done by some form of participatory evaluation, surveys, interviews with individual farmers and some data collection. The outputs would be knowledge of the impact of forage technologies on livelihoods (such increased income, less drudgery in looking after animals and more

[1] PE-5 Project Leader, Sustainable Systems for Smallholders, CIAT, Cali, Colombia.
[2] Agricultural Anthropologist, CIAT, Cali, Colombia.

efficient use of labour. We would also hope that there might be some positive impact of benefits on maintaining natural resources.

How can we measure impact?

Preferably we would interview individuals or groups of farmers and make our assessment against baseline information using a common set of indicators chosen with farmers and district officers.

Which group of farmers do we choose for studying impact? We have four groups of farmers in the communities in which we work:

1. Participating farmers who adopt new forages.
2. Participating farmers who do not adopt forages
3. Non-participating farmers who adopt forages.
4. Non-participating farmers who do not adopt forages.

Let us take a theoretical example: There are 300 families in the village, 40 families have participated in evaluating forages with us and 30 of them are still enthusiastic and are our friends. Surely we can get the story of impact of new forages from them. However, the real impact of the new technology needs to be assessed against the situation that existed before the technology was introduced. Also, it is important for us to know why some farmers adopted and why others did not and what attracted non-participating farmers to adopt and why others outside the participating group chose not to do so. A survey for impact needs to include both adopters and non-adopters and those who spontaneously chose to adopt or to reject the technology.

How are we going to objectively assess the impact, including the rate of adoption and the magnitude of the impact? It is 1998, and the project has been running 3 years; there have been changes in staff and memories are short. It is obvious that it would help to know what was the situation when the project commenced. Hence we need to have baseline data or a baseline characterisation. And as we need to interview or assess the four groups of farmers we need baseline information of all four groups. When we started we did not know who would participate and who would adopt. Thus the baseline data needs to be collected once a suitable site has been selected and we are conducting the first participatory diagnosis.

Suggested new procedure

Step 1. Identification of potential sites using PRA.
Step 2. Diagnosis of problems and possible solutions using PD.
Step 3. Collect baseline data at villages or sites where we are conducting PD.
Step 4. Evaluation of possible solutions and monitoring.
Step 5. Follow-up assessment on impact of new forage technologies.

What data do we collect for baseline characterisation? This sets us a problem. It takes time to collect data. Is it all going to be useful? Also, why wait until the end of the project to make an assessment of impact.

It would help us and the farmers to identify indicators of impact which can be used to monitor the development of new technologies. Farmers innately know or can sense if something is likely to be successful or not. It is more difficult for us to do so. Hence, we need specific data or indicators that will provide us information on the direction of impact; and we need to be selective. When we conduct the initial PRA and then the PD we obtain a good idea of problems facing the farmers.

For example, lack of forage to feed animals, the time it takes to collect feed for their animals, money available for purchasing household essentials, equity of income sharing

between family members, low yields low due to declining soil fertility. This gives us some idea of choosing a restricted set of data that can be used as indicators in monitoring progress and assessing impact. Table 1 shows indicators which Tatang Ibrahim suggested for the FSP site Pulau Gambar where the project is working with women to improve feed supply for sheep.

Table 1. Suggested indicators for Pulau Gambar.

Criteria	Indicators
Less time for feeding sheep	Hours of labour required
More rapid weight gain	kg of liveweight gain over time
Lower lamb mortality	Lambing percentage
Larger herd size	Number of sheep
Higher income	Monthly cash income

What are other examples of useful indicators to verify the output of an activity?

- Number of cuttings distributed ⩾ ha of sown grass.
- Number of vials of semen distributed ⩾ number of calves produced.
- Number of cows distributed ⩾ litres of milk produced.
- Number of packets of seed distributed ⩾ did these grow?

It is obvious that the second set of indicators is more meaningful than the first.

Some indicators that might be appropriate for the FSP

Forage adoption:

- Area of new forage grown.
- Productivity of forages.
- Contribution of forage towards total feed requirements.

Animal productivity:

- Live weight gain of small ruminants sheep and goats (girth of cattle).
- Indirect measurements of productivity of large ruminants, e.g. sale price, body condition, hours can work as a draft animal.
- Reproductive performance (calving interval, litter size).
- Off-spring (mortality and growth).
- Animal health (evidence of internal parasites).

Labour productivity:

- Time spent cutting naturally occurring forages along roads vs. cutting improved forages.
- Time spent herding cattle for grazing vs. time spent in tethering.
- Time spent in land preparation following legume fallow vs. natural fallow.
- Time spent weeding crops following legume fallow vs. natural fallow.

For impacts additional to those directly associated with livestock production:

- Amount and quality of manure used for crop production.
- Crop yield following forage or legume phase.
- Earthworm activity (due to changes in soil structure and soil fertility).
- Weediness.
- Change in land use, e.g. area of land terraced with erosion barriers or proportion of farm using some form of forage integration.

Livelihood changes:

- Changes in assets.
- Income through sale of animals, forage, planting materials.
- Value of manure through sales or used for crop/forage production.

- More leisure time or less hours spent in unpleasant tasks.

It is likely that only a restricted set of the above would be used for each locality.

In summary

1. Conduct PRA, site selection, initial participatory diagnosis and the initial selection of possible problem-solving alternatives. Target communities or sites and problems should be tentatively identified at this stage.
2. Conduct Participatory Diagnosis to define problems and potential technology solutions.
3. Conduct a baseline survey of individual families / groups which focuses on current land use, labour allocation, assets, a measure of productivity output plus disposable income. Remember, the baseline survey is to provide a basis for comparison before and after adoption of forages technologies. Hence, it will be useful to develop specific sets of measurable indicators for each site which relate to the outputs we are trying to achieve. Choose indicators that can be monitored periodically throughout the project. Where there is expertise available, the baseline data can contribute to a reasonable ex-ante analysis of potential problem-solving alternatives.
4. Participatory Technology Development, accompanied by monitoring of impact using indicators selected.
5. Ex-post impact study at the project level. Benefits can be calculated; and characteristics of adopters vs. non-adopters identified.
6. Recommendations that can be used for policy decisions.

At this stage projects will usually not have influenced change over large areas. However, analysis of benefits and costs, farmers' assessments, and knowledge about who does and does not adopt can lead to recommendations and actions to facilitate adoption over the larger target area. In a sense, sound ex-post impact analysis at the project level will serve as an ex-ante impact analysis for national or regional efforts to facilitate widespread change.