

## **The Innovation Tree:**

### **New PRA tool to reveal socio-psychological factors influencing the innovation adoption process**

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#### **Summary**

A new PRA tool namely the Innovation Tree has been developed. It has helped people to visualise and analyse the way in which an innovation is spread over time between community members. Not only did we find it to be a very useful tool to distinguish between innovators, early and late adopters, but also to help both outsiders and the community to understand some of the social and psychological dimensions that influence the adoption of an innovation within that community. The Innovation Tree also allowed for investigating how different personalities or types of innovators play a different role in promoting the technology to their colleagues, which is of direct relevance for developing farmer-to-farmer extension activities. The Type 1 innovator inspires a wide range of people from different levels within a community and has a modest, mild and inquiring character. They easily engage in farmer-to-farmer knowledge strengthening both within and outside the community. The Type 2 innovator entuses fewer and mainly like-minded people within the community, and has a strongly competitive character. They are more eager to go outside the community to promote the technology, rather than getting engaged in educational activities.

#### **Introduction**

The Seed Health Improvement sub-Project (SHIP), which operates under the Poverty Elimination Through Rice Research Assistance (PETRRA) project in Bangladesh, started in 1999 and has mainly focused on seed cleaning, proper drying and proper storing as three pillars to improve rice seed and seedling health. Activities have been undertaken in four villages in each of the seven agroecological zones. As SHIP began its fourth year, increased emphasis was put on how to improve scaling-up strategies. CABI Bioscience as one of project partners, alongside the International Rice Research Institute (IRRI), has been at the forefront of developing, validating and disseminating innovative discovery learning tools and approaches to increase farmer participation in crop and pest management.

During a national workshop in April 2002, potential uptake pathways were explored from the point of view of the national project partner organisations. These included the Bangladesh Rice Research Institute (BRRI), the Rural Development Academy (RDA) at Bogra, and four different non-governmental organisations namely CARE, PROSHIKA, BRAC and GKF. Farmer-to-farmer extension and the use of local leaders and institutions were mentioned as important uptake pathways, yet with no clear understanding as to how to proceed, and without information on the point of view of the end-users. The following illustrates how the community in Maria village, Bogra, expressed their point of view and expertise, after being triggered by the new PRA tool to analyse their own innovation adoption process.

### **Stimulating innovation**

In Maria village, the key-site for SHIP activities implemented by RDA, multipurpose seed drying tables were developed in a participatory way by stimulating people's creativity. People in Bangladesh traditionally dry their rice seed on the floor or on a bamboo mat, also called *chatai*. The introduction of tube wells and new rice varieties over the past 10 or so years enabled a lot of farmers to grow a second rice crop during the dry season. However, properly drying this *boro* seed has become one of the major bottlenecks, because it is harvested at the on-set of the rainy season.

As post-harvest activities are mainly the responsibility of women, we organised a learning session with mainly the women of the 30 participating households. To ensure full ownership, the concept of improved drying was introduced through a visualisation and reflection session on physical processes such as ventilation and evaporation, rather than by showing a ready-made drying table and trying to get people adapt it to their own needs and means. A limited number of questions, embedded in real-world situations, were developed to stimulate the thinking process, and by the end of this two-hour session, all agreed upon useful criteria for making seed drying platforms or tables.

In a next session these criteria were further discussed with both husbands and wives, and a monitoring sheet was developed by the participants. We transferred this to an A4 sheet. All households received a copy and were asked to record the date at which they would make their table. It was made clear from the early on-set that if they wished to make one, it would be at their own expense.

Within a period of only five months all the thirty households engaged in the project had adopted the idea of this technology, each bringing in their own innovations. More than 60% of the multipurpose drying tables were designed and made after close consultation between husband and wife. Personal observations and informal talks also revealed an important exchange of ideas between households. We wished to know how could we find out how people within the community inspired one another, and what could we actually learn from this?

## **Why analysing the innovation adoption process?**

We believe that visualising the innovation adoption process could help in:

- provoking community reflection and raising awareness about the dynamics of the process
- providing insights in the social and psychological dimensions underlying the innovation adoption process
- probing which people, or more specifically personalities, to engage in a particular farmer-to-farmer extension activity.

A better understanding of the innovation adoption process could help outsiders in better targeting their community innovation activities. Secondly, it is generally agreed upon that for the selection of extension workers, not only the technical but also the facilitation skills are important criteria. This is equally important when selecting farmer facilitators, and as such we have looked for a way to gather insights in the underlying social and psychological dimensions of the innovation adoption process. As far as we were aware, no PRA tool existed to visualise such a process and encompass some of these factors.

Flexibility and creativity are key factors in participatory approaches. Through brainstorming we ended up with the Innovation Tree in which ideas from the flow chart and a method to identify indigenous specialists have been adjusted and combined.

### **Materials**

Each household needs a card about half an A4-size, and there should be enough markers. The session is best held in an open space in the village, but could also be done indoors presuming a large enough floor or wall can be found. Lines can be drawn with either a stick in the sand, or with crayons on harder surfaces. In case the illiteracy rate is high, pictures of the participating households will be useful.

### **How it works**

1. Invite those households who have adopted or adapted a technology for a meeting, brief them about the objective of the exercise, and provide cards and markers.
2. Ask them to write their name on the card along with the date on which they adopted the technology. The fact that this date has been recorded by them on their monitoring sheet may help at this point.
3. Explore with the participants whether the technology could be classified into broad groups. In our case, for instance, the participants clearly distinguished two broad classes of drying tables, namely light ones and heavy ones.
4. Draw one line for each group, leaving ample space between each line. The length of the lines depends on the number of participants, and whether you do it indoors or outdoors. In the open you should allow for at least half a meter per household.

5. Ask the participants to bring their cards and take place on the line according to which broad group they belong to (photo 1).
6. Ask them to re-arrange themselves according to the date at which they have adopted the innovation. At completion, innovators should be at one end, while late adopters at the other. After having laid their card on the line, they can go back to the group.
7. The person or household who first made the innovation is asked to take the floor and explain who or what inspired them to do this (photo 2). One facilitator guides the process, while another records all the comments.
8. Consequently in chronological order all the others are asked to draw one or several lines to cards of households who inspired them to also adopt the idea of the innovation, while adapting it to their personal needs and limitations. Lines can be drawn within or between groups (photos 3 and 4). The facilitator tries to find out what exactly convinced them to do it, and what other than personal factors were involved in the decision-making process. Although subtlety is the master of the facilitator, the underlying question is 'Why was household x a source of inspiration and not household y, while both adopted the innovation before you did?'. Preferably a third facilitator simultaneously copies the name cards and lines on a sheet for later processing (figure 1).
9. The last part of the exercise is the most important one, as this is the time to facilitate group discussion and stimulate reflection. The first step in the discussion should deal with the innovation process itself, and depending on the objective, focus more on either the technical, economic, social or psychological dimensions.
10. During the last part of the discussion the facilitator tries to draw on the insights gained from the exercise, and explores who could contribute in which way to scaling-up the innovation adoption process.

### **Revealing social and psychological factors**

Farmer decision-making in adopting a technology is influenced by institutional, economic, cultural, social and psychological characteristics. A whole range of anthropological and social tools exist to reveal mainly the first three categories. The social and psychological factors enhancing or inhibiting the actual adoption can be analysed directly with the community through the Innovation Tree. As these factors are often location- and technology-specific, a list of factors is given in Table 1 based on a literature review and personal experience.

The above factors partly determine whether a technology is adopted or not, but the Innovation Tree exercise has also enabled us to investigate how different personalities or types of innovators play a different role in promoting the technology to their colleagues. We have identified two types of innovators (Table 2).

Table 1. Some social and psychological characteristics influencing the innovation adoption process. Factors identified in our project by applying the Innovation Tree are indicated by an \*.

<b>Social factors</b>		<b>Psychological factors</b>	
Stimulating adoption	Inhibiting adoption	Stimulating adoption	Inhibiting adoption
Personal communication network*	Opposition in the farming community	Innovation proneness*	Complexity of technology
Social participation*	Social isolation	Risk taking ability	Risk avoidance
External pressure* <sup>1</sup>	Poverty	Extravert*	High level of stress
Common need for solving a problem		Overall knowledge	Lack of knowledge on the technology
		Self fulfilment*	Lack of motivation
		Pride in ownership*	Mistrust of project staff
		Level of aspiration	

<sup>1</sup>The presence of the project and visits of international staff contributed to certain people being eager to make a good impression.

The first type of innovator has inspired a wide range of people from different levels within a community and has a modest, mild and inquiring character. This innovator has enthusiastically engaged in farmer-to-farmer knowledge strengthening of seed health management, both within and outside the community. The second type has enthused fewer and mainly like-minded people within the community, and has a strongly competitive character. This innovator has been more eager to go outside the community to promote the technology based on his innovation, rather than getting engaged in education activities.

Table 2. Profiles of two types of innovators as identified in the Seed Health Improvement sub-Project, Bangladesh.

	<b>Type 1 Innovator</b>	<b>Type 2 Innovator</b>
Main interest	Knowledge	Technology
Personality	Modest, mild and inquiring	Competitive
Social interaction	Intense	Limited to like-minded people
Potential contribution to extension	Action learning	Technology promotion

## Conclusions

Although the Innovation Tree has so far only been used on a small-scale in a few villages and with a focus on a technological innovation, it can be applied with any type of innovation, whether triggered by a project, a workshop, or any other communication channel.

As illustrated above, we believe the Innovation Tree is a useful tool to distinguish between different types of innovators, but also to better understand the psychological and social dimensions underpinning the decision-making process, which would be difficult to disclose in other ways. This may yield valuable information about which people or, more broadly, personalities (and even institutions) to engage in a particular scaling-up activity.

However, as with any PRA tool, none can stand on its own and therefore we stress the need to complement this tool with other PRA tools or techniques such as semi-structured interviews and personal observations. The tool may need to be modified to take account of the different adaptations made to the innovation by the different participants.

And last but not least, it is important to realise that the output from the discussion following this PRA exercise goes much further than the actual innovation adoption process. Indeed, as is often the case, discussion topics quickly evolve towards social development issues and how community members see their role in this process.



Photo 1. Participants from Maria village line up in two rows, one for the light and one for the heavy tables.



Photo 2. After having placed their cards in chronological order of adopting the innovation, one by one takes the floor and explains who or what inspired them to do this.



Photo 3. Hamida indicates who inspired her to adopt the innovation.



Photo 4. Zabed Ali indicates who inspired him.

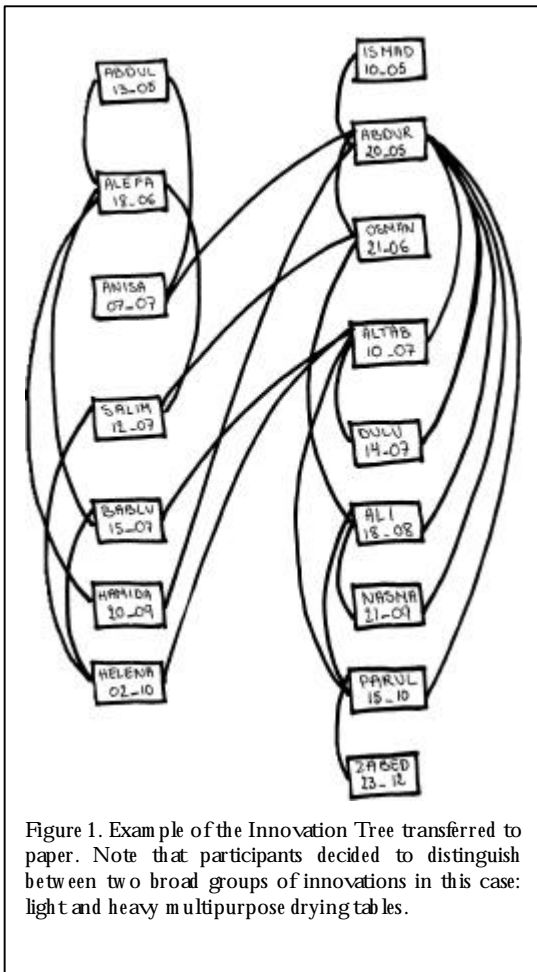


Figure 1. Example of the Innovation Tree transferred to paper. Note that participants decided to distinguish between two broad groups of innovations in this case: light and heavy multipurpose drying tables.