

# Farmer-participatory Extension in Jumla, Western Nepal

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Extension work is crucial to the successful and appropriate promotion of beekeeping in rural areas. Hence it is necessary that the Asian Apicultural Association (AAA) formulate guidelines about extension and how it may be executed appropriately in the Asian context. The issues raised in this paper have been compiled on the basis of the author's experience in beekeeping development in the remote mountain area of Jumla, Nepal. Whilst many of these issues will be general throughout Asia, others may relate only to the remote, traditional and resource-poor situation of this case study. The aim of this paper is to formulate a model on the basis of this case study.

The reasons for choosing Jumla as the site for methodological research are as follows.

- The *Apis cerana* bees in Jumla are larger and probably higher honey-yielding than other Himalayan strains.
- A strong tradition of beekeeping exists in Jumla.
- Beekeeping has a comparative advantage in the high altitudes of Jumla where rice cannot be grown.
- Honey and wax are traditionally important components of the society's (barter) economy.
- Forage resources for bees are good.

- The remoteness of Jumla and lack of land for cultivation leads to extreme poverty. Beekeeping as a means of income and improved nutrition needs to be tested as an option.

A working definition of extension in beekeeping could be as follows: transfer of beekeeping (technical) skills and knowledge, usually from beekeeping 'specialists' to 'learners' through visits to people in their own communities/homes. Learners are often men and women farmers but may also be potential new extension workers. Specialists may be bee scientists, extension workers and/or farmers.

### Methods of Beekeeping Extension

Several methods used in combination make for a good extension programme. These are as follows:

#### Classroom based training

This is suitable for teaching beekeeping theory and bee biology, and can be held in local or district agricultural training centres. This method suffers from the fact that selection of farmers participating in training is difficult and can be a source of conflict within village communities.

Often the most vocal rather than the most active farmers are selected to attend, rather than the most interested who may stay quiet and unnoticed.

### **Village based training**

This is suitable for teaching both theory classes (although materials and facilities may be limited) and for practical hive making. This has the advantage that many members of the community can take part. Farmers who can take time away from their work can turn up as convenient and gain some idea of what is happening. Regular tasks such as caring for livestock or children can be fitted in between classes. Separate classes for men and women can be given at different times of day depending on participants' daily routines. Also, trainers can gain better understanding of the village situation and what may be appropriate answers there.

### **Practical classes and/or demonstrations**

These are useful especially in demonstration apiaries and with lead farmers. It is essential for beekeeping manipulations and colony management training.

### **Extension visits**

Including advisory services, and on-the-spot practical problem-solving with demonstrations. These are essential to follow-up training, to investigate what problems are being experienced and to explore potential answers.

### **Farmer field trips**

Usually these should be to lead farmers in the same area/district, but may also be beneficial between different areas, especially taking farmers from less developed areas into more developed ones. Where funding is available and there is similarity of language and beekeeping conditions, exchange visits of farmers (even between neighbouring countries) may also be worthwhile. Such an exchange will be taking place between the Jumla farmers of the Himalayan Beekeepers' Association and those of

the National Tree Growers' Cooperative Federation in Munsiri, Uttar Pradesh, India.

### **Distribution of written material**

This is especially appropriate where literacy skills are commonplace. In areas where the rates of literacy are extremely low this is less effective. Materials should be dominated by pictures and text and should be in clear, simple, local language. Such materials are appropriate for new readers and also more educated people.

### **Basic principles in beekeeping extension**

#### **Work with resources available in the area**

These include: local (indigenous) bees; traditional technology and knowledge; locally available materials; local people.

*Why use indigenous honeybees?* Local indigenous honeybees are the most suitable for use in almost all situations in beekeeping development. This is because imported honeybees spread exotic diseases that cannot be controlled. They are often not ecologically suited to their new environment and are expensive to buy. They require higher inputs than more wild-natured local bees. Inappropriate introductions of exotic bees, which are usually not screened for bee diseases, can have disastrous results. Jumla provides us with an example. In the early 1990s, *Apis mellifera* was introduced to Jumla by a beekeeping technician employed by an NGO to improve beekeeping in the district through training and extension. By 1994, these *A. mellifera* were seen to be highly infested with European Foul Brood (EFB) (Pecchacker, pers. comm.). By 1995, when I started working in Jumla, EFB in combination with the older Thai Sac Brood Virus Disease (TSBV) was wiping out the local bee population. In 1996, most colonies in the project's apiary at the Karnali Technical School died and yet more died in village communities. Samples taken in 1996 showed confirmed levels of EFB. In 1997, TSBV was hardly found at all, but EFB continued to destroy colonies throughout the district and is still affecting colonies now.

Although we cannot go back in time and test what would have happened if *A. mellifera* had not been introduced, there is strong evidence to suggest that the disease entered Jumla with the European bee. EFB is non-indigenous to *A. cerana* and is unlikely to have spread from it.

*Why use traditional (indigenous) knowledge and technology?* Local traditional beekeepers know their own bees and beekeeping conditions better than most outsider 'specialists', especially more than foreigners who do not speak the local language. However apparently 'primitive' local techniques in beekeeping may appear, extensionists must realise that these methods have developed over time for a reason and cannot be simply dismissed and replaced with 'modern' methods. Change takes time, and the more traditional and less developed the society, the longer it takes. Illiterate people with no experience outside their own district are slow to accept new ideas and usually need to be convinced that something will work before accepting it. Also, just as plant genetic resources need to be conserved for potential application in the future, beekeeping indigenous knowledge needs to be accessed and documented in order to avoid the loss of valuable techniques that could be applied in the future or in other problem areas.

*Accessing of indigenous knowledge.* Time and effort is needed to access indigenous knowledge but this is also a means of building trust between the farmer and the extensionist. The best means of access is by looking, learning and joining in with traditional practices and by informal interviews about these practices whilst staying with farmers in their homes or gathering in small groups. Such activities are particularly easy if 'participant-observation' methodology is adopted. This means adoption of local customs, dress and behaviours by the outsider extension worker. Participatory rural appraisal (PRA), and participatory learning and action (PLA) can also be used as a means of accessing knowledge, by making charts and calendars about traditional beekeeping activities and how they relate to other

agricultural practices, income sources and male/female workloads.

*Adapting and using indigenous knowledge.* Having studied the traditional hives in use and those preferred by farmers, appropriate beehives are often best produced by adapting the local model. This usually involves the conversion from fixed to moveable combs. In areas where there is availability of planed wood, nails, wire and so on, it may be appropriate to use 'modern' frame hives, but in many cases in remote parts of the world, top-bar hives are more practicable.

*Improvement of traditional techniques through use of appropriate technology.* Appropriate technology means technology that is suited to local working conditions and resources available. This will vary from place to place. For example, in Jumla, the Jumla log top-bar hive is most appropriate, whereas in lower-altitude, more-heavily-deforested areas, such hives are inappropriate. Here, mud, brick or straw hives may be appropriate instead.

#### **Allow recipients of extension to participate in the process of developing beekeeping**

*Participatory planning.* Initially, this means that the extensionist should ask farmers what they feel and what they want while using PRA, PLA or participant-observation methods. Once it is established that farmers are happy to participate in a beekeeping programme, a process of farmer-participatory planning should be embarked upon to decide how the programme should be organized. If appropriate technology is required, then action-research involving farmers should be embarked upon to develop it. Also, indigenous knowledge from the area should be accessed and documented for incorporation with new methods that the extension programme brings in.

*Who should be the target of extension?* Selection of farmer-recipients of beekeeping extension is a challenge. General guidelines may include targeting those who have traditional experience in beekeeping, those who are particularly interested and already active in traditional

methods, and those for whom beekeeping holds a comparative advantage economically. Because of the advantages of beekeeping in terms of being low-input, not requiring land and not being time-consuming, beekeeping may also be appropriate for disadvantaged groups such as landless people (e.g., low castes in Jumla) and women.

*Group work.* Having decided to work with a particular target category, beekeeper groups need to be formed in order to organize activities, and share experience and ideas. Groups should be in 'pocket areas' that can become centres of beekeeping expertise and resources for surrounding areas. These groups benefit from belonging to district-level beekeepers' associations. Groups need to feel that they own the programme in their community and that the outputs are for their benefit, otherwise the extension effort will fail. Allowing beekeeping groups to make decisions and take responsibility is crucial to effective group functioning and for motivation.

*Farmer-to-farmer.* Having formed groups and given training to farmers, the most skilled and interested should be used to teach other farmers in their area. Farmers share local dialect and understanding and are comfortable with the village situation in which they have to conduct extension activities. Because fellow farmers understand each other's problems, there is likely to be more trust between the 'extensionist' and 'learner'. Really effective farmer-to-farmer approaches are perhaps the only sustainable answer to building long-term extension programmes in beekeeping in rural areas.

*Marketing activities.* Co-operatives that are part of, or the same as, an area's beekeepers' associations are a good means of co-ordinating marketing activities. Facilitation of marketing can be crucial if significant income is to be generated from beekeeping. Processing of hive products and manufacture of value-added products also needs organizing in order to increase potential benefits to the local beekeepers or beekeepers' association.

## Cultural Sensitivity

Several rules of thumb apply to 'outsiders' who act as extension workers both foreigners and those from outside the target area. These are summarised as follows.

- Respect local traditions and taboos.
- Dress appropriately – this means that modest, non-extravagant clothes that do not emphasise the differences (e.g., in wealth and educational status) between extensionist and farmer are essential. Clothes that are viewed as highly fashionable or that are unfamiliar to the local community may be a means of alienating farmers.
- Learn the local language or dialect whenever possible. If time does not allow, make an effort to learn some greetings and basic small talk.
- Pay respect to local experts rather than assuming that you know more than them.
- Promote the concept of mutual learning. Listen to them and ask them about what they know as well as sharing your ideas/knowledge.
- Ask permission before opening or touching hives, before taking photographs and so on.
- Share time, space and perhaps also food with farmers. Generation of a good relationship between the extensionist and farmer is crucial to extension success.
- Join in with what is happening. Relax and be yourself with the farmers.

## Sustainability

Issues of sustainability must be addressed and re-addressed throughout the extension programme. All too often, whilst outside funding is available, it is tempting to solve problems through spending money, but if such extravagance cannot be sustained later then such expenditure should be considered carefully. Extensionists need to ask themselves the following.

- Who takes over after the programme?

- Where will materials and resources come from later?
- Are there any environmental issues at stake (e.g., forest use)?
- Do farmers feel that they own the programme?

**Outputs of Extension**

Potential outputs of extension can be listed as follows.

- Knowledge transfer and sharing/generation of new knowledge.
- Income generation from beekeeping.
- Livelihood improvement from beekeeping. This is particularly important in remote areas where honey is a luxury to be kept for festivals and religious ceremonies, and where it can be used as a medicine. Beeswax products can also have medicinal and other social and environmental benefits.
- Organization of farmers.
- Motivation.
- Empowerment of farmers (and in the case of farmer-to-farmer approach, of extensionists too).
- Development of new appropriate technologies (through adaptation of indigenous knowledge).

**Examples of Potential Applications of PRA Tools**

Questions about how, whether, why and how to operate extension programmes and the tools that can be used to address them are listed in the table below.

When to meet farmers, hold training and other activities?	Seasonal calendar Daily routine
Who are the beekeepers, where do they live, where are their hives, their hive-making and floral resources, and	Social map Resource map

crops needing pollination?	Preference ranking of beekeeping versus other activities and matrix analysis of the results
What is the relative economic importance of beekeeping?	Seasonal calendar Flow charts
What local beekeeping practices are in use and when are they important?	Forage calendar Time lines or trends
What are the main forage species?	Separate PRA activities for women and men, and comparison of views
How are honey yields, colony numbers and other parameters changing?	
Are there gender issues to be considered?	

**The Beekeeping Extension Programme in Jumla**

The extension programme described here developed from an action-research project in appropriate beehive design and indigenous knowledge. In 1994, experts from Austria introduced a straw hive to the Karnali Technical School (KTS) and Jumla farmers. A year later in 1995, when a follow-up visit was made to the district, it was found that the straw hives were generally not being accepted and that the few in use suffered from problems in management. Hence, hive-testing was begun in July 1995, establishing experimental hives of five designs at KTS. The hives under test include the traditional cylindrical horizontal log hive; a log top-bar hive modified from the traditional hive; a square cross-section log top-bar hive or 'Jumla' hive; the Austrian straw hive (with frames or top bars); and the wooden Newton hive with frames.

Methods and results of these experiments and results of indigenous knowledge research are given in other papers in these proceedings.

In April/May 1996, examples of the hives under test were also distributed to four farmers' groups of different castes in different eco-zones of the district to test their acceptability to farmers and workability in village beekeeping conditions. The groups were given training in hive making and in beekeeping theory and practice, with the intention that these farmers would then be able to teach beekeeping in their neighbouring villages. It was planned that the farmers would divide colonies from those given by the programme and that a proportion of the resulting new colonies could be used to start new beekeeping groups in the area.

At the same time as the beekeeping groups were established (spring 1996), brood diseases including Thai Sac Brood Virus and European Foul Brood, reached epidemic proportions causing the loss of most colonies in the KTS apiary, village demonstration apiaries and farmers own traditional hives. Beekeepers' morale and enthusiasm waned and the programme looked doomed to fail. The Jumla Beekeeping Project staff investigated medicines for the disease and management techniques to control it and in May 1997, a farmer-trainers' training in 'Disease management and extension' was held. At this training, lead farmers from the four original beekeepers' groups were chosen and were given detailed training in how to recognise bee brood diseases and in disease management, as well as basic beekeeping and extension methods.

From this training the best trainers were selected and sent into the field to conduct a questionnaire survey about bee disease and traditional beekeeping methods. They conducted PRA exercises and gave classes on bee disease, beeswax processing including candle- and medicinal cream-making and promoted the use of top-bar hives, particularly the 'Jumla' hive. The results of the questionnaire survey are presented below and also in papers on beeswax

processing and indigenous knowledge presented in these proceedings.

The employment of the farmer-trainers by the Jumla Beekeeping Project was empowering and motivating for farmers, as well as a most effective mechanism for reaching out to beekeepers throughout the district. Local farmer-trainers have a number of advantages compared to government extension workers or development agency workers from outside the area. They speak the same dialect as farmers (the Jumli language is quite distinct from Nepali of the plains and Kathmandu valley). They are not particularly uncomfortable in field conditions which outsiders find difficult, and there is less suspicion and potential for bad feelings generated by wealth, education and cultural imbalances.

Within a few months, they were organizing the rebuilding of the previously inactive district beekeepers' association into a new farmer-led NGO called the Himalayan Beekeepers' Association (or HIBA), Jumla. This organization, now registered as an NGO, is actively forming new beekeepers' groups, providing training in hive-making and beekeeping, and attempting to assist with disease control. Since the training of farmer-trainers in May 1997, village-based training in beekeeping and/or hive making have been conducted. Many new village beekeepers' groups have been formed and farmers throughout the district have received extension visits concerning harvesting and quality of honey, beeswax processing and marketing, beehive sanitation and disease control, and other aspects of beekeeping.

From March 1998, with funding assistance from the Jumla Beekeeping Project, HIBA is establishing Beekeeping Information Centres in villages of seven areas of the district, focusing on the remoter and higher altitudes where beekeeping has a comparative advantage over cultivation and also a strong traditional basis. Each of these centres will be staffed by one full-time male farmer-trainer from March to September 1998. He will establish Jumla hives

and traditional hives at the centre and also distribute hives to the most active farmers' group. Two demonstration apiaries will be established in each area that will be used for training and demonstration purposes and as potential banks of queens or nucleus colonies.

Although currently, many of its activities are sponsored by the Jumla Beekeeping Project, the intention is that HIBA will develop over the coming years into a strong farmer-led self-financing organization. It is hoped that the co-operative marketing of honey, beeswax and value-added products, in collaboration with another local NGO called Surya Social Service Society, will enable the financing of a minimal training and extension service in beekeeping. However, if HIBA succeeds in the coming years to create village centres of beekeeping expertise it might prove unnecessary to operate intensive extension programmes of the kind described above. Hopefully, by working together with agricultural development office extension workers in the future a sustainable and effective service in beekeeping can be established.

Promoting beekeeping amongst women is a huge challenge in Jumla. Women are interested in learning about beekeeping but a gender imbalance in workload means that women have little free time to either learn or practice beekeeping. They are busy from morning to night in household chores, child-care and agricultural work, and hence it is difficult for them to make

time for beekeeping training and for extension workers to meet them. The biggest barrier to their participation is the inability of women to speak out or even enter a group if men are present coupled with their lack of education. If someone comes to the village, it is assumed by all that they will want to speak to the men since they are more often the educated ones and the spokesperson for the family. In order to reach out to women, women farmer-trainers have also been trained. Five women are employed in making extension visits and running training to encourage women's participation. Separate classes and discussions are held with women. For women extension workers, however, it is not so easy to enter a village and walk around staying in different places without causing gossip. In Jumla culture, it is generally unacceptable for a woman to travel about especially in the company of a man who is not her father, brother or husband. Hence, future programmes intend to use the women trainers more to give five- to seven-day training in one place rather than in occasional extension visits. These women will also visit the beekeeping information centres and make contact with women in the field, but will not go on long field trips that require staying in a different place each day. It is hoped that as the bee population becomes resistant to disease colonies will become available for women's groups.