Improving the livelihoods of small-scale pig producers in Northeast India: An integrated, people-centred approach

Rameswar Deka and Iain Wright

NAIP

ILRI
International Livestock Research Institute

Foreword

The National Agricultural Innovation Project (NAIP) is a World Bank and Government of India funded country-wide initiative led by Indian Council of Agricultural Research (ICAR). As a part of the initiative, ICAR-Northeast Hill Regional Centre is leading a project entitled 'Livelihood improvement and empowerment of rural poor through sustainable farming systems in North-east India' in the seven Northeastern states excluding Assam. The project is being implemented with the involvement of several local, national and international organizations. The International Livestock Research Institute (ILRI), one of the 15 centres supported by the Consultative Group on International Agricultural Research (CGIAR), is a member of the project consortium and has been developing and implementing a model for livelihood improvement through development of the pig sector in Mon district, Nagaland with additional support from the International Fund for Agricultural Development (IFAD). Apart from ILRI, the other partners are ICAR-Nagaland Centre, School of Agricultural Science and Rural Development (SASARD), Nagaland University and International Water Management Institute (IWMI).

The project design was influenced by a previous study of the pig sector in Nagaland (Deka and Thorpe 2008). This brochure summarizes the approach that has been developed and presents some of the results of the implementation of the model. We sincerely hope that it will be of value to those who are developing or implementing pig development programs in NE India and elsewhere.

Project region

Mon district in Nagaland, the home of the Konyak Naga tribe, is a strategically important district bordering Myanmar in the south and Assam in the northwest. It has an area of 1786 km^2 and a population of 259,604 (as per 2001 census) which accounts for 13% of the total population of the state.

Figure 1. *Map of Nagaland.*

Two villages in Mon district, Lompongsheanghah and Longwa were selected for project implementation. Lompongsheanghah is about 30 km from the Assam-Nagaland border and 10 km from the district headquarters (Mon town). Longwa is located about 40 km from Mon town and straddles the Indo-Myanmar border. There are about 115 households in Lompongsheanghah and about 536 households in Longwa.

Livelihood strategies

The primary sources of livelihood for the people of the project villages are agriculture, mainly cultivation of rice, millet, fruits, vegetables etc. in the jhum fields (slash and burn). Apart from crop cultivation, rearing of livestock, especially pigs and backyard poultry (plus mithun in Longwa village), collection of fire wood, petty trading and wage labouring are secondary sources of income. The poverty level is higher in Longwa than in Lompongsheanghah. For 3–4 months a year, much of the population faces severe food shortages and depends on non-conventional food resources like tapioca, colocacia etc. as staples.

Pigs are the most common and preferred livestock species in Mon district. The maority of households rear pigs (mostly 1 or 2 pigs), mainly for fattening. The production system in the villages is very traditional, mainly based on indigenous breeds with feeding systems primarily based on jungle forages and kitchen waste. The housing system is poor and unhygienic. Access to veterinary services and improved farm inputs is almost nil or negligible. Pig producers have traditional knowledge and skills for management of pigs for fattening but few have the skills to successfully breed pigs. Prior to this project there has been no concerted effort to improve the pig production system in the project villages leaving the whole system traditional and poorly remunerative.

The approach

A ‘people-centric’ approach was adopted to overcome the various challenges of livelihood in an affordable manner within the scope of limited skills and available resources in the target communities. A key component of the design is the involvement of the local population at all stages in the project design and implementation and the use of their own resources to make the whole process community-drieve and self-sustainable. The aim is to improve the livelihood of rural poor in the project villages by transforming a subsistence pig production system to a market-oriented production system through promotion of a locally suitable, innovative package of practices for increasing the productivity of smallholder pig production systems.

Considering the remote location of the project villages and constraints like poor financial resources to invest on farming system, poor road connectivity, poor access to veterinary and other input/output services, a community-based service delivery system was designed to address the constraints of pig production and marketing. The lack of resources also means that large changes in the pig systems

are not sustainable, so the approach taken was to promote incremental changes in the system, commensurate with the available resources and skills, rather than promoting significantly different systems.

The process

The process followed was designed to ensure that the project activities were demand driven, relevant to the needs of the local people and would lead to sustained improvement in livelihoods after the end of the project.

Step 1: Assessment of the prevailing livestock system

The prevailing pig production and marketing systems in the project villages were assessed through participatory discussions with the community members. The needs, expectations, interest and availability of resources of the community members were also assessed at the beginning of the project. In order to take forward the implementation of the project activities, the project built on the dynamics of the local social institutions such as Self Help Groups (SHG). The SHGs were motivated to act like a vehicle to drive the project interventions towards its objectives.

Step 2: Identification of interventions

Local best practices were identified, assessed and suitable technologies and interventions were identified in consultation with the local community members keeping in mind the available financial resources and access to farm inputs, services and markets.

Step 3: Introduction of Pass on Gift scheme (PoG)

The Pass on Gift scheme is a ceremonial handing on of project benefits from one beneficiary to another. The members of each SHG were asked to identify the six most successful pig producers within the group who would receive better quality piglets supplied by ILRI under the PoG scheme. They were also asked to select the down-line beneficiaries (two or three in number) under each first line beneficiary in advance, who would receive piglets as a gift at the end of the first production cycle from the first line beneficiaries.

Step 4: Assessments of training needs

The knowledge gaps and training needs of the target group were assessed in consultation with the target beneficiaries. A sensitization program was launched involving the local decision-makers including the Pastor, Chairman of the Village Council, Students' body etc. to make them aware of how to organize the PoG scheme. At the beginning of the initiative it was made clear to community members that except for the capacity building programs and some critical farm inputs (like piglets, planting materials of food–feed crops) all other inputs like feeding, management, construction of a pigsty would have to come voluntarily from the pig producers' own resources.

Step 5: Design and delivery of training

Based on the training need assessment, several customized training courses were designed and delivered to the target group before implementing the interventions. Exclusive training cum exposure trips were also arranged for the smallholder pig producers. All training programs had refresher courses scheduled after few months.

Step 6: Activities and impact

Based on the assessment of the constraints on pig production and marketing system, the following interventions were designed and implemented.

Capacity building

Several customized training programs were designed and delivered to the target groups, which included: 'livestock-based livelihood program' for project implementers, 'SHG management and group dynamism' for project implementers and executives of SHGs, 'veterinary first aid for pigs' for livestock service providers, 'smallholder pig management' for pig producers etc. Other customized training courses on 'disease management', 'quarantine measures', etc. were also conducted from time to time. The trainings were imparted by using local veterinarians, ILRI scientists, relevant experts from other organizations and successful pig producers as resource persons. Refresher trainings and exposure trips were organized as and when desired by the community. So far, 16 training courses have been delivered to 331 beneficiaries.

Figure 2. *SHG management training.*

Figure 3. *Pig management training.*

Breed improvement

The six initial first line beneficiaries from each SHG were provided with good quality crossbred piglets (large Black Cross and Hampshire) under the PoG scheme. Out of six beneficiaries, five beneficiaries received one female piglet each and one beneficiary received one male piglet (maintaining the sex ratio at 5:1). It was insisted that the beneficiaries reared the piglets individually and exclusively for breeding with their own household resources and labour and they would not sell the reared pigs for slaughtering or any other purpose. It was also suggested that they did not sell the weaned piglets outside the project villages until the local demands are met. The aim was to eventually improve the breeding herd by replacing the indigenous pigs with crossbred ones.

All piglets were vaccinated against Swine Fever before bringing them into the village. The livestock service provider offered deworming drugs, mineral and vitamin mixture to the piglets at the appropriate times. Currently, 91 beneficiaries are rearing improved pigs in both the villages.

Figure 4. *Indigenous pigs (before project intervention).*

Figure 5. *Crossbred pig (after intervention).*

Feed improvement

Jungle forages and kitchen waste are inadequate to meet the feed requirement of the improved pigs to maintain acceptable growth rates and good health, so for improved feeding, all the beneficiaries were encouraged to cultivate food–feed crops which can provide both food for people and feed for animals. Cultivation of food–feed crops can also reduce the drudgery of women who collect jungle forages, often consuming a lot of time. The beneficiaries were provided with planting materials of an improved variety of sweetpotato, maize and colocacia collected from different local, national and international organizations. The beneficiaries were motivated to till the land for cultivation and to fence the plots with their own resources and labour. With ILRI's support out of 91 beneficiaries, 71 cultivated food–feed crops in their backyards covering an average area of about 600 square feet each.

Figure 6. *Jungle forages used for feeding of pigs (before intervention).*

Figure 7. *Food–feed crops cultivated for feeding pigs (after intervention).*

Disease management through community-based veterinary first aid services

For the promotion of community-based first aid services, the villagers were asked to identify two youths from each project village who had interest, education and commitment to serve as livestock service providers (LSP). After initial training in basic animal health care they were provided with a first aid kit with all required medicines and utensils for treatment of minor ailments of pigs. ILRI linked them with experienced veterinarians based in Mon (Nagaland) and Sonari (Assam). Responding to their request for more advanced training, ILRI organized refresher training in the College of Veterinary Science, Khanapara, Guwahati followed by several other refresher training courses/exposure visits. Initially, LSPs were paid

Indian rupee (INR)[1] 1000 each as stipend which was gradually reduced towards the end of the third year. Simultaneously, they were asked to generate revenue by offering quality first aid services and other livestock services such as market linkages, technical guidance, credit linkages etc.

Figure 8. *A trained LSP treating a pig in Longwa village.*

Better housing

To improve the housing conditions and reduce the risk of disease, the beneficiaries were motivated and encouraged to construct a larger pig sty (about 40 square feet per pig) to improve the comfort of the pigs. They were encouraged to construct the sty in their backyard, especially in a dry area having plenty of sunlight and a proper drainage system with two manure pits for collecting the dung, which is used as fertilizer for food–feed crop cultivation. The materials used for constructing the pig sties were generally locally available materials (preferably wooden plank and thatch).

Figure 9. *Pig sty before project intervention.*

Figure 10. *Pig sty after project intervention.*

1. On 19 July 2011, USD 1 = INR 44.5021.

Better hygiene and sanitation

To control spread of diseases (including zoonotic diseases), beneficiaries were made aware of the importance of maintaining clean and hygienic practices in the pig sty through a hygiene and sanitation drive. The local church, students' body and village development council were involved in advocating cleanliness and hygiene. The project initially provided disinfectants like phenol, potassium permanganate, lime etc. to the SHG groups and trained the LSPs and SHG members on the use of these disinfectants in cleaning the pig sty, farm utensils and surroundings. They were also encouraged to be vigilant regarding the outbreak of certain diseases, especially Swine Fever and taught how to quarantine the infected pigs and dispose of sick pigs. Almost all beneficiaries adopted the clean and hygienic measures in their respective villages.

Figure 11. *The hygiene and sanitation drive in action.*

Business development services

Business development services were introduced with the help of community representatives and ILRI's field staff in order to assist the rural entrepreneurs to scale up and scale out their on-going activities. ILRI's staff gathered relevant information from various sources such as government/non-government agencies, banks, financial institutions, business houses, farm input suppliers etc. and disseminated it to the target community as and when required through the LSPs besides creating linkages between the LSPs and all relevant stakeholders. Business development initiatives facilitated by ILRI led to investment on a feed grinding machine by the villagers in Lompongsheanghah village for preparing mixed feed for the pigs. ILRI provided logistic and technical support for this initiative.

Impact on poor beneficiaries

There is a significant impact of the project in the target villages with a rising popularity of pig breeding (Table 1). Although women traditionally look after the pigs, men also began taking a substantial interest in pig breeding as many misconceptions regarding the survival of crossbred pigs in the villages were dis-spelled. Villagers also became keen to learn new skills. At the start of the project villagers used to ask for a day wage for attending training programs but as they have realized the benefits of enhanced knowledge and skills they attend training programs with no request for payment, sometimes even forgoing a day's wage under the NREGA program to attend training. As a result of the project intervention many volunteers including the church pastors and local students of the villages have spread awareness on clean and hygienic rearing of pigs and herd management in properly sanitized sties. They have also learned to prepare affordable mixed feed for the pigs from available food–feed crops (sweetpotato, tapioca, collocacia and maize). The villages are already equipped with two trained LSPs who are ready to aid the project beneficiaries with veterinary supplies and treatment. The annual income from pigs increased by 286% per household.

Table 1. *Performance key indicators*

Indicator	Before	After
Households with a breeding pig herd	2	91
Households with crossbred pigs	4	91
Number of pigs per piggery unit	1	1
Production/yield		
Growth rate (kg/annum)	30	70
Number of piglets/farrowing	4–8	8–11
Average cost of rearing a sow up to 1st farrowing (INR)	1000	3800
Average income/sow (INR)	4000	15,391
Profit/sow from single farrowing (INR)	3000	11,591
Increase in income (%)		286

Policy advocacy

As part of the strategy to scale out the model, ILRI is working closely with officials of the Veterinary and Animal Husbandry Department, Nagaland and

other NE states. The lessons learned from this and other projects in NE India, are being used to trying to influence policymakers to design livestock development programs to meet the needs and expectations of poor livestock keepers bearing in mind the resource constraints and poor accessibility to inputs and services. Some of the key areas of the policy advocacy strategy are to develop a community based integrated service delivery system, local resource based feeding systems for pigs and development and supply of good quality classical Swine Fever vaccine for making the pig production system more remunerative. The success of the project has stimulated several government and semi-government organizations in NE India to replicate the model and several have sought ILRI's technical support to do so.

Reference

Deka, R. and Thorpe, W. 2008. Nagaland's pig sub-sector: Current status, constraints and opportunities. New Delhi, International Livestock Research Institute.