

Brief overview of ILRI's activities in Northeast India on pig system development

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ILRI

International Livestock Research Institute

International Livestock Research Institute (ILRI)

- ILRI works for food security and reduce poverty in developing countries through research for efficient, safe and sustainable use of livestock
- One of the 15 global agricultural research institutes (CGIAR)
- Supported by about 60 countries and public & private sector organizations
- India is one of the supporting countries
- ILRI works in India under a broader long term MoU signed with ICAR, Govt. of India

The map displays the density of ILRI's global reach using a color scale for the number of people per square kilometer. The scale is as follows:

No. per Km ²
0
1 - 2
3 - 5
6 - 20
> 20

Green stars indicate ILRI outposts, and a red star indicates the Headquarters in Nairobi. Yellow stars indicate ILRI outposts in SE Asia: Hanoi, Vientiane, and Chiang Mai (Bangkok).

ILRI's approach for pig system development in NEI

Needs two prone approaches:

- development of smallholders pig system
- development of commercial pig system

ILRI works for smallholders pig system development

We follow-

- system approach
- Investigate problem areas
- design and pilot need based interventions
- build capacity of local partners
- generate evidence from the pilots
- support local govt./others to scale out
- support decision makers for policy framing (if required)

Pig appraisal studies in Assam & Nagaland

Output:

- Assam's pigs sub-sector, current status, constraints and opportunities
- Nagaland's pigs sub-sector, current status constraints and opportunities

Outcome:

- Become an important document for donors & development agencies for understanding pig-sub sector
- Helped NEC, Ministry of DONER to organize high level policy meeting in New Delhi on 14 Jan 2011 to discuss on piggery

Support: VAHD (Govt. of Assam & Nagaland)

National Agricultural Innovation Projects (NAIP) in Mon district, Nagaland

Activities:

- Introduced pass-on gift scheme
- Popularized food-feed crops cultivation
- Introduced Livestock Service Providers(LSPs) model
- Improved breed through selective breeding
- Guided for low cost housing
- Organized hygiene and sanitation drive
- Organized buyers-sellers meet in the villages
- Strengthened capacity of all actors in the value chain

Partners: ICAR-Nagaland Center & Nagaland University



NAIP project in Mon, Nagaland

Outcome

- Transform piglet deficit project villages into surplus producers of piglets
- Become a knowledge driven community based successful model for piggery development
- Developed 3 training manuals, case studies, policy briefs and several extension materials
- Lesson learnt are being used in designing different piggery development projects



Enhancing Livelihood through Livestock Knowledge System (ELKS)

Components of the project

1. Nutrient gap analysis and designing and piloting nutritional interventions
2. Piloting Livestock Service Provider (LSP) model
3. Epidemiological study on Classical Swine Fever (CSF) and policy facilitation for CSF control programme
4. Assessing human health risk in informal pork value chain
5. Facilitating pig breeding policy for the state of Nagaland
6. Piloting Artificial Insemination in pigs in Nagaland
7. Supporting VAHD, GoN to implement pig breeding policy

Sponsored by: NEIDA, Tata Trust

Pig nutrition pilot

Specific activities

- Analysed nutrient content of non-conventional feed stuff offered by farmers in Nagaland & Mizoram
- Formulated customized supplementary feed
- Produced supplementary feed in Nagaland using govt. infrastructure
- Piloted 3 different feed regimes in Nagaland (with 100% non-conventional, 100% concentrate & 30% supplementary feed) & analyzed economics outcome
- Imparted training to VAHD officers on production and management of small feed plant
- Collected jungle forages used for feeding pigs, did proximate analysis & produced herbarium

Partners: AAU, VAHD (GoN), VAHD (GoMi) & Tata Trust

Mini pig feed manufacturing unit



Non-conventional feed staff is deficient in 35% protein, 32% energy and 17 % total dry matter

Also deficient in lysine, methionine & tryptophan

Required about 560 gm supplementary feed with 20 % CP and 3760 Kcal energy

Feeding of supplementary feeding gives more economic return than 100% concentrate or 100% non-conventional feeding

Used govt. feed milling infrastructure to prepare supplementary feed

Partner: AAU

Outcome



- Feeding pigs with nutritionally balanced **supplementary feed** fetches about Rs. 4000/year additional income, besides 1-2 extra piglets
- Promotion of local production/procurement of energy ingredients and centralised bulk purchase of protein source can considerably reduce cost of production
- Require innovations/investment to reduce transportation cost

Livestock Service Provider (LSP) model for service delivery

- LSP were local community representative selected by Village Councils
- They were trained by ILRI for 30 days in different spells with support from VAHD, GoN & GoMi in Nagaland & Mizoram
- All total 18 LSPs were trained
- They were mainly responsible for vaccination, deworming, First Aid activities and extension activities
- They worked directly under the guidance of local veterinary officer
- Initially they were offered Rs.1000/- per month/LSP from the project
- 10% drop out were recorded



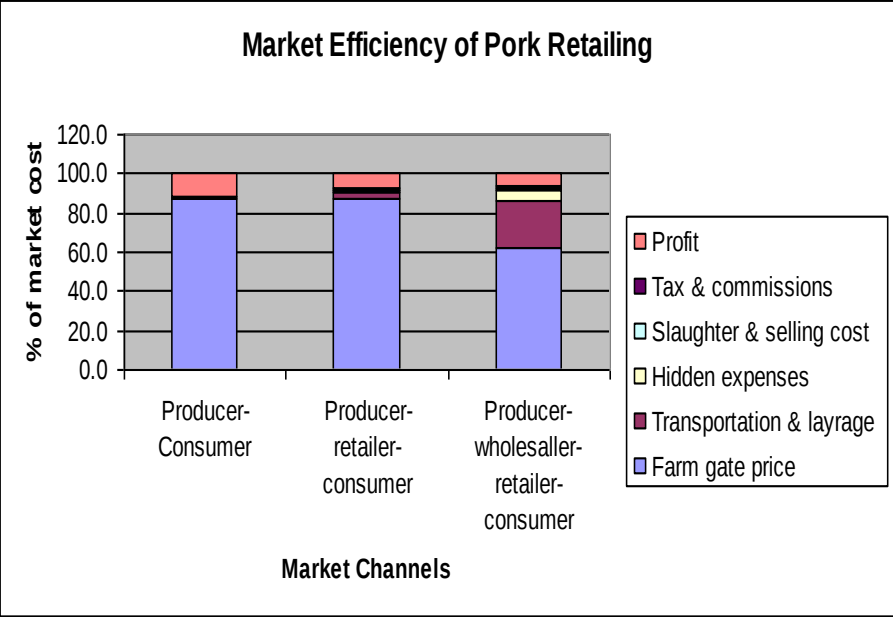
Partners: VAHD (GoN & GoMi)

Outcome of LSP model

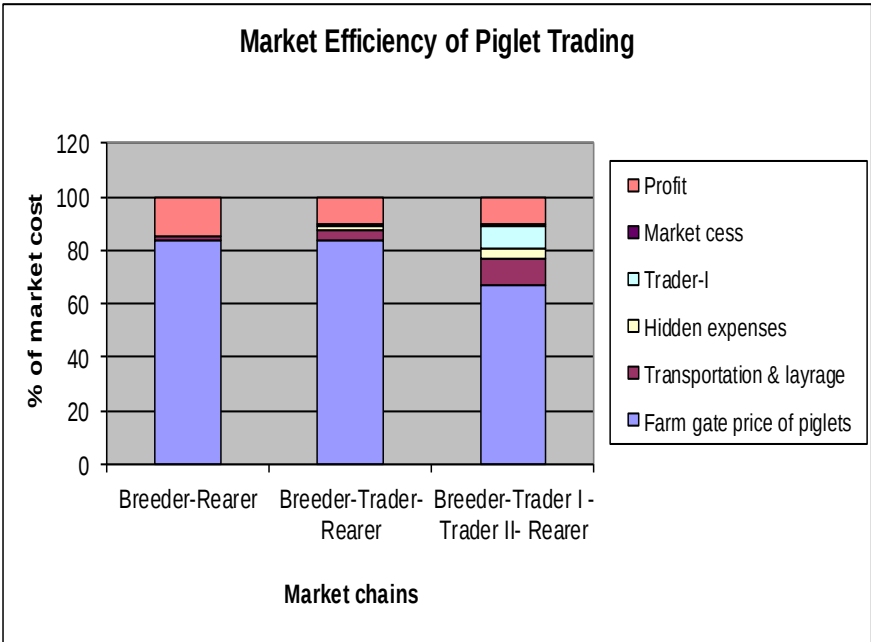
- Accessibility of livestock service increased (almost 80% of pig rearers in the project villages benefited)
- Affordability of services increased (cost of minor veterinary services reduced by 90%)
- Vaccination reduced CSF mortality to a considerable extent in project villages
- VAHD, GoN is planning to replicate the LSP model in remote rural areas of the state



Market efficiency of pig/pork trading



Partners: VAHD (GoN) & AHVD(GoA)



Hazard in raw pork produced in wet market

- Pork samples from Dimapur and Kohima districts in Nagaland were analysed to assess microbial load and antimicrobial residue
- A sizable % of pork samples contains microbial load above satisfactory level
- Small % of samples also contains antimicrobial residues
- There is need of risk mitigation approach in informal market

Partner: VAHD (GoN)

Hazard	% samples positive	% samples with unsatisfactory level
Total aerobic bacteria	97.80	20.2
Enterobacteriaceae	94.5	88.6
<i>Listeria</i> spp.	39.6	2.3%
<i>Staphylococcus aureus</i>	47.4	36.8
Antimicrobial residue	4.5	4.5
<i>Cysticercus cellulosae</i>	8.8	8.8

Control of Classical Swine Fever (CSF)

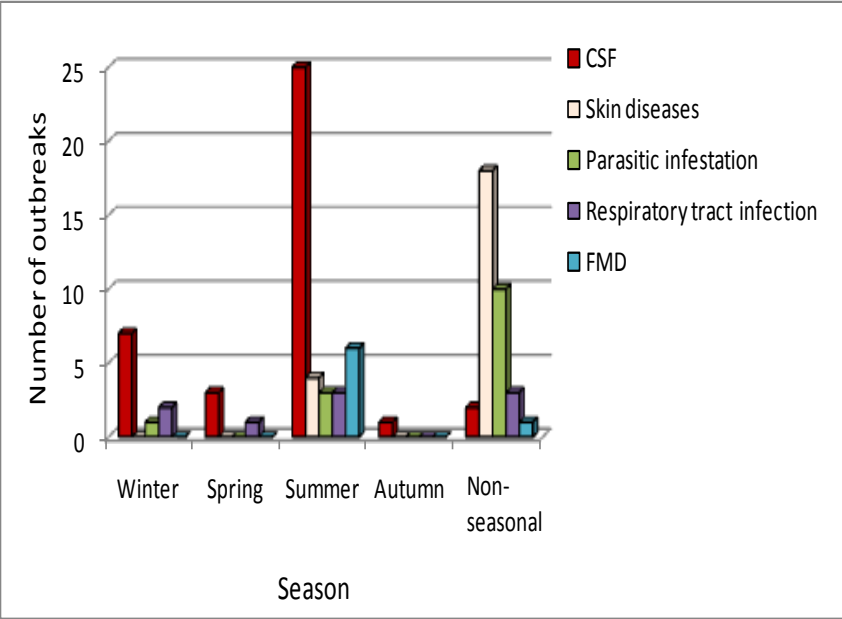
Activities

- Conducted participatory epidemiology in Assam, Nagaland & Mizoram
- Collected & analyzed biological samples for CSF
- Assessed economic loss caused by CSF in Assam, Nagaland & Mizoram
- Policy initiative to influence DAHDF, GoI to design CSF control programme

Partner: AAU

Key findings of epidemiological study

The distribution of the diseases by season



Economic loss caused by CSF

	Assam	Mizoram	Nagaland	Total
Cost of mortality	Rs 1775 million	Rs 34 million	Rs 267 million	Rs 2077 million
Cost of treatment	Rs 24 million	Rs 0.44 million	Rs 0.004 million	Rs 25 million
Cost of replacement	Rs 102 million	Rs 2 million	Rs 19 million	Rs 123 million
Total	Rs 1902 million	Rs 36 million	Rs 286 million	Rs 2224 million

Partner: AAU

Outcome

- Policy facilitation influenced DAHDF, GoI to initiate CSF control programme with initial focus in NEI
- Expedited delivery of seed virus to private parties & licensing process of CSF vaccine production

Partners: AAU, all NE state govt. departments & NRCP



Nagaland Pig Breeding Policy

- Generating evidence:
 - Breed mapping exercise
 - Brainstorming with breed experts
 - Stakeholder consultations
 - Development of Technical programme
- Development of breeding policy
- Launching of breeding policy

Partners: VAHD (GoN), NRCP, AAU, NBGAR & Tata trust



Planned activities

- Going to pilot AI in pigs in Nagaland
- Working closely with VAHD to roll out the pig breeding policy
- Support AHVD, Govt. of Assam in improving smallholder pig system under the World Bank sponsored APART project
- Support IFAD in designing their forthcoming project in Nagaland & Mizoram

Nagaland's pig subsector

Current status, constraints and opportunities



Pig breeds, breeding systems and supply and demand for genetic materials in Nagaland, India



RESEARCH
PROGRAM ON
Livestock

ILRI PROJECT REPORT

Availability and nutritional value of wild forages as feed for pigs and mithun in Nagaland, India



ILRI RESEARCH BRIEF
May 2017

The impact of evidence-based stakeholder policy facilitation on pig-sub sector growth in northeast India

V Padmakumar, Ram Pratim Deka, Iain Wright

Background

In northeast India, pig farming is one of the main sources of livelihoods for most households. About 80% of the tribal households there rear pigs. A large proportion of farmers keep one-three pigs, with fewer keeping larger numbers. The number of pigs available per 100 persons in the northeast is 18 compared to four in the country as a whole. Nearly all tribal households consume meat, mainly pork, as part of their daily diets. Some northern states, such as Nagaland, import pigs from northern states, such as Assam and Meghalaya, via informal trade routes.

Despite the importance of swine in Nagaland, the region has not adopted a policy for planned pig production. In response to a request from the Nagaland Veterinary and Animal Husbandry Department, the International Livestock Research Institute (ILRI), with funding from North-East Initiative Development Agency of Tata Trusts, supported the development of a pig breeding policy and a disease control program for classical swine fever.

The issue

Studies in Nagaland have reported that the pig population in Nagaland is the result of haphazard breeding within and between various breeds, such as Hampshire, Large black, Saddle black, etc. Pigs have been bred and crossbred in the absence of any systematic and scientific breeding

program. An earlier study conducted by ILRI found that the crossbred pigs in Nagaland did not perform well even under optimum feed situations. This means that there is a scarcity of information about the genetic potential of available breeds/ crossbreeds (to perform) and the feeding and management systems required to support and extract best productive and reproductive performance from the existing pig population.

Furthermore, Classical swine fever (CSF), a highly contagious viral disease of pigs, has been found to cause significant threat to the pig production in India, particularly in the northeast. The disease kills large numbers of pigs, destabilizing the rural economy. While there are some sporadic efforts to control the disease in the region, there have been limited impact due to factors such as vaccine shortages in sufficient quantity (0.04 million doses per year against 7.84 million), a lack of cold storage facilities, an absence of a disease reporting mechanism, and a scarcity of accurate information on the incidence and impact of the disease on the smallholder economy. The Lapsed CSF vaccine is generally used to control the disease in India. The biggest limitation of this technology is its complete dependence on the availability and continuous supply of rabbits. Therefore, greater importance should be placed on producing Lysine-rich cell culture vaccine, which does not depend on the availability of rabbits, facilitating its production in unlimited quantities.

Thank you

