Needs assessment of smallholder goat farmers in Odisha, India

D-BRIEF *from MIT D-Lab Scale-Ups* – **Spring 2016**

RESEARCH OBJECTIVES

Assess the needs and challenges of smallholder goat farmers in Odisha, India, particularly with respect to feed and fodder.

Recommend potential solutions to one or more challenges identified in the needs assessment.

Goat management practices and challenges for smallholder goat farmers in Odisha, India — and recommended solutions.

In February and March of 2016, an MIT D-Lab Scale-Ups team conducted a qualitative needs assessment study in order to understand the current practices and needs of smallholder goat herders in Odisha, India.

The study was conducted in partnership with Heifer International's headquarters team and India field office, and three of Heifer's local partners: Nydhee, Unnayan, and Sambhandh in the Mayurbhanj district. The D-Lab team (two D-Lab researchers, two local researchers, one veterinarian, and two interpreters) selected and interviewed over 200 current and former tribal goat herders about their goat management practices and challenges. Based on the findings, D-Lab recommended solutions that could potentially solve one or more of the identified problems.

Goats stall-feeding on tree branches.

Summary key findings

Among all the challenges uncovered, these were the top five:

1. *Shortage of nutritious feed throughout the year,* especially during the summer and during the rainy season, as goats do not like to get wet or eat wet feed. Insufficient feed can lead to smaller, weaker goats.
2. *High death rates of goats due to disease.* Many of the goat herders reported a high rate of death, often due to disease.
3. *Disorganized selling of goats.* Many goat herders reported selling to a middleman when they needed funds for a large family expenditure, rather than when the goats are the correct age or weight.
4. *Inbreeding of goats*, which can lead to smaller, weaker goats that are more susceptible to disease. Many of the goat herders did not have access to good bucks or artificial insemination.
5. *Unsafe and unhygienic living conditions for goats*, which can increase the likelihood of the goats contracting a disease or being killed by other animals. Many of the goats lived with the family or with other animals without proper ventilation or drainage.

Heifer India has already been working closely with the local communities to solve some of the problems identified. However, the challenges still existed at the time of the study because Heifer's programs had been operational for only about a year and had not expanded to all regions and partners.

Smallholder Goat Farmer Assessment: India

Background

Small ruminant production is one of the main sources of income for farmers living in the developing world. Of approximately 617 million goats in the world, 97.3 percent are found in the developing world. India ranks second in the world goat population with 14.6 percent of the population. The global population of goats steadily increased over the last two decades due to rising demand for goat products. Goats are attractive animals to keep as they are reliable producers and fast breeders, have lower nutritional requirements, and fetch a good price. They are assets that can easily be liquidized for cash in times of need, as they can be sold for meat. (Hossain et al. 2004).

Heifer International works with smallholder goat herders in three states in India to increase productivity of goat rearing and promote good practices for feeding, housing, breeding, and goat health care.

Study design & methodology

The study design included a variety of research methods such as semi-structured interviews, focus group discussions with goat herders, key informant interviews, immersion activities (a method where the researcher shadows the participant to observe the activities conducted by the participant), and projective methods (a technique used to uncover the latent needs of participants).

The research team interviewed 193 goat herders, 23 former goat herders, and 40 other stakeholders. The team also conducted 10 focus groups discussions. All of the current and former goat herders were members of self help groups (SHGs) as well as beneficiaries of one or more programs supported by Heifer International. Ninety-eight percent of the participants were women and were randomly selected with the help of Heifer's local NGO partners.

Key findings & recommendations

The study revealed several challenges faced by the goat herders, some of which Heifer India was already working to solve. However, some challenges persist because Heifer's programs, focused mainly on training and capacity building and have been operational for only about a year. Hence, some of the recommendations focus on expanding the work that has already been undertaken by Heifer. Among all the challenges uncovered, these were the top five:

Mahua flowers (*Madhuca* longifolia) collected from forests for goat feed.

1. Shortage of nutritious feed throughout the year

Herders and other stakeholders reported a shortage of nutritious feed and fodder for goats year-round, but especially in the summer. months. Grazing was the primary method of feeding goats and herders spent an average of six hours per day on grazing in summer, limiting the time available for other income-generating activities and family and social life as well.

In the rainy season, when green fodder is plentiful, grazing time is limited because goats dislike being wet and dislike wet food. Hence, during the rainy season, goat herders often have to collect leaves and other materials to feed the goats at home. Currently, most herders do not store fodder and they cannot afford to buy the concentrated feed from the store.

Recommendations

- Promote growing fodder crops and trees such as subabul, sesbania, signal grass, and other fruit trees such as moringa and jackfruit at home and on agricultural land when the land is not in use. (Heifer staff reported that they have started massive plantation activities across the region to solve this problem.)
- Promote more stall-feeding at home and try leaf meals (leguminous fodder crops sun dried, pressed and stored in a container) and silage or haylage (chopped green or dried fodder mixed with additives and stored in airtight container for fermentation).

2. High goat death rate due to disease

The study found that about 24 percent of the goats died in the last year and many of the reported deaths were due to disease. PPR, Enterotoxemia, Ecthyma and Goat pox were the most common diseases reported by veterinarians. Some of the issues contributing to this challenge are lack of access to timely vaccinations, insufficient capacity at the government veterinary department to administer vaccines and lack of awareness about the importance of vaccines among the goat herders.

(Heifer has already established several "health camps" to tackle the problem. Since the study, it was reported by Heifer that the death rate due to disease has gone down.)

Recommendations

- Determine root cause of goat disease and evaluate connection to vaccinations.
- Implement additional programs to create awareness about the benefits of administering vaccines at correct time and dose.
- Improve access to vaccines through training and capacity building at the community level.
- Promote and expand Heifer's Community Agro Vet Entrepreneurs program.
- Explore and provide low cost cold storage facilities.

3. Disorganized goat selling

Interviews with herders and other stakeholders revealed that most of the time, a herder sells a goat when in need of money for a significant family expense, and not when the goat is at the age and weight that will bring the best price. Further, most herders reported that they sell their goats to middlemen who come to their house to buy the goats. Currently, these middlemen don't weigh the goats, rather, the price is fixed based on the 'visual estimate' of the weight. All these factors lead to herder getting a lower price for the goat.

Recommendations

- Implement educational programs to create awareness on right time to sell the goats.
- Form a cooperative or an organized group of goat herders to buy and sell the goats and provide access to weighing machines to weigh the goats before selling.

4. Inbreeding

While goat herders did not report inbreeding as a problem, other stakeholders considered it to be one of the major challenges facing goat farmers. The study found that due to a lack of understanding about the adverse impact of inbreeding, the limited capacity of veterinarians to conduct artificial insemination, and the limited availability of a diverse group of bucks in the villages, that bucks (male goats) from the same family were repeatedly used for breeding purposes. There was strong evidence that inbreeding is resulting in smaller and weaker goats that are more susceptible to disease.

Recommendations

- Restore and improve genetic quality of Black Bengal breed through:
  - Awareness and education on identification of good bucks that are, bigger, stronger, and have better quality meat.
  - Establishment of goat breeding facilities in Panchayats.
  - Training and capacity building of community members to perform breeding activities.

5. Unsafe and unhygienic living conditions for goats

It was observed that a majority of the goats were either living with the family or in the shed with other animals without proper ventilation or drainage. Lack of proper housing increases the likelihood of disease as well the likelihood of goats getting killed by other animals. About 70 percent of the goat herders reported that they aspired to have a goat shed with benches for their goats.

Recommendations

- Expand the work Heifer is already doing to create awareness and build low cost sheds.
- Explore other low cost shed options.

Woman feeding her goat by hand.

Specific projects to pilot in the field

Based on the recommendations above, D-Lab suggests the following specific projects to be implemented in the field. These projects should be developed and implemented using a participatory model involving Heifer, the local partners, goat herders, and other stakeholders. D-Lab will also explore opportunities to collaborate with students and experts at MIT.

1. Feed- and fodder-related assessments

- Evaluate leaf meal, haylage, and silage across different characteristics such as usability, cost, availability, goat preference, nutrition, etc. Work with local veterinarian, nutritionist, local partners, and goat herders to determine the appropriate composition of feeds.
- Gauge how much feed is wasted in different feeding practices and at different times of the year.
- Assess business models for providing leaf meal, silage, haylage and concentrate (individual versus collective production).
- Evaluate business models for a nursery that could sell fodder trees and grasses.

2. Vaccine storage, supply-chain, and delivery solutions

- Assess different cold chain solutions for storing vaccines and supply chain for delivering them. Could consider off-grid cold storage solutions.
- Develop an app that reminds farmers to vaccinate their goats at the correct time.

3. Goat selling business model evaluation

- Evaluate business models for selling individually or selling in a cooperative.

4. Buck and artificial insemination supply chain evaluation

- Evaluate the supply chain and business models of providing bucks or artificial insemination.

5. Development of lower cost goat shed

- Research, evaluate and develop lower cost houses for goats and evaluate the supply chain for providing raw materials.

Smallholder Goat Farmer Assessment: India

The MIT D-Lab–Heifer International Partnership

The MIT D-Lab–Heifer International partnership began in the summer of 2015. Heifer provides livestock and training on animal husbandry practices to communities in 27 countries around the world in an effort to reduce hunger and poverty. Heifer's close, long-term relationships with local communities and partners enable the organization to develop trust and implement programs effectively. D-Lab is known for its participatory methods of needs assessment and product design, as well as for technology evaluation. Together, D-Lab and Heifer are able to apply their complementary skills and expertise to some of the world's most pressing challenges.

Next steps

Moving forward, D-Lab will collaborate with Heifer International to select one or more specific projects and explore funding opportunities to pilot those projects in Odisha, India.

The pilot could be implemented through a participatory model that would include technology evaluation, technology design, or a co-creation design workshop with Heifer International field staff, goat herders, other stakeholders, students, and experts at MIT.

Future impact

The team plans to work with Heifer International to implement one or more of these solutions, which could have a direct impact on the goat herders and their livelihoods.

Although the results from this study are specific to the context and market in Odisha, India, many of the findings and insights about the needs assessment approach can be applied to future assessments in other parts of India and abroad.

Further information & full report

Kendra Leith| kleith@mit.edu | +1 617-324-6008
D-Lab | Massachusetts Institute of Technology
77 Massachusetts Ave., N51-301, Cambridge, MA 02139 USA

Acknowledgments

This D-Lab Scale-Ups study was made possible by funding from D-Lab Scale-Ups program and Heifer International. Contributing to this research and report were D-Lab staff Kendra Leith, Megha Hegde, and Saida Benhayoune.

D-Lab is grateful for the work of consultants and interpreters hired in India: veterinarian and development practitioner Dr. Prakash Bhat, researchers Jayanta Patra and Umakanta Mohanta, and interpreters Guman Tudu and Lakman Hembram.Technical assistance: Amit Gandhi.

In the course of this study, the MIT D-Lab team received invaluable assistance and information from the following people:

Heifer headquarters staff: Rienzzie Kern and Dilip Bhandari

Heifer India staff: Avni Malhotra, Sushmita Parai, Krishna Govindankutty and Mari Surin

Staff of Heifer local partner NGO Nydhee: Prasant Muduli, Kashinath

Staff of Heifer local partner NGO Unnayan: Sanjiv Das, Kabita Behra

Staff of Heifer local partner NGO Sambhandh: Debasish Rout and Raju Mohanta

Photo credits: Megha Hegde.

d-lab.mit.edu/scale-ups/research-and-development

Launched in 2011 by D-Lab, the Scale-Ups program assists social entrepreneurs from MIT and the developing world, as well as NGOs and corporations, to bring poverty alleviating technologies to market at scale.

Image on page one header: D-Lab's Megha Hegde (left) and Kendra Leith (right) with a local goat farmer (center).