



## Mastitis Prevention and Control for the Improvement of Milk Quality and Smallholder Income in Nepal

### Key Messages

1

Mastitis constrains smallholder dairy production in Nepal reducing milk yields, milk quality and smallholder income but is preventable with proper animal husbandry practices.

2

Six months after the combined interventions were implemented in three districts in Nepal, the prevalence of mastitis decreased from 55% to 28% in cows and from 78% to 18% in buffaloes.

3

Significant economic and health benefits could be achieved by reducing the prevalence of mastitis among smallholder farmer dairy animals through the proposed low-cost intervention.

4

A combined set of interventions, including training, technical support, integrating farmer feedback, and milk testing, can positively increase the adoption of good husbandry practices by participating dairy farmers and increase milk production quality and safety.

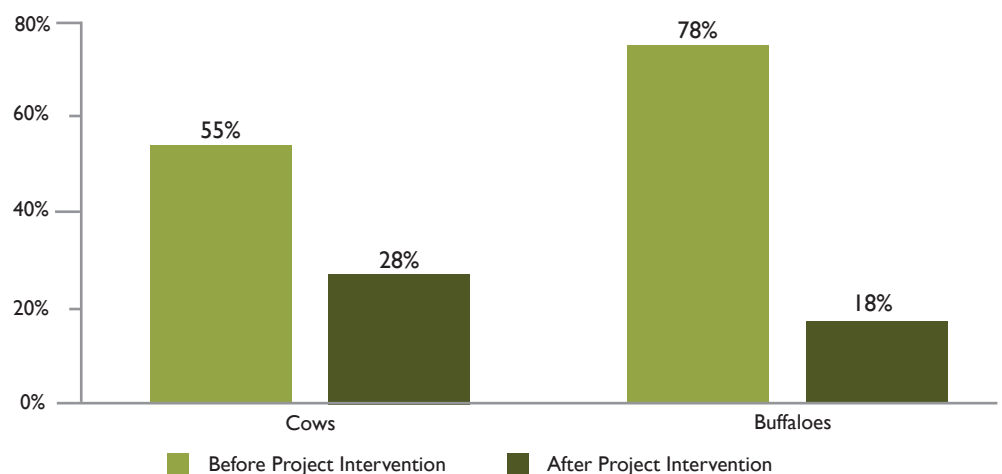
### What is the issue?

Mastitis, an infection of the udder in dairy animals, is a serious economic issue for smallholder dairy farmers. A single incidence of mastitis can cost farmers \$63 per buffalo due to lower milk yield and increased treatment costs<sup>1</sup>. Not only is mastitis a costly problem, it is also widespread, studies in Nepal have found the prevalence of mastitis to be as high as 60% in dairy animals<sup>2</sup>.

### What was done?

A baseline survey was conducted with 422 smallholder dairy farmers (65% female and 35% male) to determine the prevalence of mastitis prior to the implementation of the project interventions. Then farmers were trained on mastitis prevention techniques and control technologies such as Milk Teat Dipping (PMTD) and Dry Cow Therapy (DCT). This increased use of best management practices such as cleaning the udder, washing hands with soap and stripping off milk by farmers. Consequently, 6 months after the intervention, the prevalence of mastitis was dramatically reduced from 78% at the baseline to 18% at the endline in buffalo and from 55% to 28% at endline, in cows. The results were statistically significant for buffaloes but not cows.

Figure 1. Prevalence of sub-clinical mastitis in cows and buffaloes before the intervention and six months post-intervention.



## Conclusion and General Implications

This research project demonstrated that a combined set of interventions can decrease the prevalence of mastitis resulting in higher milk production, safety and quality. This has important implications, 1) more milk available at the household level potentially contributing to improved household nutritional status, 2) more milk available for sale resulting in more household income, 3) more hygienic raw milk will improve the food safety of dairy products.

## Policy Implications

### 1. Milk production, safety and quality can be substantially increased by investing in mastitis reduction training and technologies.

To achieve the policy goals of increased milk production, the Government of Nepal should prioritize training programs for smallholder dairy farmers in mastitis prevention strategies. This could be through a training of trainers model with private and public sector stakeholders including model farmers, extension officers and dairy cooperative staff.

### 2. Mastitis prevention training of smallholder farmers is a cost-effective investment

Based on the average milk production per dairy animal per year<sup>3</sup> and the potential amount of increased milk production due to decreased prevalence of mastitis<sup>1,2</sup>, the potential increased income for farmers would be greater than the cost of scaling up the project intervention to 10,000 smallholder farmers (\$15 USD per farmer). Across 10,000 dairy animals (50% cows and 50% buffaloes) this decrease in the prevalence mastitis could result in 20% higher milk production. Based on average milk yields for cows and buffaloes, this increase would be approximately 396,000 liters of milk, which at 50 NPR per liter would be worth about \$174,000 USD. Conservatively assuming that each farmer had one dairy animal, the income benefits per farmer (\$17.40) would be greater than the cost per farmer (\$15 USD), such that a profit of \$48,000 would be apply for 20,000 farmers.

### 3. The impacts of the interventions at the farmer-level could be increased through investments in cooperatives and fostering an enabling environment

Apart from on-farm interventions, the project team also worked with dairy cooperatives to assess mastitis prevalence through other parameters such as somatic cell count levels and electrical conductivity values. While the California Mastitis Test is good for screening for mastitis, testing at the first level of the milk processing will allow to reject the milk that doesn't meet established standards.

Complementary to the regular on-farm CMT, monitoring for somatic cell count at the dairy cooperative level will ensure only quality milk enters the dairy processing chain. Regulations that allow premium prices for better-quality milk could provide additional encouragement for the adoption of improved technologies among farmers and cooperatives.



Figure 2. A Nepalese farmer working with Heifer International milks her cow. Our project aimed to increase the incomes of farmers by reducing incidences of mastitis. (Photo credit: Heifer International)

## Recommended Next Steps

1. Invest in a mastitis reduction and control training program for smallholder dairy farmers in order to reduce mastitis and increase milk production, safety and quality.
2. Enhance the benefits of training for farmers through investments in milk production cooperatives and in fostering an enabling environment.

## References

- <sup>1</sup>Dhakal, I.P. and B.B. Thapa, 2002. Economic impact of clinical mastitis in the buffaloes in Nepal. Buffalo J., 2: 225-234.
- <sup>2</sup>FAO. 2014. Impact of mastitis in small scale dairy production systems. Animal Production and Health Working Paper. No. 13. Rome.
- <sup>3</sup> Ministry of Agricultural Development (MoAD). 2012. Statistical Information on Nepalese Agriculture 2011/2012. Kathmandu, Nepal. <http://moad.gov.np/public/uploads/1530372555-yearbook%202012.pdf>

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