

Successful Smallholder Silage Production: A Case Study from Northeast Thailand

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In Thailand, a major limitation in raising dairy cattle is insufficient feed, especially during the dry season. Farmers are very familiar with the use of crop by-products as animal feed, but less familiar with forage conservation. Despite much research work on silage production at research centres and Universities in Thailand, adoption has been generally low. There are many reasons for this, including

- a lack of herbage,
- silage making is deemed complicated,
- a lack of investment capital for new machinery.

This paper discusses the potential for adoption of forage ensiling techniques in smallholder Thai dairy farms and the factors affecting this potential. The study area is Sung Nuen District, Nakornratchasima in Northeast Thailand. It is located between latitude 14°30' - 15°15' N, longitude 101°43' - 101°56' E. Average annual rainfall is 805 mm and the principal crops grown are rice, maize, cassava and sugar cane.

Participatory diagnosis of livestock feeding problems was conducted with dairy farmers in 1997. The major problem was a lack of good quality roughage in the dry season. Two other feed

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resources the farmers have been commonly using to reduce this problem are crop residues (especially rice straw) and sugar cane tops. Formerly, crop residues were available free of charge, but rising demand has resulted in increased prices and crop residues becoming increasingly scarce. Also, the low protein content of these residues is not adequate for productive cattle during the dry season. As a result, farmers have become interested in testing forage conservation methods including silage making

Silage Making Demonstration

The Animal Nutrition Research Centre at Pakchong collaborated with a district livestock officer to conduct a silage making demonstration in the village, with 53 dairy farmers participating. Three different techniques of silage making demonstrated were:

- Bunker silos
- Black polythene bags of 40-kg capacity
- Plastic bags of about 800-kg capacity

Because they were in a maize growing area, corn silage was made in the demonstration. Farmers provided chopped corn leaves and their labour. The development workers provided labour, materials (plastic bags) and technical advice. Follow-up visits were conducted to check for problems and discuss with farmers their experiences with silage making. All 53 farmers were interested in trying to make silage on their farms. One farmer modified the technique to make silage in plastic buckets and in a below-ground pit silo for sale.



Table1. Preference ranking of various types of silo.

Silage technique	Farmer's preference (%)
• Bunker silo	38
• Plastic bucket	31
• Black polythene bag	23
• Plastic bag (800kg)	8

Farmers' Comments

Black polythene bag:

cheap and easy to feed animals

Plastic bag (800kg):

can make a large amount at one time

Plastic bucket:

even if it is more expensive than plastic bags at the beginning, it can be reused many times and also protect the silage from insects and rodents.

Bunker silo:

Large initial capital investment for construction but lasts for a long time

Factors Affecting the Potential for Adoption of Silage Making On Farm.

- Farmers realised that the lack of good quality roughage in the dry season was their main constraint.
- Learning by doing: farmers found that in fact, silage making is not difficult or as complicated as they had heard and read.
- The development workers know the needs of farmers and provide various alternatives for them to observe, compare and evaluate before choosing the best possible solutions.
- Farmers must have sufficient material available locally to be ensiled.
- As they are smallholder farmers, not all ensiling technologies are appropriate. The cost of the ensiling technology needs to be balanced with the availability of capital on-farm.

Conclusions

There is some potential for broader application of silage making on smallholder dairy farms in Thailand. However, the particular methods used for silage making will be adapted by farmers to fit their own situations. We are continuing to work with these farmers to monitor adoption and discuss their needs so we have a better understanding of which silage technologies have the best potential under these conditions.