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Leucaena as basal feed for meat goats in Prachuapkhirikhan Province, Thailand

Leucaena como alimento base para cabras de carne en la provincia de Prachuapkhirikhan, Tailandia

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Introduction

Goat rearing for meat and milk has long been practiced in Thailand, mostly associated with the Thai Muslim community. The Department of Livestock Development (DLD 2018a) estimated the total number of goats in Thailand in 2017 at 653,000 with 34.3% located in the south. The productivity of goats depends largely on availability of pasture and other sources of feed, which vary with site. This paper reports on the use of leucaena (*Leucaena leucocephala*) for goat feeding in Prachuapkhirikhan Province, which covers 6,368 km² in the central part of Thailand.

Goat population and number of farmers in Prachuapkhirikhan Province

Prachuapkhirikhan Province is ranked 4th in terms of goat numbers in Thailand with 39,260 goats or 6% of the country's total. Most are meat goats with 50% Boer goat infusion (Table 1). While some male goats are castrated, most are left entire and fattened.

Based on recent statistics of the Department of Livestock Development (DLD 2018b), 36% of goat farmers in Prachuapkhirikhan keep 1–20 head, 29% keep 21–40, 19% keep 41–60, 11% keep 61–100 and only 5% keep more than 100 animals.

Table 1. Numbers of goats and farmers in Thailand and Prachuapkhirikhan Province in 2017 (DLD 2018b).

	Meat goats		
	Male	Female	Farmers
All of Thailand	182,645	442,745	50,758
Prachuapkhirikhan	15,163	23,852	918
	Dairy goats		
	Male	Female	Farmers
All of Thailand	8,586	18,988	1,780
Prachuapkhirikhan	99	145	13
	Total		Farmers
	Goats		
All of Thailand	652,964		51,851
Prachuapkhirikhan	39,259		925

Production systems and feeding

Breeding of kids for meat goat production

There are 2 production systems in this group:

- A semi-intensive system in which breeding goats are grazed for 4–6 hours per day (Figure 1) on naturally occurring plants such as leucaena, desmanthus, *Pithecellobium dulce* and native grasses. Fresh leucaena is fed as a supplement in pens in the evening at a rate of 3–5 kg/hd/d. The pens are in either elevated houses with slatted flooring or on the ground.

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- b. An intensive system (zero grazing) practiced mostly as a part-time activity and generally on a small scale with approximately 30–40 head per farm. After finishing their main activity as a contingent worker in other agricultural activities, farmers cut leucaena, which is available naturally along the roadsides or in a public area, to feed their goats (Figure 2). While the basal feed is leucaena, napier grass (*Cenchrus purpureus*; syn. *Pennisetum purpureum*), pangola grass (*Digitaria eriantha*), ruzi grass (*Brachiaria ruziziensis*) and native grasses may be added. Farmers feed fresh leucaena at 7–10 kg/hd/d, in the morning and in the evening. Goats consume leucaena leaf, young stems, pods and bark (Figures 3 and 4). The chemical composition of the leucaena varies with plant part. Unpublished data from Prachuapkhirikhan Animal Nutrition Research and Development Center indicate that leucaena leaf contains about 23% crude protein (CP), 19% crude fiber, 9% fat and 44% nitrogen-free extract. Bark contains 12% CP at 50 cm height and 15% CP at the tip of the stem; young pods contain 23% CP and pods with seeds contain 21% CP. In both systems, does kid twice per year and produce 2–3 kids/year. Farmers sell weaned kids at about 15 kg (3–4 months of age) or continue feeding them for 4–5 months before selling them at about 25–30 kg live weight.



Figure 1. Free grazing.



Figure 2. Leucaena collected along roadside.



Figure 3. Goats consuming leucaena leaf.



Figure 4. Non-edible leucaena stem residue after feeding.

Meat goat producers

Farmers generally buy weaned kids at 15 kg live weight and feed for 4–5 months to about 25–30 kg live weight achieving weight gains of 100–150 g/d. Goats are sold by weight. In general, goat management is a confined intensive system. Other than grasses, leucaena has gained wide acceptance among goat farmers as a suitable basal feed due to its wide availability naturally and its high crude protein concentration. Goats are fed with combinations of feed sources, which vary among farms and seasons, including:

- Chopped leucaena (Figure 5) or chopped leucaena mixed with napier grass 1:1 supplemented with 300 g of pelleted concentrate feed with a total of 16% CP (e.g. 50% maize grain or broken rice, 10% rice bran, 26.5% coconut meal, 10% leucaena leaf meal, 1.5% urea, 1% dicalcium phosphate, 0.9% salt and 0.1% sulphur), half being fed in the morning and half in the afternoon.
- Chopped leucaena mixed with corn silage 1:1 (Figures 6 and 7).
- In the dry season, when production of leucaena is low, farmers feed leucaena and pineapple waste from pineapple jam factories.

There are no reports of toxicity symptoms due to mimosine and the main constraint that goat farmers face is low production of leucaena in the dry season.



Figure 5. Chopping leucaena.



Figure 6. Leucaena and corn silage.



Figure 7. Leucaena and corn silage fed to goats.

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