



Response of sheep to supplementations with *Leucaena leucocephala* leaf meal on body weight gain and carcass components



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Introduction

- Food from animal sources contributes 18% of global calories and 25% of global protein consumptions.
- However, livestock sector contributes to green house gas emissions from which enteric methane is the crucial one.
- Through *in vitro* studies, *Leucaena leucocephala* leaf was identified as potential candidate in mitigating enteric methane production.
- Nevertheless, its efficiency as animal feed source in reducing methane production has not yet been determined.

Objectives of the study were to evaluate supplementation of *Leucaena* leaf meal on growth performance, carcass components and methane production in rams.

Materials and Methods

- Thirty yearling rams with initial body weight of 20.0 ± 1.31 kg were randomly allocated into five treatment diets with six rams each.
- All rams received a basal diet of natural grass hay *ad libitum* and concentrate mix.
- Treatment diets contain:
 - 346 g/head/day concentrate mix, no supplementation (control diet, T1) and
 - diets supplemented with *Leucaena* leaf at a rate of 5% (T2), 10% (T3), 15% (T4) and 20% (T5) replacing the control diet.
 - Thus, concentrate mix to *Leucaena* leaf was offered at a ratio of 346:0, 329:17; 311:35; 294:52, and 277:69 g/head/day for T1, T2, T3, T4 and T5, respectively.
- Initial body weight was taken at beginning and then every two weeks.
- Twenty rams were slaughtered and carcass components were weighed.
- Enteric methane was determined from 24 hr *in vitro* gas production.

Results

- Body weight and feed intake did not differ among rams fed with various levels of supplementations.
- Rams fed on T2 and T3 diets had higher ($P < 0.05$) slaughter, foreleg and thorax weights than non-supplemented.
- Average hot carcass weight was highest in rams fed on T2 and T3 diets.
- Dressing percentage values ranged from 39.4 in T3 to 42.0% in T1 and was not affected by supplementations.
- The highest hind leg weight was noted in rams fed T2 and T3 diets.

Table 1. Effect of *Leucaena* leaf meal supplementation on body weight and feed efficiency of rams

Live weight and gain (kg/head)	Levels of <i>Leucaena</i> leaf meal supplementation (g/head/day)				
	0 (T1)	17 (T2)	35 (T3)	52 (T4)	69 (T5)
Initial weight	19.8	20.0	20.5	19.8	20.2
Final weight	26.2	26.4	25.5	26.1	26.5
Total gain	6.35	6.38	4.98	6.33	6.30
Feed intake	81.0	79.7	82.5	80.8	79.1
Feed conversion kg feed/kg gain	13.0 ^b	13.5 ^b	16.8 ^a	12.8 ^b	12.6 ^b

Table 2. Main carcass parts of rams supplemented with various levels of *Leucaena* leaf meal

Weight of carcass parts (kg)	Levels of <i>Leucaena</i> leaf meal supplementation (g/head/day)				
	0 (T1)	17 (T2)	35 (T3)	52 (T4)	69 (T5)
Slaughter	22.9 ^b	25.2 ^{ab}	25.8 ^a	23.7 ^{ab}	23.3 ^b
Hot carcass	9.63	10.6	10.2	9.75	9.70
Dressing (%)	42.0	42.2	39.4	41.3	41.7
Rib-eye (cm ²)	13.0	14.7	14.5	14.4	14.1
Foreleg	1.81 ^b	1.97 ^a	1.95 ^{ab}	1.83 ^b	1.80 ^b
Hind leg	2.08	2.28	2.36	2.18	2.20
Lumbar	1.68	1.85	1.75	1.75	1.85
Thorax	2.37 ^b	2.63 ^{ab}	2.75 ^a	2.45 ^b	2.53 ^{ab}

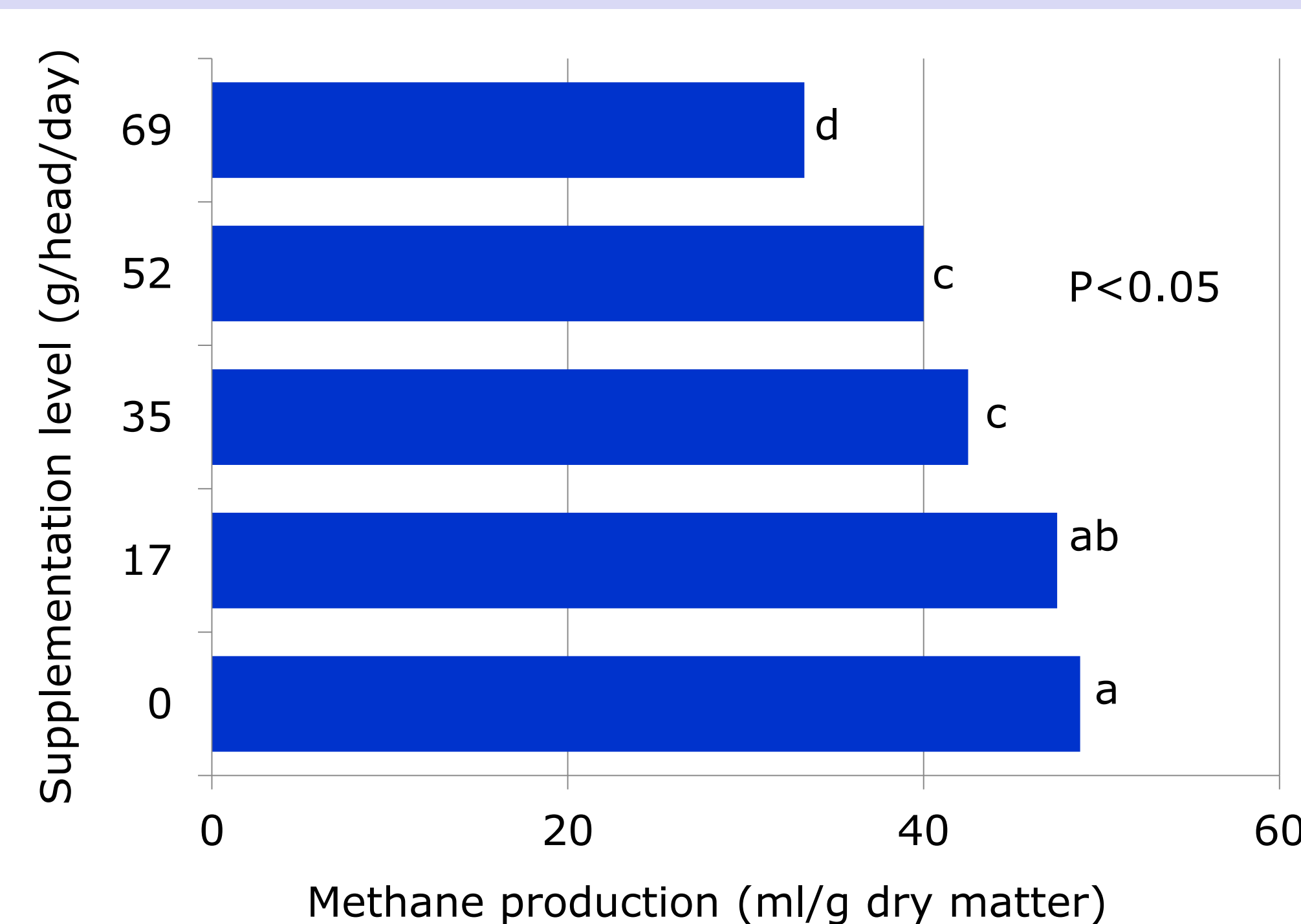


Fig. 1. Effect of *Leucaena* leaf supplementation on methane production

- Highest rib-eye area (cm²) was noted in rams fed with T2 followed by T3 diets while the lowest in T1.



Fig. 2. Rams feeding on supplement feed

- Methane production reduced with increased levels of *Leucaena* supplementation.
- Lowest methane emission was observed in rams supplemented with 71 g/head/day.



Fig. 3. Main carcass components of local rams

Conclusions

- Except feed efficiency, growth performances were not affected by *Leucaena* supplement.
- Leucaena* leaf supplementation improved some of the carcass components.
- Methane production reduced with increased *Leucaena* leaf supplementation and can be used to supplement poor quality forages.