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The following one-page abstracts summarise papers presented at Animal Production 2018 in addition to those published as peer-reviewed research papers or reviews in the special issue of *Animal Production Science* Volume 58, Issue 8. Their sequence is grouped into 12 major topic areas. These abstracts were independently reviewed by at least one reviewer for merit and clarity before final acceptance by the guest editors.

Nutritional modelling for enhanced livestock productivity in the rangelands of northern Ghana in response to pasture improvement with an adapted tropical legume species

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Low digestibility and crude protein concentrations in native pastures compels some nomadic livestock herders in the rangelands of northern Ghana to burn mature and dry forage to encourage regrowth with better nutritive characteristics. This practice, however, typically leads to pasture scarcity in the dry season (Nov-Apr) so that animals lose weight sometimes leading to mortalities. One possible solution to this problem is to introduce an adapted legume with the aim of increasing protein and dry matter intake during the dry season. Currently, there are no data to support this proposition and provide estimates of likely responses of livestock to the introduction of a legume in this grazing system. The main objective of this study was to use the Grazfeed® program to estimate the potential increase in productivity of lambs in response to incorporation of an adapted tropical legume in native *Hyperthelia dissoluta* (Yellow thatching grass) pastures typical of northern Ghana.

Modelling was conducted for unimproved pasture (0% Legume) and improved pasture (30% legume) for both the dry season (November –April) and wet season (May–October). Values for crude protein (CP) and dry matter digestibility (DMD) were as reported by Skerman and Riveros (1990) (Table 1). Values used for green and dead pasture mass of unimproved pasture ranged from 0 to 1.5 and 1.0 to 1.5 T DM/ha, respectively, in the dry season and 1.0 to 3.5 and 0.5 to 1.0 T DM/ha, respectively, in the wet season. Values used for green and dead pasture mass of improved pasture ranged from 0.5 to 3.0 and 1.0 to 2.0 T DM/ha, respectively, in the dry season and 1.0 to 4.0 and 0.5 to 1.0 T DM/ha, respectively, in the wet season. Lambs were classed as ‘small Merino’ at 20kg liveweight and an average age of 6 months with 1.5 cm fleece as this was the closest match to the Djallonke breed commonly farmed in Ghana.

Modelling suggested acceptable weight gains from native pastures could be expected in the wet and early dry seasons, but with weight loss occurring late in the dry season. This is consistent with observations. Modelling suggested that pasture improvement would result in positive weight gains year round with the largest benefit occurring in the dry season. The study concluded that improving native pastures by incorporating an adapted legume at an average 30% of total dry matter would significantly enhance the productivity of livestock in the rangelands of northern Ghana and would avoid the need for the burning of native pastures in the dry season.

Table 1. Crude protein (CP) and dry matter digestibility (DMD) values of unimproved pasture and improved pasture for during dry and wet seasons

Season	Unimproved pasture (0% Legume)				Improved pasture (30% Legume)			
	DMD (%)		CP (%)		DMD (%)		CP (%)	
	Green	Dead	Green	Dead	Green	Dead	Green	Dead
Dry	50	45	7	4	65	50	8	5
Wet	60	40	10	5	70	40	16	6

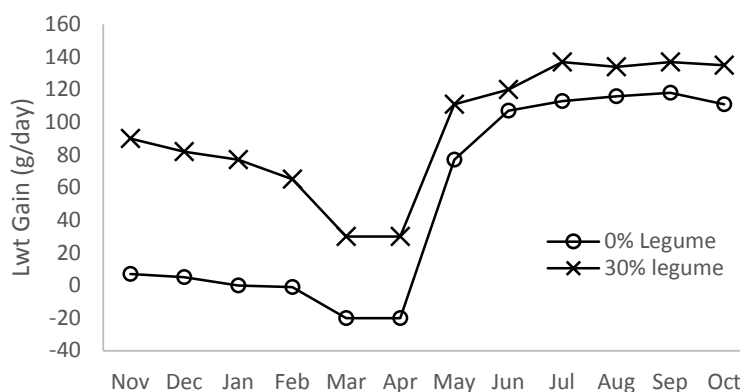


Fig. 1. Daily weight gain in 20kg lambs grazing native pastures with 0% and 30% legumes in the dry and wet seasons of northern Ghana predicted using the Grazfeed® Program.

Reference

Skerman PJ, Riveros F (1990) *Tropical grasses* (No. 23). Food & Agriculture Org. 11, 467.