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USE OF SUPPLEMENTS FOR INCREASING PERFORMANCES OF SUCKLING MARTINIK EWES WHEN FED TROPICAL FORAGES

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Abstract

Experiments have been carried out to determine the effects of supplementation upon milk production and growing performances with hair sheep Martinik ewes weighing 48 ± 4 kg liveweight (LW). In a first trial, 6 single bearing ewes (group GS) were offered individually a daily 0.5 kg of commercial pellets. They were compared to the control group (GN; 6 ewes) with no supplement during 10 weeks of lactation. Basal diet was chopped *Digitaria decumbens* grass *ad libitum.* In a second trial, level of supplementation was adapted to the ewes' litter size: 6 twins bearing ewes (TW) and 6 single (SI). Mean milk production (oxytocin method) reached 1186 and 940 $g.d^{-1}$ ($P<0.05$) for GS and GN ewes, respectively. Body condition score (BCS) of GS ewes maintained during lactation while those of GN ewes slightly decreased ($P<0.05$). No difference was recorded for lambs daily weight gain (DWG). Milk production varied significantly ($P<0.05$) according to the litter size: 926 and 1246 $g.d^{-1}$ for SI and TW, respectively. The BCS of TW ewes decreased more than those of SI ewes (-1.4 *vs* –1.0). Individual DWG were different ($P<0.01$): 216 and 150 $g.d^{-1}$ for single and twin lamb, respectively. It is concluded that use of supplements is necessary in intensive breeding conditions (high reproduction frequency and productivity), in order to allow high levels of performances when ewes are fed tropical forages.

Keywords: tropical forages, supplementation, Martinik ewe, milk production, body condition score, daily weight gain.

Introduction

Local hair sheep are the main ovine genotypes prevailing in the Caribbean (Devendra and McLeroy, 1982). They are mainly raised on the suckling system for meat production. Traditional systems of production are based on grazing natural pastures. Nutritive value of tropical forages is poor compared with high animal requirements (Aumont *et al*, 1995). The low energy content of tropical grasses is known as the major feeding constraint to the performance of grazing animals in many tropical situations (Humphreys, 1990). Supplementation is required in order to increase animal performances. Although suckling ewes are the main systems prevailing in tropical conditions, data about animal performances in such systems are scarce. Thus, experiments have been carried out in order to determine the effects of supplementation upon ewes' milk production and growing performances of the litter.

Material and Methods

Experiments were located in a humid region of Guadeloupe (French West Indies, 16.1 ° N 61.6° W). Martinik ewes (48 ± 4 kg LW), local hair sheep genotype very similar to BlackBelly breed, described by Mahieu *et al.*, (1997) were used.

In a first trial, 12 single suckling ewes and their lambs were determined (Table 1) according to the ewe's supplementation level: 0.5 $kg.d^{-1}$ per head of commercial pellets, was offered to the first group (GS), whereas no pellets were supplied to the second group (GN).

Basal diet was chopped *Digitaria decumbens* (Dd) grass offered *ad libitum* in individual crates.

In a second trial, the use of supplement was studied with 2 animal requirements levels: (Table 2) ewes suckling single (SI, 6 ewes) and twins (TW, 6 ewes). Basal diet was a mixture of Dd and *Panicum maximum* grasses offered *ad libitum* in collective stalls.

For both trial, supplements were composed of maize (65 %), soya bean (3 %) and fish meals (8 %) and dehydrated alfafa (24 %). Concentrates were daily distributed to the ewes all over the 10 weeks of lactation. Lambs were offered separately, the same pellets *ad libitum,* from one month of age up to weaning. Minerals and water were offered *ad libitum.* Milk production (MP) was estimated weekly, by the oxytocin method, adapted to tropical sheep by Mahieu *et al.*, (1997). Body condition score (BCS , 5 scores) was estimated at the same time. Lambs were weighed each week from birth to weaning (75 days). General linear model procedures (SAS 1988) were used to adjust ewes' data (milk production and BCS) to the following sources of variation: supplementation level in trial 1 and litter size in trial 2. Lambs performance were adjusted to same sources of variation in addition to sex and to lamb birthweight covariable.

Results and Discussion

In trial 1, mean milk production (Table 1) reached 1186 and 940 $g.d^{-1}$ ($P<0.05$) for GS and GN ewes**,** respectively**.** Body condition score of GS ewes maintained during lactation while those of GN ewes slightly decreased ($P<0.05$). On the other hand, no difference was recorded for lambs DWG between treatments (Table 1) probably because lambs were offered supplements *ad libitum* from one month of age. In trial 2, mean MP for SI (single) and TW (twins) ewes (Table 2) were 926 and 1246 $g.d^{-1}$, respectively ($P< 0.05$). Litter size has a well known effect upon doe performances. When MP of SI ewes is compared to 780 $g.d^{-1}$ reported

by Godfrey *et al*., (1997) for BlackBelly ewes rearing single lamb and grazing only pastures, energy supplying in our conditions had improved the milking performances (19 % more). However, the MP of TW ewes was very similar to 1245 $g.d^{-1}$ observed by Mahieu *et al*., (1997), for Martinik ewes rearing twins on Dd pastures without supplement. The BCS of TW ewes decreased more than those of SI ewes (-1.4 *vs* –1.0; $P<0.05$). Lamb DWG were different ($P<0.01$): 216 and 150 $g.d^{-1}$ for litter size 1 and 2, respectively. Twins DWG observed at pasture by Mahieu *et al*., 1997 never exceeded 150 $g.d^{-1}$.

As far as single suckling ewes are concerned, very high level of supplementation is not required (not more than 1% of LW). Low level could induced lost of BCS which might generate problems for further reproduction (Lindsay *et al*., 1993). For twins bearing ewes, it might be better to offer a higher level of supplementation as concluded by Alexandre *et al*., (2000) for tropical breeds reared in intensive conditions. In fact, this could allow high does and lambs performances, together with, a good body condition, required for intensive reproduction frequency and high prolificacy.

Energy requirements of suckling ewes is very poorly documented in tropical conditions. These experiments, although they are carried out with stall-fed animals for better feeding control, give conclusions for feeding management rules in tropical grazing system. On the other hand, it is concluded that low digestible tropical grass might not allow the expression of potential productive capacity of tropical breeds and that supplementation is required. In that sense, further studies are required to study the use of local resources as supplements.

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Table 1 - Least square means (S.D.) of Martinik sheep milk production (g/d), body condition score, daily weight gain (DWG, g) according to supplement level.

	Supplement level	
Trait	GS : supplemented group	GN : no supplementation
Milk production (g/d)	1186[a] (170)	940[b] (185)
BCS during lactation	+ 0.40[a] ± (0.63)	- 0.58[b] ± (0.73)
DWG (g/d)	222 (30)	209 (45)

Values within the same row with different superscripts differ significantly: a, b: P<0.05.

Table 2 - Least square means (SD) of Martinik sheep milk production, body condition score, daily weight gain (DWG, g) according to litter size (ewes receiving supplements as defined in text).

	Litter size	
Trait	Single	Twins
Milk production (g/d)	926 [a] (215)	1246 [b] (225)
BCS during lactation	-1.00 [a](0.68)	-1.40 [b] (0.65)
Lamb DWG (g/d)	216 [a] (31)	150 [b] (27)

Values within the same row with different superscripts differ significantly: a, b: P<0.05.