

Effect of feeding different types of roughage on the performance of pregnant Awassi ewes

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Abstract

This experiment was designed to study the performance of Awassi pregnant ewes fed different types of roughage (green, hay and silage) during late pregnancy.

Twenty four Awassi ewes (initial weight 47.01 ± 0.9 Kg) aged 2-3 years mated in mid June were used in a three treatments completely randomized design. Animals were housed and grouply penned 8 weeks before lambing. Treatment 1 (G1) consisted of alfalfa green roughage, Treatment 2 (G2) was fed whole crop maize silage and treatment 3 (G3) was fed dried alfalfa hay. All treated ewes were fed roughages ad libitum plus 200 g/day concentrate.

Types of roughage had no significant effect on ewes body weight changes (changes from the start of the experimental feeding to 24 hours post lambing). Ewes fed green roughage (G1) had heavier post-lambing weight than G2 and G3. lambs born from group 1 were heavier ($P < 0.01$) than G2 and G3. Similar results were obtained for growth rate and weaning weight of lambs.

تأثير استخدام أنواع مختلفة من الأعلاف الخشنة على أداء النعاج العواسية الحوامل

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الخلاصة

اجريت هذه التجربة لمعرفة تأثير استخدام انواع من الاعلاف الخشنة (العلف الاخضر ودريس الجب والسايلاج) على اداء النعاج العواسية الحوامل .

استعملت في التجربة 24 نعجة عواسية بعمر 2-3 سنة ووزن ابتدائي 47.01 ± 0.9 كغم . سفدت النعاج في منتصف حزيران وقسمت الى ثلاث مجاميع بصورة عشوائية وادخلت في ثلاث حضائر منفصلة قبل ولادتها بثمان اسابيع .

غذيت المجموعة الاولى على الجب الاخضر , والمجموعة الثانية على السايلاج المصنع من محصول الذرة , فيما غذيت المجموعة الثالثة على دريس الجب , كما اضيف العلف المركز للمجاميع الثلاث بواقع 200 غم/راس/ يوم .

أظهرت النتائج ان لنوع العلف الخشن المستخدم تأثير غير معنوي على التغيرات الوزنية للنعاج (من بداية التجربة الى 24 ساعة بعد الولادة) حيث لوحظ بان اوزان نعاج المجموعة الاولى بعد الولادة كانت اعلى من اوزان النعاج في المجموعتين الثانية والثالثة . وبطريقة مماثلة معدل نمو الحملان ومعدلات اوزانها عند الفطام كانت اعلى في المجموعة الاولى عنها في المجموعتين الاخرين.

Introduction

The potential performance of local breeds remain an important target when designing a new and improved sheep system . A number of experiments conducted to examine the performance of Awassi sheep under improved condition.

It is well known that feeding pregnant ewes during late pregnancy affect their lambing performance (1,2). However, reviewing the published work in Iraq, related to feeding pregnant ewes showed only two attempts using Arabi and Karadi sheep (3,4). Their work was based mainly on feeding ewes different level of concentrate during late pregnancy.

Roughage comprise greater proportion of the ewes diet during pregnancy. Greenhalgh (5) stated that sheep is often considered to be an animal capable of meeting its requirements largely from roughages with concentrates in late pregnancy under improved systems. The main types of roughages fed under these systems are hay and silage.

There appears to be a lack of detailed information on feeding pregnant Awassi ewes during late pregnancy. The present study concerns with effects of feeding different types of roughage on ewes performance during pre and post lambing.

Materials and Methods

Twenty four Awassi ewes, aged 2-3 years with mean live body weight (47.01 ± 0.90 Kg) were used in a completely randomized design. Ewes were penned into three groups in an animal house from the end of thirteenth weeks of pregnancy to parturition. The ewes were mated in mid June following synchronization treatment by using progesterone impregnated intravaginal sponges (Veramix, Upjohn Ltd). Rams wearing (sire, sine) harnesses were used and mating date was recorded daily.

Ewes were allocated randomly to three type of roughages, treatment 1 (G1) green alfalfa, treatment 2 (G2) maize silage and treatment 3 (G3) alfalfa hay.

Silage consisted of whole plant maize and ensiled directly with formic acid added at 2.5 liters per tone of fresh material. Hay was composed of field dried alfalfa. Green roughage alfalfa early bloom harvested daily. Concentrate was fed to all treatments on same level of 200 g/day per ewe. The three type of roughages were given ad libitum from the beginning of the experiment until lambing. The aim was to provide each ewes daily with 10.38 Mj of ME during last 6 weeks of pregnancy (6). The chemical compositions of the feedstuffs used are shown in table 1. throughout the experiment the ewes were given their daily concentrate and roughage in single feed in the morning. Fresh water was available all the time.

Ewes feeds intakes were recorded every other day and live body weight recorded weekly. During lambing time the ewes live weights were recorded 24 hours postpartum. Lambs birth weight were recorded approximately 2 hours after the lambs were dried then the lambs were weight weekly until weaning about 16 weeks after lambing.

All the data were subjected to analysis of variance according to completely randomized design. The means of the experimental treatments were compared for the least signification difference using the student T-test (7). The data of four ewes were excluded, three barren and one late lambing.

Table (1) Chemical composition of the experimental diets

	Green (Alfalfa)	*silage (Maize)	Hay (Alfalfa)	Concentrate
Dry matter (g/kg)	258.7	368.4	872.1	914.0
Crude protein (g/kg DM)	180.0	84.2	145.1	140.0
Crude fiber(g/kg DM)	187.3	265.7	223.9	93.8
Ether extractive (g/kg DM)	23.3	13.8	15.5	21.0
Ash (g/kg DM)	99.1	167.1	120.3	10.2
NDF (g/kg DM)	356.4	573.7	387.5	266.0
ADF (g/kg DM)	207.5	366.6	232.0	231.0
Gross energy (MJ/Kg DM)	17.6	18.8	18.2	17.9
** ME (MJ/kg DM)	8.2	10.7	8.1	12.7

* PH = 4.54

** ME : Estimated by applying the following equation :

$$\text{MEF} = 13.5 - 0.015 \text{ ADF} + 0.014 \text{ CP (6)}$$

Concentrate : Corn 17% + Wheat 25% + Wheat bran 42% + Soya bean 10% + 6% additives

Results and discussion

The main objective of this experiment was to investigate the effect of feeding the conserved roughage (silage and hay) on the performance of pregnant awassi ewes. The objective of this study was achieved and could be judged from the ewes feed intake, live weight changes and lambs birth weight.

Table 2 showed that ewes fed green alfalfa hay had better dry matter intakes than silage. The lower dry matter intake of silage could be due to physical form. The silage used in this study was made long crop maize (not chopped). A higher dry matter intakes of finely chopped maize silage was noted as compared with the unchopped silage(8).

Table (2) Ewes live-weight (\pm SE) changes and dry matter intake during experimental period

	G1	G2	G3	Sig.
No. of ewes	7	7	6	
Ewes mating weight (kg)	40.3 \pm 0.61	40.3 \pm 1.36	39.6 \pm 0.90	NS
Ewes weight at start (kg)	47.3 \pm 1.07	47.2 \pm 1.73	46.4 \pm 1.93	NS
Ewes post-lambing weight (kg)	48.16 \pm 1.38	44.30 \pm 1.77	44.9 \pm 2.60	NS
Ewes live-weight changes (start to post-lambing) (kg)	0.86 \pm 1.00	-2.9 \pm 0.79	-1.50 \pm 1.00	NS
* Mean dry matter intake (g/day)	1370	980	1350	
* ME intake (MJ/day)	11.23	10.53	10.97	
* Protein intake (g/day)	246.6	82.51	195.7	

* Ewes fed on a group basis, therefore no statistical analysis carried out.

Wilkins (9) stated that sheep tended to have lower silage intake than other ruminants.

Mean live weight and live weight changes are presented in table 2. The data showed that the weight losses of the ewes from the start to 24 hours post-lambing were not affected significantly by the type of roughage fed. However group 1 performed better than group 2 and 3. This could be due to the higher ME intakes and protein content in G1 in comparison with G2 and G3. Rutter et al (10) observed no significant effect of roughages (hay, grass silage. Oat silage) on the live weight changes of pregnant ewes .

The mean birth weight of lambs (adjusted for sex) in group 1 was significantly higher ($P < 0.01$) than those of group 2 and 3 (table 3). Similar results were observed with regard to growth rate and weaning weight. This may reflect the better nutritional states of group 1.

Table 2 showed that G1 had higher dietary protein intake than G2 and G3. Robinson and Forbes (11) stated that the birth weight of lambs born from ewes on the lower protein intakes were generally lower than those from the higher protein intakes.

Wallace (1) and Owen (12) obtained a positive relationships between body weight at parturition and milk production. It would seem therefore, that the carry-over effect into lactation of the treatments imposed during pregnancy was partially as result of the differences in ewe body weight at parturition which was caused by the types of feeding given during pregnancy. Similar result were observed by Khalaf et al (13), who showed that growth rate of lambs is associated with the level of ewes feeding during late pregnancy

Conclusion

The results of this experiment indicated that the Awassi pregnant ewes performed better on green alfalfa roughage. It showed that lambs born from group G1 had higher birth weight and growth rate. It can be suggested that using green roughage is beneficial when it is available. On the other hand ewes fed silage and hay performed reasonably. Silage and hay can be used when there is scarcity of green forage. Further work is needed to examine the interaction of type of roughage with concentrate levels fed during late pregnancy.

Table (3) Mean (\pm SE) birth weight, weaning weight and growth rates of the lambs

	* G1	G2	G3	Sig.
Birth weight (kg)	(7) 4.9 \pm 0.13	(7) 4.3 \pm 0.16	(6) 4.4 \pm 0.12	**
Weaning weight (kg)	(6) 27.1 \pm 1.51	(6) 21.6 \pm 1.30	(6) 25.6 \pm 1.31	**
Growth rate (g)/day	(6) 186 \pm 12.37 a	(6) 144.2 \pm 10.04 b	(6) 176 \pm 10.04 ab	**

* Figures in parentheses indicate the number of lambs in each treatment

** $P < 0.01$

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