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PRODUCTIVE PERFORMANCE OF GROWING LAMBS FED ON UREATED SILAGE AND CONCENTRATE

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ABSTRACT

The aim of this study was to investigate the effect of partial substitution of concentrate feed mixture in the rations of growing lambs by ureated fodder corn silage (FCS) at different levels. A feeding trial for 135 days was carried out on twenty eight ½ Osimi x ½ Chios crossbred lambs of 6 months old and weighing 23.20 + 1.56 Kg LBW. Animals were divided into 4 groups (7 lambs each). The experimental groups allotted randomly into four rations control (R1): 3% CFM and 1% bean straw of LBW, while R2, R3 and R4 included 1, 1.5 and 2% CFM, respectively, while ureated fodder corn silage (FCS) *ad-libitum*. Feed intake, digestibility coefficients, nutritive values, nitrogen utilization, daily gain, feed conversion and economical efficiency were determined. Results indicated that the apparent digestibility coefficients of all nutrients and feeding value of rations containing silage ($P<0.01$) increased with increasing fodder corn silage except OMD, compared to the control ration. Daily DMI expressed as Kg/h/d or DM/kg $W^{0.75}$ was significantly ($P<0.05$) higher in lambs fed rations containing different levels of FCS compared to those given the control ration. Lambs received silage recorded higher ($P<0.01$) average daily gain (ADG) than those received the control ration, the realized ADG were 174.44, 180.30 and 187.40 g/day for R2, R3 and R4, respectively, while lambs of the control recorded 156.5 g/day. Ruminal pH values, NH_3-N and total VFA'S concentrations showed that, using silage in rations of sheep had no significant effect, after 3 or 6 hrs post feeding. No significant differences were found among the experimental treatments in serum total protein, albumin, globulin, creatinine and urea-N. Feed conversion of lambs fed R2, R3 and R4 was markedly better than of the control group. Economical efficiency was better with the 1% CFM + silage ration (R4) than the other rations. Dressing percentage (on empty body weight) of groups fed silage containing rations was in favor of control. It could be concluded that, feeding ureated fodder corn silage (Darawa silage) *ad-libitum* with low level of concentrate feed mixture (1% of LBW of growing lambs diets), resulted in superior nutrition status and better daily gain, feed conversion and economical efficiency, as compared with other groups could be recommended.

Keywords: Maize silage, Feeding value, Sheep performance, Nutritive value.

INTRODUCTION

In Egypt, there is a gap between the available and required animal feeds. Nowadays, use of corn silage has widely spread in Egyptian farms due to availability of mechanization. Accordingly, the silage can provide farm animals with a high source of energy as a result of improving forage crops. The total cultivated area with fodder corn (Darawa) is about 268101 Feddan (Ministry of Agriculture, 2005). This area represents 82.16% of the total cultivated forage crops lands. Using corn silage for dairy or fattening animals improved their performance and reduced cost of feeding as it minimize the amount of expensive concentrates needed in animal diets (El-Says *et al.*, 1997; Khinizy *et al.*, 1997 and Mahmoud *et al.*, 1999). However,

no studies have reported or assessed its replacement rates or comparative feeding value primarily with high energy growing and finishing rations for growing lambs. Khinizy *et al.*, (1997) showed that feeding whole maize silage *ad-libitum* (without any supplement) with low level of concentrate feed mixture (1% of LBW of buffalo calves) resulted in improvement of feed consumption and better daily gain, feed and economical efficiencies, rumen fermentation and blood parameters without negative effects on animal metabolism.In summer season, the available feeds (mainly CFM and straws) only cover39% and 22% of the animal energy and protein requirements (El-Serafy, 1991). However, its use for small ruminants has not been fully explored. The present study aimed to investigate the effect of feeding CFM at rates of 1, 1.5 and 2% of LBW beside *ad-libitum* feeding of ureated fodder corn silage (Darawa silage) to growing lambs.

MATERIALS AND METHODS

This research was carried out at Agricultural Research and Experimental Center, belonging to El-Menia University, Faculty of Agriculture. A feeding trial lasted 135 days was carried out on twenty eight ½ Osimi x ½ Chios crossbred lambs of 6 months old and weighing 23.20 ± 1.56 Kg LBW. Animals were divided into 4 groups (7 lambs each).

SILAGE MAKING: Four tons of 1st cut whole corn fodder plants were harvested at 1-1.25 m height and chopped (2–2.5 cm), pressed by tractor and ensiled in a horizontal bunker silo (9 m^3 approximately). At ensiling time, 3% molasses, 0.3% urea solution and 0.5% lime stone powder (w/w) were added and fairly distributed among the successive layers of the chopped plants. The silo was covered with plastic sheet and sand soil and loaded with big stones. Silo was opened after two months storage period and the quality of the produced silage was recorded daily before offering to animals.

The experimental groups allotted randomly into four rations as shown in (Table 1): control (R1): 3:1 CFM: bean straw, while R2, R3 and R4 received 1, 1.5 and 2% CFM of LBW, respectively, while fodder corn silage offered *ad-libitum*. Feeds were offered in group feeding in two equal portions at 8.00 am and 4.00 pm. Refused feeds (if any) were daily collected and recorded. The offered amounts of feed mixtures were biweekly adjusted according to body weight changes. Drinking water was freely available all times. Through the feeding trails digestibility trials were carried out. Three animals were chosen randomly from each group to be subjected to digestibility and nitrogen balance trial for 14 successive days, 7 days as preliminary period and 7 days for feces and urine collection in metabolic cages. At the end of each trial, samples of rumen liquor were withdrawn from each animal by a stomach tube at 0, 3 and 6 hrs after feeding. Collected samples of rumen liquor were immediately determined for pH and NH_3 - N, concentration, while samples kept for VFA'S analysis were stored at –20 C° until determination.

Table (1): Calculated nutrients composition and gross energy (GE*) of the main ingredients and the experimental rations.

Item	DM%	Nutrients% (DM basis)						GE, MJ /kg DM
		OM	CP	CF	EE	NFE	Ash	
CFM	90.00	87.05	14.54	13.92	3.49	55.10	12.95	1.713
UCFS*	28.52	90.44	10.85	30.15	3.03	46.41	9.56	1.768
Bean straw	7.91	87.48	5.41	40.89	0.40	40.78	12.52	1.645
Ration1 (3%CFM+BS *ad-lib.*).	100	89.19	11.52	22.82	2.47	52.38	12.81	1.726
Ration 2 (2%CFM + Silage *ad-lib.*).	100	89.68	11.67	26.53	3.13	48.35	10.32	1.756
Ration 3 (1.5%CFM + Silage *ad-lib.*).	100	89.31	12.08	24.72	3.19	49.32	10.69	1.750
Ration 4 (1%CFM + Silage *ad-lib.*).	100	88.95	12.48	23.01	3.24	50.22	11.05	1.745

CFM = Concentrate feed mixture, UCFS = Ureated corn fodder silage (Darawa).

***pH 4.30, in DM%, acetic acid 2.54, propionic acid 0.71, butyric acid 0.33 and lactic acid 6.42.**

****GE, MJ/kg DM = 0.0226 CP + 0.0407 EE + 0.0192 CF + 0.0177 NFE (MAFF, 1975).**

Blood samples were collected from jugular vein two times throughout the feeding trails (from 4 animals of each group) at 6 hours post feeding. Blood samples were centrifuged at 4000 rpm for 20 minutes. Serum was separated and stored at –20 C° till the biochemical analysis. Commercial kits purchased from Biomerieus (Marcyi; Etoile 69260, Charbonnieres, Les Bains, France) were used for all colorimetric determinations. At the end of feeding period, three lambs of each group were randomly chosen and slaughtered after deprived from feeding and water for 16 hours before slaughter time to determine dressing percentage.

Chemical analysis:

Feeds: Proximate chemical analysis of feeds, ingredients, feces and urine was done according to A.O.A.C. (1990), while digestible energy (DE) and metabolizable energy (ME) MJ/kg DM of the tested rations were calculated according to MAAF (1975) equations. Individual volatile fatty acids and lactic acid of fodder corn silage were analyzed according to the procedure of Ackman and Burgher (1963), using gas liquid chromatography apparatus (GCV chromatograph PYE Unicam).

Rumen liquor: Ruminal fluid samples were taken using stomach tube before and post-feeding (0, 3 and 6 hrs) at the end of feeding trials. The samples were filtered through 3 layers of cloth cheese and directed to the determination of pH value (Hanna instruments Hi 3424 micro-computer–pH meter) immediately. Ammonia-N concentration was determined according to Conway (1957) , while, total VFA'S concentration was measured according to Warner (1964).

Blood Serum Metabolites: Serum total proteins (TP) were determined according to Henry 1964, albumin according to Doumas and Biggs 1972, urea according to Patton and Grouch (1977), Creatinine according to Bartels (1971), cholesterol according to Watson (1960) and triglycerides according to Bucolo and David (1973).

Statistical Analysis:

The data for all traits were statistically analyzed according to Snedecor and Cochran, 1980 in one way analysis of variance design using general linear model (GLM) procedure by computer program of SAS (1995) using the model:

$X_{ij} = \mu + A_i + e_{ij}$
Where: X_{ij} = represents observation, μ = overall mean,
A_i = effect of treatments (rations) and e_{ij} = experimental error (common error).

RESULTS AND DISCUSSION

proximate analysis of rations: Data in Table (1) show that, control ration (R1) had lower values of CP, CF and EE contents than other rations, while ration (R4) had higher values of all contents except CF . Increasing corn fodder silage (FCS) in growing lambs diets, increased all nutrients content of rations including energy and ash contents. The high energy value of FCS was primarily due to its high NFE content (46.41%) and also higher in EE.
Feed intake: Data presented in (Table 3) illustrated that estimation of consumed fodder offered *ad lib* to the experimental groups indicate that as CFM decreased the lambs consumed more UCFS to a level made total feed intake increased significantly ($P < 0.05$). However, when DM intake was related to metabolic body weights (g DM/kg $W^{0.75}$) the intake was slightly reduced by decreasing CFM. This might be a function of the increased feed bulk as silage ratio increased in the ration. Meanwhile, when intake measured as TDN values it was increasing although concentrate was decreased because silage consumed increased. Accordingly, it seems that both feed bulk and nutritive value (TDN) shared to control consumption of feed.

Lambs fed silage rations also consumed more TDN and DCP than control ration. Feed consumption of R2, R3 and R4 (rations containing silage) lead to increase the consumption of DM by 0.52, 4.35 and 2.62%, respectively. Generally, increasing intake of silage improved ($P<0.05$) feeding value on basis of TDN and DCP. This means providing lambs with more energy and nitrogen from tested rations. In this respect, Khinizy *et al.*, (1997) observed that calves fed different treatments nearly consumed all concentrate feed mixture offered which represented 1% of LBW , compareing to control ration which represented 2% of LBW.
Digestibility Coefficients and Feeding Values: Results obtained in Table 2 indicated that the apparent digestibility coefficients of all nutrients and feeding values increased with increasing silage consumed. The increase was significant ($P<0.01$) with R-2 and R-3 while insignificant with R-4. Control ration was lower ($P<0.05$) than other experimental rations. However OM digestibility did not differ significantly among all tested rations. This may be due to the high energy and protein contents (OM and CP), which leads to increase the apparent digestibility significantly ($P<0.01$) with adding corn fodder silage to the rations compared with bean straw (control). These results can be explained in light of the chemical composition and the reduced particles size of concentrate compared to fodder corn silage that may be resulted in increasing DM intake, lowering rate of passage, increasing digestion time in rumen and subsequently higher the digestibility of silage containing rations for DM, CP, CF and EE. These results are in

agreement with those found by Cilliers *et al* (1998), Mohamed *et al* (1999), Mohsen *et al* (2001) and Suliman and Marzouk (2006).

Table 2: Performance of growing lambs fed different levels of corn fodder silage.

Item	Experimental rations				± SE
	R1 (CR) (3% LBW)	R2 (2%LBW)	R3 (1.5%LBW)	R4 (1% LBW)	
No. of Animals	7	7	7	7	--
Duration of trail, d	135	135	135	135	--
Av. Initial weight, kg	20.30^{a}	20.11^{a}	20.04^{a}	20.16^{a}	2.12 NS
Av. Final live wt., Kg	41.43^{d}	43.66^{c}	44.38^{b}	45.36^{a}	2.02 *
Total gain, kg	21.13^{d}	23.55^{c}	24.34^{b}	25.30^{a}	2.47 **-
Av. Daily gain, g	156.50^{d}	174.44^{c}	180.30^{b}	187.44^{a}	3.02 **
Feed consumption:					
Av. CFM, g	1001^{a}	839^{b}	633^{c}	428^{d}	4.37 **
Silage DM intake, g	---	502^{c}	760^{b}	942^{a}	3.42 **
Bean straw intake, g	334	---	---	---	---
Av. daily DM intake (g)	1335^{a}	1342^{a}	1393^{a}	1370^{a}	2.18 NS
Av. Daily DM intake, g/kg w $^{0.75}$/h/d)	81.75^{a}	79.03^{ab}	81.04^{a}	78.38^{b}	1.02 *
Av. daily TDN, kg	0.818^{c}	0.841^{b}	0.890^{a}	0.890^{a}	2.17*
Av. daily DE (MJ/kg DM)	1669^{c}	1696^{b}	1761^{a}	1766^{a}	4.76*
Av. daily ME (MJ/kg DM)	1369^{c}	1390^{b}	1444^{a}	1448^{a}	3.58*
Av. daily DCP, g	95^{c}	97^{c}	107^{b}	110^{a}	2.94*
Water intake, L/h/d	3.644^{b}	3.436^{ab}	3.472^{ab}	3.737^{a}	0.14 *
Water intake, L/kg w $^{0.75}$	0.223^{a}	0.202^{b}	0.202^{b}	0.214^{a}	0.23 *
Water intake L/ kg DMI	2.731^{a}	2.560^{b}	2.492^{b}	2.728^{a}	0.57 *
Feed conversion:					
Kg DM/Kg gain	8.53^{a}	7.69^{b}	7.73^{b}	7.31^{c}	0.43 *
Kg TDN/Kg gain	5.23^{a}	4.82^{b}	4. 94^{b}	4.75^{b}	0.03 NS
Kg DCP/Kg gain	0.609^{a}	0.558^{d}	0.594^{c}	0.585^{b}	0.14 *
Dressing percentage	50.52^{d}	50.90^{c}	53.70^{b}	54.83^{a}	2.15*
Feed cost/kg gain	7.78^{a}	6.36^{b}	5.55^{c}	4.68^{d}	1.18 *
Daily revenue[1]	2.66^{c}	2.97^{b}	3.07^{ab}	3.19^{a}	0.25 *
Economic efficiency[2]	1. 18^{d}	1.68^{c}	2.07^{b}	2.63^{a}	0.16*

a, b, c and d means with different superscripts on the same row are different at (P<0.05).

[1]Based on free market prices of feed ingredients 2006, the cost of experimental rations was estimated as the total prices of ingredients used in the concentrate feed mixture, bean straw and fresh silage, being, 1050, 500 and 130 L.E., respectively and the price of one kg body weight on selling, 17.0 L.E.

[2]Economic efficiency Y = [(A-B/B)], where A= selling cost of obtain gain, and B=feeding cost of this gain.

Increasing replacement rate of concentrate mixture with corn fodder silage was accompanied with increasing values of TDN and DCP which mainly attributed to the increase in digestibility of CP and other nutrients. Differences in TDN (P<0.01) and DCP (P<0.05) values between the control ration and R2, R3 and R4 rations were 2.28, 4.21 and 6.02% for TDN and 1.54, 7.70 and 12.18% for DCP, respectively. The observed increase in digestibilities of most nutrients of including silage may be attributed to its high EE content (3.03%) and NFE content (46.41%) compared to EE and NFE contents of bean straw (0.40 and 40.78%, respectively). Phillips *et al.*, (1995) concluded that increasing diet fat content encouraged digestibility coefficients of all nutrients especially CP and CF by growing lambs. Also, the

observed progress in digestibilities of most nutrients for the silage diets may be due to its slight higher CF content (26.53, 24.72 and 23.01%) when compared with the control one which contained (22.82%) as explained by Khattab *et al.*, (1999). These results agree with the findings of Mohsen *et al* (2001), Mohsen *et al* (2005), Taie *et al* (1998) and Mohamed *et al* (1999).

Daily gain and Feed Conversion: Performance of the growing lambs (Table 2) indicated that lambs fed diet containing corn fodder silage (R2, R3 and R4) were heavier ($P<0.05$) by 11.45, 15.19 and 19.73%, respectively over those fed the control diet. Lambs received the least CFM (1% of LBW) + silage *ad-lib* recorded the highest ($P<0.05$) average daily gain (ADG). Average daily gains of R1, R2 and R3 were 174.44, 180.30 and 187.40 g/day *vs.* (156.5) g/day for control, respectively. These results may be due to their high content of NFE, energy, and crude protein (Table 1). In this respect, these results are in agreement with those reported by Taie *et al* (1998), Mohsen *et al* (2001) and Suliman and Marzouk (2006), as they found that feeding high energy diets resulted in greater daily body weight gain.

Table 3: Digestion coefficients and nutritive values of the experimental rations, by sheep.

Item	Experimental rations				± SE
	R1 (CR)	R2 (2%LBW)	R3 (1.5%(LBW)	R4 (1%LBW)	
Digestion coefficients (%):					
DM	63.05^{c}	64.36^{b}	68.34^{a}	68.96^{a}	2.06 **
OM	65.82^{a}	66.50^{a}	66.52^{a}	67.84^{a}	1.79NS
CP	62.01^{b}	62.08^{b}	63.68^{a}	64.13^{a}	1.15**
CF	51.60^{c}	52.83^{b}	54.17^{a}	55.14^{a}	1.38**
EE	72.53^{c}	75.45^{b}	78.253^{a}	78.92^{a}	1.18**
NFE	73.20^{d}	74.65^{c}	75.36^{b}	76.72^{a}	1.82**
Nutritive values:					
TDN%	61.29^{d}	62.69^{c}	63.87^{b}	64.98^{a}	1.72*
DE (MJ/kg DM)*	1250.58	1263.50	1263.88	1288.96	---
ME (MJ/kg DM)**	1025.48	1036.07	1036.38	1056.95	---
DCP%	7.14^{c}	7.25^{c}	7.69^{b}	8.01^{a}	0.58**

*DE

**ME, calculated according to MAAF (1975) using equations being DE (MJ/kg DM) = Digestible organic matter (DOM X 19) & ME (MJ/kg DM) = DE X 0.82.

a, b, c and d Means with different superscripts on the same row are different at ($P<0.05$).

Daily water consumption of lambs increased significantly ($P<0.05$) with the increase of concentrate feed mixture consumed either when water consumption was related to body weight or metabolic body weight. These results are in accordance with Shkolinik *et al.* (1980) and El-Banna (1993).

Concerning feed conversion efficiency (FCE, Table 2), estimated as Kg DM or Kg TDN/kg gain, it was recognized that as concentrate feed decreased and silage increased in the feed, efficiency of feed conversion improved. Meanwhile, all silage fed groups had better FCE than the control, i.e., use of corn fodder silage while reducing concentrate had better feed conversion.

Accordingly, feed cost per kg gain and economical efficiency was better with the R2, R3 and R4 rations than control ration. However, feed conversion expressed as kg DM and TDN were significant (P<0.5) difference and the figures were 7.69, 7.73, 7.31 for R2, R3 and R4 vs. 8.53 kg /kg gain for control, respectively. While the feed conversions expressed as TDN were 4.82, 4.94, and 4.75 for R2, R3 and R4 vs. 5.23 kg /kg gain for control, respectively. These results due to mainly for, high CP and energy content of silage ration content (Table 1) the availability of nutrient utilization, and also to the efficiency of feeds. These findings are in agreement with El-Sayes *et al.* (1997), Mohamed *et al* (1999), Mohsen *et al* (2001) and Shehata *et al.* (2006). Results in (Table 2) indicated that the dressing percent of lambs fed on fodder corn silage were heavier than of those fed on control ration. These results were in accordance with those findings of Suliman (1994), and Rossi and Loerch (2003), while it disagreement with findings of El-Sayes *et al.* (1997) on buffalo calves fed maize silage.

Table 4: Effect of the experimental rations on some ruminal parameters of lambs

Item	Experimental rations				± SE
	R1 (CR)	R2 (1%LBW)	R3 (1.5%LBW)	R4 (2% LBW)	
PH					
0 hr *	6.82[a]	6. 65[a]	6.67[a]	6.65[a]	0.23 NS
3	5.60[b]	5.67[b]	5.66[b]	5.54[b]	0.21 NS
6	6.46[a]	6.58[a]	6.52[a]	6.46[a]	0.17 NS
NH3.– N (mg/100ml)					
0 hr *	14.30[a]	14.40[a]	14.37[a]	14.28[a]	0.34 NS
3	22.76[a]	23.43[a]	23.17[a]	21.25[a]	0.37 NS
6	23.01[b]	22.50[b]	22.77[b]	22.43[b]	0.18 NS
Total VFA'S (Meq/100 ml)					
0 hr *	7.45[c]	7.40[c]	7.42[c]	7.03[c]	0.12 NS
3	9.46[b]	9.33[b]	9.14[b]	8.12[b]	0.16 NS
6	8.33[a]	8.48[a]	8.70[a]	7.17[a]	0.11 NS

+ a, b and c Means with different superscripts on the same column are different at (P<0.05).
*** after feeding**

Ruminal Parameters: Data of rumen parameters (Table 4) showed that after 3 or 6 hrs post feeding, using CFS in rations of sheep had no significant effect on rumen pH, NH_3-N and total VFA'S. In this respect, Ahmed *et al.* (2002) and Shehata *et al.* (2006) pointed that, ruminal pH and TVFA'S concentrations tended to increase after feeding with silage rations which mostly due to the increased intake of silage. Moreover, increasing fodder corn silage level in the ration from 10 to 20% did not affect ruminal pH value. The existed pH value above six might indicates that there was no deleterious effect on the digestion of the roughage since rumen pH below six known to inhibit the activity of cellulytic bacteria (Hungate, 1966 and Mehrez *et al.*, 1983).

Nitrogen Utilization: Data in table (5) indicate no significant differences among the experimental treatments and the control in the daily nitrogen intake of lambs. Percentage of apparent N utilization (NB/NI X100) was

currently lower (P<0.05) for the control ration (R1) than the other rations, while rations containing low levels of concentrate and high level of silage (R4) was recorded the higher values which can be attributed mainly to higher fecal N. Similar N retention values were recorded for the three treatment rations. Therefore, it is suggested that lambs can utilize N of the rations containing different levels of silage more efficiently by 7.89, 16.32 and 25.12% than control ration, respectively. In this respect, Gunter *et al* (1998) and Ghanem *et al.* (2000) came to the same conclusion with lambs and goats fed silage with feed mixture.

Clinical Biochemistry: As shown in Table 6, no significant differences were found among the experimental treatments was noticed in serum total protein, albumin, globulin, creatinine and urea-N. In this respect, Abdelhmid *et al.* (1999) and Shehata *et al.* (2006) on goat, mentioned that, all estimated values for measured parameters of blood serum constituents were within the normal levels for animals fed the different levels of silage rations.

Table (5): Dietary nitrogen utilization of the experimental rations, by sheep (g/h/d).

Item	Experimental rations				± SE
	R1 (CR)	R2 (1%LBW)	R3 (1.5%LBW)	R4 (2% LBW)	
N-balance:					--
N. intake	165.19	158.60	153. 89	154.50	2.07 NS
Fecal N.	67.69	57.56	55.01	53.37	
Urinary N.	50.42	52.26	51.87	46.04	
Retained N.	47.08	48.77	51.01	55.09	
Apparent N utilization[1]	28.50[d]	30.75[c]	33.15[b]	35.66[a]	2.10 **

+a, b and c Means with different superscripts on the same row are different at (P<0.05).
[1] (N balance / N intake)

Table 6: Effect of the experimental rations on some blood serum parameters of lambs.

Item	Experimental rations				± SE
	R1 (CR)	R2 (1%LBW)	R3 (1.5%LBW)	R4 (2% LBW)	
T. Protein (g/dl)	7.54[a]	7.55[a]	7.67[a]	7.75[a]	1.27 NS
Albumin (g/dl)	3.72[a]	3.76[a]	3.77[a]	3.84[a]	2.45 NS
Globulin (g/dl)	3.82[a]	3.79[a]	3.90[a]	3.91[a]	1.48 NS
Creatinine (mg/dl)	1.21[a]	1.23[a]	1.26[a]	1.30[a]	1.39 NS
Urea-N (mg/dl)	13.30[a]	13.36[a]	13.42[a]	13.57[a]	1.37 NS

Ns: not significant (P≥0.05).

It could be concluded that, feeding ureated fodder corn silage (Darawa silage) *ad-libitum* with low level of concentrate feed mixture (1% of LBW and up) for growing lambs, resulted in superior feeding status, better daily gain and feed efficiency and better economical efficiency.

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الأداء الانتاجى للحملان النامية المغذاة على سيلاج معامل باليوريا و العلف المركز.

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تهدف هذة الدراسة إلى اختبار تأثير الأستبدال الجزئى لمخلوط العلف المركز فى علائق الحملان النامية بمستويات مختلفة من سيلاج الدراوة المعامل باليوريا. استخدم فى هذه الدراسة ٢٨ حمل خليط (٢/١ أوسيمى X ٢/١ كيوس) عمر ٦ شهور و متوسط وزن حى ٢٣,٢٠± ١,٥٦ كجم . نوى التمر. قسمت الحيوانات إلى أربعة مجموعات تجريبية (٧ حيوانات فى المجموعة). وزعت المجموعات التجريبية على أربعة علائق تجريبية (١) عليقة مقارنة (كنترول): ٣% علف مركز +١% تبن فول من وزن الجسم الحى. بينما غذيت المجموعات الثانية و الثالثة و الرابعة على العلف المركز بنسب ١ & ١,٥ & ٢% من وزن الجسم على التوالى أما التغذية علىسيلاج الدراوة المعامل باليوريا فقد كانت حتى الشبع. امتدت تجربة التغذية إلى ١٣٥ يوم حيث تضمنت تقدير كمية الغذاء المأكول و معاملات الهضم و القيمة الغذائية و ميزان الأزوت و معدلات النمو و الكفاءة التحويلية و الاقتصادية ووظائف الكبد و الكلى للحيوانات و كان من النتائج المتحصل عليها من هذة الدراسة:

-زادت معاملات الهضم الظاهري لكل المركبات الغذائية و كذلك القيمة الغذائية و الطاقة الممثلة للعلائق المحتوية على سيلاج دراوة بدرجة معنوية (٥%) عن مجموعة الكنترول.كان المأكول اليومى معبرا عنة بالكجم / رأس / يوم أو كجم مادة جافة منسوبة لحيز الجسم التمثيلى أعلى معنويا (٥%) مع الحملان التى غذيت على علائق تحتوى مستويات مختلفة من سيلاج الدراوة عن الحملان التى غذيت على عليقة المقارنة. سجلت الحملان التى غذيت على علائق سيلاج الدراوة المعامل باليوريا حتى الشبع و مخلوط العلف المركز 1% من وزن الجسم الحى زيادة معنوية (١%) عن مجموعة المقارنة و كان متوسط النمو المحقق (١٧٤,٤٤ & ١٨٠,٣٠ و١٨٧,٤٤) جم / يوم للحيوانات التى غذيت عالكنترول أوضحتو ١,٥ و١% مع سيلاج الدراوة حتى الشبع على التوالى مقابل (١٥٦,٥٠) جم/يوم بالنسبة لحيوانات عليقة الكنترول أوضحت قيم حموضة الكرش و تركيزات نيتروجين الأمونيا و الأحماض الدهنية الطيارة الكلية لجميع المعاملات أنة لم يكن هناك تأثير معنوى.- بالنسبة للسيرم:لا توجد فروق معنوية بين المعاملات التجريبية فى محتواها من البروتين الكلى و الألبيومين و الجلوبيولين و الكرياتنين و اليوريا.

كانت الكفاءة التحولية محسوبة كمادة جافة و مركبات كلية مهضومة/كجم نمو فى حملان العليقة الثانية و الثالثة و الرابعة أفضل عن الحملان التى غذيت على عليقة الكنترول.كانت الكفاءة الأقتصادية بالنسبة للحملان التى تم تغذيتها على١% من العلف المركز و سيلاج الدراوة حتى الشبع أفضل من الحملان التى غذيت على العلائق الأخرى.

من هذة الدراسة يمكن أن يوصى بالتغذية على سيلاج الدراوة المعامل باليوريا حتى الشبع و مخلوط العلف المركز (1% من وزن الجسم الحى) فى علائق الحملان النامية حيث تستطيع تحسين القيمة الغذائية و النمو اليومى و الكفاءة الغذائية و الاقتصادية.