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JEVALUATION OF DIFFERENT FEEDING SYSTEMS FOR GROWING BALADI LAMBS DURING SUMMER

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ABSTRACT

Thirty Baladi lambs of average 25 ± 0.20 Kg body weight were randomly divided into five groups and assigned to the following feeding treatments:

1- Chopped wheat straw (ad lib) and concentrate feed mix (CFM) at 2.5% of LBW (control group)
2- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 2% of LBW
3- Berseem hay (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW
4- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW and Block (ad lib)
5- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW and 100 ml of El-Mufeed liquid/h/d

A comparative feeding trial for 18 weeks was conducted during summer. Five metabolism trials were carried out in order to evaluate the feeding value of the experimental rations.

The results obtained were as follows:

1- Berseem hay ration (group 3) had better digestion coefficients, feeding value, nitrogen balance, daily gain and feed conversion than other groups.
2- El-Mufeed ration (group 5) recorded the lowest feed cost per Kg weight gain and the best economic efficiency. Lambs fed urea molasses block ration (group 4) was better in feed conversion (as Kg TDN/Kg gain)
3- Results indicated that no significant differences among groups in rumen liquor parameters (pH, TVFA's and ammonia). Block ration (group 4) resulted in higher pH and ammonia and lower TVFA concentrations.
4- Berseem hay ration (group 3) resulted in increased plasma TP and albumin, while El-Mufeed ration (group 5) resulted in increased in increased plasma glucose.

It is concluded that the nutritive value of roughage can be improved by chopping to 3cm or ureation. Premixes such as El-Mufeed or urea molasses blocks can be used to reduce the cost of nutrition.

Keywords: concentrates, replacement, lambs, digestibility, urea, molasses, block, supplement

INTRODUCTION

When low quality roughage such as straws or stalks are used as the basal feed for ruminant animals their nutritive values should be improved. This might be achieved through treatment or supplementation to correct for nutrient deficiencies and to increase the availability of nutrients (Silva et al, 1989). Supplementation of NPN and sugar substrates to rations has been recommended to improve nutrient utilization by ruminants (Mehrez, 1981, Soliman et al, 1985 and El-Ayek, 1996).

The aim of this study was to investigate the influence of using berseem hay or ureated roughage with supplementation on nutritive values and body performance of Baladi lambs.

MATERIALS AND METHODS

Animals And Management

This study was carried out during summer season (June to September). Thirty male Baladi lambs (25 ± 0.20 Kg average initial body weight) were randomly assigned to five balanced groups. Animals of each group were kept in a pen and weighed individually on biweekly basis. Feeds were offered twice daily. Water was available for animals all times. Water intake was determined for each animal. The feed residues not consumed by animals were weighed and taken into account for determination of actual feed intake. The experimental period lasted for 126 days (18 weeks). After the 10^{th} week of the experimental period, animals were kept in metabolic cages and feces and urine were collected and sampled for a whole week from three animals in each group. Rumen fluid samples were collected during the collection period before feeding and 3 and 6 hrs post feeding through stomach tube. Blood samples were withdrawn from the left Jugular vein before feeding, centrifuged at 4000 rpm for 20 minutes and the resultant plasma was frozen for later analysis.

Experimental Rations

Lambs were randomly assigned to five balanced groups to evaluate the following rations:

1- Chopped wheat straw (ad lib) and concentrate feed mix (CFM) at 2.5% of LBW (control group)

2- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 2% of LBW

3- Berseem hay (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW

4- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW and urea molasses block (ad lib)

5- Chopped ureated WS (ad lib) and concentrate feed mix (CFM) at 1.5% of LBW and 100 ml of El-Mufeed liquid/h/d

Ingredients of urea molasses block (UMB) and El-Mufeed liquid are shown in Table (1). Chemical composition of the ration ingredients is shown in Table (2). Daily rations of the five groups were adjusted every two weeks according to the changes of body weights.

Analysis

Samples of feeds, feces and urine were analyzed according to A.O.A.C. (1990). Rumen fluid samples were analyzed for ammonia-N (Conway, 1963), TVFA's (Kromann et al, 1967). Plasma total protein and albumin concentrations were determined according to Patters, (1968) and Doumas (1971), respectively. Globulin was estimated by difference. Plasma urea concentrations was determined according to Coulombe and Farreau, (1963). Plasma glucose concentration was determined according to Hyvarinen and Nikklia, (1962). The data was analyzed statistically by using SAS procedures, (1988).

Table 1: Ingredients of urea molasses block (UMB) and Mufeed liquid

Ingredient	UMB, %	Mufeed, %
Beet molasses	41.00	90.00
Wheat bran	32.00	--
Urea	10.00	2.50
Mineral premix	2.00	2.50
Sodium chloride	5.00	--
Binding agent	10.00	--
Water	--	5.00
Total	100.00	100.00

Table 2: Chemical composition of ration ingredients as fed to growing lambs

Item	DM	OM	CP	EE	CF	NFE	Ash
		DM basis, %					
CFM*	86.10	93.80	14.18	2.77	12.34	64.51	6.20
Wheat straw**	86.30	89.18	4.03	1.38	36.11	47.66	10.82
Ureated wheat straw***	85.93	88.00	7.66	1.44	34.02	44.88	12.00
Berseem hay	86.83	87.32	12.69	2.03	34.81	37.79	12.68
UMB	79.79	70.89	37.35	2.61	3.14	27.79	29.11
El-Mufeed	69.11	93.61	11.02	1.42	1.09	80.08	6.39

*Concentrate feed mixture contains: 35% wheat bran, 30% undecrticated cotton seed cake, 26% yellow corn, 5% molasses, 3% limestone, and 1% mineral salt.
** a local thresher was used to chop wheat straw to 3cm legnth.
*** wheat straw was treated with 4% urea (4 Kg urea/50liter H_2O/100Kg straw)

RESULTS

Digestibility Coefficients And Nutritive Value

Table (3) shows the digestibility coefficients and nutritive values of the control and tested rations. Digestibility coefficients of DM, OM, CF, and EE of berseem hay (G3) were the greatest among all rations (P<0.05). The UMB (ration G4) had significantly (P<0.05) higher CP digestibility than other rations. On the other hand, supplementation with El-Mufeed (ration G5) resulted in increased NFE and decreased CF digestibility coefficients.

Table 3: Digestibility and feeding values of the experimental rations

Item	Digestibility, %						Feeding values, %	
	DM	OM	CP	CF	EE	NFE	TDN	DCP
G1	64.42ab	68.70ab	62.95c	50.28b	71.19b	75.63a	66.30a	7.07c
G2	63.09b	67.81ab	64.52bc	52.75b	71.29b	72.29b	64.75a	7.56c
G3	68.86a	70.58a	66.24b	58.79a	74.14a	76.01a	66.48a	8.44b
G4	63.41b	66.34b	69.82a	52.24b	71.26b	69.10c	61.53b	10.16a
G5	65.93ab	68.09ab	65.58bc	50.00b	72.22b	76.27a	66.43a	7.49c

a, b and c means bearing different superscripts on the same column are different (P<0.05)

Total digestible nutrients (TDN) value (Table 3) of UMB ration (G4) was significantly (P<0.05) lower than the other rations, however, there were no significant differences among rations (3, 5, 4, and 1). The DCP value was significantly (P<0.05) higher for UMB (ration 4) than for other rations, which did not show any significant differences among them (2, 5 and 1).

Nitrogen Utilization And Water Metabolism

Nitrogen metabolism data as affected by treatments is shown in Table (4). The least nitrogen intake, digested nitrogen, and urinary nitrogen were for El-Mufeed ration (G5). Nitrogen intake (g/h/d) was higher for berseem hay ration (G3). Nitrogen balance was, therefore, higher for this group (5.11 g/h/d).

Table 4: Nitrogen utilization and water metabolism of lambs fed the experimental rations

Item	Animal groups				
	G1	G2	G3	G4	G5
Nitrogen balance, g/h/d					
N intake	21.72	18.11	21.88	21.36	17.61
Fecal N	8.05	6.43	7.39	6.43	6.06
Digested N	13.67	11.68	14.49	14.93	11.55
Urinary N	9.16	6.95	9.38	10.13	6.87
N balance	4.51c	4.73b	5.11a	4.80b	4.68b
Water utilization, ml/h/d					
Water intake	3130a	2560b	3220a	3180a	2200b
Urine volume	975ab	723bc	977ab	1082a	552c
Urine/water intake	31.15ab	28.24b	30.34b	34.03a	25.09b
Water intake/Kg DMI (L)	2.69c	2.57c	3.18b	3.69a	2.43c

a,b,c means with different superscripts in the same row differ significantly (P<0.05

Water intake as affected by type of ration (Table 4) with El-Mufeed ration (G5) being the least (2200 ml/h/d) whereas berseem hay ration (G5) was the highest (3220 ml/h/d). Animals fed UMB ration (G4) excreted larger urine volume (1082 ml/h/d). Also, urine/water intake (34.03%) and water intake/Kg DM intake (3.69 l) followed the same trend.

Ruminal Fermentation Parameters

The average values of rumen liquor parameters at different times (0, 3, and 6 hrs postfeeding) are shown in Table (5). Some variations in pH values took place 3, and 6 hrs postfeeding and the overall average. Control group (G1) had the lowest pH values (6.09, 6.39 and 6.43, respectively). Concentrations of TVFA's of the five groups were significantly different at 3, 6 and overall average.

Table 5: Ruminal fermentation parameters of growing lambs fed the experimental ration

	pH				TVFA's, mleq/100 ml				NH_3-N, ml%			
Item	0	3	6	Ave.	0	3	6	Ave.	0	3	6	Ave.
G1	6.80	6.09b	6.39	6.43b	5.14	9.26a	7.58a	7.33a	16.11	27.10b	18.21c	20.47c
G2	6.84	6.22a	6.43	6.50a	4.99	8.76b	7.38b	7.04b	16.63	29.56a	19.64ab	21.94b
G3	6.88	6.21a	6.47	6.52a	4.86	8.80b	7.26b	6.97b	16.80	29.71a	21.01a	22.51ab
G4	6.89	6.21a	6.48	6.53a	4.82	8.82b	7.24b	6.96b	16.89	30.34a	20.90a	22.71a
G5	6.87	6.20a	6.39	6.49a	4.89	9.14a	7.73a	7.25a	16.22	28.04b	19.26ab	21.17bc

a,b,c means with different superscripts in the same column differ significantly (P<0.05).

Ammonia-N concentrations at zero time for all of the animal groups had close values. At 3, and 6 hrs postfeeding and overall average values of ammonia-N concentrations of the control group were significantly lower than other groups.

Blood Plasma Indicators

Plasma total protein and its fractions (Table 6) were higher for berseem hay ration (G3) than other rations. Plasma urea nitrogen concentrations were higher for G4 and G3 (28.11 and 28.03 mg%, respectively). The overall mean of plasma glucose concentrations was similar among treatments.

Table 6:Blood plasma parameters of growing lambs fed the experimental rations

Item	Total protein, g%	Albumin, g%	Globulin, g%	A/G ratio	Urea, mg%	Glucose, mg%
G1	6.95b	3.89	3.06	1.27	26.00c	57.72
G2	7.02ab	3.99	3.03	1.32	27.56ab	57.12
G3	7.15a	4.00	3.15	1.27	28.03a	55.60
G4	7.07ab	3.98	3.09	1.29	28.11a	56.69
G5	7.01ab	3.97	3.04	1.31	26.28bc	57.75

a,b,c means with different superscripts in the same column differ significantly (P<0.05)

Growth Trial

The data in Table (7) indicated that average daily gain weight gains for lambs were 107.70, 110.40, 121.35, 111.90, and 109.63 gm/d for groups 1 to 5, respectively. Average body weight of berseem hay group (G3) was significantly (P<0.05) higher than other rations.

Table 7: Performance of lambs fed the different experimental rations

Item	G1	G2	G3	G4	G5
Initial weight (Kg	24.83	25.17	24.83	25.00	25.33
Final weight (Kg)	38.40	39.08	40.12	39.10	39.15
Total gain (Kg)	13.57	13.91	15.29	14.10	13.82
Daily gain, g/h/d	107.70b	110.40b	121.35a	111.90b	109.68b
Daily feed intake, g/h/d					
CFM	678.13	552.13	422.75	420.86	419.48
Wheat straw	292.30	--	--	--	--
Ureated wheat straw	--	341.04	--	346.53	353.40
Berseem hay	--	--	537.65	--	--
UMB	--	--	--	95.75	--
El-Mufeed	--	--	--	--	69.11
TDMI	970.43a	893.17b	960.40a	863.14b	841.99b
TDNI	643.40a	578.33b	638.47a	531.09b	559.33b
DCPI	68.61bc	67.52bc	81.06ab	87.70a	63.07c
Feed conversion					
Kg DM/Kg gain	9.01a	8.09b	7.91b	7.71b	7.68b
Kg TDN/Kg gain	5.97a	5.24b	5.26b	4.75b	5.10b
Kg DCP/Kg gain	0.64bc	0.61c	0.67b	0.78a	0.58c
Feed cost*	4.98	4.17	3.96	4.16	3.65
Economical efficiency	1.83	2.16	2.28	2.14	2.46

a,b,c means with different superscripts in the same row differ significantly (P<0.05)

*** based on the assumption that the prices of each ton of CFM, wheat straw, ureated wheat straw, berseem hay, UMB, and El-Mufeed were 600, 160, 190, 300, 800, and 300 LE respectively and the price of one Kg of live body weight was 9.00 LE.**

The control group had higher total dry matter intake (TDMI) and total TDN intake, while UMB group (G4) had higher total DCP intake (g/h/d) than other groups.

Statistical analysis showed some significant differences ($P<0.05$) in feed efficiency expressed as Kg DM, TDN and DCP/Kg gain, among all rations. Animal group fed El-Mufeed ration (G5) showed the best Kg DM/Kg gain or Kg DCP/Kg gain, while UMB ration (G4) was the best in feed efficiency as Kg TDN/Kg gain.

Feed cost per Kg weight gain and economical efficiency (as a ratio between price of the weight gain and cost of feed consumed) were recorded for different rations as presented in Table (7). Data showed that the feed cost per Kg weight gain with El-Mufeed ration (G5) had the lowest value. Also, it had higher economical efficiency, while control ration (G1) was the lowest.

DISCUSSION

Wheat straw is a roughage commonly used in Egypt as a basic feedstuff component especially during summer season. The main constraint of feeding poor quality roughage is that they are bulky in mass, have high content of cellulose bound to lignin in their structure and have low N contents. Lignin is indigestible component whereas the cellulose is susceptible to bacterial cellulases. This susceptibility is dependent upon the loosening of their bonds with lignin. Therefore, the availability of cellulose for digestion seems to be a function of its dissociation from lignin (Fouad et al, 1998). When low quality roughages are used as the basal feeds for ruminant animals, their values may be improved by means of treatments or supplementation to correct their nutrient deficiencies and to increase the availability of nutrients (Silva et al, 1989). Urea treatment of poor quality roughage has the effects of increasing N content and releasing cellulose from lignin or weakening their tight association (Deraz, 1996). In additions, Lashin et al,(1995) ,reported that supplementing either urea-molasses block or El-Mufeed liquid to chopped roughages showed improved feed utilization. Supplementation of NPN and sugar substances to rations has been recommended to improve nutrient utilization by ruminant (Mehrez, 1981,Soliman et al, 1985 and El.Ayek, 1996).

The results presented in table (3) showed that the CPD, CFD and DCP values of ureated wheat straw ration (G2) were higher than that of untreated wheat straw ration (G1). Increased CP digestibility, may be explained by the changes in rumen pH values which in turn influences protein solubility and shifts in rumen microflora (Ganev et al, 1979). The values obtained in the present study for DCP content are mainly caused by urea treatment. On the other side, the decrease in CP and CF digestibilities in control group (1) may be attributed to the lower nitrogen solubility and higher amount of the undegradable protein in untreated wheat straw than ureated (El-Sayed et al, 1997). The highest values for CF digestibility that was observed with ureated wheat straw ration (G2), could be due to the effect of NH_3 on the cell wall constituents of wheat straw and/or as a result of supplying N for rumen microorganisms (Gabr, 1988). Accordingly, CF digestion of tested material was improved (Van Soest, 1982).

Most of the nutrient digestibilities and nutritive values of berseem hay ration (G3) were significantly ($P<0.05$) higher than those observed for the control. The higher digestibility of CF of G3 (Table 3) is attributed to the ability of berseem hay fibers to be digested easier than wheat straw. This resulted in higher feeding values expressed as TDN (66.48%) of this group compared to other groups.

The urea molasses block (UMB) fed group (4) was significantly higher in CPD and DCP than other groups, which can be attributed to the high content of protein (Table 1) and, therefore, increased protein intake (El-Bedawy *et al,* 1993). Increased fiber digestibility in UMB fed group (4) than the control group (1) due to CP, which stimulated microbial production and hence increased CF digestibility (Munoz *et al,* 1985).

The lowest CF digestibility values were exhibited by wheat straw-fed group (1) and El-Mufeed fed group (5) (50.28, and 50.00%, respectively). This may be due to the increased CFM with ration 1 (containing 2.5% of body weight concentrates, Mehrez *et al,* 1993) and increased soluble carbohydrate proportion in El-Mufeed liquid (Table 1). Therefore, less saliva was secreted due to less chewing and rumination (Mehrez, 1995). These results were similar to those reported by Sundestol and Owen, (1984), Fahmy *et al,* (1996), Hanafy *et al,* (1996), and Fouad *et al,* (1997 and 1998).

The highest nitrogen intake (Table 4) was for G1, G3 and G4. This may be attributed to the increased level of CFM with ration G1 containing 2.5% concentrate, and high content of CP of berseem hay (G3) and UMB (G4). Nitrogen balance was significantly low ($P<0.05$) for the control ration. Moreover, N retention was higher ($P<0.05$) in berseem hay ration followed by UMB ration. Taie (1998) found that N retention increased with increasing protein level in the diet for lambs. The increases in N retention with ration (G3) may have been due to the improvement of nutrient digestibility than other ones (Table 3), and may also be due to the increased protein reaching the abomasum (El-Ayek, 1999).

Nitrogen retention was lower for UMB ration than for berseem hay ration (4.80 to 5.11 g/h/d, respectively). This may be attributed to raising urea level in the UMB (Table 1) and the increased urine volume (1082 ml/h/d) and consequently increased urinary nitrogen output (10.13 g/h/d), and/or an increase in glucocorticoids catabolic hormones secretion (Thompson *et al,* 1963).

Animals on berseem hay (G3) had the highest water intake followed by UMB. High berseem hay proportion in ration (3) increased free water intake (Khattab *et al,* 1999). Animals on UMB group excreted larger urine volume and urine/water intake and water intake/Kg DM intake followed the same trend. These may be due to the high content of NaCl and urea of UMB (5% and 10%, respectively) (Fouad, 1995).

Data in Table (4) cleared reduced free water consumption by animals on El-Mufeed group (5). It may be due to the reduction of daily feed intake, urine excretion that followed almost the same trend as did water intake.

Water requirements vary and are regulated by many factors, such as intake of DM, environmental temperature, water losses from the body and species (Shafie, 1999). Sheep consume about 2L water/Kg DM feed intake at temperature between 0 and 15 °C, this ratio increases to 3:1 above 20 °C (NRC, 1991). The present results agree with that concept. Sooud *et al*, (1988) noted that water intake increased in the hottest months.

Ruminal pH values, total VFA's and ammonia-N concentrations were affected by time after feeding (Table 5). Control (G1) and El-Mufeed (G5) resulted in lower pH values, higher TVFA's concentrations and lower NH_3-N concentrations. These effects are probably due to better utilization of dietary carbohydrates (Fadel *et al*, 1987) as indicated by increased NFE digestibility (Table 3) and/or to decreased amount of salivary secretion per unit of dry matter intake (Rumsey *et al*, 1970). Abdel-Hafez, (1983) found that ruminal TVFA concentrations increased with increasing concentrate level in the ration.

The rumen liquor parameters of ureated wheat straw ration and berseem hay ration were within normal range and did not differ significantly. Ruminal concentrations of NH_3-N increased in berseem hay ration as CP in the diet increased, resulted in greater intake and flow of total N to the duodenum (Jones-Endsley *et al*, 1997). The higher ruminal pH values and NH_3-N concentrations and lower TVFA concentrations in UMB ration, may be associated with faster rate in the rumen fermentation (Mehrez *et al*, 1977), increase in NPN in the diet (Lashin *et al*, 1995) and higher nitrogen digestibility (Table 3) (Defaria and Huber, 1984). Lower TVFA's in the rumen fluid of lambs of G4 may be due to receiving the highest level of urea (Roberston and Miller, 1971) and/or a dilution effect because lambs consumed more water (Schneider *et al*, 1988) (see Table 3).

Several factors seem to affect serum total protein and its fractions, the nutritional status of animals, health and dietary protein consumption (Kummer *et al*, 1980 and Khattab *et al*, 1996). The higher level of protein in diet was accompanied by higher concentrations of serum TP and albumin (Solouma, 1999). Abdel-Ghani et al (1997) reported that serum globulin concentrations in animals have been observed to increase slightly with increasing dietary protein intake.

The plasma urea concentrations of UMB was slightly higher, due to higher intake of urea through UMB (Sahoo *et al*, 1992) and for low energy-protein ratio (Montemurro *et al*, 1995). El-Muffed liquid ration (G5) and control ration of 2.5% CFM. (G_1) showed a high glucose concentrations. This effect is probably due to increased soluble carbohydrate in the (table 2) (El-Ayoty *et al*, 1993). On the other hand, Hungate (1966) reported that, feed ingredients of high-energy concentration are known to produce more propionic acid in the rumen, which is a precursor for glucose synthesis. These results agreed with those obtained by Fouad *et al*, (1997 and 1998). Generally, the means of some plasma blood parameters are within the range of normal values (Stanek *et al*, 1992). These normal values may indicate that liver, kidney, spleen and muscles were functioning well.

The superiority of ADG of G3 was associated with the highest digestibility coefficients and TDN value, which enhanced animal performance (Khattab *et al*, 1996). Sunsoncy *et al*, (1987) found that the consumption of urea-molasses mixture by the animals was relatively small and associated with improvements in feed conversion efficiency. It is probably due to a marked improvement in rumen microbial digestion (Ayala and Tun, 1991). Similar trend for improving ADG as a result of feeding ureated or supplemented low quality agricultural residues was reported by Sundestol, (1984), Fahmy, (1990) and Fahmy *et al*, (1995).

Feed intake by rams as DM or TDN from both control ration and berseem hay ration were significantly higher. On the other hand, feed intake as DCP of UMB ration was significantly higher. This means that CFM was in high percent (2.5% in G1) and berseem hay was highly palatable (Khattab *et al*, 1999) and increased CP content of UMB (37.35%) (Fouad *et al*, 1997).

The best feed conversion as DM/Kg gain was observed with animals fed El-Mufeed ration (7.68 Kg). The lowest TDN/Kg gain value was for animals fed UMB (4.75 Kg); being the highest with untreated wheat straw ration (5.97 Kg). Regarding DCP Kg/Kg gain, it was distinctly the lowest for El-Mufeed ration. It is of interest to note that there was a great association between the total DCP intake and its utilization as DCP Kg/Kg gain (Mehrez *et al*, 1997).

From the economic point of view, the highest value of feed cost/Kg gain was (4.98 LE) with the control ration. It is associated with the highest CFM intake (2.5%) because of its high price and the lowest economical efficiency (1.83). On the other hand, El-Mufeed ration had the cheapest value of feed cost/Kg gain (3.65 LE) and the highest economic efficiency (2.46) due to the low CFM intake (1.5%) and low price of El-Mufeed liquid.

This study has shown that there were some benefits from the nutrition system that have been tested. The use of hay as bulk material has led to the decrease of the period needed to reach the marketing potential. Also, the use of El-Mufeed liquid led to the decrease of the cost of one Kg of weight gain, with an increase in economical efficiency. In additions, the use of UMB improved feed efficiency (Kg DM and TDN/Kg gain).

Generally speaking, it was noticed that treating roughage chemically with urea and additives (El-Mufeed or UMB) led to the decrease of the dependence on CFM (taking into account that the local production is insufficient to the animal nutrition needs throughout the year). This is in addition to the large benefits of decreasing the rest of production of one Kg of weight gain with increasing economic efficiency and speeding the rate of return of the capital leading, at the end, to increasing the profit of the farmer.

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تقييم نظم تغذية مختلفة لانماء الحملان البلدى خلال موسم الصيف

رأفت طه فؤاد و طارق عبد الوهاب دراز***

*** قسم بحوث استخدام المخلفات -معهد بحوث الإنتاج الحيوانى - مركز البحوث الزراعيـــة - الدقـى - الجيزة**

**** قسم بحوث تغذية الحيوان- معهد بحوث الإنتاج الحيوانى - مركز البحوث الزراعيـــة - الدقـى - الجيزة**

تم إجراء تجربة نمو على الحملان البلدى (٣٠ حولى) بمتوسط وزن ٢٥ كجـــم حيـــث قســـمت الحملان عشوائيا الى خمس مجموعات متشابهة وغذيت العلائق التالية:

تبن قمح بطول ٣ سم لحد الشبع + ٢,٥% من وزن الجسم علف مركز (مجموعة المقارنة)

١. تبن قمح بطول ٣ سم و معامل باليوريا لحد الشبع + ٢% من وزن الجسم علف مركز
٢. دريس برسيم + ١,٥% من وزن الجسم علف مركز
٣. تبن قمح بطول ٣ سم و معامل باليوريا لحد الشبع + ١,٥% من وزن الجسم علف
٤. مركز + بلوك لحد الشبع
٥. تبن قمح بطول ٣ سم و معامل باليوريا لحد الشبع + ١,٥% من وزن الجسم علف مركز + ١٠٠ ســم مفيد

استمرت التجربة ثمانية عشر أسبوعا خلال فترة الصيف تم خلالها إجراء تجارب تمثيـــل غذائـــى وتقييم مكونات سائل الكرش والدم وتقدير معدلات النمو والكفاءة الغذائية والاقتصادية وكانت أهم النتـــائج كالتالى:

١- حققت مجموعة الدريس افضل معاملات هضم وقيم غذائية وميزان ازوت واعلى معـــدل نمـــو وكفـــاءة غذائية عن باقى المجموعات

٢- كانت مجموعة المفيد اقل تكلفة لكيلو النمو وافضل كفاءة اقتصادية بينما كانت مجموعة البلوك افضل فـــى الكفاءة الغذائية كمركبات كلية مهضومة/كيلو نمو

٣- لم تكن هناك فروق معنوية بين المجاميع فى مقاييس سائل الكرش وان كانت مجموعة البلوك اعلاها فـــى الاس الهيدروجينى (٦,٥٣) والامونيا (٢٢,٧١) واقلها فى الاحماض الدهنية (٦,٩٦)

٤- كانت مجموعة الدريس اكبر من البروتين الكلى للبلازما وكذلك الالبيومين بينما تفوقت مجموعة المفيـــد فى نسبة جلوكوز البلازما

اوضحت هذه الدراسة انه يمكن تحسين الاستفادة من المخلفات الزراعية بتقطيعها ميكانيكيا لطـــول ٣ سم ومعاملتها كيماويا باليوريا مع او بدون استخدام المدعمات مثل المفيد لتقليل نسبة العلف المركز بالعليقة ولتقليل تكلفة انتاج كيلو نمو الحملان البلدى