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FEEDING SUGAR BEET TOPS SILAGE FOR SHEEP: 1 - IN SUMMER

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SUMMARY

This study was conducted to investigate the growth performance of lambs fed sugar beet tops silage (SBTS) with concentrate feed mixture CFM. Forty growing male lambs (20 Frafra and 20 saidi weight 20.19 kg as average) were used in feeding trail. Animals were randomly divided into five similar groups according to their live body weight beside twenty mature rams (45 kg live body weight) were used in digestibility trails. Each groups were fed one of the following diet. (T1), CFM +Wheat Straw control, (T2) , CFM + SBTS supplemented with 0.25 urea /100 kg dry matter of silage un-chopped), (T3), CFM + SBTS supplemented with 0.25 urea /100 kg dry matter of silage chopped), (T4), CFM + SBTS supplemented with 0.5 urea /100 kg dry matter of silage un-chopped), (T5), CFM + SBTS supplemented with 0.5 urea /100 kg dry matter of silage chopped). CFM were offered as 3% of live body weight for all groups ,while roughages were fed ad lib. Control T1 had higher ($P<0.05$) digestibility in CP, CF, EE and TDN compared with treatments containing ureated SBTS chopped or un-chopped, but diets ureated with 0.25% urea chopped or unchopped was better in digestibility than those ureated with 0.5% urea. Rations containing 0.25% urea chopped or un-chopped(T2 andT3) were the best ($P<0.05$) digestibility in OM, NFE and digestible crude protein (DCP) than rations T4,T5 and control. The values of total nitrogen intake (TNI), fecal nitrogen (FN),urinary nitrogen(UN), total nitrogen excretion(TNE), nitrogen balance(NB) and nitrogen absorption (NAB) in control treatment lower ($P<0.05$) than other treatments. Total gain and daily gain were reicorded by the rations contain SBTS(U .0250%) higher than rations contain SBTS (U.0.5%) and control ration . This diferences were insignificant. The significant($P<0.05$) higher DM and TDN consumed by lambs fed control ration (T1),but feed intake as DCP has lower than other treatments . Lambs fed T2 and T3, showed the best conversion as DM and TDN, compared with those fed (T1),(T4) and(T5). Therefore, the lowest feed cost and the best weight gain equal the best revenue and better economic efficiency which showed by lambs fed diets containing ureated sugar beet tops T2 flowed by T3, T4, T5 and T1.

Keywords*: silage, performance, digestibility, sugar beet tops, urea, chopped and unchopped.*

INTRODUCTION

In Egypet , the total planted area of sugar beet was about 504 thousand faddans (Agriculture Economics , 2015). The sugar beet leaves is the one of the most important by products of the sugar beet production after harvest. Beet tops can be used as silage . Tops are an excellent source of protein , vitamin A and carbohydrates . Tops are equal to alfalfa haylage or corn silage for sheep . Beet top silage is best fed in combination with other feeds . Tops should be windrowed in the field and allowed to wilt to 60-65% moisture befor ensilage (Stanacev Vidica 2002 ; B¨ohme *et al*., 2001) . Sugar beets produce about15 tons/ feddan of roots and 4 tons/ feddan of TDN in the tops. Beet top silage is best fed in combination with other feeds. So, ensiling of sugar beet tops may contribute in solving some problems concerning resources of animal feeding, especially in summer season and minimize the pollution. It may offer a reduction of feed coast and minimize quantities of expensive concentrate feedstuffs used in animal feeding(Mohi El-Din,1998 and Bendary *et al* 1999). Moreover it may after a significant reduction of feed cost as well as reduction of using concentrate feed mixture for lactating cows(Bendary and younis, 1997) and lambs (Ghanem *et al*., 2000) or replacing fresh berseem in ration lactating cows.(Ahmed *et al*.,2003) Therefore silage can form the complete ration for bulls if mineral and vitamin supplementation are available. Supplemental protein will often be required when grass silage are fed(Haustein,2003). The aim of this study was to investigated the effect of feeding different treatments on sugar beet tops silage on nutrient digestibility, growth performance, economic efficiency of growing sheep.

MATERIALS AND METHODS

The current study was carried out at Mallawi, Animal Production Research station belonging to Animal Production Research Institute, Agriculture Research Center, Ministry of Agriculture, Egypt. Digestibility trails were conducted to calculate nutritive values, nitrogen balance. performance and economic study were also studied.

Silage preparation

Sugar beet tops (SBT) was collected from suger beet fildes at the harvesting time and wilted to diminish the moisture content to about 70% befor ensilage. Wilted SBT chopped or unchopped were ensileang in stack of 2x1.5x1.75meters. For both four silages 5% molasses and 1.5% lime stone were added every bunker . Urea was used by 0.25 or 0.50/100kg dry matter of silage. Silages compressed by a workers feet , then covered with plastic sheet , hard presed with 30 cm of soil layer and ensild for 12 weeks .

Feeding trail

Fourty growing male lambs (20 Saidi lambs + 20 Frafra lambs), with 6 months age and 20.10 ± 0.39 kg live body weight (LBW) were distributed into five simlar groups (n= eight each). From the pervious studies on sugar beet tops silage pointed that a good quality feeding values, so, treatments were :

T_1 (control) 3% CFM (concentrate feed mixture)+ W.S.(wheat straw) ad lib.

T_2 3% CFM +unchopped SBTS 0.25% urea\ 100 Kg DM SBTS ad lib .

T_3 3% CFM + chopped SBTS 0.25% urea\ 100 Kg DM SBTS ad lib .

T_4 3% CFM +unchopped SBTS 0.5% urea \ 100 Kg DM SBTS ad lib .

T_5 3% CFM + chopped SBTS 0.5% urea \ 100 Kg DM SBTS ad lib .

Rations offered twice daily equal portions at 8.00 am and 4.00 pm .Water was freely available to lambs . Lambs were weighted biweekly in the morning befor feeding and drinking . The duration of experimental trial equal 18 weeks.

Digetibility trails

A total of 20 mature rams with an average 45Kg live body weight were applied in digestion trails four animals for each treatment. Each trail lasted 21 days in which,14 days as a preliminary period and seven days for faces and urine collection. Rations offered twice daily(8.00 am and 4.00pm) into two equal portions. Fresh water was made available all the time. Faces were collected and weighted daily and sample of 10%of total daily faces were taken for drying at 60^{o}c for 24 hours. At the end of the collection period , 5% of the individual acidified daily urine sample were pooled and subsamples were subjected for urine determination.

Economical evalution

Economical evalution for the tested diet assuming that the price of one kg of live body weight of the lambs was 22.00 Egyptian pound (LE). The price of one kg DM of CFM, wheat straw and ureated SBTS (0.25 or 0.50 urea) chopped or unchopped were 2.50, 1.10, 0.70,0.80, 0.80 and 0.90 LE respectively.The experiment was terminted when lambs reached LBW. (40- 45 kg).

Analysis of feed , feces and nitrogen of urine samples were carried out according to A.O.A.C. (1999).

Statstical analysis

Data are expressed as mean ± SE , statistical analysis was performed using one way ANOVA. The general linear model (GLM) was applied to test the differences among the five experimental diets . P-values less than 0.05 were considered to be statistically significant (SAS. Institute, 2003). Duncan's test was used to examine the significant degrees among means (Duncan's 1955).

The statistical analysis was calculated using the following equations : $Yijk= \mu + Ti + eijk$

Where : Yijk= Experiment observations; μ = The over all mean; Ti = The effect of dietary treatments, eijk= The experimental error.

RESULTS AND DISCUSSION

Proximate Analysis

Chemical composition on dry matter basis of individual feedstuffs and the calculated composition of experimental rations are shown in Table (1). Data revealed that the average contents of CP and ash were higher in sugar beet tops silage compared with CFM the figures were (15.25 % and 30.40% vs 14.02 and 11.60 % respectively). While the average contents of OM and NFE % were high in CFM compared with SBTS (88.40 and 57.70% vs 69.60 and 37.10) respectively. So, that the contents of CP and ash in experimental rations were affected by urea and leaves of sugar beet leaves. It is quite accepted that the leaves contain greater portions of CP and lesser portions of CF (Taie 1998 and Suliman 2001). Silages showed low percentage of NFE than CFM. Silage characterized had lower content of NFE, but higher content of CF as a source of structural carbohydrate than CFM (MARSS, 1997). Moreover some NFE were fermented through ensiling. These results are agreed with those reported by Suliman *et al*. (2004 and 2013). Average ash percent for SBTS was 30.4% , this value was in accordance with those reported by Bendary *et al*. (1996) they found that value of ash in SBTS was 30.21% . The high ash content in sugar beet leaves could be explained by soil contamination (Ximena Valderrama and Rene Anrique, 2011) .

Table (1): Chemical composition of tested feedstuffs and experimental rations used in feeding lambs .

Item	DM%	Chemical analysis on DM basis					
		OM	CP	CF	EE	NFE	Ash
CFM	93.35	88.40	14.02	14.07	2.61	57.7	11.60
W.S.	89.00	89.40	2.39	40.30	1.56	45.15	10.60
SBTS. U(0.25) UN	28.59	69.10	15.00	14.90	2.23	36.97	30.90
SBTS. U(0.25) CH	27.78	69.80	15.23	15.05	2.10	37.42	30.20
SBTS. U(0.50) UN	30.16	69.50	15.48	14.37	2.02	37.63	30.50
SBTS. U(0.50) CH	31.66s	70.00	15.28	14.60	2.36	37.76	30.00
Rations							
T1		88.62	11.43	19.90	2.38	54.91	11.38
T2		80.89	14.40	14.39	2.46	53.64	15.11
T3		80.62	14.56	14.50	2.37	53.19	15.38
T4		81.22	14.58	14.19	2.39	54.06	14.78
T5		80.09	14.59	14.30	2.50	52.70	15.91

The concentrate feed mixture (CFM) consisted of cotton seed meal 8%, rice gluten meal 7%, soybean meal 3%, wheat bran 21%, rice bran 18 % , ground maize 25 % , molasses 15 %, lime stone 2.5 % and salt 0.5 %.

Nutrient digestibility

Nutrients digestibility coefficients of experimental rations are presented in (Table 2). There were significant differences ($P<0.05$) in all nutrients digestibility coefficients among experimental rations.The highest value of OM digestibility was recorded with T2 compared with T1 (control), the figure recorded 77.01 vs 72.31% respectively.While the lowest one was observed with T4 (ureated SBTS 0.50 unchopped).

These results can explained in light of chemical composition , urea addition , mechanical treatment and the characteristics of forage. These results are agree with those finding by Ahmed *et al.* (*2003)* who found that the digestibility of DM and OM, increased with elevating the level of corn Stover silage in ration. The digestibility of CP, CF and EE were higher in T_1than other groups.The NFE digestibility was higher and best in all treatments of treated SBTS compared with control one .The rations containing SBTS 0.25% U were high digesion coefficients compared with ration containing SBTS 0.5% U. Also, the differences between rations containing SBTS 0.25% U and control ration were not significant in most nutrient digestibilty except in NFE . These results are in agreement with obtained by Bendary *et al* . (2000) who found that no significant differences among expermental ration in digestability coefficient of all nutrients when cow fed rations containing differet forms of sugar beet tops and berseem silage compared with those fed dry summer ration .

Table (2). Nutrients digestibility coefficients and nutritive values for rams fed different experimental rations.

Item	T1	T2	T3	T4	T5
Digestibility coefficients					
DM	69.28±1.14^{a}	71.29±2.06^{a}	68.31±1.89^{a}	61.72±1.24^{b}	67.04±4.15^{a}
OM	72.31±1.09^{bc}	77.01±1.48^{a}	75.53±1.50^{ab}	69.38±2.88^{c}	72.75±3.59^{bc}
CP	72.00±1.22^{a}	68.82±1.24^{ab}	68.06±1.48^{ab}	60.34±3.35^{c}	64.95±3.92^{b}
CF	84.16±0.68^{a}	77.90±2.68^{b}	80.15±1.44^{ab}	72.34±2.02^{c}	73.09±3.86^{c}
EE	83.98±2.41^{a}	75.99±1.61^{bc}	81.14±3.76^{ab}	73.60±3.42^{c}	79.38±0.73^{abc}
NFE	67.57±1.26^{d}	79.18±1.24^{a}	76.23±1.59^{ab}	70.94±3.03^{cd}	74.49±3.38^{bc}
Nutritive values					
TDN	66.57±1.00^{a}	64.53±1.32^{a}	63.08±1.26^{a}	58.53±2.42^{b}	57.59±2.62^{b}
DCP	8.23±0.14^{c}	9.91±0.18^{a}	9.91±0.22^{a}	8.80±0.49^{bc}	9.48±0.50^{ab}

^{a,b,c,d} *Means denoted within the same raw with different superscripts are significantly differ at P<0.05.*

Feeding values

Highly significant differences (P<0.01) were detected among experimental rations concerning TDN and DCP. The highest values were recorded by T1 for TDN (66.75%), while the lowest TDN value was found in T5 (57.59%). However the highest value of DCP was recorded by T3 and T2, but the lowest one was found in T1 (control), recording (9.91 vs 8.23) respectively.

No significant differences between T1 and T2, and T3 were detected in TDN. Bendary *et al* . (2000)reported that no significant differences in nutritve value as (TDN for rations containing different forms of sugar beet tops and berseem silage compared with control ration . These results agreed with those obtaiend by Ahmed *et al* ., (2003) and Eweedah (1986) who reported that the DCP value was higher in sugar beet tops silage. Also, these results were in accordance with Gaafer *et al*. (2011) who found that DCP value increased with increasing level of sugar beet tops silage in the rations **.**

Nitrogen balance

Data in Table (3) indicated that significant defferences (P<0.05) among experimental treatments in total nitrogen intake (TNI), fecal nitrogen (FN),urinary nitrogen(UN), total nitrogen excretion(TNE), nitrogen balance (NB)and nitrogen absorbed (NAB).

Table (3) Nitrogen balance and nitrogen absorption for different treatments of experimental rations.

Item	T1	T2	T3	T4	T5
Total N intake	21.92±0.00^{c}	28.18±0.49^{ab}	27.52±2.10^{b}	28.25±0.94^{ab}	30.31±1.05^{a}
Fecal N	6.15±0.27^{c}	8.80±0.50^{b}	8.75±0.48^{b}	11.23±1.26^{a}	11.39±1.57^{a}
Urinary N	3.27±0.29^{c}	6.07±0.37^{a}	4.30±0.35^{b}	3.38±0.74b^{c}	4.35±0.56^{b}
Total N excretion	9.42±0.09^{b}	14.87±0.83^{a}	13.05±0.22^{ab}	14.61±1.98^{a}	15.74±1.63^{a}
N balance	12.50±0.09^{b}	13.31±0.37^{ab}	14.47±2.03^{a}	13.64±1.18^{ab}	14.57±1.10^{a}
N absorbed	15.77±0.27^{b}	19.38±0.01^{a}	18.77±1.63^{a}	17.02±0.63^{ab}	18.92±0.71^{a}

^{a,b,c} *Means denoted within the same row with different superscripts are significantly differ at P<0.05.*

The values of (TNI), (FN), (UN) and (TNI) in control treatment were lower than other treatments,these results were in accordance with proximate analysis . The highest value of nitrogen balance (NB) was recorded by T5 (14.57)., while the intermediate values were observed byT2,T3andT4.Meanwhile control treatment was the lowest value of NB(12.50). Also the figures of(NAB) showed (T1)the lower value than other treatments.

The results of nitrogen balance (NB) and nitrogen absorbed (NAB)were conjugated with DCP (Table 2). Protein of rations could be more efficiently utilized either with rations containing silage than control ration.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.

Feeding trail

Average daily gain

Groth performance of lambs fed different rations are presented in Table (4). Higher final weight, total gain and daily gain were reicorded by ration contains SBTS than control ration , also the ration contain SBTS(U .0250%) higher than rations contain SBTS ((0.5%). However this deferences were insignificant and differences (p< 0.05) .These results may be due to the suitable protein and energy contents and efficient utilization of treated SBTS and its rumen fermentation products, volatile fatty acids, NH3 and microbial protein (EL- Badawy., 1994). These results are inagreement with those obtained byEL-Nahas *et al*., (2009) showed that, feeding rations containing sugar beet tops silage and corn Stover silages increased final body weight, total gain and daily gain. Similar findings by Bendary *et al*. (1992 and 1999)who showed that live body weight gain for calves feeding ration containing sugar beet tops (silage or dried) and CFM were higher than calves fed rice straw , hay and concentrat mixture. Charmeley (2001) found thay there is aquadratic relationship between silage protein solubility and body weight gain. Initialy, increasing solubility leads to increases in weight gain. However, as solibilty increases above 475g/ Kg -1 total N then gains decline markedly.

Table (4). Growth Performance and feed conversion for lambs fed different experimental rations.

Item	T1	T2	T3	T4	T5
Initial weight (kg)	19.75±1.06	19.75±0.48	20.00±0.59	20.00±0.56	21.00±0.57
Final weight (kg)	38.88±0.81	40.63±0.60	40.81±0.61	39.25±0.45	40.38±0.60
Total gain (kg)	19.13±0.55	20.88±0.89	20.81±0.51	19.25±0.93	19.38±1.13
Daily gain (g)	159.42±4.57	174.00±7.38	173.42±4.22	160.42±7.72	161.46±9.44
DM intake (g)	134.43±0.04^{a}	121.47±0.00^{b}	118.28±0.00^{c}	134.28±0.00^{a}	131.83±0.00^{a}
TDN intake	89.46±0.00^{a}	78.38±0.00^{b}	76.62±0.00^{c}	78.65±0.00^{b}	75.92±0.00^{c}
DCP intake	11.06±0.00^{d}	12.04±0.00^{c}	12.21±0.00^{b}	11.82±0.00^{c}	12.41±0.00^{a}
Feed Conversion					
DM kg/kg gain	7.03±0.22^{a}	5.82±0.25^{b}	5.68±0.14^{b}	6.98±0.40^{a}	6.80±0.41^{a}
TDN kg/kg gain	4.68±0.15^{a}	3.75±0.16^{b}	3.68±0.09^{b}	4.09±0.24^{b}	3.92±0.23^{b}
DCP kg / kg gain	0.58±0.02	0.58±0.62	0.59±0.01	0.61±0.04	0.64±0.04

^{a,b,c,d} *Means denoted within the same raw with different superscripts are significantly differ at P<0.05.*

Feed intake

There were significant differences (P<0.01) in feed intakes as DM, TDN and DCP among treatments. Lambs fed T2 and T3 recorded the lower feed intake as DM than control ration, while lambs fed control ration recorded the highest value for feed intake as TDN however , feed intake as DCP has lower than other treatments .

These results are in agreement with those obtained by Bendary *et al.* (1999) who found that feeding growing calves on ration containing sugar beet tops silage reduced the intake of DM and TDN .However , Gaafer *et al* .(2011) found that the DCP intake increased (p< 0.05%) with increaing level of SBTS in the ration , but the intake of DM and TDN decreased significant (p< 0.5%).

Feed conversion

There were significant differences (P<0.05) in feed conversion among lambs fed the different experimental rations in Table (4). Feed conversion improved by feeding rations containing treated SBTS. Lambs fed T2 and T3, showed the best conversion as DM and TDN compared with those fed control ration (T1). No significant differences (P<0.05) in conversion as DCP among lambs fed different diets containing different portions of treated SBTS. These results are in accordace with these obtained by Bendary *et al* . (1992 and 1999) who found that better feed efficiency attained by feeding growing calves in ration containing SBTS compared with control ration .Suliman *et al*. (2013)showed that the best feed conversion so as TDN or DCP that for diet containing CFM+SBTS compared with control diet(containing CFM + berseem hay). Overall , the insignificant differences for lambs performance between the chopped and unchopped , these results agree with thise obtained by Mostafa *et al*. (1995) who found that the differences between the chopped and unchopped berseem silage with 5% molasses were minimal and not significant in most performance triats.

Economical efficiency

Economic efficiency illustrated in Table (5) revealed that the total cost of feeding for lambs fed the control diet (T1) was higher (294.12 LE) compared with those fed on T2, T3, T4 and T5, being 254.43, 255.16 ,278.68 and 279.42 LE,respectively. Moreover, lambs fed diets containing ureated sugar beet tops silages (T2, T3, T4 and T5) recorded the highest daily weight gain compared with control (T1).the figures were 20.88, 20.81, 19.25 and 19.38 kg body weight gain vs. 19.13 kg for T1. Therefore, the lowest feed cost and the best weight gain equal the best revenue and better economic efficiency which showed by lambs fed diets containing ureated sugar beet tops T2, T3, T5 and T4 compared with T1 (Table 5). These results may be due to the reduce of the quantity of high expensive concentrate feed mixture , increasing daily weight gain with diets containing sugar beet tops. These results are in accordance with these obtained by (Ghanem *et al*. 2000 ; Ahmed *et al*. 2003 and El-Nahas *et al* 2009) who indicated that feeding growing calves in ration containing sugar beet tops silage reduced the feed coast per kg gain and subsequently increased economical efficiency.

Table (5). Feed cost and economical efficiency of different experimental groups.

Economical evaluation	T1	T2	T3	T4	T5
Total kg DMI of CFM	104.49	94.11	94.43	100.74	100.48
Total DMI of W.S. Or SBTS	29.9	27.36	23.85	33.54	31.35
Total feed intake kg DM	134.39	121.47	118.28	134.28	131.83
Cost of total feed intake LE (b)	294.12	254.43	255.16	278.68	279.42
Price of kg LBW LE	22.00	22.00	22.00	22.00	22.00
Total gain	19.13	20.88	20.81	19.25	19.38
Price of total gain (a)	420.86	457.82	453.86	423.50	426.36
Revenue	126.74	203.39	198.70	144.82	146.94
Economical efficiency (y)	0.43	0.80	0.78	0.52	0.53

Where: Economic efficiency, y = {(a-b)/b)}, where a = selling cost the obtain gain and b = feeding cost of this gain.

CONCLUSION

It could be concluded that T2 and T3 showed an improvement in approximate analysis and experimental rations, digestibility, nutritive value, nitrogen balance, growth performance and economical efficiency. Therefore, it could be recommended that (0.25%) ureated sugar beet tops silages chopped or unchopped can be used for lambs feeding.

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تغذية الاغنام بسيلاج عروش بنجر في العروة الصيفي

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أجرى هذا البحث فى محطة بحوث الانتاج الحيوانى بملوى التابعة لمعهد بحوث الانتاج الحيوانى لدراسة النمو ومعاملات الهضم والتقييم الغذائى للاغنام المغذاة على سيلاج عروش بنجر السكر المعامل باليوريا مع العلف المركز. وقد استخدم عدد 20 كبش تام النمو لتجارب الهضم بمتوسط وزن حي 45كجم. كما استخدم عدد 40 حمل (20حمل من سلالة الفرافرة + 20حمل صعيدي) بمتوسط وزن حي 20.19 ± 0.38 كيلو جرام. وقد وزعت عشوائيا في خمسة مجموعات طبقا لوزن الجسم الحي وقد استخدمت خمسة علائق تجريبية في تجربتي الهضم والنمو وكانت العلائق موزعة كالتالى :-

العليقة الأولي (عليقه المقارنة) :علف مركز + تبن قمح ; العليقة الثانية: علف مركز + سيلاج عروش بنجرالسكرمعامل باليوريا 0.25 / 100 كجم مادة جافة من السيلاج غير مقطع ;العليقة الثالثة : علف مركز + سيلاج عروش بنجر السكر معامل باليوريا 0.25 / 100 كجم مادة جافة من السيلاج مقطع ; العليقة الرابعة: علف مركز + سيلاج عروش بنجر السكر معامل باليوريا 0.50 / 100 كجم مادة جافة من السيلاج غير مقطع; العليقة الخامسة: علف مركز بروتين + سيلاج عروش بنجر السكر معامل باليوريا 0.50 / 100 كجم مادة جافة من السيلاج مقطع .وكان العلف المركز يعطى بنسبة 3% لكل المجاميع .أما تبن قمح و السيلاج فكانا يعطيا لحد الشبع وقد أظهرت البيانات النتائج التالية:-

1- كانت العليقة الأولي (المقارنة اعلى معنويا عند مستوى (0.05) بالنسبة لهضم البروتين الخام والألياف الخام والدهن وكذلك المركبات الكلية المهضومة عن باقي المعاملات.

2- كانت العليقة الثانية والثالثة اعلى معنويا عند مستوى (0.05) بالنسبة لهضم المادة الجافة والمادة العضوية والكربوهيدرات الذائبة والبروتين مهضوم عن باقي المعاملات.

3- كانت العليقة الأولي (المقارنة) اقل معنويا عند مستوى (0.05) بالنسبة للنيتروجين المأكول وكذلك ميزان الازوت و النتروجين الممتص عن باقي المعاملات.

4-سجلت العلائق المحتوية على سيلاج عروش بنجرالسكرمعامل باليوريا 0.25 / 100 كجم مادة جافة معدلات عالية من الزيادة اليومية فى الوزن عن باقي العلائق وكانت الفروق غير معنوية.

5- تفوقت العليقة الأولي (المقارنة)معنويا (0.05) بالنسبة للمأكول اليومى كمادة الجافة أو كمركبات كلية مهضومة عن باقي العلائق فى حين كانت أقل العلائق بالنسبة للمأكول اليومى كبروتين خام مهضوم.

6-كانت الحملان المغذاة على العليقة الثانية والثالثة افضل فى الكفائة التحويلية للغذاء كمادة الجافة أو كمركبات كلية مهضومة عن باقي الحملان .

7- كانت العليقة الثانية افضل العلائق من حيث الكفائةالاقتصادية تليها العلائق3 ثم 4 ثم 5 و كانت أقلهم فى الكفائةالاقتصادية العليقة الأولي (المقارنة) .

و تخلص هذه الدراسة إلي أن الحملان المغذاة على سيلاج عروش بنجر السكر المعامل باليوريا سواء كان مقطع أم غير مقطع بالاضافة إلي العلف المركز كانت افضل من عليقة المقارنة بالنسبة لمعامل الهضم والقيمة الغذائية وميزان الازوت والكفاءة الاقتصادية وكانت افضل اضافة لمستوى اليوريا هو 0.25 /100 كجم مادة جافة من السيلاج . وبالتالي يمكن التوصية باستخدام سيلاج ورق البنجر المعامل باليوريا بنسبة 0.25 / 100 في تغذية الأغنام .