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

T.A.A. Deraz1, A.A. Khr1, A.I.A. Suliman1, O. Abdel-Salam1 and A.O. Elashhab2
1Animal Nutrition Department, Animal Production Research Institute, , Giza, Egypt.
2Agriculture Ingenear Research Institute, Giza, Egypt.

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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 Fafra 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 un-chopped 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 differences 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 Egypt, 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 before ensilage (Stancac Vidica 2002; B ohme et al., 2001). Sugar beets produce about 15 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 cost 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 trials 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 fields at the harvesting time and wilted to diminish the moisture content to about 70% before ensilage. Wilted SBT chopped or unchopped were ensiled in stack of 2x1.5x1.75 meters. 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 pressed with 30 cm of soil layer and ensiled for 12 weeks.

Feeding trail

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

T1 (control) 3% CFM (concentrate feed mixture) + W.S.(wheat straw) ad lib. 
T2 3% CFM +unchopped SBTS 0.25% urea\100 Kg DM SBTS ad lib .
T3 3% CFM + chopped SBTS 0.25% urea\100 Kg DM SBTS ad lib .
T4 3% CFM +unchopped SBTS 0.5% urea\100 Kg DM SBTS ad lib .
T5 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 before feeding and drinking. The duration of experimental trial equal 18 weeks.

Digestibility 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°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 evaluation

Economical evaluation 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 terminated 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).

Statistical 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=μ + Ti + εijk

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

<table>
<thead>
<tr>
<th>Item</th>
<th>DM%</th>
<th>Chemical analysis on DM basis</th>
<th>Ash</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OM</td>
<td>CP</td>
<td>CF</td>
</tr>
<tr>
<td>CFM</td>
<td>93.35</td>
<td>88.40</td>
<td>14.02</td>
</tr>
<tr>
<td>W.S.</td>
<td>89.00</td>
<td>89.40</td>
<td>2.39</td>
</tr>
<tr>
<td>SBTS. U(0.25) UN</td>
<td>28.59</td>
<td>69.10</td>
<td>15.00</td>
</tr>
<tr>
<td>SBTS. U(0.25) CH</td>
<td>27.78</td>
<td>69.80</td>
<td>15.23</td>
</tr>
<tr>
<td>SBTS. U(0.50) UN</td>
<td>30.16</td>
<td>69.50</td>
<td>15.48</td>
</tr>
<tr>
<td>SBTS. U(0.50) CH</td>
<td>31.66s</td>
<td>70.00</td>
<td>15.28</td>
</tr>
</tbody>
</table>

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 T1, than 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 digestibility except in NFE. These results are in agreement with obtained by Bendary et al. (2000) who found that no significant differences among experimental ration in digestability coefficient of all nutrients when cow fed rations containing differeret 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestibility coefficients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td>69.28±1.14a</td>
<td>71.29±2.06c</td>
<td>68.31±1.89c</td>
<td>61.72±1.24b</td>
<td>67.04±4.15a</td>
</tr>
<tr>
<td>OM</td>
<td>72.31±1.09bc</td>
<td>77.01±1.48c</td>
<td>75.53±1.50bc</td>
<td>69.38±2.88c</td>
<td>72.75±3.59bc</td>
</tr>
<tr>
<td>CP</td>
<td>72.00±1.22ab</td>
<td>68.82±1.24ab</td>
<td>68.06±1.48ab</td>
<td>60.34±3.35c</td>
<td>64.95±3.92b</td>
</tr>
<tr>
<td>CF</td>
<td>84.16±0.68a</td>
<td>79.90±2.68bc</td>
<td>80.15±1.44ab</td>
<td>72.34±2.02c</td>
<td>73.09±3.86bc</td>
</tr>
<tr>
<td>EE</td>
<td>83.98±2.41ab</td>
<td>75.99±1.61bc</td>
<td>81.14±3.76ab</td>
<td>73.60±3.42c</td>
<td>79.38±0.73bc</td>
</tr>
<tr>
<td>NFE</td>
<td>67.57±1.26ab</td>
<td>79.18±1.24ab</td>
<td>76.23±1.59ab</td>
<td>70.94±3.03cd</td>
<td>74.49±3.38bc</td>
</tr>
<tr>
<td>Nutritive values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDN</td>
<td>66.57±1.00a</td>
<td>64.53±1.32a</td>
<td>63.08±1.26a</td>
<td>58.53±2.42b</td>
<td>57.59±2.62b</td>
</tr>
<tr>
<td>DCP</td>
<td>8.23±0.14a</td>
<td>9.91±0.18abc</td>
<td>9.91±0.22a</td>
<td>8.80±0.49bc</td>
<td>9.48±0.50ab</td>
</tr>
</tbody>
</table>

*a,b,c,d Means* denoted within the same row with different superscript 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 nutritive value as (TDN for rations containing different forms of sugar beet tops and berseem silage compared with control ration. These results agreed with those obtained by Ahmed et al., (2003) and Eweddah (1986) who reported that the DCP value was higher in sugar beet tops silage. Also, these results were in accordance with Gaaf er 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 differences (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.

<table>
<thead>
<tr>
<th>Item</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total N intake</td>
<td>21.92±0.00c</td>
<td>28.18±0.49ab</td>
<td>27.52±1.0bc</td>
<td>28.25±0.94ab</td>
<td>30.31±1.05a</td>
</tr>
<tr>
<td>Fecal N</td>
<td>6.15±0.27a</td>
<td>8.80±0.50b</td>
<td>8.75±0.48b</td>
<td>11.23±1.26a</td>
<td>11.39±1.57a</td>
</tr>
<tr>
<td>Urinary N</td>
<td>3.27±0.29a</td>
<td>6.07±0.37a</td>
<td>4.30±0.35b</td>
<td>3.38±0.74c</td>
<td>4.35±0.56b</td>
</tr>
<tr>
<td>Total N excretion</td>
<td>9.42±0.09b</td>
<td>14.87±0.83a</td>
<td>13.05±0.22ab</td>
<td>14.61±1.98a</td>
<td>15.74±1.63a</td>
</tr>
<tr>
<td>N balance</td>
<td>12.50±0.09b</td>
<td>13.31±0.37ab</td>
<td>14.47±2.03a</td>
<td>13.64±1.18ab</td>
<td>14.57±1.10a</td>
</tr>
<tr>
<td>N absorbed</td>
<td>15.77±0.27b</td>
<td>19.38±0.01a</td>
<td>18.77±1.63a</td>
<td>17.02±0.63ab</td>
<td>18.92±0.71a</td>
</tr>
</tbody>
</table>

*a,b,c,d Means* denoted within the same row with different superscript 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 by T2, T3 and T4. 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 SBT than control ration , also the ration contain SBTs (U .0250% ) higher than rations contain SBT ((0.5%). However this deferences were insignifcant and differences (p< 0.05).These results may be due to the suitable protein and energy contentes 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 by EL-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 and corn) and CFM were higher than calves fed rice straw , hay and concentrat mixture. Charmley (2001) found that there is aquadratic relationship between silage protein solubility and body weight gain. Initially, 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial weight (kg)</td>
<td>19.75±1.06</td>
<td>19.75±0.48</td>
<td>20.00±0.59</td>
<td>20.00±0.56</td>
<td>21.00±0.57</td>
</tr>
<tr>
<td>Final weight (kg)</td>
<td>38.88±0.81</td>
<td>40.63±0.60</td>
<td>40.81±0.61</td>
<td>39.25±0.45</td>
<td>40.38±0.60</td>
</tr>
<tr>
<td>Total gain (kg)</td>
<td>19.13±0.55</td>
<td>20.88±0.89</td>
<td>20.81±0.51</td>
<td>19.25±0.93</td>
<td>19.38±1.13</td>
</tr>
<tr>
<td>Daily gain (g)</td>
<td>159.42±4.57</td>
<td>174.00±7.38</td>
<td>173.42±4.22</td>
<td>160.42±7.72</td>
<td>161.46±9.44</td>
</tr>
<tr>
<td>DM intake (g)</td>
<td>134.43±0.04</td>
<td>121.47±0.00</td>
<td>118.28±0.00</td>
<td>134.28±0.00</td>
<td>131.83±0.00</td>
</tr>
<tr>
<td>TDN intake</td>
<td>89.46±0.00</td>
<td>78.38±0.00</td>
<td>76.62±0.00</td>
<td>78.65±0.00</td>
<td>75.92±0.00</td>
</tr>
<tr>
<td>DCP intake</td>
<td>11.06±0.00</td>
<td>12.04±0.00</td>
<td>12.21±0.00</td>
<td>11.82±0.00</td>
<td>12.41±0.00</td>
</tr>
</tbody>
</table>

Feed Conversion

DM kg/kg gain                 | 7.03±0.22  | 5.82±0.25  | 5.68±0.14  | 6.98±0.40  | 6.80±0.41  |
TDN kg/kg gain                | 4.68±0.15  | 3.75±0.16  | 3.68±0.09  | 4.09±0.24  | 3.92±0.23  |
DCP kg / kg gain              | 0.58±0.02  | 0.58±0.62  | 0.59±0.01  | 0.61±0.04  | 0.64±0.04  |

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 increasing 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 diferent diets containing diferent portions of treated SBTs. These results are in accordance 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 thse 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

Economical 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 reduced quantity of high expensive concentrate feed mixture, increasing daily weight gain with diets containing sugar beet tops. These results are in accordance with those 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 cost per kg gain and subsequently increased economical efficiency.

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

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

Where: Economic efficiency, $y = \frac{(a-b)}{b}$, 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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غذية الاغنام بسلاج عروش بنجر في العروة الصيفي

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أحمد استاد الأشْهِب٠،

ا قسم تغذية الحيوان، معمل بحوث الإنتاج الحيواني - مركز البحوث الزراعية - الدقي - الجزيرة

معدل تغذية الميكة الزراعية - الدقي - الجزيرة

أجري هذا الدراسة في محطة بحوث الإنتاج الحيواني بملهى التابعة لمعهد بحوث الإنتاج الحيواني لدراسة النمو ومعاملات الهضم والتحدي الغذائي من الاعراض المذكورة على سلاج عروش بنجر السكر المعامل بالبروبونيا مع العقل المركزي. وقد استخدم عدد 20 كيلو تجربة للัญعم بمستوي وزن حي 100 كجم، كما استخدم عدد 40 حلم (20 حلم من سلالة المدعو هي 30 كجم) / (20 حلم صعيد). تمت مسابقة وزن الحي 0.25 كجم جرام. ووزعت (شITION) في خمسة مجموعات طبقاً للوزن وتمت سلسلة علاجات تجريبيّة في تجريبيين الهضم والمعدة والخلايا الموزعة كالتالي:

العُلقة الأولى (علاقة المقارنة): علقة مركز + سلاج عروش بنجر السكر معامل بالبروبونيا / 100 كجم. علقة مركز + سلاج عروش بنجر السكر معامل بالبروبونيا / 100 كجم. 

1 - كميات العُلقة الأولى (المقارنة) تم قم عليها عند مستوى (0.05) بالنسبة لزيادة هضم الأمية، والمواد الغذائية، والكربوهيدرات الدينية.

2 - كميات العُلقة الثانية والثالثة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

3 - كميات العُلقة الرابعة والخامسة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

4 - كميات العُلقة السادسة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

5 - كميات العُلقة السابعة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

6 - كميات العُلقة الثامنة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

7 - كميات العُلقة التاسعة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

8 - كميات العُلقة العاشرة (علاقة المقارنة): قم عليها عند مستوى (0.05) بالنسبة للتيترودجين السكرول والكسروت والبروبونيا الممتص عن بالي معاملات.

وخلصت هذه الدراسة إلى أن العُلقات المعاملة على سلاج عروش بنجر السكر معامل بالبروبونيا سواها كان قم عليها عند مستوى (0.05).

ال إطلاق إلى العُلقة المركز كانت أفضل من علقة المقارنة بالنسبة للمعدة الهضم والتحدي الغذائي و 그러면 الأمر وأفاد الحالة الاقتصادية. و تابع حيث تضاقت في التحويلية لل الغذاء كمية النباتية حسب كميات السكرول والكسروت بالبروبونيا. و وبالتالي يمكن التوصية باستخدام سلاج برق الضر معامل بالبروبونيا بنسبة 0.25/ 100 في غذية الأغذية.