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Variation of the Dry Matter Intake During the Finishing Period and Feed Conversion upon Wool and Hair Lamb

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Abstract: An experiment was carried to evaluate the dry matter intake (DMI) and feed conversion (FC) of wool and hair lambs, fed in groups a mixed ration that was offered *ad libitum*. Eleven wool lambs and ten hair lambs were used, aged 73 days, in which food intake was daily measured for 79 days and weighed every 14 days in the experimental period. The dry matter intake (DMI) varied between weeks ($P<0.01$), the maximum intakes were reported on weeks 8, 9 and 10, the lowest corresponded to weeks 1, 2 and 3. According to the type of lamb a significant effect was found ($P<0.01$), the DMI was higher for wool lambs (1.088±0.014 kg) than for hair lambs (0.861±0.014 kg). For FC no significant differences were found between both types of lambs, wool lambs presented 4.482±0.567 kg and hair lambs 5.204±0.838 kg. Best conversion rates were reported for days 73, 87, 101 and 137 of age and the lowest for the day 129 for wool lambs and 115 for hair lambs. The DMI varied between weeks, the FC decreases as the lamb ages and was similar for both types of lambs.

Key words: Wool Lamb · Hair Lamb · Dry Matter Intake · Feed Conversion

INTRODUCTION

Sheep offer multiple advantages over other species, like great adaptability to variable environmental conditions and different nutritional regimes [1], high reproductive potential, as a low cost of initial investment, construction and maintenance of the farms [2, 3].

In intensive production systems, feed is often carried out *ad libitum* in order to increase the growth rate and profit. The energy is mainly included in intake control, for changes in energy requirements in animals as well as it content in diet modify intake [4]. In animal production companies, the profit depends mainly on the animal ability to maximize intake. Therefore, it is essential to understand the most important factors that affect it (physiological, environmental and handling) [5].

Feed conversion is truly related to energy and protein content in a ration, as well as lamb age and breed [6]. According to researches carried out in Mexico, FC was reported as the difference between final weight minus initial weight, divided by total feed intake [7].

Several investigations about DMI in lambs were accomplished in Mexico [7, 8] but comparisons among wool and hair lambs were low and there is still less research to evaluate FC according to lamb age, therefore this investigation was carried out to estimate DMI and FC of wool and hair lambs from weaning to 137 days of age.

MATERIALS AND METHODS

The research was carried out at the Veterinary Science Department of the Authonomous University of Ciudad Juarez, Chihuahua, Mexico, located 31°44'36" north latitude and at 106°25'54" west longitude and 1127 masl (meters above sea level) of height [9] with 230 mm of annual precipitation, 16.5°C of middle temperature and 14.5°C of thermal oscillation [10].

Eleven wool lambs (*Polipay x Rambouillet*) and ten hair lambs (*Pelibuey*) were used. After 60 days they were weaned and assigned in two groups (wool and hair). After a 13 day adaptation period they were fed with a mixed ration composite of alfalfa hay, flaked corn and

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Table 1: Chemical composition of feed

Chemical component	
Dry matter	89.66%
Moisture	10.34%
Protein	15.26%
Fat	5.23%
Ashes	5.01%
Crude Fiber	14.31%
Nitrogen-Free Extract (NFE)	60.19%
Total Digestible Nutrients (TDN)	83.37%
Digestible energy (DE kcal/kg)	3675.59
Metabolizable energy (ME kcal/kg)	3013.67

* Results reported as dry matter

cottonseed meal. Feed was provided twice per day, at 8:00 and 18:00 hours, they were daily weighed on a digital scale and the offered feed was increased if non-acceptance was less than 5%, feed was conducted in group. The chemical composition of the ration is presented in Table 1. The lamb initial weight was 16.794±0.950 kg for wool lambs and 15.040±0.917 kg for hair lambs. Afterwards, they were weighed every 14 days at 6:00 o´clock on a digital scale until they reached a weight of 38.19±1.740 kg and 30.87±1.160 kg for wool and hair lambs, respectively, at an age of 5 months. The FC was calculated based on the accumulative weight every 14 days, divided by feed intake during this time. The intake data was analyzed by means of an 11x2 factorial design that corresponded to e leven weeks of feed and both types of l ambs, with seven repetitions per treatment. The methodology described by Steel and Torrie [11] was used applying the SPSS Statistic Package Version 17.0 [11]. The FC was evaluated by comparison of means for independent samples.

RESULTS AND DISCUSSION

The DMI varied among weeks (P<0.01), the maximum intakes were reported on weeks 8, 9 and 10, the lowest corresponded to weeks 1, 2 and 3. These results are presented in Table 2. According to the type of lamb a significant effect was found (P<0.01), the DMI was higher for wool lambs 1.088±0.014 kg than for hair lambs 0.861±0.014 kg. The DMI for wool lambs was similar to the reported by Christodoulou *et al*. [13] who registered a DMI of 1.22 kg for lambs of *Florina* breed, for growing *Ossimi* lambs [14] he reported a DMI 1.283 kg. The DMI for hair lambs was similar to the reported by González del Angel *et al.* [7] who reported 0.847 kg for *Pelibuey* lambs. However, Partida *et al*. [8] presented a DMI of 1.19±0.1 kg, which is higher than the results obtained in this investigation. This difference could be due to the ration composition that was used, which contained 14% of raw protein and 2.8 Mcal EM/kg dry matter, compared to this research which applied 15.25% of raw protein and 3.01 MCal EM.

Table 2: Variations in the dry matter intake (kg) by week of wool and hair lambs.

Week	Wool	Hair
1	0.760±0.008^{a}	0.559±0.037^{a}
2	0.780±0.027^{ab}	0.645±0.021^{a}
3	0.878±0.028^{b}	0.764±0.031^{abc}
4	0.991±0.025^{cd}	0.886±0.018^{abc}
5	1.062±0.024^{cd}	0.934±0.028^{bc}
6	1.088±0.069^{d}	1.016±0.041^{bc}
7	1.114±0.040^{cd}	0.833±0.040^{abc}
8	1.298±0.026^{de}	0.923±0.069^{abc}
9	1.341±0.040^{ef}	1.060±0.052^{bc}
10	1.448±0.062^{e}	0.912±0.100^{abc}
11	1.199±0.034^{d}	0.932±0.033^{abc}

Different letters between columns imply significance (P<0.05).

Table 3: Feed conversion (kg) of wool and hair lambs.

Age in days	Wool	Hair
73	3.528	3.078
87	4.156	4.022
101	3.889	4.313
115	5.168	8.630
129	6.952	6.669
137	3.203	4.514

For FC no significant differences were found between both types of lambs, wool lambs presented 4.482±0.567 kg and hair lambs 5.204±0.838 kg. A FC of 4.99 kg for wool lambs fed with a fishmeal ration was reported by Fahney *et al*.[15] when growing *Rahmani* lambs similar to the present research. Also, Soha *et al*. [6], reported a FC of 4.69 kg in rations with pea straw 35%, yellow corn 25% and sunflower meal 24%.

However, a FC of 6.6±0.7 kg for hair lambs was reported by Partida *et al*. [8], which is higher than the results obtained in this investigation. This difference could be due to the lambs ages, because they used older animals and another possible effect could be the ration ingredients which contained corn stubble and chicken manure, ingredients that were not used in this research. In another study using *Pelibuey* lambs González del Angel *et al*. [7], a 5.9 kg FC was presented, similar to the one found in this research, which best conversion was registered at day 73, 87, 101 and 137 of age and the lowest for day 129 for wool lambs and 115 for hair lambs. These results are presented in Table 3.

CONCLUSIONS

It can be concluded that the feed intake was higher for wool lambs than for hair lambs, the maximum week intake varied between weeks and the feed conversion was similar for both types of lambs, however, it varied in accordance to the lambs age, that is higher on the first 100 days of age.

REFERENCES

1. Tawila, M.A., H.A.A. Omer and S.M. Gad, 2008. Partial Replacing of Concentrate Feed Mixture by Potato Processing Waste in Sheep Rations. American-Eurasian J. Agric. and Environ.4: 156-154.
2. Fayaz, M., S. Nateghi and Hassan Yeganeh, 2011. Investigating the Effect of Climatic and Different Stages of Growth on the Preference Value of Bromus tomentellus in the Semi-Steppe Rangeland of Iran by Sheep. American-Eurasian J. Agric. and Environ. 11: 177-182.
3. Peraza-Mercado, G., E. Jaramillo-López and A.D. Alarcón-Rojo, 2010. Breed effect upon Carcass characteristics and Meat Quality of Pelibuey and Polipay x Rambouillet lambs. American-Eurasian J. Agric. and Environ. 5: 508-513.
4. Forbes, J.M., 2003. The multifactorial nature of food intake control. J. Anim. Sci. 81:(E. Suppl.2): E139-E144.
5. NRC, 1987. Predicting Feed Intake of Food Producing Animals. National Academy Press. Washington, D.C. U.S.A.
6. Soha, S., H.H. Abdel-Magid, A. El-Raham, M.I. Mohamed and I.M. Awadalla. 2008. Utilization of Chick Pea Straw and Pea Straw in Feeding Growing Rahmani Lambs. American-Eurasian J. Agric. and Environ., 4: 214-217.
7. González del Angel, G.E., G.E. Castillo, L.C.Y. Cruz and J.M. Besten, 1997. Efecto del nivel de complementación sobre la ganancia de peso en corderos Pelibuey y estabulados. Vet. Mex., 28: 137-145.
8. Partida de la P e ña, J.A., V.D. y Braña and R.L. Martínez, 2009. Desempeño productivo y propiedades de la canal en ovinos Pelibuey y sus cruzas con Suffolk o Dorset. Téc Pecu Méx., 47: 313-322.
9. Esquivel, C.V.H., 2010. Resumen Mensual en la Estación Meteorológica de Ingeniería de la UniversidadAutónomadeCiudadJuárez.ttp://148.210.20.37:1279/clima/Estación01/NOAAMO.TXT. Consulta: 5 de agosto.
10. Álvarez, G.A., 1980. Boletín meteorológico del estado de Chihuahua. Dirección de Geografía y Meteorología, S.A.R.H. Gobierno del estado de Chihuahua.
11. Steel, R.G.D. and J.H. Torrie, 1980. Principles and procedures of statistics. A biometrical approach. 2nd Ed. Kogakusha, LTD. McGraw-Hill Book Co. Tokyo, Japan.
12. George, D. and P. Mallary, 2006. SPSS for Windows Step by Step. A simple Guide and Reference, 6th Ed. Pearson. Boston, MA. U.S.A.
13. Christodoulou, V., V.A. Bampidis, E. Sissidou and J. Ambrosiadis, 2007. Evaluation of Florina (Pelagonia) sheep breed for grout and carcass traits. Small Ruminant Res., 70: 239-247.
14. El-Kady, R.I., A.A. Hala. H.A.A. Abou-Zeina. O.F.M. Salam, M.M. Shourky and S.M. Ahmed, 2008. Respose of Growing Ossimi Lambs to Diets Containing Different Levels of Deffated Jojoba Meal. American-Eurasian J. Agric. and Environ., 4: 34-43.
15. Fahney, M.H., J.M. Boucher, L.M. Boste, R. Gregorie, G. Butler and J.E. Corneau, 1992. Feed efficiency, carcass characteristics and sensory quality of lambs, with or without prolific ancestry, fed diets with different protein supplements. J. Anim. Sci., 70: 1364-1374.