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Feed Intake in Ossimi, Rahmani and Merino Rams

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Feed intake in Ossimi, Rahmani and Merino rams was measured in the Animal Breeding Department, Faculty of Agriculture, Cairo University, using different procedures, over a period of two months.

The following results were obtained :

1. The average actual daily feed intake of berseem was 7.4, 7.1, 6.8 kg for Ossimi, Rahmani and Merino rams, respectively.

2. The estimated feed consumption using the marker was 10% less than the actual feed intake in all breeds.

3. The daily intake using Cr_2O_3 marker technique in the berseem pasture was 8, 58, 8, 47 and 7.59 kg with a dry matter of 1.31, 1.24 and 1.15 kg for the three breeds, respectively.

4. The feed intake and dry matter consumption in pasture was greater than that in case feeding indoors on berseem.

5. The daily dry matter in take per 100 kg body weight was highest in Merino rams (2.51) followed by the Ossimi and Rahmani (2.01 and 1.96 kg respectively). While in the pasture it was 2.81, 2.34 and 2.35 kg for Merino, Ossimi and Rahmani rams, respectively.

6. It is suggested to use one fed. of berseem which produces 30 tons on the average taking four cuts. to feed 25 adult imported Merino and native sheep in Egypt.

Feed intake is partly a function of metabolic rate and body size. The daily intake of green forage (usually measured as dry matter intake) varies with the breed and age of sheep as well as the type and stage of forage growth.

The problem of measuring how much feed an animal obtains from the pasture is an important and difficult one. Considerable efforts were given to the improvement of the method and techniques by Raymond (1966).

By means of collection bags, the weight of faeces voided by animals can be measured "directly" to be able to calculate for age consumption, or estimated "indirectly" by dosing the animals with known weights of indigestible external traces as chromic oxide and measuring the concentration of tracer in a sample of faeces.

If errors are to be reduced this necessitates systematic sampling of faeces either directly from the sward (Raymond and Minson, 1955) or by "grab" sampling from the rectum (Lambourne and Reardon, 1963) to calculate the total faecal excretion from the concentration of the indicator in representative samples.

Material and Methods

Feed intake was estimated using four yearling rams (13 months old) from each of Ossimi, Rahmani and Merino breeds for a period of 2 months. Water was made available all the time.

The daily feed intake was estimated by different procedures :

1. *Actual consumption by berseem sward*

(*a*) *Direct technique*

Each ram was offered 10 kg of clover per day in the morning during a period of two months. The refused clover was weighed daily before offering the new fresh supply to find out the individual daily feed intake.

(*b*) *Chromic oxide technique*

To compare the accuracy of the chromic oxide technique with the direct weighing method, a solution of 5 g $Cr_2 O_3$ in 500 ml water was sprayed evenly on the 10 kg daily diet for each individual within a period of 3 days. The feed intake was estimated according to this technique and compared with the direct weighing method. Total faeces collections were made daily. For the estimation of feed intake by $Cr_2 O_3$ method, 1-1.5 g samples of dried berseem and faeces were digested with nitric acid and oxidized with perchloric acid and sodium molybdate mixture. The condition of the digestion and oxidation of specimens were fulfilled according to Carter *et al.* (1960), Whitby and Daphne Lang (1960). The concentration of Cr_2O_3 was estimated by colorimetric technique at 425 W.L.

2. *Feed consumption in the pasture*

Feed consumption in the pasture was estimated using Chromic oxide as a marker. The same rams used in the last experiment were allowed to graze on a fixed area of green berseem covering their requirements. This area was sprayed by a solution of 60 g $Cr_2 O_3$ in 6l of water. Two kg of gelatin were dissolved in the water to give sufficient viscosity to fix the solution on the berseem plants. The animals were grazed daily for a period of 8 hr from 8 a m to 4 p m. This time period was previously found to be optimum for sufficient feed intake with the same animals used (Khalil and Afifi, 1975).

According to Barnicoat (1945) and Lambourne (1957) each animal was given a 5g dose of Cr_2O_3 daily in a capsule for a period of four days to attain the general stable level of Cr_2O_3. The experiment began on the fifth day and continued for three days on each individual.

Samples were taken from the berseem and faeces to estimate Cr_2O_3 concentration. The concentration of the marker in the berseem was estimated in several samples taken from various locations in the fixed field area. The concentration of Cr_2O_3 and total dry matter per day were estimated in 2-5% from the total collection of the faeces on each individual.

Feed intake was calculated according to the equation of Raymond and Minson (1955) and Lambourne (1957).

$$\text{Dry matter consumption (g) per day} = \frac{\text{Cr}_2\text{O}_3 \text{ units per g dry faeces} \times \text{dry matter in faeces g per day}}{\text{Cr}_2\text{O}_3 \text{ per g dry matter of forage}}$$

Results and Discussion

Feed intake

(*a*) *Actual feed intake of berseem*

The average daily feed consumption of offered green berseem was 7.4, 7.1 and 6.8 kg for Ossimi, Rahmani and Merino rams, respectively (Table 1).

TABLE 1. Average actual berseem intake (kg) and dry matter consumption, 100 kg body weight by Ossimi, Rahmani and Merino rams.

Animals No.	Ossimi	Rahmani	Merino
1	5.8	7.3	6.5
2	7.2	7.4	7.0
3	8.5	6.6	6.6
4	7.9	7.0	7.2
Mean fresh berseem intake	*7.4±0.12	7.1±0.83	6.8±0.75
Mean dry matter intake	**1.129	1.083	1.038
Final body weight	56.20	55.30	41.30
Dry matter consumption / 100 kg body weight	2.009	1.958	2.513

* The average for each individual animals represents daily consumption during 63 consecutive days.

** The av erage dry matter during the total period of berseem was 15.26 %.

The daily dry matter intake 100 kg body weight was highest in Merino rams 2.51 followed by Ossimi and Rahmani 2.01 and 1.96 kg, respectively.

(b) Estimated feed intake by chromic oxide marker

When daily feed consumption was estimated by the marker technique for individual animals (Table 2), it was clear that estimated feed consumption was less than the actual value by 10 % in rams of all the breeds used. The difference may be due to the error caused by the uneven spreading of Cr_2O_3 on the offered feed, thus inducing-non accurate sampling.

TABLE 2. Average actual versus estimated berseem intake in Ossimi, Rahmani and Merino rams.

Breed	Food Intake							
	Actual				Estimated by marker(Cr_2O_3)			
	First day	Second	Third	Mean	First day	Second	Third	Mean
Ossimi	Fresh 7.7	7.3	7.2	7.4±0.03	6.7	6.6	6.5	6.6±0.02
	Dry mater 1.175	1.114	1.099	1.129	1.053	1.007	0.992	1.007
Rahmani	Fresh 7.1	6.6	6.8	6.9±0.01	6.4	6.2	6.0	6.2±0.03
	Dry matter 1.083	1.007	1.038	1.053	0.997	0.946	0.916	0.946
Merino	Fresh 7.2	7.1	7.0	7.1±0.03	6.5	6.4	6.2	6.4±0.37
	Dry matter 1.098	1.083	1.068	1.083	0.992	0.977	0.946	0.977

(c) *Feed intake in pasture*

Applying the chromic oxide (Cr_2O_3) marker technique in the berseem pasture, the estimated average dry matter consumed daily was 1.207, 1.260 and 1.126 kg in Ossimi, Rahmani and Merino rams, respectively. The daily berseem intake was 7.8, 7.7 and 6.9 for Ossimi Rahmani and Merino rams. respectively. This berseem contained 16.22% dry matter. Since the marker technique gave only 90% of the actual in the pasture, the daily berseem intake values could be adjusted to 8.58, 8.47 and 7.59 kg for the three breeds respectively (Table 3). These values of feed intake when rams grazed on berseem in pasture were greater than those in case of feeding indoors. This may be due to enhanced appetite and improved selectivity by the process of grazing.

The daily intake of bereem measured as a dry matter consumption per 100 kg body weight varied with the breeds mentioned. It was highest in the imported Merino rams followed by the Ossimi and Rahmani, respectively (Table 3).

TABLE 3. **Average berseem intake (kg) in grazing pasture estimated by marker (Cr_2O_3) for Ossimi, Rahmani and Merino rams.**

Breed	Items	Food intake*	
		Estimated	Corrected for accuracy 90%
Ossimi	Fresh	7.8±0.58	8.6 ± 0.99
	Dry matter.	1.190	1.312
	Dry matter consumption per100kg body weight .	2.117	2.335
Rahmani	Fresh	7.7±0.58	8.5 ± 0.69
	Dry matter	1.175	1.297
	Dry matter consumption per100kg body weight.	2.125	2.345
Merino	Fresh	6.9±0.03	7.6±0.03
	Dry matter	1.053	1.159
	Dry matter consumption per 100kg pody weight.	2.549	2.806

* Mean of the three days

According to Maynard and Loosli (1962) and Ghoneim (1955) feeding standards, the average feed requirements for the adult sheep in 700g starch equivelant and 110 g digested protein which correspond toabout 7 kg of berseem, (average feed consumption in the experiment). Bearing in mind that one fed. of berseem produces 30 tons on the average taking four cuts.

It can be calculated that the number of adult sheep which can be fed per fed. is about 25 heads.

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كمية الغذاء المأكول لاغنام الاوسيمى والرحمانى والمرينو

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أجرى بحث تجريبى لدراسة كمية الغذاء المأكول من البرسيم لاغنام الأوسيمى والرحمانى والمرينو فى مزرعة كلية الزراعة ـ جامعة القاهرة بالجيزة • واستعملت لذلك طرق مختلفة أولها وزن المقدار المأكول فعلا من الكمية المعطاه . ثم اضافة المرقم (اكسيد الكروميك) وحساب كمية الغذاء المأكول الحقيقى ثم باستعمال المرقم فى الحظيرة ثم رش المرقم فى المرعى على البرسيم وحساب الغذاء المأكول فى المرعى كأساس لمعرفة الفروق بين الاغنام المستوردة والاغنام المحلية •

وتتلخص النتائج التى توصل اليها البحث فيما يلى : ـ

(١) كان متوسط كمية البرسيم المأكوله يوميا والتى استمرت ٦٠ يوما هو ٧ر٤ ، ٧ر١ ، ٦ر٨ ـ كيلو جرام لكباش الاوسيمى والرحمانى والمرينو بالترتيب•

(٢) بتقدير كمية البرسيم المأكولة بطريقة المرقم اتضح أن هذه الطريقة تعطى قيمة أقل من المستهلك الحقيقى المأكول بمقدار ١٠٪ تقريبا للأنواع الثلاثة •

(٣) كان معدل الاستهلاك الحقيقى المحسوب بالمرعى هو ٨ر٦ ، ٨ر٥ ، ٨ر٦ كيلو جرام لكباش الأوسيمى والرحمانى والمرينو بالترتيب •

(٤) كمية البرسيم المستهلكة فى المرعى زادت عن كمية البرسيم المستهلكة فى الحظيرة •

(٥)كانت كمية المأكول كمادة جافه بالنسبة الى كل ١٠٠ كيلو جرام من الوزن الحى أكبر فى أغنام المرينو ٢ر٥١ ثم ٢ر٠١ ثم الرحمانى ١ر٩٦ كيلو جرام فى الحظيرة بينما كانت فى المرعى ٢ر٨١ ، ٢ر٣٤ ، ٢ر٣٥ كيلو جرام للأنواع الثلاثة بالترتيب •

(٦) يوصى هذا البحث بتخصيص فدان برسيم لكل ٢٥ رأسا من الأغنام المستوردة والمختلفة لتكفى احتياجاتها الغذائية فى جمهورية مصر العربية •