

## A note on fattening of Baladi kids on different feeding systems

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### RÉSUMÉ

ASHMAWI (G. M.), EL GALLAD (T.), ATTIA (A.). — Note sur l'engraissement des chevreaux « Baladi » avec différents régimes alimentaires. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (1) : 65-69.

Douze chevreaux « Baladi » âgés de 7 à 8 mois ont été répartis en trois groupes identiques pour rechercher les effets de trois régimes alimentaires à base de concentrés : zéro (N), 400 g (I) et 600 g (H). Les travaux ont porté sur le gain de poids, la répartition des masses corporelles et les caractéristiques de la carcasse pendant une période d'engraissement de 120 jours. En outre, tous les groupes ont reçu du trèfle *ad libitum*.

Les chevreaux nourris exclusivement au trèfle (N) ont eu une croissance pondérale de 54 g par chevreau et par jour. Pour ceux soumis aux régimes de 400 g (I) et 600 g (H), on a enregistré respectivement 59 g et 90 g.

Les poids du corps éviscéré et de la carcasse pantelante et réfrigérée ont augmenté proportionnellement à ces mêmes niveaux.

De même les poids les plus élevés pour l'épaule, les côtes thoraciques et les côtes abdominales, le filet, le gigot entier ont été obtenus avec le niveau d'engraissement le plus fort (H), suivis respectivement par les niveaux I et N.

Le pourcentage le plus élevé de viande dans tous les morceaux, à l'exception du collet et du dos, ont été obtenus lorsque les chevreaux étaient soumis au régime alimentaire le plus intensif.

Les dépenses et les recettes basées sur l'emploi de chacune de ces formules ont été également calculées.

**Mots clés :** Chevreau - Variété « Baladi » - Engraissement - Concentrés - Découpe - Rendement - Egypte.

The available local statistics show that the approximate population of goats in Egypt is  $\approx$  2 millions (1). These animals are relied in their feeding system mainly on clover, grasses and crop residuals.

Baladi breed is the most common one with different colors and sizes. It is low in producti-

### SUMMARY

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Twelve Baladi kids (7-8 months old) were allotted into 3 similar groups to investigate the effects of 3 different levels of dietary concentrates mixtures : 0 (N), 400 g (I) and 600 g (H) on their body weight gain, body composition and carcass characteristics during a 120 days fattening period. All groups received liberal amounts of clover (Berseem, *Trifolium alexandrinum*).

Kids fattened on clover only/(N), gained  $54 \pm 2,9$  g kid/day and those on the 400 g (I) and 600 g (H) levels gained  $59 \pm 4,9$  g and  $91 \pm 9,4$  g kid/day, respectively.

Empty body weight, warm carcass and chilled carcass weights were increased proportionally to the level of nutrition.

Also, the heaviest shoulder, belly ribs, back ribs, loin and leg were produced under the high fattening level (H) followed respectively by those of I and N Levels.

The highest meat percentage in all cuts (except neck and back) was obtained when kids were under the highest level of nutrition.

The costs and returns based on using the above regime of nutrition were also calculated.

**Key words :** Kids - Baladi breed - Fattening - Concentrate - Dressing yield (carcass) - Egypt.

vity in both meat and milk with the following mean characteristics :

Live weight :

at birth 1.5-2.0 kg,

at weaning 6.0 kg,

at 5 months of age 8.0 kg,

at 7 months of age 11.0 kg,  
at 12 months of age 12-20 kg.

Average adult weight : 25 kg.

Lactation period : 120-150 days.

Av. daily milk : 0.4 kg.

Kidding rate : 1.5 (can be increased by improving nutrition and management conditions).

Until now, little attention has been paid to investigate the effect of feeding on the performance of goats particularly on the body composition and carcass characteristics during the fattening period. Also, attention to study the effect of supplementing concentrate mixture in their rations on such performance in the Egyptian goats was very little and consequently the bibliography is almost nil.

The present investigation is an attempt to evaluate the efficiency of some currently practised feeding regimes for fattening the Baladi Kids.

Twelve kids (7 to 8 months old) of the flock of the Small Ruminants Farm, Fac. of Agriculture, Cairo University, were allotted into three similar groups.

Along 120 days fattening period (1st January to 30th April 1981) each group was kept in a separate 3 × 4 meters pen. All groups received liberal amounts of Berseem (*Trifolium alexandrinum*) as a normal level of feeding (N).

In order to investigate the effect of supplementing extra amount of concentrate, one group received additional daily allowance of 400 g/kid of feed mixture as an intermediate level of feeding (I) while another group was fed 600 g/kid day of the same feed as a high level of feeding (H). Daily consumption (per group), of each feed stuff was recorded.

#### Composition of the concentrate feed mixtures

Concentrate feed mixture is composed of :

42 p. 100 undecorticated cotton seed cake,  
25 p. 100 wheat bran,

22 p. 100 yellow corn, 5 p. 100 rice bran,  
2 p. 100 lime stone, 1 p. 100 salt, 3 p. 100 molasses.

With chemical analysis as follows :

Dry matter	percentage 92.35.
Organic matter	percentage 86.42.
Crude protein	percentage 21.28.
Energy exchange	percentage 3.44.
Crude fibre	percentage 17.60.
Nitrogen-free extract	percentage 44.10.
Ash	percentage 13.58.

The nutritive value of this feed is :

S.V. 55 and 15 DCP.

#### Weight gains and feed efficiency

Changes in fast body weight were recorded at biweekly intervals (Fig. 1). It can be noticed that from the 5th week of experimentation, kids put to the N level were consistently less in weight than those of the other two groups (I and H). Changes in body weight of kids of the I & H levels followed nearly the same pattern along the first 10 weeks and differed markedly thereafter.

When comparing daily weight gain during the experiment, it was clear that the lower value obtained was also with animals fed on Berseem only (N level) and the highest was with animals fed on Berseem with the highest level of feed mixtures (H level). This of course was reflected on the daily gain recorded for those kids. Kids fattened on Berseem only (N) gained 54 g/day kid and those on the high level (H) gained 91 g/day/kid.

However, in spite of increasing the level of concentrate in the ration has resulted in a marked increase in the relative growth rate, feed efficiency did not improve with the increase of concentrate (Table I).

#### Carcass characteristics

To obtain information on responses of body offals, organs, parts and carcasses to changes in feeding level, two kids of each fattened group were slaughtered after 12 hrs. fasting.

All body offals and organs except pelt and small intestine did not differ significantly with changing the fattening regime (Table II).

An evaluation of carcass characteristics of the slaughtered animals was carried out. Warm carcasses were weighed then kept in a cooler for 24 hrs. at 4 °C and re-weighed. Loss in weight due to chilling was calculated (results are shown in table II).

The highest warm chilled carcass weight was produced from kids fattened on the highest level of feeding (H) in comparison with the other two levels (N and I). Empty body weight, warm carcass weight and chilled carcass weight were increased proportionally to the level of nutrition. There was a trend towards an increase in these values as dietary concentrate increased from 0 to 600 g/kid/day.

The chilled carcass was cut longitudinally into two equal halves. Each right half was subdivided into bone-in cuts. Differences between weights of the corresponding body parts of kids fattened on the three levels did not reach a

Fig. I. Growth rate of Baladi kids

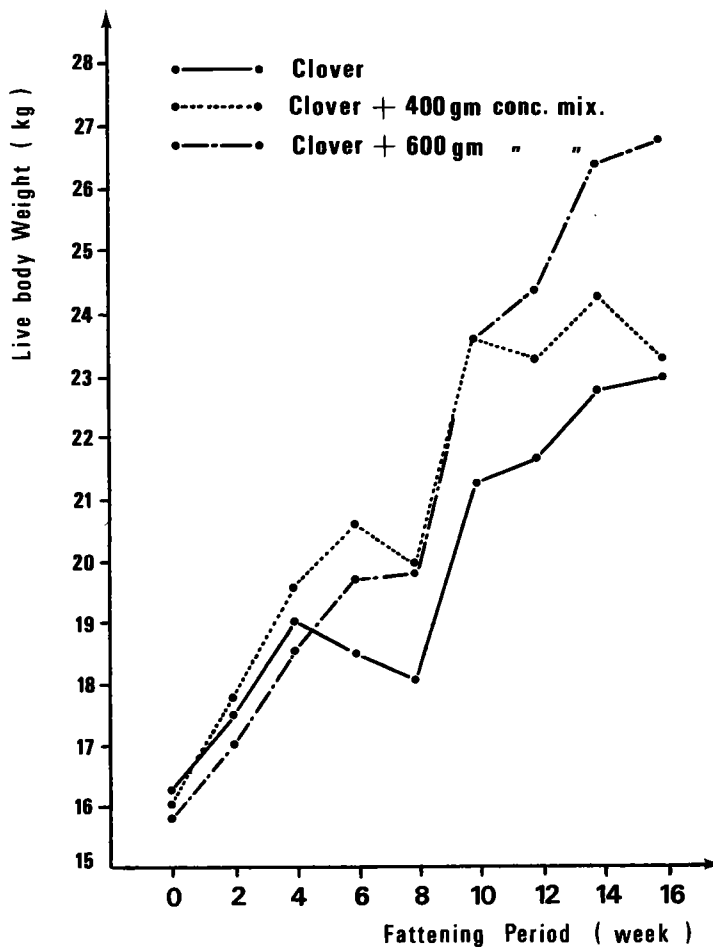


TABLE N°I—Live performance, feed intake and feed conversion ratio of Baladi kids fattened on three different feeding systems

Characteristic	Level of feeding		
	Normal (N)	Intermediate (I)	High (H)
N° of kids	4	4	4
Initial body weight (kg)	16.3 ± 2.8	16.0 ± 1.3	15.8 ± 3.1
Final body weight (kg)	22.8 ± 1.7	23.1 ± 1.2	26.6 ± 2.2
Body weight gain (kg)	6.5	7.1	10.8
Av. daily gain (g)	54 ± 2.9 <sup>a</sup>	59 ± 4.9 <sup>b</sup>	91 ± 9.4 <sup>ab</sup>
p.100 gain (gain/initial weight) x 100	39.88	44.38	68.35
Av. daily intake of Berseem (kg)	4.31	4.05	3.86
Av. daily intake of feed mix. (g)	-	361	575
Av. dry matter intake (g)	625	905	1 066
Feed efficiency (g D.M. intake/g/gain)	11.6	15.3	11.7

N.B. Averages bearing the same letter differ significantly.

TABLE N°II-Carcass characteristics of Baladi kids fattened on three different feeding levels.

I t e m	F e e d i n g   l e v e l					
	N o r m a l		I n t e r m e d i a t e		H i g h	
	W e i g h t (k g)	p.100	W e i g h t (k g)	p.100	W e i g h t (k g)	p.100
Fasting body weight (FBW)	25.3		25.0		29.5	
Empty body weight (EBW)	20.8		22.4		27.8	
Warm Carcass weight	10.1	39.9* 48.6***	12.3	49.2* 54.9***	14.1	47.8* 50.7***
Warm carcass weight including all edible parts	11.2	44.3* 53.9***	13.4	53.6* 59.8***	15.3	51.9* 55.0***
Chilled carcass weight	9.8	38.7* 47.1***	12.2	48.8* 54.5***	13.8	46.8* 49.6***
<u>Edible offals :</u>						
Rumen (empty)	1.125	4.46	0.910	3.04	0.883	2.99
Small intestine (empty)	0.388	1.54	0.290	1.16	0.98	1.35
Large intestine (empty)	0.333	1.32	0.253	1.01	0.255	0.86
Heart	0.100	0.39	0.123	0.49	0.135	0.46
Liver	0.500	1.98	0.463	1.85	0.538	1.82
Lung + Trachea	0.350	1.38	0.322	1.29	0.388	1.32
Kidneys	0.086	0.34	0.080	0.32	0.098	0.33
Spleen	0.052	0.21	0.053	0.21	0.058	0.19
Testicle	0.238	0.94	0.258	1.03	0.293	0.99
Head	1.820	7.21	1.885	7.54	2.263	7.67
Feet	0.592	2.34	0.683	2.73	0.778	2.64
Omentum	0.412	1.63	0.293	1.17	0.355	1.20
Dressing percentage		40.05		49.4		47.66
Collar shrink		97.03		99.19		97.87
Pelt	1.670	6.61	1.670	6.68	2.223	7.54
<u>Body parts :</u>						
Neck	1.150	11.73	1.580	12.91	1.005	7.26
Shoulder	2.115	21.56	2.636	21.37	3.130	22.62
Belly ribs	1.125	11.47	1.363	11.13	1.536	11.10
Back ribs	1.263	12.88	1.700	13.89	1.825	13.19
Belly meat	0.463	4.72	0.573	4.68	0.535	3.87
Loin	1.000	10.20	1.185	9.68	1.480	10.70
Kidney fat	0.138	1.14	0.263	2.15	0.260	1.88
Lég	2.778	28.32	2.926	23.89	3.370	24.36
Tail	0.060	0.61	0.045	0.37	0.045	0.33

\* Relative to FBW ; \*\*\* Relative to EBW.

significant level except for neck, shoulder and back ribs.

In general, it may be noticed that the heaviest shoulder, belly ribs, back ribs, loin and leg were produced under the high fattening level (H) followed respectively by those of the I and N levels.

In order to study the influence of fattening level on dressing percentage each cut of one right half and the whole left half within each fattening level were dissected into meat, bone and fat. Results are presented in table III.

It was observed that the highest meat percentage in all cuts (except neck and back) was obtained when kids were under the highest level of fattening (H) and cuts of kids fattened on the Berseem only (N) were more boney in comparison with the other levels.

Comparing the overall dressing percentage of the kids fattened on the different levels, revealed that I and H levels were 5 and 8 p. 100 more in meat, 7 and 10 p. 100 less boney and 2 and 1 p. 100 more in fat.

TABLE N°III-Changes in dressing p.100 of the different parts of the left side of kids fattened on three different feeding levels

	Feeding level								
	Normal			Intermediate			High		
	meat	bone	fat	meat	bone	fat	meat	bone	fat
Neck	63.89	36.11	0.00	73.68	23.39	2.92	72.67	25.00	2.33
Shoulder	71.35	26.42	2.23	73.02	24.21	2.71	73.80	22.05	4.15
Belly ribs	62.26	34.91	2.83	64.96	23.36	11.68	68.86	24.55	6.59
Back ribs	62.81	35.15	2.04	74.08	24.94	0.98	72.89	24.30	2.81
Loin	58.25	41.75	0.00	54.63	45.37	0.00	67.78	27.78	4.44
Leg	71.70	25.97	2.33	78.26	18.63	3.11	82.34	16.97	0.69
Ribs 9, 10 & 11	62.23	27.94	9.83	65.54	25.18	9.28	66.13	23.69	10.18
Overall	66.86	31.38	1.76	72.05	24.51	3.44	75.30	21.75	2.95

### Costs and return

The cost of ration was calculated at prevailing market rates at the time of the experiment. The price of one kg of Berseem and of concentrate mixture (subsidized) was 1.5 and 3.5 piasters respectively. Accordingly, the cheapest and the most expensive cost of one kg body gain was that

of kids fed on the H and the I levels respectively (Table IV). Also, the return based on the warm carcass weight showed that kids fattened on H and I levels were tremendously higher than fattening on Berseem only (N) and the return was proportionally related to the level of concentrate supplemented with Berseem (Table IV).

TABLE N°IV-Feed costs and return above feed cost of Baladi kids fattened on three different feeding levels

Item	Feeding level		
	Normal	Intermediate	High
Initial price per head (piaster).	2 000.0	2 000.0	2 000.0
Feed costs of total gain	774.8	877.6	929.9
Feed costs of 1 kg body weight gain (piaster)	119.2	123.6	86.1
Selling price (125p/kg live body weight)	2 850	2 890	3 325
Return (piaster above feed costs/head)	75.2	12.4	395.1
Warm carcass weight + edible part (kg)	11.2	13.4	15.3
Selling price (250 p/kg meat)	2 800	3 350	3 825
Return/head as meat only	25.2	472.4	895.1

### RESUMEN

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Se utilizaron 12 cabritos Baladi de 7 a 8 meses de edad, distribuidos en 3 grupos idénticos, para buscar los efectos de 3 regimenes alimenticios a base de concentrados : zero (N), 400 g (I) y 600 g (H). Se estudiaron el aumento de peso, la repartición de las masas corporales y las características de la canal durante un periodo de engorde de 120 días. Además, todos los grupos recibieron trébol *ad libitum*.

Los cabritos alimentados en exclusiva con trébol (N) ganaron  $54 \pm 2,9$  g por animal y por día ; los alimentados con regimenes de 400 g (I) y 600 g (H) ganaron  $59 \pm 4,9$  g y  $91 \pm 9,4$  g.

Los pesos del cuerpo eviscerado y de la canal refrigerada aumentaron proporcionalmente del mismo modo.

Lo mismo, se obtuvieron los pesos más elevados para la espalda, las costillas torácicas y las costillas abdominales, el solomillo, la pierna y entrada de pierna con el regimen de engorde más elevado (H), y luego con los regimenes I y N.

El porcentaje de carne fué más elevado en todos los trozos, con excepción del pezcuelo y del lomo, cuando se alimentaron los cabritos con el regimen alimenticio más intensivo.

Se calcularon también los gastos y los ingresos basados sobre el empleo de cada una de estas fórmulas.

*Palabras claves* : Cabrito - Raza Baladi - Engorde - Concentrados - Rendimiento a la canal - Egipto.

### REFERENCE

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