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( / ) *Medicago sativa*

( / MJ/kg) *Medicago coronata*

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(E-mail: harzani@ut.ac.ir )

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, *Stipa barbata*, *Poterium ovina* :  
, *Bromus briziformis*, *sangoisorba*, *Festuca*  
*Anthemis altissima*, *Achillea millefolium*,  
*Thymus kotoschyanus*, *Astragalus*  
*microcephalus*, *Taraxacum officinalis*, *Poa*  
*bulbosa*, *Medicago sativa*, *Medicago*  
*coronata*, *Artemisia aucheri*, *Stachys*  
*inflata*, *Agropyron tauri*

, *Astragalus-sp*  
*sp.*, *Stachys infalata*, *Festuca ovina*,  
*Bromus.sp briziformis sp*, *Artemisia*  
*aucheri*  
, *Verbascum album*,  
*Peganum harmala*, *Phlomis orientalis*

(ADF)

(DMD)

(ME)

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$$DMD = / - / ADF\% + / N\%$$

$$ME(MJ/kg) = / DMD\% -$$

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$$ME = / + / W$$

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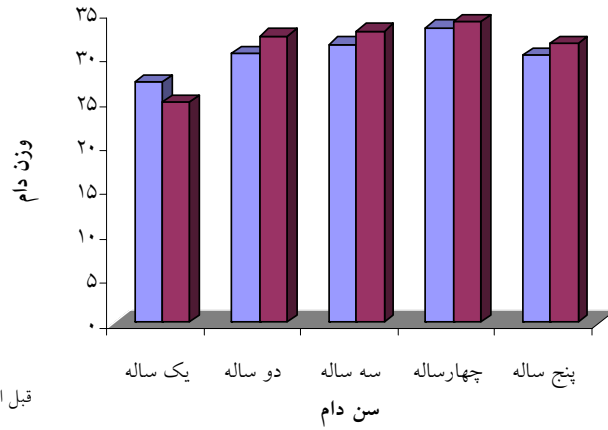
*Medicago sativa*

ADF

<sup>1</sup>-Oddy *et al.*

<sup>2</sup>-Standard committee on Agriculture

<sup>3</sup>- Yong & Corbett



■ قبل از دوره چرای  
■ بعد از دوره چرای

شکل ۱- مقایسه تغییرات وزن دامها، قبل و بعد از دوره چرای

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*Stipa barbata*

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DMD	ME(MJ/kg)	ADF			
52/19±.12	9/8±.03	91/86±.08	8/57±.13		<i>Stipa barbata</i>
50/56±.14	12/9±.07	43/5±.14	7/87±.13		
41±11/4	4/9±1/9	54/61±13/7	9/7±.138		
98/59±.138	9/9±.06	23/39±.06	11/97±.126		<i>Poterium sangoisorba</i>
60/13±.06	8/21±.01	31/97±.05	8/1±.127		
53/39±.14	7/9±.02	39/71±.125	9/91±.091		
67/55±3/9	9/2±.061	27/81±4/7	19/1±.175		<i>Atriplex sp</i>
58/33±1/7	7/9±.129	37/69±1/7	19/0.2±.184		
58/0.8±.065	7/8±.111	37/82±.128	15/69±1/1		
65/69±.11	9/1±.01	25/7±.129	9/9±.177		<i>Festuca ovina</i>
60/49±.053	7/9±.09	29/77±.096	8/27±.04		
56/71±.052	7/9±.08	39/13±.065	8/9±.03		
61/89±.126	8/5±.06	30/43±.14	9/39±.125		<i>Bromus briziformis</i>
60/49±.053	7/9±.09	31/77±.175	8/25±.131		
60/13±1	8/5±.117	32/0.2±1/2	8/13±.06		
59/38±.048	7/5±.08	38/37±.093	12/18±.128		<i>Anthemis altissima</i>
48/0.8±.077	9/1±.113	49/11±.177	9/88±.139		
45/39±.12	5/7±.03	49/22±.124	9/47±.08		
60/69±.114	8/3±.02	32/97±.115	11/82±.05		<i>Thymus kotoschyanus</i>
55/79±.08	7/4±.01	38/0.4±.115	9/82±.122		
53/23±.07	7/5±.01	40/29±.12	7/88±.127		
64/17±.136	8/9±.06	30/45±.147	15/71±.117		<i>Astragalus microcephalus</i>
61/99±.123	8/5±.05	32/4±.152	14/0.4±.129		
59/41±.052	7/5±.08	38/18±.096	11/85±.07		
70/38±.04	9/9±.06	23/47±.148	115±.		<i>Taraxacum officinalis</i>
60/52±.096	8/2±.116	34/13±1	13/99±.138		
55/68±0/8	7/4±1	38/65±7/3	10/92±.171		
66/61±.125	9/3±.06	25/87±.129	11/84±.149		<i>Poa bulbosa</i>
61/35±.135	8/4±.06	29/79±.144	9/4±.03		
59/67±.121	8/1±.03	31/77±.125	9/29±.17		
72/63±4	10/34±.068	25/53±4/2	27/87±2/2		<i>Medicago sativa</i>
68/43±.136	9/9±.06	29/0.7±.115	29/33±.096		
63/89±1/2	8/8±.117	31/28±.128	17/57±1/3		
73/24±.18	10/44±.113	23/49±1/1	24/89±.051		<i>Medicago coronata</i>
73/4±.126	10/47±.04	22/91±.11	24/0.2±.054		
49/0.2±2/3	8/8±.139	31/82±3/9	18/43±1/9		
61/4±.117	8/4±.02	33/32±.129	14/44±.114		<i>Artemisia aucheri</i>
58/62±.126	7/9±.06	35/45±.051	11/73±.185		
54/63±.129	7/2±.05	39/55±.122	10/4±.134		
55/41±.052	7/4±.08	39/69±.091	12/52±.113		<i>Stachys inflata</i>
51/58±.044	9/7±.07	43/42±.045	10/4±.096		
49/89±.045	9/4±.07	44/93±.096	9/21±.025		
62/13±.022	8/5±.05	33/96±.112	18/0.5±.092		<i>Agropyron tauri</i>
59/22±.062	7/5±.01	39/21±.084	13/68±1/9		
52/72±.047	9/9±.08	40/8±.06	7/74±.011		
59/7±.044	8/1±.07	34/91±.09	13/49±1/3		<i>Achillea millefolium</i>
52/27±2	9/8±.034	42/81±2/5	10/44±.039		
48/37±.073	9/2±.012	174±.07	9/12±.047		

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		ADF	
/ ± / f	/ ± / j	/ ± / a	<i>Stipa barbata</i>
/ ± / b	/ ± / i	/ ± / ihg	<i>Poterium sangoisorba</i>
/ ± / b	/ ± / c	/ ± / fe	<i>Atriplex sp.</i>
/ ± / b	/ ± / i	/ ± / jih	<i>Festuca ovina</i>
/ ± / b	/ ± / i	/ ± / ba	<i>Bromus briziformis</i>
/ ± / e	/ ± / i	/ ± / d	<i>Anthemis altissima</i>
/ ± / c	/ ± / h	/ ± / gfe	<i>Thymus cotoschyanus</i>
/ ± / b	/ ± / d	/ ± / hgf	<i>Astragalua microcephalus</i>
/ ± / b	± / d	/ ± / ji	<i>Taraxacum officinalis</i>
/ ± / b	/ ± / ji	/ ± / j	<i>Poa bulbosa</i>
/ ± / a	/ ± / a	/ ± / j	<i>Medicago sativa</i>
/ ± / a	/ ± / b	/ ± / k	<i>Medicago coronata</i>
/ ± / c	/ ± / f	/ ± / ed	<i>Artemisia aucheri</i>
/ ± / d	/ ± / g	/ ± / cb	<i>Stachys inflata</i>
/ ± / c	/ ± / e	± / d	<i>Agropyron tauri</i>
/ ± / d	/ ± / g	/ ± / c	<i>Achillea millefolium</i>

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*Stipa barbata*  
*Anthemis altissima, Stachy*  
*inflata, Achillea millefolium*  
*Agropyron tauri*

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)*Trifolium pratense* *Coronilla varia*

10- Arzani,H., M. Zohdi, E. Fish, G. H. Zahedi Amiri, A. Nikkhah, and D. Wester, 2004. Phenological Effects on Forage Quality of Five Grass Species, Journal Rangeland Ecological Management, No. 57(6). PP.221-229.

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- 11- Ginti, K. G., Ratry, P. V., 1987. Livestock Feeding on Pasture New Zealand Society of Animal Production, Occasional Publication No.10
  - 12-MAFF, Ministry of Agriculture Fisheries and Food, 1984. Energy Allowance and Feeding System for Ruminants, Her Majesty's Stationery, London, Reference Book No.43
  - 13-Oddy, V.H., Robards, G.E. and Low, S.G., 1983. Prediction of In vivo Matter Digestibility from the Fiber Nitrogen Content of a Feed, In Feed Information and Animal Production, eds. G.E. Robards, and R. G. Pakham Commonwealth Agricultural Bureaux, Australia, pp. 395-398
  - 14-Standard Committee on Agriculture, 1990. Feeding Standards for Australian Livestock Ruminants, CSIRO, Australia
  - 15-Stoddart, L. and Smith, A., 1955. Range Management, Mc. Graw-Hill New York
  - 16-Vallentin, J. F., 1990. Grazing Management, Sandiego: Academic press
  - 17- Vallentin, J. F., 2001. Grazing Management, Sandiego: Academic press
  - 18-Voisin, A., 1959. Grass Productivity, Philosophical Library, New York, p. 349
  - 19-Yong, B.A., J.L. Corbett, 1972. Maintenance Energy Requirement of Grazing Sheep in Relation to Herbage Availability, Icaloria Metric Estimates, Australian Journal of Agriculture Res., 23.

## Determination of Unit Animal Daily Forage Requirement for Sheep (Zel Race) Grazing in Mazandaran Rangelands (Case Study: West Mazandaran Rangelands)

H. Arzani<sup>1</sup> S. Farazmand<sup>2</sup> R. Erfanzade<sup>3</sup>

### Abstract

To achieve an acceptable level of animal performance, a matching of animal feed requirement with the needed quantity of forage, with due attention to forage quality, is essential. In this study, feed requirement of Zel race sheep, grazing on mazandaran rangelands was estimated. For calculation of the ratio of ram to ram + lamb a number of 10 rams, ten 3-month old and ten 6-month old lambs were weighted, the respective weights being recorded and then used. Overall average sheep weight was found as 30.48 kgs. The average weight for the ten rams, ten 3, and ten 6-month old rams were 47.67, 19.75, and 23.53 kgs respectively. The ratio of ram to sheep weight was found to be 1.56 and the ratio of 3 and 6-month old lambs to sheep (Zel race) were 0.67, and 0.7 respectively. For a determination of animal feed requirement, based on forage quality, samples of plant species in different phonological stages were taken for in-vitro analysis. Analysis and assessment of crude protein, digestibility and metabolizable energy were carried out. In vegetative phonological stage, the highest protein percentage was recorded for *Medicago sativa* whilst the highest metabolizable energy for *Medicago coronata*. Taking into account the distances between sheep yards and rangeland, topographic conditions, vegetation density, as well as distances between animal watering stations and additional 50% was added to the pre-calculated animal feed requirement, using the formula  $ME = 1.8 + 0.1 W$  where W stands for live weight. Based upon forage quality in any of the phonological stages as well as plant nutritional composition, the daily forage requirement of unit animal was determined to be 0.8, 0.91, and 0.97 kgs/day in the plant phonological stages of vegetative, flowering and maturity, respectively.

**Keywords:** Unit animal, Daily unit animal, Seep, Zel race, Unit animal feed requirement, Forage quality, Mazandaran.

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