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IMPACT OF FEEDING GUAR PLANT AS SILAGE OR HAY FOR ZARAIBI DOES IN TWO REPRODUCTIVE STAGES ON NEWBORN PERFORMANCE AND SOME BLOOD AND METABOLIC PARAMETERS.

Mohamed, E.A. ; M.E. El-Kholany ; W.M.A. Sadek and A. L. I. Desoky
Animal Production Research Institute, Agricultural Research Center,
Dokki, Giza, Egypt.

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ABSTRACT

This study aimed to study effects of using Guar plant as silage (GS) or hay (GH) in feeding Egyptian Zaraibi does during the late pregnancy and suckling periods on growth parameters, and some rumen and blood parameters. The roughage was 40% corn silage (CS), 30% GS+30% CS, and 30% GH+30% CS in ration of G1, G2, and G3, respectively. Results indicated that daily DM intake as BW% and g/kgw$^{0.75}$ was higher during suckling period than at late pregnancy in all groups. The ruminal NH3-N and TVFA's concentrations were affected (P<0.05) by feeding and reproductive stage. Only RBCs and MCHC was the highest (P<0.05) in G3 and the lowest (P<0.05) in G2, being lower at late pregnancy than at suckling. Globulin was highest and creatinine and ALP were lowest in G3 (P<0.05). Total proteins, globulin, calcium, phosphorus, manganese were higher (P<0.05) during suckling than at late pregnancy. Birth and weaning weights, daily gain, and crop of born kids were the highest (P<0.05) in G3. The mortality rate was 30, 23.8, and 9.1% in G1, G2, and G3, respectively. Values of economic feed efficiency was 1.85, 2.35, and 2.55 in G1, G2, and G3, respectively. It could be concluded that using Guar silage or Guar hay as partial replacement of concentrate feed mixture in Zaraibi does rations during late pregnancy and suckling period had a positive impacts on born kids performance and production of viable kids at weaning. This strategy has a good economic return on the herd of Zaraibi goats.

INTRODUCTION

Nutrition is a major factor affecting the physiological and metabolic statuses, and consequently the productive performance of farm animals. In Egypt, there is wide gap between the available feed stuffs and the nutritional requirements of animal population. During summer season, green forages with reasonable protein contents are not adequately available. Guar (*Cyamopsis tetragonoloba*) is a multi-purpose plant, most used today as a source of galactomannan gum, which is used as a stabilizer in foods such as salad dressings, ice cream and yoghurt. The gum and the water soluble resin extracted from seeds are also use in other industries, including paper manufacturing, cosmetics, mining and oil drilling **(Wong and Parmar, 1997).** Guar was found to be not very suitable for grazing due to its hairy leaves and unpalatability **(Göhl, 1982),** but Guar is sometimes grazed to reduce the risk of blot in ruminants **(Wong and Parmar, 1997).** Palatability improves after cutting and wilting **(Göhl, 1982).** The best time for cutting Guar for fodder is during flowering and early pod formation **(Wong and Parmar, 1997).** In goats, Guar hay cut a pod formation gave better nutrient and energy intakes and digestabilities than the mixture of Guar hay and crushed oats **(Pachauri and Upadhyaya 1986).**

In this respect, Guar plant was choosing to study the possibility of using as silage or hay in feeding pregnant Egyptian Zaraibi does during the late pregnancy and suckling periods on production performance and some metabolic parameters of does and their newborn kids..

MATERIALS AND METHODS

This study was conducted at El-Serw Experimental Research Station belongs to Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt.

Thirty lactating Zaraibi does in the 2^{nd}, 3^{rd} and 4^{th} seasons of lactation, and weighing on averaged 40.0 kg were divided according to their body weight into 3 similar groups (10 does in each group). The experimental groups were fed three experimental rations, included control (G1): 60% CFM + 40% corn silage (CS), the second group (G2): 40% CFM + 30% Guar silage (GS) + 30% CS and the third group (G3): 40% CFM +30% Guar hay (GH) + 30% CS. All does were at the late pregnancy period (4^{th} months of pregnancy) and feeding period continued for 90 days after kidding (at weaning). Animals were weighed at the beginning and biweekly as transition period on the same ration before the start of the experiment.

The nutrients were calculated to cover dairy goats requirements according to **NRC (1981).** Concentrate feed mixture (CFM) consisted of 43% yellow corn, undecortecated cotton meal (25%), wheat bran (25%), molasses (3.5%), limestone (2%), common salt (1.0%) and minerals mixture (0.5%). The chemical composition of different feed stuffs was determined (Table 1), water was available all times and drinking water was measured for each group (ml/day). Diets were offered twice daily at 8 a.m. and 3 p.m. and any refused amounts were daily recorded. Approximate chemical analysis of the feeds was carried out according to **A.O.A.C (1995).**

Table (1): Chemical analysis of feeds and experimental rations during the late pregnancy and suckling periods.

Feeds	DM%	Chemical composition % on DM basis					
		OM	CF	CP	EE	NFE	Ash
CFM	90.50	93.60	15.60	14.50	3.40	60.10	6.40
CS	33.50	91.00	28.80	9.30	3.20	49.70	9.00
GS	35.50	86.50	26.30	14.65	2.50	43.05	13.50
GH	85.50	83.00	12.00	21.00	2.30	47.70	17.00
Chemical composition of experimental rations during the late pregnancy							
G1	62.80	90.40	23.45	12.10	2.65	52.20	9.60
G2	61.50	89.50	23.60	12.81	2.90	50.19	10.50
G3	62.50	90.30	23.30	14.92	2.95	49.13	9.70
Chemical composition of experimental rations during the suckling period							
G1	62.90	90.30	23.65	12.00	2.60	52.05	9.70
G2	62.00	89.45	23.70	12.75	2.95	50.05	10.55
G3	63.30	90.50	23.20	14.90	3.00	49.40	9.50

CFM: Concentrate feed mixture (25% undecortecated cottonseed meal, 43% yellow corn, 25% wheat bran, 3.5% molasses, 2% limestone, 1% common salt and 0.5% minerals mixture).
CS: Corn silage GS: Guar silage GH: Guar hay
(G1): 60% CFM + 40% Cs (G2): 40% CFM + 60% (30% GS + 30% CS) (G3): 40% CFM + 60% (30% GH + 30% CS)

Rumen fluid samples were taken from 3 animals of each experimental group using stomach tube at 0 2, 4 and 6 h post-feeding during the end of feeding trails. The samples were filtered through 3 layers of gauze and pH was immediately by pH-meter. Ammonia nitrogen (NH_3-N) concentration was measured according to **Conway (1957).** Microbial protein was determined according to **Shultz and Shultz (1970)**, while, concentration of total volatile fatty acids (VFA's) was determined according to the technique described by **Warner (1964).**

Live body weight of does and their kids was biweekly recorded individually . Litter size (number of kids/doe), kidding rate (litter size × 100) and mortality rate were also calculated.

Blood samples were taken once during last month of pregnancy and the first month of lactation from 3 does of each group via the jugular vein just before feeding. Blood sample of each doe was collected into two test tubes, the 1st contained EDTA as anticoagulant, while another test tube without anticoagulant. The 1st tube was taken as whole blood, and immediately used for hematological estimation. Another tube of the blood sample was centrifuged at 4000 rpm for 20 minutes to separate serum, which was frozen at -20°C until analyses for enzyme activity, biochemicals, minerals and hormonal determination . Commercial kits were used for all blood measures.

Data were statistically analyzed by factorial design of ANOVA (3×2) to study the effect of the experimental rations, reproductive stage, and their interaction on different parameters studied using **SAS (2003).** The analyzed data are presented as means and SEM.

RESULTS AND DISCUSSION

Feed intake:

At late pregnancy stage, daily dry matter intake relative to LBW or metabolic body weight was slightly higher in G1 than in G2 and G3. The same trend was observed with daily DM intake during suckling period.The daily DM intake expressed as BW% and g/kgw$^{0.75}$ during the suckling periods was higher than that consumed during the late pregnancy period in all ration (Table 2). The observed increase in roughage intake as a silage denotes that silage was of good quality as reported by **Ahmed et al. (2001 and 2013)** with lactating goats.

Generally, there are many factors affecting chemical composition as species (legume and grass), soil, fertilization, subsequent, cuts, age and environmental condition **(Gabra et al., 1991; Khinizy et al., 1997; Haggag et al, 2000; and Soliman & Haggag, 2002).**

Table (2): Daily dray mater intake (DMI) by Zaraibi does during the two experimental periods.

Items	Groups		
	G1	G2	G3
Daily dray mater intake (g/h) during the late pregnancy period*			
From CFM	820	540	530
From CS	546	405	400
From GS	0	405	0
From GH	0	0	390
Total DMI	1366	1350	1320
DMI, % BW	3.42	3.38	3.30
DMI, g/kg w$^{0.75}$	85.91	84.90	83.02
Daily dray mater intake (g/h) during the suckling period*			
From CFM	870	600	585
From CS	580	710	420
From GS	0	415	0
From GH	0	0	400
Total DMI	1450	1425	1405
DMI, % BW	3.63	3.56	3.51
DMI, g/kg w$^{0.75}$	91.20	89.62	88.36

*** Group feeding.**

Water consumption:

Data of water consumption of Zaraibi does during pregnancy and suckling periods are presented in Table (3). The differences in water consumption among the experimental groups were slight, but water consumption increased at the suckling period as compared to at late pregnancy, especially in G3 (Table 3). Generally, the quantity of daily water consumption in present study is nearly similar to those obtained by **Soliman et al. (2010)** on growing Zaraibi goats (ranged from 2.22 to 3.30 ml/g DM intake) and **Ahmed et al. (2013)** on lactating Zaraibi goats (ranged from 2.82 to 3.06 ml/g DM intake).

Table (3): Daily water consumption by Zaraibi does during the two experimental periods.

Item	Experimental groups		
	G1	G2	G3
Water consumption during the late pregnancy period*			
Liter/head/day	3.85	3.90	4.00
ml/kg BW	96	98	100
ml/kg $w^{0.75}$	242	245	251
ml/g DMI	2.82	2.89	3.03
Water consumption during the suckling period*			
Liter/head/day	5.20	5.35	5.50
ml/kg BW	130	133	138
ml/kg $w^{0.75}$	327	336	345
ml/g DMI	3.58	3.75	3.91

*** Group feeding.**

Ruminal fermentation parameters:

Concerning the effect of the experimental rations, reproductive stage and their interaction on ruminal parameters indicated that the minimum pH values and the maximum total VFA's values were recorded 3 h post-feeding. The same trend was obtained by **Gabra et al. (1999)** and **Shehata et al. (2006)** on goats, and **Sadek (2011)** on sheep. Moreover, the ruminal ammonia-N concentrations were greater post-feeding than before-feeding and the maximum values of NH3-N in the ruminal liquor reached at 3 h post-feeding. At 3 and 6 h post-feeding, ruminal NH3-N concentrations were significantly higher in the rumen of goats in G2 and G3 than in those G1. The high content of ruminal ammonia-N concentration in G3 may be due to the high content of CP in silage mixture (Table1). Similar results were observed by **Ahmed et al. (2001), Shehata et al. (2006)** and **Ibrahim et al. (2012)** with Zaraibi goats fed rations containing kochia, reed and sesbania silages, respectively. Also, **El-Kholany (2004)** found that the NH3-N was higher in the rumen of goats fed sesbania silage and silage mixture (sesbania+ maize) than those fed maize silage only; this may be attributed to high content of CP in sesbania silage and high protein degradability of sesbania protein as reported by **Khalili and Varikko (1992).**

Ruminal total VFA's concentrations showed the highest values 3and 6 h post-feeding in G3 (12.40 and 11.45 mEq/100ml, respectively), while the lowest values were detected in G1 (12.03 and 11.09 mEq/100ml, respectively). This differences were significant. Similar results were observed by **El-Kholany (2004),** who reported that the highest values of ruminal TVFA's were recorded with silage mixture (sesbania+ maize) at all hours, and then maize silage and lowest values were detected with sesbania silage group. The decrease in TVFA's during the late pregnancy, may be due to the decrease in daily feed intake per $kgw^{0.75}$ and/or response to the physiological stress of pregnancy. The same result was observed by **Sadek (2011)** with Rahmani ewes during late pregnancy and suckling periods. Generally, it seems that ruminal VFA's showed an opposite trend of ruminal NH3-N, since both were affected by physiological status (Table 4).

Table (4): The effect of experimental rations on some rumen parameters of Zaraibi does during the two experimental periods.

Item		pH			NH3 (mg/100ml RL)			TVF's (meq./ 100ml RL)		
		0	3	6	0	3	6	0	3	6
G1		6.90	6.50	6.70	16.32	21.05[bc]	20.00[b]	9.10	12.03[b]	11.09[b]
G2		6.97	6.60	6.75	16.45	21.85[ab]	21.30[a]	9.05	12.13[ab]	11.22[ab]
G3		6.95	6.55	6.80	16.60	22.30[a]	21.55[a]	9.02	12.40[a]	11.45[a]
SEM		0.18	0.10	0.12	0.22	0.24	0.26	0.041	0.105	0.093
Sig.		NS	NS	NS	NS	*	*	NS	*	*
Pregnancy		7.00	6.60	6.81	16.60	22.14	22.00[a]	8.95	11.94[b]	10.75[b]
Suckling		7.89	6.47	6.70	16.30	21.40	19.85[b]	9.21	12.12[a]	12.20[a]
SEM		0.12	0.08	0.09	0.30	0.35	0.27	0.20	0.15	0.21
Sig.		NS	NS	NS	NS	NS	*	NS	*	*
Pregnancy	G1	6.96	6.59	6.78	16.50	21.23	21.42	9.00	11.70	10.62
	G2	7.30	6.64	6.79	16.47	22.25	22.13	8.90	11.93	10.67
	G3	7.00	6.58	6.85	16.83	22.95	22.45	8.95	12.20	10.91
Suckling	G1	6.83	6.40	6.60	16.12	20.85	18.60	9.15	11.36	11.19
	G2	6.93	6.54	6.70	16.43	21.45	20.45	9.20	12.40	12.65
	G3	6.90	6.48	6.80	16.35	21.90	20.50	9.29	12.60	12.76
SEM		0.24	0.16	0.17	0.58	0.71	0.55	0.39	0.30	0.42
Sig.		NS	NS	NS	NS	NS	NS	NS	NS	NS

a-c: Means at the same column with different letters are significantly ($P<0.05$) different.
NS: Non-significant.

Blood parameters:

Hematological parameters:

Data of hematological parameters of does fed different experimental rations during late pregnancy and suckling periods are presented in Table (5). Results indicated that only RBCs and MCHC were affected significantly by the experimental ration or reproductive stage, being significantly the highest in G3 and the lowest in G1, and during suckling than at late pregnancy, However, most hematological parameters were not affected significantly by the experimental ration or reproductive stage (Table 5).

The observed reduction in the values of the erythrogram (RBCs and MCHC) at late pregnancy as compared to during suckling may be attributed to the mild stress of pregnancy as reported by **Schalm (1961),**

Ahmed (1999) and **Sadek (2011).** These findings are in agreement with those reported by **Hafez et al. (1983),** who observed that some hematological parameters such as Hb, MCHC and RBC's decreased with the advance of pregnancy especially during the last week and thereafter tended to increase after parturition till they approach the values of the control group (non pregnant and non lactation) 6 weeks post- partum. The same trend was observed by **El-Fadaly and Radwan (1992)** for hematocrit value and Hb. In general, the obtained data indicate that all estimated values for measured parameters are within the normal range of Zaraibi goats as reported by **Ahmed et al. (2008).**

Table (5): The effect of experimental rations on some hematological parameters of Zaraibi does during the two experimental periods.

Item		Hb (g/dl)	Hct (%)	RBC's ($\times10^3$/ul)	MCV (Fl)	MCH (Pg)	MCHC (%)	WBC's ($\times10^3$/ul)	Lympho Cyst,(%)	Nutro Phils,(%)	Meuo Cyst, (%)	Platlets ($\times10^3$/ul)
G1		10.80	35.30	13.45^c	20.80	5.70	30.10^c	10.26	55.63	37.30	5.90	450
G2		11.00	35.10	13.80^b	19.80	6.30	32.04^b	10.07	57.80	36.30	5.65	466
G3		11.33	34.20	14.10^a	19.90	6.40	33.30^a	10.03	63.12	34.00	5.73	495
SEM		0.35	0.93	0.25	0.60	0.40	0.55	0.37	2.60	2.56	0.60	14.20
Sig.		NS	NS	*	NS	NS	*	NS	NS	NS	NS	NS
Pregnancy		10.62	34.75	13.38^b	20.03	6.00	30.47^b	10.21	58.31	36.83	5.83	457
Suckling		11.04	34.90	13.95^a	20.13	6.23	32.00^a	10.05	59.43	34.80	5.68	485
SEM		0.24	0.68	0.17	0.40	0.24	0.39	0.28	1.80	1.75	0.43	10.05
Sig.		NS	NS	*	NS	NS	*	NS	NS	NS	NS	NS
Pregnancy	G1	10.45	35.40	12.92	20.80	5.50	29.42	10.30	54.63	38.30	6.00	438
	G2	10.40	34.85	13.45	19.70	6.20	29.54	10.17	56.30	37.20	5.75	456
	G3	11.00	34.00	13.76	19.60	6.30	32.46	10.15	64.00	35.00	5.73	478
Suckling	G1	10.08	35.20	13.28	20.70	5.80	30.78	10.27	56.63	36.20	5.82	461
	G2	11.36	35.10	14.15	19.70	6.50	31.07	9.97	59.30	35.20	5.53	480
	G3	11.68	34.40	14.43	20.00	6.40	34.13	9.92	62.35	33.00	5.70	513
SEM		0.48	1.36	0.34	0.80	0.48	0.78	0.56	3.60	3.50	0.86	20.10
Sig.		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

a-c: Means at the same column with different letters are significantly ($P<0.05$) different.
NS: Non-significant.

Biochemical parameters:

Data of biochemical parameters of does fed different experimental rations during late pregnancy and suckling periods are presented in Table (6). Serum concentration of globulin and phosphorus significantly increased, while creatinine concentration and ALP activity significantly decreased in G2 and G3 compared with G1. As affected by the reproductive stage, total proteins, globulin, calcium, phosphorus, manganese were higher ($P<0.05$) during suckling than at late pregnancy. In comparable with the present results, **Ahmed (1999)** showed that serum total proteins, globulin, urea-N, creatinine, uric acid, total lipids, cholesterol and magnesium as well as thyroid hormones concentrations were higher at the last month of pregnancy than in the lactation months.

Table (6): The effect of experimental rations on some biochemical parameters of Zaraibi does during the two experimental periods.

Item		T. Protein, (g/dl)	Albumin, (g/dl)	Globulin, (g/dl)	Creatinine, (mg/dl)	Urea-N, (mg/dl)	Cholesterol, (ml/dl)	Triglyceride, (ml/dl)	AST, (u/l)	ALT, (u/l)	ALP, (u/l)	T3 (mg/dl)	T4 (mg/dl)	Glucose, (ml/dl)	Calcium, (ml/dl)	Phosphorus, (ml/dl)	Magnesium, (ml/dl)
G1		6.20	3.75	2.45^{b}	0.93^{a}	16.83	91.20	49.20	75.20	23.00	123.50^{a}	118.20	6.80	57.00	9.50	4.30^{b}	2.50
G2		6.35	3.48	2.87^{a}	0.83^{ab}	15.70	88.80	46.30	69.50	20.80	110.20^{b}	122.30	6.65	56.80	9.65	4.65^{ab}	2.70
G3		6.46	3.56	2.90^{a}	0.75^{b}	15.83	90.83	47.00	69.85	20.65	109.70^{b}	127.33	6.70	58.75	9.80	5.00^{a}	2.63
SEM		0.20	0.14	0.10	0.06	0.40	2.60	2.57	3.52	1.44	2.50	7.10	0.46	3.90	0.34	0.15	0.16
Sig.		NS	NS	*	*	NS	NS	NS	NS	NS	*	NS	NS	NS	NS	*	NS
Pregnancy		6.15^{b}	3.40	2.75^{b}	0.94^{a}	16.39	96.23^{a}	49.68	72.06	21.78	121.40^{a}	159.77^{a}	7.48^{a}	55.96	9.19^{b}	4.32^{b}	2.21^{b}
Suckling		6.50^{a}	3.65	2.85^{a}	0.82^{b}	15.93	84.99^{b}	45.53	71.68	21.21	106.43^{b}	84.13^{b}	5.91^{b}	59.80	10.15^{a}	4.97^{a}	3.10^{a}
SEM		0.12	0.09	0.08	0.05	0.28	1.84	1.83	2.47	1.04	1.72	5.00	0.34	2.76	0.25	0.10	0.12
Sig.		*	NS	*	*	NS	*	NS	NS	NS	*	*	*	NS	*	*	*
Pregnancy	G1	5.94	3.58	2.36	1.02	17.08	97.00	51.35	77.20	23.70	131.00	156.00	7.75	59.65	9.06	4.00	2.15
	G2	6.13	3.37	2.76	0.93	16.00	95.00	48.00	69.00	21.30	117.20	157.00	7.25	53.63	9.20	4.40	2.30
	G3	6.38	3.24	3.14	0.86	16.10	96.70	49.70	70.00	20.35	116.00	166.30	7.45	54.60	9.30	4.55	2.18
Suckling	G1	6.40	3.84	2.56	0.86	16.58	85.67	47.30	75.00	22.33	115.00	81.40	5.85	56.30	10.05	4.50	2.95
	G2	6.60	3.60	3.00	0.83	15.62	84.30	45.00	70.35	20.30	103.00	81.70	6.05	60.00	10.10	4.95	3.25
	G3	6.50	3.50	3.00	0.76	15.60	85.00	44.30	69.70	21.00	101.30	89.30	5.83	63.10	10.30	5.45	3.10
SEM		0.24	0.18	0.16	0.10	0.56	3.68	3.66	4.94	2.08	3.44	9.98	0.68	5.52	0.50	0.21	0.24
Sig.		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

a-c: Means at the same column with different letters are significantly ($P<0.05$) different.
NS: Non-significant.

Generally, the obtained data of most serum biochemicals of does in the experimental groups are within the normal range as reported by **Kaneko (1989), Maged (2004) Sadek (2011) and Ahmed et al. (2012)** for small ruminants.

Live body weight of does:

Table (7) showed that changes in live body weight (LBW) of Zaraibi goats. The LBW of does increased to the maximum before parturition and recorded the highest values (ranged from 48.6 to 49.8 kg) then sharply decreased post- parturition to the minimum at day 90th (weaning) in all groups. The same trend was observed by **Ahmed et al. (2012)** with Zaraibi does at the late pregnancy and during the lactation period. Also, **Shehata et al. (2007)** observed that the LBW of does increased to the maximum weight before parturition (end of pregnancy) and recorded the highest values (55.7-58.8 kg), decreased during post-partum to the minimum values during suckling period, then slightly increased in during the lactation period. Similar results were observed by **El-Shinnawy et al. (2010)** with Rahmani ewes during the late pregnancy and suckling periods.

Table (7): Live body weight change (kg) of Zaraibi does during the two experimental periods.

Days	Groups		
	G1	G2	G3
Initial weight (at 90 days of pregnancy)	40.2	40.0	39.8
At 120 days of pregnancy	43.4	43.8	43.8
At 150 days of pregnancy (last month)	48.6	49.10	49.8
Weight at kidding	40.0	40.3	41.3
Weight at 30 days post kidding	38.6	38.9	39.4
Weight at 60 days post kidding	37.4	38.0	39.0
Weight at 90 days post kidding	36.3	36.8	38.1
Weight at 90 days as % of weight at kidding	90.75	91.32	92.25

Productive performance:

Data of the productive performance of Zaraibi does fed on the tested experimental rations are summarized in Table (8). The results indicated that no abortion cases happened during the late eight weeks of pregnancy. The obtained data showed that the still birth cases were noticeably higher in G1 (15%) compared with the other groups. From data in Table (8) it seems that incidence of twins parturition was high in Zaraibi does fed G3 compared with other groups, hence, the kidding rate or litter size was high too. Moreover, kidding rates were 200, 210 and

220 in G1, G2 and G3 respectively. Similar values for litter size of Zaraibi does were obtained by **Mousa (1996), Ahmed (1999)** and **Maged (2012).**

The present study indicated that does given Guar hay (G3) or Guar silage (G2) during late pregnancy period gave born kids with heavier weight at the birth and weaning (1.90, 1.67 and 10.65, 9.98 kg, respectively) compared with G1 (1.50 and 9.30 kg, respectively) and the differences were significant as shown in Table (8). Accordingly, output measured as kilograms produced per doe and economic feed efficiency were better with G3, followed by G2 and lastly G1. These positive effects may be attributed to high content of CP in Guar silage and Guar hay.

The percentage of mortality recorded the highest values in control group (30%) then G2 (23.80%) whereas mortality rate was (9.10%) in G3. Similar results were observed by **El- Hosseiny et al. (2000)** who observed that using medical herbs such as chamomile flowers in doe diets reduced mortality rate of born kids to zero during the suckling period compared with rate of 6.67 to 13.33% for other medicinal herbs.

Table (8): The effect of experimental rations on reproductive performance and economic efficiency of Zaraibi does.

Item	Experimental group		
	G1	G2	G3
Number of does	10	10	10
Does with single kids (%)	30	20	20
Does with twin kids (%)	40	50	40
Does with triple kids (%)	30	30	40
Total number of born kids	20	21	22
Litter size/doe	2	2.1	2.2
Kidding rate	200	210	220
Still birth	3	2	0
Alive kids at 0 days	17	19	22
Alive kids at 15 days	16	18	21
Alive kids at 30 days	16	18	21
Alive kids at 45 days	15	17	21
Alive kids at 60 days	14	16	20
Alive kids at 90 days	14	16	20
Average kid weight at birth (kg)	1.50 ± 0.08^{b}	1.67 ± 0.10^{ab}	1.90 ± 0.10^{a}
Average kid weight at weaning (kg)	9.30 ± 0.30^{b}	9.98 ± 0.28^{ab}	10.65 ± 0.47^{a}
Average daily gain (kg/h/d)	86.67 ± 4.40^{b}	92.33 ± 1.86^{ab}	97.22 ± 2.46^{a}
Kid crop (kg) /doe at birth	3.75±0.27	4.14±0.60	4.60±0.45
Kid crop (kg)/doe at weaning	25.62 ± 1.95^{b}	27.12 ± 2.90^{ab}	27.95 ± 2.55^{a}
Number of dead kids	6	5	2
Mortality rate of kids	30	23.80	9.10
Economic efficiency	1.85	2.35	2.55

a-b: Means at the same row with different letters are significantly (P<0.05) different.

CONCLUSION

It could be concluded that using Guar silage or Guar hay as partial replacement of concentrate feed mixture in Zaraibi does rations during late pregnancy and suckling periods had a positive impacts on improving some metabolic parameters and reproductive performance, without any adverse effect on the general health. This improvement was reflected on born kids performance and production of viable kids at weaning. This had a good economic strategy in the management of Zaraibi goat heds. Further studies are needed to evaluate the Guar forage in different forms (hay- fresh - silage) at different levels as well as with other sources of energy and feed additive with different farm animals.

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أثر تغذية الماعز الزرايبى على الجوار كسيلاج أو دريس خلال مرحلتين مختلفتين من الإنتاج على أداء الجداء حديثي الولادة وبعض قياسات الدم والتمثيل الغذائى.

محمد إبراهيم احمد، محمد التابعى الخولانى، وليد ماهر أمين صادق، احمد لولى إبراهيم دسوقى

معهد بحوث الإنتاج الحيوانى ، مركز البحوث الزراعية ، الدقى ، الجيزة ، مصر.

يهدف البحث الى دراسة تأثيرات استخدام نبات الجوار كسيلاج أو دريس في علائق الماعز الزرايبي المصرية خلال فترتى الحمل المتأخر والرضاعة على معدل نمو الجداء المولودة، وبعض قياسات الكرش والدم. كان العلف الخشن فى العلائق التجريبية 40% من سيلاج الذرة ، 30٪ سيلاج الجوار + 30٪ سيلاج الذرة ، 30٪ دريس جوار + 30٪ سيلاج الذرة (G1، G2 ، و G3 على التوالي). أوضحت النتائج أن المادة الجافة المأكولة كنسبة مئوية لوزن الجسم BW٪ و g / kgw0.75 خلال فتراة الرضاعة كانت أعلى منها خلال فترة الحمل المتأخرة في كل المجموعات. اثرت تركيز كلا من NH3-N و TVFA فى سائل الكرش معنويا بالتغذية وبرحلة الانتاج (P<0.05) . كانت مج3 الاعلى فقط فى RBC's و MCHC ومج 2 الأقل عند مستوى معنوية (P<0.05) وكانت فى فترة الحمل

المتأخر اقل من فترة الرضاعة. بينما ارتفع تركيز الجلوبيولين وانخفض تركيز الكرياتينين وALP فى مج3 عند مستوى معنوية (P<0.05). البروتين الكلى، الجلوبيولين، الكالسيوم، الفسفور والمغنسيوم كانت مرتفعة خلال فترة الرضاعة عنها خلال فترة الحمل المتأخر. وزن الميلاد والفطام ومعدل الزيادة اليومية وحاصل الجداء المولودة كانت اعلى بشكل معنوى فى مج3. بلغ معدل النفوق 30، 23.8 و 9.1% فى مج1، مج2 و مج3 على التوالى. كانت قيمة العائد الاقتصادى 1.85، 2.35 و 2.55 فى مج1، مج2 و مج3 على التوالى.

الخلاصة، ان الاستبدال الجزئى للعلف المركز باستخدام سيلاج الجوار أو دريس الجوار في علائق الماعز الزرابي خلال فترتى الحمل المتأخر والرضاعة كان له اثر ايجابى انعكس على أداء الجداء المولودة والمفطومه . مما كان له مردود اقتصادي جيد على قطيع الماعز الزرابي.