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Performance of Kids Fed Berseem Silage Alone or Mixed with Barely,Napier Grass or Rod Grass.

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ABSTRACT

This study was conducted to investigate the growth performance, of fattening kids fed berseem silage alone or mixed with either , barley, hybrid Napier grass or Rod grass .Thirty-two growing Zaraibi kids of four months age and averaged 13.19 kg live body weight were used to this study.The animals were distributed on four feeding treatments (8 heads each),were used in this study .The experiment included two stages. The first stage represents a growing period 140 days ,during which the kids were fed concentrate feed mixture (CFM) to cover 50 % of protein requirements recommended by NRC(1989).In addition to *ad libitum* silage supplement, where (100 % berseem silage) was offered to group1(G_1),(50 % berseem+50 %barley silage) to group 2 (G_2),(50% berseem+50% hybrid Napier grass silage) to group 3(G_3) and (50% berseem+50% Rod grass silage) to group 4 (G4).Second stage the (finishing period 60 days) all experimental groups were fed 60% concentrate feed mixture (CFM)+ 20% berseem hay+20% rice straw. The results showed that , during the first stage (growing period of 140 days) the substitution of mixture of Rod grass x berseem silage G4) and hybrid Napeir grass x berseem silage(G3) significantly ($p < 0.05$) increased live body weight , body weight gain , protein and energy efficiency ratios compared with kids fed other dietary treatment groups. Moreover, final body weight (finishing period 60 days) the kids fed G4 and G3 rations were significantly ($p<0.05$) higher than those fed others tested rations. While feed intake as well as (DM , CP ,TDN ,DCP, protein and energy) were significantly ($p<0.05$) higher for kids fed control (G1) followed by those fed barely x berseem silage ration (G2) than kids fed Rod grass x berseem silage(G4)and hybrid Napeir grass x berseem silage(G3).However feed conversion ratio was the best for Rod grass x berseem silage(G4)followed by hybrid Napeir grass x berseem silage(G3). Meanwhile , the results illustrated that kids fed Rod grass x berseem silage (G4) improved ($p<0.05$) most nutrients digestibility and feeding values as TDN and DCP compared with other tested rations .The average daily feed intake by kids fed control and barely rations during growing period were significantly ($p <0.05$) higher than others . Average daily feed intake by kids during finishing period showed that kids fed control (G1) and barely x berseem silage(G2) had the highest DM intake . However, kids fed ration contained Rod grass x berseem silage (G4) and hybrid Napier grass x berseem silage(G3)showed the lowest DM intake. It could be concluded that Rod grass mixing with berseem silage(G4) , hybrid Napier grass with berseem silage(G3) and barely with berseem silage(G2) as silages in growing kids nutrition led to improve digestibility of most nutrients, increase daily gain , feed conversion and higher economic return and economic efficiency during the whole fattening period .

Keywords: Zaribi kids, berseem silage ,hybrid napier grass silage, barley silage , and rod grass , growth performance ,fattening.

INTRODUCTION

Berseem silage one of the important feed for animal and it commonly used not in Egypt but overall the world for performance and lactating animals nutrition particularly for small animals as well as (sheep and goats) and large animals as (cattle ,beef cattle and camels). Silages can be used for lambs and kids production together with concentrate feed mixture(CFM).Live weight gains were high in kids fed only silage diets and inclusion of CFM to the diet led to good responses in production parameters Shahzad *et al*. (2011).Feeding lambs with Rye grass ensiled x berseem increased silage consumption and caused more growth performance Salem *et al*.(2012) In some studies no improvement was observes even with improved silage quality karteien (2014).Many research papers published on the effects of feeding of goats and sheep performance and meat quality, on the other side there are some available data on comparing grass as silage or hay with cereal for feeding of lambs and kids. Grass is moderately appropriate for silage making due to the poor carbohydrate content .It is reported that hay or grass silage use as forage source did not affect live weight gain .Therefore forages as legume and grasses are an important forage source for ruminants in many parts of the world and it can be offered freshly to animals, or preserved as hay and silage Brandly *et al* ,. (2012) .The most areas of our country specially in east and northeast regions of Egypt are rich in terms of rangeland. In these parts, common use of hay from grass , however silage making in this area with high amounts. Produced hay or grass silage in these areas is used commonly in feeding of goats , sheep and cattle.

The aim of this study was to estimating the effect of using different silage mixtures with berseem grass silage, as (barley, hybrid Napier grass and Rod grass) as equivalent mixes of grass with berseem silage ,on growth performance and economic efficiency in zaribi kids.

MATERIALS AND METHODS

Experimental design and animals and their feeding

32 kid's zaribi goats, aged 4 months old and average initial body weight 13.19 kg were used in this study. Animals were distributed on four feeding treatments (8 each).Each group was housed in separate pens under similar condition. Animals were weighed at the beginning of the experiment and at biweekly intervals thereafter. The experiment is consists of two stages. The first stage represents (growing period for 140 days) during which the kids were fed concentrate feed mixture (CFM) to cover 50% of protein requirements recommended by NRC(1981).In addition to *ad libitum* silage supplement,where berseem silage alone was offered group1(G_1),silage (50% berseem+50 % barley) group 2 (G_2),(50 % silage berseem + 50% hybrid napier grass silage) group 3 (G_3) and silage made of (50 % berseem + 50% Rod grass) group 4 (G4),all rations on DM bases respectively. Second stage (finishing period for 60 days),the corresponding kids were fed 60% concentrate feed mixture(CFM)+20 % berseem hay+20% rice straw for all experimental

groups. All animals in this study were subjected to 10 days as adaptation period before the starting of the study .CEM and silage were given twice a day(8 am and 4 pm) while water was available all day during the study .

Ensiling making

The forages as well as (berseem or its mixtures , barely , hybrid Napier grass and Rode grass) was sun dried for 48 hrs to reach a moisture content of about 65 - 70% and chopped (10-15 cm) by a chopper machine before ensiling to reduce the moisture content to about 70%, then mixed with rice straw (4:1) on dry matter basis. Ensiling was done using white plastic bag .The ensiling lasted for 8 weeks then samples were taken to test for the physical and fermentative characteristics.Feed intake and feces were recorded daily ,The chemical analysis of CFM and different types of silages are presented in Table (1) .

Silage quality

Quality tests for silage was determined as following , the silage was extract and prepared by homogenizing 20 gram fresh material with (100 ml distilled water) then blending for 10 minutes Schultz (1996) .The homogenized sample was filtered through a double layer cheese cloth then the solution was (re-filtrated) through a filter paper until it becomes perfectly clear. The pH value was directly determined using digital pH meter. Water extracts were mixed with (25% meta-phosphoric acid. Lactic acid concentration was determined by titration with 0.1 N sodium hydroxide solution using 0.5 ml of phenolphthalein indicator) , according to Analytical Chemistry of Foods (1995). proportion of TVFA'S as well as (acetic, propionic, butyric and valeric acid) were determined according to Rusel *et al* .,(1999),natural detergent fiber and acid detergent fiber were determined according to Van Soest *et al*. (1991).Silage quality is shown in Table (2)

Live body weight and growth performance

Live weights of the animals were recorded at the beginning of the study (zero day) and every week throughout the study. They were weighed individually before the morning feed .Average daily live weight gain of animals in the each group was recorded. Concentrate and forage intakes were determined for each group. All of the offered concentrates were consumed by the animals in all groups through the study .The net forage intake in each group was determined for each groups by subtracting the remaining forage from the offered forage. Total feed intake of animals was converted to dry matter basis, and feed efficiency was calculated by dividing average daily feed intake to average daily weight gain.

Digestibility trials

Four digestibility trials were conducted to determine nutrients digestibility coefficients and nutritive values of the experimental rations .Samples of feces and urine were taken daily from three animal with 24 hours interval during the collection period .The samples of rations and feces were composted and representative samples were analyzed according to A.O.A.C.(2000) .

Rumen fluid samples and analysis

At the end of the study rumen liquor samples were collected from three animals before feeding (0 time) , 4 and 8 hrs post feeding . Rumen fluid samples were taken from 3 kids of each experimental group using stomach tube before feeding (0 time) and 4 and 8 hrs post feeding .The samples were filtered through3 layers of gauze and immediately subjected to the determination of pH value of the rumen fluids were immediately measured by a pH meter according to the methods of McDonald (2007) Then, rumen fluid filtered through four layers cheesecloth. Approximately 7- 8 ml filtered rumen fluid was transferred to a tube and 3-4 drop concentrated H2SO4 was added on rumen fluid. After then, the tube was mixed and stored at (- 4 °C) until the process of analysis .The remaining part of rumen fluid was centrifuged 3000 g for 15 minutes and 4 ml supernatant was transferred to a tube and 1 ml 25% methaphosphoric acid was added on and mixed, then stored at-20°C for determination of NH3 N concentration was made according to modified (Kjeldal method) Bolsen, *et al* .(1976) .

Blood samples and serum parameters

The end of the study, blood samples were taken from the jugular from each animal. Blood samples were centrifuged at 3000 g for 15 minutes. Serum samples were transferred to a tube and they were stored at (-20°C) for analyses. Blood biochemistry analysis including the measurement of glucose, total protein and albumin. Concentration of blood serum parameters were analyzed using the commercial kits.

Nitrogen balance

Samples of feces and urine were collected daily up to seven successive days representatively. After feces collection samples were dried then, mixed and kept for chemical analysis. Nitrogen was d determined in rations , feces and urine according to A.O. A.C. (2000) .

Economics feed efficiency

Economic efficiency was calculated on bases of selling income of body weight gain(BWG)-cost of feed intake as following : -

Income over feed cost (LE) = {(body weight gain(kg)x price of kg gain (LE) - total feed cost (LE) Aboul Ella (2000) ,where price of - One ton CFM = 3000 LE , rice straw=100 LE/ ton , berseem silage =200 LE/ ton, barely grass=200 LE/ ton , hybrid Napier silage = 200 LE / ton , rod grass =180 LE/ton , live body weight = 35 LE /kg , body weight as the dominant market price in this period) .

Statistical analysis

Data were statistical analyzed by general liner , model using ANOVA procedures of SAS (2003) . The significance among treatments means were detected by Duncan's multiple range tests (1955).

RESULTS AND DISCUSSION

Chemical analysis

Data of chemical composition of different types of silage mixed with berseem as well as (barley ,hybrid napery grass and Rod grass compared with berseem silage alone are presented in Table (1).The results revealed that barely grass (G2) , hybrid napier grass(G3) and Rod grass (G4) rations, rich in CP content (14.22 ,14.21 and 14.64 respectively) compared with control group(14.01). Moreover , G4 ration had lower values of crud fiber, nitrogen free extract and no fiber carbohydrate(NFC)

(24.79, 44.67 and 26.24 respectively) whereas , ether extract and ash were the highest values (3.35 and 12.55 respectively) than those of G1 ration (3.15, and 10.25 respectively) , G2 ration (3.07 and 10.25 respectively) and G3 rations (2.41 and 12.00 respectively).Generally the chemical composition of barley, hybrid napier grass and Rod grass may be considered as a preliminary indication to their feeding values, as an alternative or new alternative ingredients plant protein sources in goats diet .It may be used to resolving the shortage of animal nutrition in Egypt .These results are in agreement with those obtained by Zenkolwa et al .(2007), who showed that Rod grass contains 17% CP ,3% EE , 24% CF , 12 % ash and 45 % NFE. The results of this study showed clearly that chemical composition of T1 ration contained the highest value of NDF, ADL (44.17 and 10.16 % respectively) than others .The hybrid napier grass contained higher NDF and ADF (43.22 and 34.61 , respectively) than other experimental rations. As same time , the fattening diet was higher in DM , OM and NFE (90.47 , 91.55 and 57.03) But , it was lower in CF , EE, Ash , NDF , ADF , ADL and NFC(18.93,8.45, 41.54,32.42 , 3.61 and 34.42 respectively).This results are agreement with those obtained by Damilan et al. (2000) who reported that CP of Rod grass silage was 14.31- 16.45%. and berseem silage(BS) had 14.70 % of CP. The significantly different CP content of forage depended on morphological status and plant age Bilal et al. (2001).

Table 1 . Chemical composition of tested Ingredients and Rations(% on DM basis).

Rations					Ingredients						
Fattening diet	G4	G3	G2	G1	RS	Rod grass	Naper hybrid	Barely	BH	EB	CFM*	Items
90.47	87.46	88.63	86.15	91.00	89.13	86,49	88.16	89.22	88.93	88.56	90.27	DM
Chemical analysis (% on DM basis)												
91.55	87.45	88.00	89.75	89.95	88.65	90.37	89.77	88.70	89.36	88.58	89.70	OM
18.93	24.79	26.01	25.13	27.50	28.31	28.74	30.21	29.35	26.14	25.14	12.50	CF
12.73	14.64	14.21	14.22	14.01	1.36	16.70	15.36	13.75	14.51	13.16	13.79	CP
2.86	3.35	2.41	3.07	3.15	1.45	3.49	3.88	2.57	2,48	2.59	2.80	EE
57.03	44.67	45.37	47.33	45.29	57.53	41.44	40.32	43.03	46.13	47.69	60.61	NFE
8.45	12.55	12.00	10.25	10.05	11.35	9. 63	10.23	11.30	10.64	11.42	10.30	Ash
Celluloses fractionation												
41.54	43.22	42.97	41.99	44.17	NDF							
32.42	34.61	33.78	32.47	33.47	ADF							
7.61	7.90	8.82	9.76	10.16	ADL							
9.12	8.90	9.19	9.52	10.70	Hemicelluloses							
24.81	25.71	24.96	22.71	23.31	Cellulose							
34.42	26.24	28.41	30.47	28.63	**NFC							
58.46	56.78	57.03	58.01	55.83	***NDS							
7.59	8.20	9.10	9.84	10.77	****UNDF							
33.95	35.02	33.87	32.15	33.40	*****ANDF							

***Concentrate feed mixture (CFM) consists of 36% yellow corn, 30% undecortecated cotton seed, 27% wheat bran, 3.0% molasses, 2.5 % limestone, 1% common salt and 0.5% minerals mixture.**
**** Non fibrous carbohydrate % (NFC) = 100- (CP%+EE%+ASH%+NDF%) , (Calsamiglia *et al.*, 1995).**
***** NDS : Neutral detergent soluble = 100 – NDF**
******UNDF: Unavailable NDF = NDF X 0.01 X ADL X 2.4 (Fox *et al* ., 2000) . ***** ANDF : Available NDF = ADF – UNDF .**

Silage quality

Results in Table (2) showed , no marked differences between the three experimental treatments for pH but , addition to , G4 ration was higher values of lactic acid and total acidity (6.33 and 29.93) than those of G3 ration(6.19 and 29.68) , G2 ration (6.17 and 28.19) whereas the lowest values with G1 ration (6.03 and 27.92) respectively .On the other hand ,The lowest values of acetic acid ,butyric acid , ammonia and Total TVFA's were recorded with G4 ration (2.18, 0.24, 0.17and 18.86 ,respectively) than those of G1 ration(2.61, 0.39 , 0.23 and 22.55) , G2 ration (2.29,0.41, 0.22 and 19.92) G3 ration .These results are in agreement with that reported by salam (2006) , who indicated that the ensilage can preserve feed and improve its feeding value .

Feed intake and water consumption

The daily dry matter intake (DMI) decreased linearly (P<0.05) with the addition of Rod grass silage and hybrid Napier grass Table (3).The lowest daily DMI was recorded for kids fed G4 diet (1146) followed by those given G3 diet(1171) than those G1(1233) and G2 (1191) .On the other side DM intake and CP intake were significantly (p<0.05) higher within G1 ration (9.06 and 172.74 respectively) followed by G2 (8.15 and 169.36) than others and the lowest values were recorded with G3 (7.10 and 166.40) and G4 (6.53 and 167.77) respectively .This could be due to more characters and increase of exactly feed compensates of mixed silage with berseem . and dry matter intake (DMI) of the Rod grass silage and hybrid Napier grass which had high amount of fermentable carbohydrates. and energy, which had increased the digestibility of the silages.

Table 2 . Anaerobic fermentation of silage quality (berseem , barely , napier grass and Rod grass of kids fed tested rations

Items	T1	T2	T3	T4
pH value	4.21	4.28	4.36	4.07
Lactic acid % DM	6.03^{B}	6.17^{B}	6.19^{A}	6.33^{A}
Acetic acid % DM	2.61^{A}	2.29^{B}	2.43^{B}	2.18^{B}
Butyric acid % DM	0.39^{A}	0.41^{A}	0.32^{B}	0.24^{B}
Ammonia % DM	0.23^{A}	0.22^{A}	0.18^{B}	0.17^{B}
Total acidity(ml in NaOH/100 g)	27.92^{B}	28.19^{A}	29.68^{A}	29.93^{A}

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

The average daily water consumption of kids of Zaraibi goats fed the tested experimental rations is summarized in Table (3).The differences among the four groups in water consumption (L/h and ml/ $kgw^{0.82}$) were noticeable. However, the highest value of daily water consumption (ml/g DM intake) was recorded G_1 (3.87) followed by G_2 (3.45) and G_3(3.23) while G_4 recorded the lowest value (3.09). Generally, the quantity of daily water consumption in the 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).

Table 3 . Average feed intake , water consumption and feed conversion ratio through the growing period .

Items	Experimental groups (on DM% bases)			
	G_1	G_2	G_3	G_4
Daily DM intake through growing period				
Concentrate (CFM) , g/h/d	549	538	544	542
silage , g/h/d	684	653	627	604
Total DM intake g /h/d,	1233 ^{A}	1191 ^{A}	1171 ^{B}	1146 ^{B}
Kg DM intake/ kg gain	9.06 ^{A}	8.15 ^{A}	7.10 ^{B}	6.53 ^{B}
CP intake , g / h / d	172.74 ^{A}	169.36 ^{A}	166.40 ^{B}	167.77 ^{B}
Daily water consumption				
L / h / d	3.87 ^{A}	3.45 ^{A}	3.23 ^{B}	3.09 ^{B}
Ml/ kg BW	118.17 ^{A}	101.80 ^{A}	89.55 ^{B}	80.71 ^{B}
Ml/ g DM intake	3.14	2.90	2.76	2.63
Feed conversion ratio(FCR)	9.04 ^{A}	8.15 ^{B}	7.09 ^{B}	6.53 ^{B}

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

Growth performance (growing period)

Results in Table (4). Showed higher values of total body weight and daily weight gain of kids fed G4 ration had significantly ($p < 0.05$) higher (24.57 and 175.5) followed by hybrid G3(23.11 and 165.07) in comparison of G1(19.06 and 136.14) and G2 (20.47 and 146.21)respectively. On the other hand TDN and DCP g/h/d were significantly ($p<0.05$) lower within G3 ration (749 and 114.52 respectively) respectively and the highest values were recorded with G1 (773 and 117.38) than others .On the other side, the obtain results illustrated that higher feed conversion ratio was recorded with ration containing Rod grass (G4) followed by that containing G2 and G3 rations compared with the control diet . Moreover, the rate of degradation and clearance of digestibility from the rumen Diawati (2005) reported that higher DMI might be due to a better availability of nutrients which are readily been degraded by rumen microbes. Inclusion of berseem silage to the grass silage had a positive effect on feed intake as observed by polvier *et al*. (2003) reported that the DMI of lambs and kids increased as the inclusion level of Rod grass silage in the diet .This is due to high moisture and NDF content of the silage which physically restricts DMI .

Growth performance (finishing period)

Data of average feed intake and average growth performance during finishing period as well as feed conversion efficiency of the Zaraibi kids are summarized in Table (5).The results illustrated that the during finishing period(60 days) that kids fed G4 contain (Ray grass) had lower value of dry matter intake (1393 g/h/d) in comparison of G1 ration (1393 g/h/d) , G2 ration (1391 g/h/d) and G3 ration (1389 g/h/d) .

Table 4 . Feed conversion of growing zaribi kids fed the experimental rations.

Items	Groups			
	G_1	G_2	G_3	G_4
No . of animals	8	8	8	8
Growing period				
Duration , day	140	140	140	140
Initial body weight , kg	13.69	13.42	12.96	12.71
Final body weight , kg	32.75 ^{B}	33.89 ^{B}	36.07 ^{A}	37.28 ^{A}
Total body weight gain, kg	19.06 ^{B}	20.47 ^{B}	23.11 ^{A}	24.57 ^{A}
Daily body weight gain, kg	136.14 ^{B}	146.21 ^{B}	165.07 ^{A}	175.50 ^{A}
Metabolic body size, $w^{0.75}$	13.69	14.06	14.72	15.09
Feed conversion				
Total TDN , intake g /h/d	773 ^{A}	753 ^{B}	749 ^{B}	750 ^{B}
g CP / kg gain	1269 ^{A}	1158 ^{A}	1008 ^{B}	956 ^{B}
Total DCP g /h/d	117.38 ^{B}	116.36 ^{B}	114.52 ^{A}	120.10 ^{A}
Kg TDN/ kg gain	5.68 ^{A}	5.15 ^{B}	4. 54 ^{B}	4.28 ^{B}
g DCP / kg gain	0.862 ^{A}	0.796 ^{B}	0.700 ^{B}	0.684 ^{B}
Feed efficiency				
DDM *	29.49	28.61	29.77	30.50
NE (MJ / kg) **	0.312	0.320	0.303	0.325
NED (Mcal /kg)***	1.31	1.34	1.27	1.36

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

*** DDM : Digestion dry matter % of DM = 88.9 - 0.779 X(ADF % of DM) (Schroeder ,1996)**

**** NE : Net energy(M J /kg) = TDN % X 0.0245) - 0.12/ 4.184 (NRC, 2001)**

*****NED (Mcal /kg)=(TDN%) X(0.0245) – 0.12 (NRC 2001) .**

Table 5 . Feed utilization of growing zaribi kids fed tested ration during finishing experimental period.

Items	Groups			
	G_1	G_2	G_3	G_4
Finishing period (60 day)				
No. animal	8	8	8	8
Initial body weight , kg	32.75 ^{B}	33.89 ^{B}	36.07 ^{A}	37.28 ^{A}
Final body weight , kg	42.96 ^{B}	41.55 ^{B}	45.29 ^{A}	46.95 ^{A}
Total body weight gain, kg	10.21 ^{A}	7.66 ^{B}	9.22 ^{A}	9.67 ^{A}
Daily body weight gain, g	170.17 ^{A}	127.67 ^{B}	153.67 ^{A}	161.17 ^{A}
Metabolic body size, $w^{0.75}$	16.78	16.37	17.46	17.94
Concentrate (CFM) , g/h/d	845	837	840	832
Berseem hay ,	275	280	271	270
Rice straw , g/h/d	273	274	278	276
Total DM intake km /h/d	1393 ^{A}	1391 ^{A}	1389 ^{A}	1378 ^{B}
Total TDN g/ h /d	905.59 ^{A}	904.29 ^{A}	902.99 ^{A}	895.84 ^{B}
Protein intake g/ h /d	148.77 ^{B}	145.50 ^{A}	147.49 ^{B}	137.92 ^{B}
Total DCP g / h /d	103.30 ^{B}	100.98 ^{A}	102.36 ^{B}	95.71 ^{B}
Feed conversion				
Kg DM / kg gain	6.87	8.95	7.54	6.72
Kg TDN/ kg gain	4.81	6.82	5.07	4.64
Kg DCP / kg gain	0.610	0.791	0.666	0.594

A and BMeans in the same row with different superscripts differ significantly at P < 0.05 .

Fortunately, protein intake and DCP linearly with same trend of DMI. Moreover, kids fed G_1 during the finishing period some compensatory growth after feeding on berseem forage during the growing period .The final body weight, body weight gain and daily

body weight gain of kids fed ration contained G4 was significantly ($p<0.05$) higher (46.95, 9.67 and 161.17) than those fed,G3(45.29, 9.22 and 153.67) ,G2 (41.55, 7.66 and 127.67)) and control ration (42.96, 10.21 and 170 17) respectively. As feed conversion expressed as kg DM, TDN and DCP per kg gain for kids fed G2 showed the highest feed efficiency(8.95, 6.82 and 0.791) for DM, TDN and DCP and G3 (7.54, 5.07 and 0.594) Also, the results obtained revealed that animal fed G4 showed the best feed conversion (6.72 , 4.64 AND 0.594 respectively), which might be due to this group gave the highest values daily gain and the lowest TDN and DCP of daily feed intake .ON the other hand , G2 ration showed the lowest values of daily gain with the highest TDN and DCP intake .

Growth performance overall period

Data present in Table (6).Clearly that total body weight and average daily gain were the highest values with animal fed G4 ration being (46.95 kg and 171.20 g) followed by G3 ration (45.29 kg and 161.65 g) , whereas , G2 ration was moderately (42.96 kg and 147.70 g) respectively . On the other side the lowest values had detected with animals fed G1(41.55 and 139.5).Generally, animal fed G4 and G3 appeared to have lower feed conversion than those fed control ration .This results are in agreement with those reported by Abdel-Rahman *et al*.(2001) who found that growth performance and feed conversion of legume x grass mixture was bitter than legume or grass alone. Eymanoel (2010). showed that Naper grass is palatable forage when fed to buffalo, steers and cows either alone or with concentrate . Murphy *et a*l . (1994) found that the average daily weight gain was greater for lambs fed 100% concentrate compared with lambs grazed Ray grass or Rod grass.

Table 6 . Feed utilization efficiency by growing zaribi kids fed the four tested rations overall the experimental period .

Items	G_1	G_2	G_3	G_4
Whole period (200 day)				
No. of animals	8	8	8	8
Initial body weight , kg	13.65	13.42	12.96	12.71
Final body weight , kg	41.55 ^{B}	42.96 ^{B}	45.29 ^{A}	46.95 ^{A}
Total body weight gain, kg	27.90 ^{B}	29.54 ^{B}	32.33 ^{A}	34.24 ^{A}
Daily body weight gain, g	139.5 ^{B}	147.70 ^{B}	161.65 ^{A}	171.2 ^{A}
Concentrate (CFM) , g/h/d	638	628	633	629
Silages , g/h/d	684 ^{A}	653 ^{A}	627 ^{A}	604 ^{B}
Berseem hay ,	275	280	271	270
Rice straw, g/h/d	273	274	278	276
Av. DM intake g /h/d (overall)	1870 ^{A}	1835 ^{B}	1808 ^{B}	1779 ^{B}
Total TDN intake ,g/h/d (overall period)	815.41 ^{A}	782.34 ^{B}	795.26 ^{B}	793.87 ^{B}
Total DCP intake , g / h/ d (overall period)	238.2 ^{A}	236.6 ^{B}	234.0 ^{B}	241.2 ^{A}

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

In addition to data presented was demonstrated clearly that average daily feed intake , Total TDN and DCP intake , g / h/ d (overall period) were higher with kids fed G1(1870, 815.41 and 238.3 respectively) and G2 (1835, 782.34 and 236.6 respectively) than those fed G3 (1808,795.26 and 234.0 respectively) whereas the lowest values with G4 (1879and 793.87) for DM and TDN respectively , except of DCP intake was significantly($p<0.05$) higher than those fed the other rations .

Digestion coefficients and nutritive values

The effect of experimental diets on nutrient digestibility is shown in Table (7). The apparent digestibility of DM , OM, CP,CF, EE,NFE ,NDF and ADF were significantly different among the treatments. The nutrient digestibility increased linearly with addition of hybrid Napier grass rations (G_3) the values were (67.39, 69.02,68.83,69.85,71.95 and 70.80 respectively) and G_4 (66.45, 68.79, 71.59, 70.61, 73.17 and 71.55 respectively) .Than G1 (63.31, 66.06, 67.93 , 65.71,67.88 and 66.90 respectively) addition to , G2 ration (62.31, 65.89, 68.72, 66.39 .69.84 and 67.52 respectively) and the values as same trend . On the other side finishing diets was recorded the next values(68.19,70.33,69.40,64.98,72.25 and 68.77 respectively) Similarly was obtained by Juniper *et al*. (2005).This results may be back to that G_4 ration(Rod grass) and G_3 ration(Napier grass) had content of structural carbohydrate in silage it more susceptible to rumen microbial degradation compared to barely grass (G_2) and berseem silage (G_1). Also, this is probably due to the physical and chemical constituents of combined rations . The apparent digestibility of CP also increased linearly with the substitution of Rod grass (G4)and (G3).This might be due to high uptake of nitrogen content in the diet Hunt *et al*. (1988). On the otherside , Truswbil (2005) stated that no significant difference was observed in the digestibility of NDF and ADF of goats fed Rod grass and hybrid Napier grass silage to the berseem silage . However, the highest NDF and ADF digestibility were recorded the highest value with inclusion berseem in basal diet and decreased when berseem mixed with Rod grass on the form of silage. Nutritive values as TDN and CDP were significantly differences among treatments , so the lowest nutritive values were recorded with G1 ration (62.72 and 9.52) and G4 significantly ($p<0.05$) higher (65.51 and 10.48) compared with G2 (63.21 and 9.77),G3(59.97 and 9.78) and finishing ration values (64.33 and 8.85 respectively.

Table 7 . Effect of dietary treatments on nutrient digestibility in growing zaribi kids

Items	G_1	G_2	G_3	G_4	finishing
DM	63.31 ^{B}	62.31 ^{B}	67.39 ^{A}	66.45 ^{A}	68.19 ^{A}
OM	66.06 ^{B}	65.89 ^{B}	69.02 ^{A}	68.79 ^{A}	70.33 ^{A}
CP	67.93 ^{B}	68.72 ^{A}	68.83 ^{A}	71.59 ^{A}	69.40 ^{A}
CF	65.71 ^{B}	66.39 ^{B}	69.85 ^{A}	70.61 ^{A}	64.98 ^{B}
EE	67.88 ^{B}	69.84 ^{B}	71.95 ^{A}	73.17 ^{A}	72.25 ^{A}
NFE	66.90 ^{B}	67.52 ^{B}	70.80 ^{A}	71.55	68.77 ^{B}
			Nutritive values		
NDF	61.33	55.20	52.99	60.45	57.41
ADF	53.12	47.87	43.83	52.13	49.91
TDN	62.72	63.21	59.97	65.51	64.33
DCP	9.52	9.77	9.78	10.48	8.85

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

Nitrogen balance

Results of nitrogen balance Table (8) showed that dietary nitrogen balance (% N-balance of N intake) recorded significantly ($P< 0.05$) increase for G4 ration which contained ray grass (51.59) followed by G1 ration

(45.55) than the three other rations G3 ration (44.86) , the lowest value had detected with G2 ration (42.04) .The result was in agreement with the finding of Saleh *et al*. (2007).

Table 8. Nitrogen balance of growing zaribi kids fed the four tested rations overall Period .

Items	G_1	G_2	G_3	G_4
Av. CP intake g/h/d(overall)	174.16 ^{A}	171.67 ^{A}	169.53 ^{B}	170.07 ^{B}
Nitrogen intake g/h/d	27.87	27.47	27.13	27.21
NI g / kg LBW	0.671	0.639	0.599	0.580
NI g / kg BWG	0.200	0.186	0.166	0.160
Fèces nitrogène (FN) g	5.78	4.56	5.35	4.19
Urine nitrogène (UN) g	3.71	4.68	3.52	3.79
Total nitrogène excrétion(NE),g	8.49 ^{A}	9.24 ^{A}	8.78 ^{B}	7.98 ^{B}
Digestion nitrogène DN g/ kg BW	12.59	11.19	12.04	13.98
NB %	69.54 ^{B}	66.36 ^{B}	67.64 ^{B}	70.76 ^{A}

A and B Means in the same row with different superscripts differ significantly at P < 0.05 .

Rumen Ammonia and total nitrogen

Ammonia and total nitrogen of rumen are presented in Table (9) .The results of ruminal ammonia nitrogen and total nitrogen there is not significantly observed among all four experimental treatments at zero time and was significantly (P<0.05) lower with G_1 and G_2 than of hybrid napier grass silage (G_3) and (G_4) at 4 and 8 hrs post-feeding. But, G_3 recorded the moderate values .This positive effect of mixture silage on ruminal ammonia and nitrogen intake was observed also by Mansour *et al*. (2014) in the rumen of bucks, lambs and lactating does, respectively. On the other hand the overall mean values were gradually decreased to reach the lowest values at 8 h post feeding .It is interest to note that TN were higher 8h post feeding more than 4h post feeding .

Table 9. Effect of experimental rations on rumen activities of growing zaribi kids

Parameters	Time	Experimental rations				0verall
		G_1	G_2	G_3	G_4	mean
Ammonia	0	38.54 ^{B}	43.87 ^{B}	50.91 ^{A}	56.25 ^{A}	47.39
nitrogen	4	44.76 ^{B}	48.93A ^{B}	55.67 ^{A}	60.37 ^{A}	52.43
(mg/dL)	8	41.78 ^{B}	45.87 ^{B}	53.79 ^{A}	56.73 ^{A}	49.54
Total	0	156.0 ^{A}	150.0 ^{B}	154.0 ^{B}	161.0 ^{A}	155.25
Nitrogen	4	163.0 ^{A}	165.0 ^{B}	174.0 ^{B}	176.0 ^{A}	188.00
(mg /100ml)	8	176.0^{B}	185.0^{A}	191.0 ^{A}	192.0 ^{A}	182.50

A and B Means in the same row with different superscripts differ significantly at P < 0.05

Economic efficiency

Data in Table (10) showed that the total feed cost of rations of overall period tended to be lower with berseem mixtures particularly ration contained berseem (G1) was higher of feed coast (4.62 LE) while rations contained Rod grass had lowest feed coast (4.53 LE) .As same time , G1 and G2 moderately values (4.57 and 4.58 respectively) .

Table 10 . Feed cost and economic efficiency of the experimental rations (on bases of feed intake).

Items	Experimental rations			
	G_1	G_2	G_3	G_4
Growing period 140 days				
Intake Kg / h				
Concentrate feed mixture , kg	549	538	544	542
Silage , kg	684	653	627	604
Total feed cost / h , LE	1.78 ^{A}	1.75^{B}	1.76^{B}	1.74^{B}
Daily body weight gain, kg	136.14 ^{B}	146.21 ^{B}	165.07 ^{A}	175.50 ^{A}
Price of daily weight gain LE	4.76	5.12	5.18	6.14
Economic return , (LE)	2.98	3.37	3.42	3.54
Economic efficiency %	-	13.1	14.77	18.80
Finishing period 60 days				
Intake Kg / h				
Concentrate (CFM) , g/h/d	845	837	840	832
Berseem hay ,	275	280	271	270
Rice straw , g/h/d	273	274	278	276
Total feed cost / h , LE	2.84	2.82	2.82	2.79
Daily body weight gain, g	170.17 ^{A}	127.67 ^{B}	153.67 ^{A}	161.17^{A}
Price of daily weight gain , kg	5.96	4.47	5.38	5.64
Economic return , (LE)	3.12	1.65	2.66	2.85
Economic efficiency %	-	4.70	17.95	8.65
Whole stages (200 day)				
Feed Intake Kg/ h				
Concentrate feed mixture , kg	638	628	633	629
Silage , kg	684 ^{A}	653 ^{A}	627 ^{A}	604 ^{B}
Berseem hay , kg	275	280	271	270
Rice straw , g/h/d	273	274	278	276
Total feed cost / h /d , LE	4.62	4.57	4.58	4.53
Price of body weight gain , kg	10.72	9.59	10.56	11.78
Economic return , (LE)	6.10	5.02	5.98	7.25
Economic efficiency %	-	1.78	1.97	15.86

A and B Means having different superscripts within the same row are significantly different (P<0.05) .

- Market price of CFM = 3000 LE/ ton , rice straw=100 LE/ ton , berseem silage 200LE/ ton, barley silage = 200 LE / ton , hybrid Napier silage = 200 LE/ ton , rod grass =180 LE/ton , live body weight = 35 LE/kg , (as the dominant market price in this period) .

Meanwhile , price of body weight gain / kg gave the lowest value with G2 ration (9.59 LE) whereas ,the highest was in G4 ration (11.78 LE) than other experimental groups Moreover , Economic efficiency % was higher with G4(15.86).and the lowest value with G3 (1.97).Also the economic efficiency recorded the same previous trend, showing higher economic efficiency with animal fed rations containing the respectively, giving (1.78 ,1.97 and 15.86) for G2, G3 and G4 respectively. Generally , using barley , hybrid Naper and Rod grass with berseem on the form of silage were better than use berseem silage alone because it tended to have higher daily gain , improved feed utilization efficiency and lend to lower cost of feeding to get one kg gain as well as economic efficiency.

CONCLUSION

In this study the showed that different four mixture silage containing average 250 – 320 g / kg DM of starch was superior of high quality grass silage in terms of forage intake and growth performance. The results are in agreement with those of previous studies , that Rodgrass and hybrid Napier silages with a good level of starch has the potential to increase forage intake and body weight gain (growth performance) when partial inclusion of good quality grass silage in the diet of growing goats. However, in this study there was further advantage in body weight to including silage of Rod grass and hybrid Napier silages with a berseem silage and feed efficiency was reduced. The growing kids in this study showed high body weight gain and may be as responsive to additional starch in the forage as goats producing more meat. However, there was slightly difference in the DM digestibility of the total diets. The results of this study indicate that all experimental silages used in this study had a good forage for growth performance and high daily gain. These results are agree with those obtained by Khatab (2013), who demonstrated that the partially replacement berseem by grasses reduced the cost of concentrate mixture components of goats and sheep diets by 25% .

REFFERENCES

Abdel-Rahman, H.; G.A.Baraghit ;s.s.Omar and O.f.Komona (2001).growth performance nutritive value , nitrogen balance , some rumen and blood parameters of Ossimi lambs fed either berseem, rye grass or their mixture .Egyptian J.Nutrition and feeds,4(Special Issue) 155-166.

Aboul Ella , A.A.(2000). Mathematical programing models applied to feed formul -ation for ruminants .Ph.D.Thesis in animal Nutrition, Faculty of Agrriculture, Ain-Shms, University ,Shubra El-Khe, Cairo Egypt.

ACF (1995) Analytical Chemistry of Foods (1995). Published by Blockie Academic and Professional, an imprint of chapman & Hall, Western Cleddens Road, Bishopbriggs, Glasgow, UK.

A.O.A.C. (2000). Association of Official Analytical Chemists of 0fficial Methods of Analysis 17 ed Washington D.C.

Bilal, M. Q., Sarwar, M., and Ahmad, S. (2001). Effect of stage of growth and nitrogen fertilization on protein contents of mott grass and its morphological fractions. International Journal of Agriculture and Biology1,39-41..

Brandly,T.E.; W.R. YOUNG ; B.Y.T.Poltien (2012) . Forages as legume and grasses as important forage source for ruminants in many parts of the world . Asian-Australasian Journal of Anim.Sci. 15 ,1976-1993.

Calsamiglia,S.;StemM.D.andFirnkine J.L.(1995).Effect of protein source on nitrogen metabolism in continuous culture and intestinal digestion in vitro . J. Anim. Sci.73: 1819.

Damilan,I.,Islam, M., and Rajion, M.A. (2000). Nutrient intake and digestibility of fresh, ensiled and pelleted oil palm (Elaeis guineensis) Frond by Goats. Asian-Australasian Journal of Animal Science. 13,1407-1413.

Diawati, Y.A.R. (2005) Comparison of fermentation kinetics (in vitro) of grass and shrub legume leaves: The pattern of VFA concentration, estimated CH4 and microbial biomass production. Indo. JAgri. 2(1): 21-27.

Duncan, D. (1955). Multiple ranges and multiple F-test. Biometrics,11: 1.

Eymanoel,M.R.E.L.(2010). A study of the effect of feeding Napier grass on milk production and composition using defferent level of concentrate . M.Sc. Thesis , Fac. Of Agtic. Zagazig Univ.

Fox , A.E.S.; R.K. Rrabidly ; W.T.S.Marphy ; (2000) Neutral detergent fiber equations in foods and feeds .J. of Anim. Scie. 79: 49-64.

Juniper, D.T., Browne, E.M., Fisher, A.V., Bryant, M.J., Nute, G.R. and Beever, D.E. (2005). Intake, growth and meat quality of steers given diets based on varying proportions of maize silage and grass silage. J.

Anim. Sci. 81(01): 159-170. karteien (2014) . improvement of production as relation with improved silage quality J. Nutri. Repro. 51: 1674–1687.

Khatab, E.T. (2013) . Demonstrated partially replacement berseemby grasses on cost of concentrate mixture components of goats and sheep diets.

Mansour ,M.R.; S.R.T.Shams ;R.W.Hend and M. El-Awaad (2014)Comparative nutritive values of silage ration containing different level of corn silage and sweet potato vine .Egyptian J. Nutrition and Feeds, (12):479 .

McDonalids NALD P.(2007) . The buffering constituents of herbage and of silage. J. Sci. Food Agr., , 17, 264-268.

Murphy , T.A.; S.C.Loerch ; McCLURE and M.B.So (1994) . Effect of grain or pasture finishing systems on growth rate of lambs . J.Anim.Sci.72: 3138-3144.

NRC(National Research Council),(1989). Nutrient requirement of sheep(7 th Rev. Ed . National academy press ,Washington, DC.

NRC,(National Research Council),(2001).Nutritional requirement of dairy cattle,7 th Rev. Ed National academy Sci. Washington, DC. USA.

Okoruwa, M.I., Igene, F.U. and Isika, M.A. (2012). Replacement value of cassava peels with rice husk for guinea grass in the diet of West African Dwarf (WAD) sheep. *J. Agri. Sci. 4*(7): 254 -261.

Polvier , W.F.J., Beukes, J.A. and Meeske, R.(2003). Maize silage as a finisher feed for Merino lambs. *S. Afr. J. Anim. Sci*. 43(5): S111-S115.

Truswbil ,R.W. ; Bush, K.J. and J.W. Young (2005). Quantitative separation of volatile fatty acids by high performance liquid chromatography. LiquidChromatography.

Rusell, J.B. & Wallace, R.J. (1999). Energy yielding and consuming reactions.

In: P.N. Hobson (Ed.), The Rumen Microbial Ecosystem. Elsevier Science Publishers, Barking, England, pp. 185-215.

Saleh, M. R. M.; G. I. EI - Emam; A. Abd EI- Aziz and E. I.Khalifa (2007) .

Nutritional studies and nitrogen utilization in small ruminants . J.

Animal and Poultry Prod., Mansoura Univ., Vol.3 (7): 339 – 351 .

Salam, A.M. (2006).Ensilage and improvement of feeding value Proceeding of Conference of Animal Production,In the 26th Century,16-18 Septamber, Alexandria, p.40.

Salem , A.G.; M.T. Abd El-Rhem ; S.A.Shokaer (2012).Effect of feeding lambs with Rye grass ensiled mixture on growth performance.

SAS Institute (2003). SAS/STATR User's Guide: statistics. Ver. 9.1, SAS Institute Inc., Cary, NC, USA.

Schroeder, J.W.; (1996) . Quality forage for maximum production and return . NBDSU Extension service , North , Dakota State University .

Schultz, L.H. (1996). Lactic acid production in the rumen. J. Dairy Sci., 39: 1455.

Shahzad MA, Nisa M, Sarwar M. (2011) .Nutrients intake,digestibilit nitrogen balance and growth performance of goats and sheep fed different silages with or without concentrate. Trop . Anim Health Prod . 43:795–801.

Soliman, A. A., Faten. F. Abou Ammou, E. I. Shehata, M. K. Abou Elmaged, and M. A. Shebl (2010). Impact of some feed additives on Zaraibi goats performance and blood profile fed diets. American-Eurasian J.

Agric. and Environ. Sci., 7 (1) : 80.

Truswbil ,R.W. ; Bush, K.J. and J.W. Young (1979). Quantitative separation of volatile fatty acids by high performance liquid chromatography. Liquid Chromatography.

Van Soest, P.J., Robertson, J.B. & Lewis, B.A.(1991). Methods of dietary fiber, Neutral detergent fiber, and nonstarch polysaccharides in relation to animal nutrition. Journal Dairy Science 74, 3583-3597.

Zenkolwa, N.; C.Polat; h. Akyurek; H.E.Sami;I ; E.Erten and Z. Mikulec (2007).The effect of high energy high protein of Rod grass content on growth performance of kids.

Proceeding of the 11 th17Erupian WPSAsymposium on animal nutrition Fanimark , pp ., 331-333.

أداء النمو الجداء الزرايبى المغذاه على سيلاج البرسيم بمفرده أو مختلطا مع الشعير ، هجن علف النابير أو الرود جراس .

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أجري هذا البحث لدراسة تأثير استخدام سيلاج البرسيم ومخاليطه مع (شعيرالعلف ، هجن علف النابير والرود جراس) في علائق الجداء الزرايبي النامية لقياس أدائها الإنتاجي من حيث النمو وكفاءة التحويل الغذائي والكفاءة الاقتصادية . استخدم عدد ٣٢ من الجداء الزرايبى النامية بمتوسط وزن ١٩و١٣ كجم -وزعت عشوائيا على ٤ مجاميع متماثله (٨ حيوانات بكل منها) اشتملت التجربة على مرحلتين ، المرحلة الاولى (مرحلة النمو) استمرت ١٤٠ يوما غذيت فيها جميع الحيوانات على العلف المركز ليغطي ٥٠ % من الاحتياجات البروتينية طبقا ل NRC لسنة ١٩٨١، بلأضافة الى التغذية حتى الشبع على (١٠٠% سيلاج البرسيم بمفرده) أو مخلوطا بنسبة (١:١) مع كلا من (الشعير ، هجن النابير والرود جراس) . حيث قدم سيلاج البرسيم بمفرده للمجموعة الأولي (مج١) ، ومخلوط سيلاج البرسيم مع الشعير للمجموعة الثانية (مج٢) وسيلاج البرسيم مع هجن النابير للمجموعة الثالثة (مج٣) ومخلوط سيلاج البرسيم مع الرود جراس للمجموعة الرابعة (مج٤) .واستمرت تجربة النمو (١٤٠ يوما) أما المرحلة الثانية فهى مرحلة التسمين (استمرت ٦٠ يوما) غذيت فيها الحيوانات على عليقة مكونة من ٦٠ % علف مركز + ٢٠% دريس برسيم +٢٠% قش ارز . أوضحت النتائج المتحصل عليها من هذه الدراسة خلال المرحلة الأولى (مرحلة النمو) أن الحيوانات التى تغذت على العليقتين المحتويتين على سيلاج مخلوط البرسيم مع سيلاج علف الرود جراس (مج ٤) وسيلاج مخلوط البرسيم مع هجن النابير جراس (مج٣) الأتى :- ١- زيادة معدلات نمو الجسم والوزن المكتسب اثناء مرحلة النمو زيادة معنوية على مستوى (٥ ٠و٠) للمجاميع مج٣ (٣٦,٠٧ ، ٢٣,١١على التوالى) و مج٤ (٣٧,٢٨ ، ٢٤,٥٧ على التوالى) مقارنة بالعلائق التجريبية الأخرى مج١ (٣٢.٧٥ ، ١٩.٠٦على التوالى) والمج ٢(٣٣.٨٩ ، ٢٠.٤٧على التوالى). ٢- ارتفاع كفاءة الاستفادة من المادة الجافة المأكولة والبروتين الخام المأكول لكل كج وزن مكتسب فى العليقتين مج٣ (٧.١ كج ، ١٦٦.٤ جم) لكل من المادة الجافة المأكولة والبروتين على التوالى . بينما كانت قيم الـ مج٤ (٦.٥٣ مج ، ١٦٧.٧٧جم) لكل من المادة الجافة المأكولة والبروتين المأكول على التوالى مقارنة بتلك التى غذيت على مج ١(٩.٠٦كج ، ١٧٢.٧٤جم) و مج٢ (٨.١٥ ، ١٦٩.٣٦جم) على التوالى . ٣- ارتفاع معظم المركبات الغذائية المهضومه و المركبات الكلية المهضومه والبروتين المهضوم للمج٣ و المج٤ مقارنة بباقى العلائق التجريبية الآخرى . ٤- انخفضت قيم العلف المأكول والكفاءة التحويلية لكل كج مادة جافة بالنسبة لكل كج وزن مكتسب للمجموعتتين مج٤ (٦.٥٣) و الـ مج٣ (٧.٠٩) قياسا بالمجموعة الاولى مج١ (٩.٠٤) والمجموعة الثانية (٨.١٥) . ٥- سجلت المجموعتين الاولى والثانية اعلى قيمة للـ تى دى ان والـ دى سى بى فكانت قيم اللمجموعة الأولى (٥.٦٨ كج ، ٨٦٠ و .جم) لكل من الـ تى دى ان والـ دى سى بى على التوالى بينما المجموعة الثانية فكانت (٥.١٥ كج ، ٧٩٦ و .جم) لكل من الـ تى دى ان والـ دى سى بى على التوالى . فى حين كانت اقل القيم مع المجموعة الرابعة (٤.٢٨ كج ، ٦٨٤ و .جم) لكل من الـ تى دى ان والـ دى سى بى على التوالى والمجموعة الثالثة (٤.٢٨ كج ، ٧٠٠ و .جم) لكل من الـ تى دى ان والـ دى سى بى على التوالى . ٦- سجلت المجاميع الاربعة المختبرة تباينا معنويا فى قيم المركبات الغذائية المهضومة فى مرحلة النمو على مستوى(٥. و) وكانت القيم كالتالى : المجموعة الاولى (٦٣.٣١، ٦٦.٠٦ ، ٧١. ٦٥، ٦٧.٨٨) لكل من المادة الجافة والمادة العضوية والبروتين الخام والألياف الخالمستخلص الآثيرى والمستخلص خالى الأزوت على التوالى) ، المجموعة الثانية (٦٢.٣١ ،٦٥.٨٩ ،٦٧.٥٢ ،٦٩.٨٤,٦٦,٣٩,٦٨.٧٢) لكل من المادة الجافة والمادة العضوية والبروتين الخام والألياف الخام و المستخلص الآثيرى والمستخلص خالى الأزوت على التوالى) ، المجموعة الثالثة (٦٧.٣٩ ،٦٩.٠٢ ،٦٩.٨٥,٦٥.٦٨,٨٣ و ٧١.٨٠ و ٧٠.٨٠) لكل من المادة الجافة والمادة العضوية والبروتين الخام والألياف الخام والمستخلص الآثيرى والمستخلص خالى الأزوت على التوالى) بينما اعطت المجموعة الرابعة مج ٤ (٦٦.٤٥ ،٦٨.٧٩ ،٧١.٥٩ ،٧٠.٦١,٧٠.١٧ و ٧٣. ٧١.٥٥) لكل من المادة الجافة والمادة العضوية والبروتين الخام والألياف الخام والمستخلص الآثيرى والمستخلص خالى الأزوت على التوالى) . ٧- خلال المرحلة الثانية (مرحلة التسمين) والتى استمرت ٦٠ يوما وجد أن المجاميع التى أعطت قيما منخفضة فى أوزان الجسم وخاصة مع المجاميع (مج١و مج٢) خلال فترة النمو أدت تحسنا ملحوظا فى وزن الجسم والوزن المكتسب والكفاءة الغذائية التحويلية وذلك نتيجة حدوث النمو التعويضى عند التغذية على عليقة تحتوى على نسبة أعلى من المركز مع دريس البرسيم والتى ساعدت عاى رفع معدلات النمو والاستفادة من الغذاء بينما كانت هذه الزيادة الحادثة مع المعاملتين (مج ١و مج ٢) لم تتساوى مع الزيادة الحاثة مع المعاملتين (مج٣ و مج ٤) اللتان اعطت اعلى القيم فى كافة النواحى التجريبية بداية من مرحلة النمو حتى مرحلة التسوية . ٨- الكفاءة الاقتصادية على مدار التجربة بمرحلتيها (النمو والتسمين) قد حققت لبمجموعة الرابعة مج ٤ أعلى عائد من الوزن اليومى المكتسب (١١.٧٨جنيها) ثم المجموعة الثالثة (١٠.٥٦جنيها) ثم المجموعة الاولى (١٠.٧٢جنيها) بينما اعطت المجموعة الثانية أقل عائد (٩. ٥٩ جنيها). ٩- حققت المجموعة الرابعة اعلى كفاءة اقتصادية (١٥.٨٦%) بينما سجلت المجموعة الثانية اقل كفاءة اقتصادية (١.٧٨) . نستخلص من هذه الدراسة ان استخدام سيلاج مخلوط البرسيم مع علف الرود جراس وهجن علف النابير و شعير العلف فى علائق الجداء الزرايبى النامية خلال فترتى النمو والتسمين كانت أفضل من عليقة الكنترول المحتوى على سيلاج البرسيم بمفرده .