Pak. J. Agri. Sei., Vol. 3/, *No.* 4, 1994

GROWTH AND CARCASS CHARACTERISTICS OF TEDDY GOATS AFFECTED BY ATRIPLEX FEEDING

M.RiQ2,-S.Il. Ilanjra, RA. CiII and *AA*. CiII
Department of Livestock Management,
University of Agriculture, Faisalaba.L

A study was under taken to see the effect of *Atriplex amnicola* alone and in combination with the conventional forage (Sudex) on the performance of Teddy goats, i.e., growth and carcass characteristics. The results of the study revealed a significant decrease in weight gain, feed intake, feed efficiency ana significant increase in water intake with the increase in level of Atriplex in the rat ions. However, the carcass characteristics remained normal.

INTRODUCTION

Atriplcx species commonly known as salt-bushes arc strong candidates for introduction into degraded range lands for increasing productivity of animals in arid or scrniarid regions of the world because of their high productivity and ability 10 cstablish under arid conditions (Kleinkopf, *cr a/* 1(75). Work on Atriplcx species at the Arid Zone Research Institun, , Ouctta suggests that *Atriplex canescens* commonly known as Fourwing saltbush is extremely useful for increasing forage producti /ity in the arid or semi arid regions of Baluchistan (Aro *et al.* 1988). The present study was thus designed to further assess the potential of Atriplcx species *(A/rip/ex amnicotaj* as a forage, to Teddy goat and its effect on growth and carcass quality.

l\fATERIALS AJ'\TDMETHODS

Twenty five healthy and normal female Teddy goats, ranging in age, from 12 to 14 months, were selected for the experiment from the flock being maintained at Livestock Experiment Station, University of Agriculture, Faisalabad, All the goats were ear as well as neck tagged for their identification. Experimental animals were divided into five groups and five feeding regimes were allotted randomly. A seven days non experimental period was given to the animals for adaptation to new rations. Composition of the experimental rations is given in Table I.

Table I. Compusitlnn of experimental rations I"l'cding n'gillll'S

Feeding regimes	1	2	3	4	5
Sudex (%)	100	75	50	25	0
Atriplcx (%)	0	25	50	75	100
Total	100	100	100	100	100

Weight gain data were recorded by weighing the individual animals at weekly intervals upto 13 weeks. The average weight gain per group was also calculated. The actual feed intake and water intake per groups was also recorded. Feed efficiency was calculated as the unit of feed required per unit weight gain. At the cnd of the experiment three animals randomly selected from each group were slaughtered to study the carcass

characteristics, i.e. dressing percentage and sensory evaluation of the mutton of dressed goats. Three cooking techniques were used and judging panel, comprising nine experts were selected to evaluate organoleptic sensory tests (Larmond, 1977). The data was analyzcd statistically according to technique used by Steel and Toorie *(1l)H2),* and comparison of means were made by applying DMR test (Duncan, *11)55).* The feed samples were chemically analysed for proximate composition according to A.O.A.c. (t<JS-t).

RESULTS AND DISCUSSION

The results on feed intake, water intake, feed efficiency and weight gain are given in Table 2.

reported lambs maintained on fourwing salt bush gained 0.95 kg in 10 weeks period. The results of the study (with 0 to 50% Atriplex) with respect to feed intake has non-significant difference. Contr ar y 1o this results of the animals on ration IV and V (having 75-100% Atriplcx) had significant by less feed intake than the control and arc in agreement with Pcircc (11)57) which stated that sheep on high salt diet declines the food consumption. The results of study 0-50% Atriplcx with respect to water intake are normal and had non-significant difference, The results of the study of groups on ration IV and V has significantly higher water intake than control and in line with the results of Aricli *et al. (1981))* which reported that the Awassi weathers on *Atriplex*

Table 2. Weight gain, Feed intake, water lntukeund feed elflciency on different feeding regimes.

Parameters	1	2	3	4	5
Total Av. wt. gain (kg)	4.50 a	4.14 a	2.H4 ab	1.50 be	-0,10 c
Av. feed consumed (kg) per day	3,1 a	*2.1)(,* a	2.lJ2 ab	2,45 b	I.X7 c
Av. daily water intake	0.5G a	0.72 a	1.23 bc	*1,1)3* be	2.22 c
Feed efficiency	66.0 a	64,3 a	91,3 ab	144.1 be	187.0 c

The results on carcass percentages are also given in Table 3. The results obtained on sensory evaluation test by using three different cooking techniques are given in Table 4, 5, 6. The results of the study (upto 50% saltbush) with respect to weight gain are normal and had no significant difference. The higher levels of salt bush (75 to 100 percent saltbush) with respect to weight gain were found significantly different with that of control group and are in line with Rehman *et a/* (1989) which

barclavna and sodium chloride, consumed 2.9 times higher water intake. The results of the carcass characteristics revealed that there was no significant difference among experimental goats feeding diffeent rations.

On the basis of the study it is concluded that salt tolerant plant like *A/rip/ex amnicola,* could be fed to the Teddy goats for maintenance particularly during scarcity periods without having any ill effect on the health of the animals. For production purposes animals need some supplemental

Table 3. Carcass paramentess on dilTerent feeding regimes

Parameters	1	2	3	4	5
Carcass weight (%)	39.28	40.44	39.21	38,48	37.07
Skin weight (%)	5.18	5.H(j	5.72	6.00	5.75
Liver weight (%)	1,41	1,30	1,10	1,48	1,34
Heart weight (%)	0.36	0,36	0,38	0,37	0.39
Lungs weight (%)	0.97	0.92	0.91	1,07	0.99
Kidney weight (%)	0.2fi	0.27	0.27	0.33	0.33
Head weight (%)	58fi.	0,55	0.59	6.57	0.CJ7
Legs weight (%)	1,82	2JJ1	2,12	2.34	2.74
Stomach weight (%)	3,32	3.20	3.24	3.28	3.27

Table 4. Oven Cooking

Parameters	1	2	3	4	5
Color	13.50	13,25	13,75	. 13.fi3	12.fi3
Taste	11.fi3	12,38	12.88	12.50	12,38
Flavor	II.fi3	II.fi3	13.00	11,88	13.00
Juiciness	11,11	11.fi3	12.00	II.fi3	11,13
Chcwability	11.38	14.50	12.88	13.13	13.25
Tenderness	13,24	14.25	13,25	12.13	12.88

Table 5. Steam Roast

Parameters	1	2	3	4	5
Color	12.00	13.67	13.89	12.78	13.67
Taste	11,78	12.44	14.22	11.67	11,89
F1avor	12.22	13,22	14.78	12,56	11,78
Juiciness	11.89	13,11	13.00	12.33	12,33
Chewability	11,44	12.89	14.22	12.22	12.67
Tenderness	11,44	12.11	13.22	11,89	12,33

Table 6. Conventional cooking

Parameters	1	2	3	4	5
Color	14.44	12.56	14.89	12.33	13.22
Taste	13.22	11.89	12.89	13.22	12.00
Flavor	13.78	12.33	13.44	14.33	11.78
Juiciness	14.11	12.11	14.00	13.00	11.11
Chewability	14.33	11.89	13.78	13.33	10.56
Tenderness	14.44	12.33	13.67	12.67	10.78

feeding of they are maintained on these salt tolerant plants. Based on the findings of the study, it is inferred that *Atriplex amnicola* can be fed to the small ruminants in combination with local fodders like sudex, up to a level of 50% for having normal growth. Upto 25% replacement of sudex with *Atriplex amnicola* was at par in terms of weight gain and was superior to sudex alone in terms of feed intake and feed efficiency. There was no detrimental effect on carcass and meat acceptability of the animals fed on fodder mixtures upto 50% *Atriplex amnicola*.

REFERENCES

Aro, R.S., M.I. Sultani and M. Asghar. 1988. Introduction of Fourwing Saltbush in degraded rangelands in upland Balochistan MART / AZRI Res. Report 22, ICARDA, Quetta,

AoA.C. 1984. Association of Analytical Chemists, Official Methods of Analysis of the Association of Analytical Chemists, 13th Ed. Washington, D.e.

Arieli, A, E. Nairn, R.W. Benjamin and D. Pasternak. 1989. Animal Food 49: 451-457. British Society of Animal Production.

Duncan, D.B. 1955. Multiple range and multiple F tests, Biometrics 11:1-12.

Kleinkopf, G.E., A Wallace and J.W. Cha. 1975. Sodium relations in desert plants. 4. Some physiological responses of Atriplex confertifolia to different levels of sodium chloride. Soil Sci. 120: 45-48.

Larmond, E. 1977. Methods of sensory evaluation of food. Canada Deptt. Agri. Pub. 1(,37.

Peirce, AW. 1957. Studies on salt tolerance of sheep. I. The tolerance of sheep for sodium chloride in the drinking water, Aust, J. Agri. Res. 8: 711-722.

Rehman, AV., S. Rafique and R.S. Aro. 1989. Fourwing saltbush as a winter maintenance forage for sheep in upland Bulochistan, Research Report No. 37 Arid Zone Research Institute, Quetta, Pakistan.

Steel, R.G.D. and J.H. Torrie. 1982. Principles and Procedures of Statistics. McGraw Hill Book Inc., New Your, USA