

Nutritional Potential of Some Selected Forages for Rabbits

¹L.J. Isaac, ¹I.P. Solomon; ²J.S. Ekpo and ¹M.M. Owoh

¹Department of Animal Science, University of Uyo, Nigeria

²Akwa Ibom College of Agriculture, Obio Akpa, Akwa Ibom State, Nigeria

Abstract: Sixteen weaner rabbits were used in a 60 day feeding trial to assess the nutritional potential of some forages in promoting growth. The experimental diets were Centrosema, Calapogonium, Aspillia and Tridax designated as treatments 1, 2, 3 and 4, respectively. Fifty gram of the forages was fed along with 50 g of commercial poultry growers mash per animal per day. Each trial was replicated four times. Data collected were subject to analysis of variance. Results showed that feed intake (g) was significantly ($p < 0.05$) affected by forage type with Tridax (1115.54) being better than Aspillia (618.75), Calapogonium (595.54) and Centrosema (479.02). Tridax (97.14g), supported weight gain better ($p < 0.05$) than Calapogonium (73.66 g), Centrosema (66.47 g) and Aspillia (49.25 g). Treatment did not significantly ($p > 0.05$) affect feed conversion efficiency. Apparently Tridax exhibited greater potential in promoting growth of weaner rabbits.

Key word: Nutritional potential, weaner Rabbits, centrosema, calapogonium, aspillia, tridax

INTRODUCTION

The most advantageous attribute of rabbits are their high reproductive potential and fast growth rate. This is as a result of their short gestation length, early sexual maturity, high prolificacy and ability to rebreed shortly after parturition leading to a short generation interval (Lebas *et al.*, 1986). The ability of rabbits to thrive on forages which are abundant and available all year round in high rainfall areas, makes rabbits production cheap (Aduku and Olukosi, 1990). This, however is, limited since fibre digestion in this monogastric herbivore is post gastric in the ceacum (Davidson and Spreadbury, 1975) rabbits are less than one half as efficient as cattle in digesting dietary fibre (Slade and Hinz, 1969). There has been much work on forage feeding to rabbits in a mixed feeding regime (Pote *et al.*, 1980; Cheeke, 1984; Harris *et al.*, 1984; Aduku *et al.*, 1986; Dematerova *et al.*, 1991). Harris *et al.* (1984) Obtained higher body weight gain and feed conversation efficiency in a mixed feeding of free choice hay and pellets than on sole pellet. Cheeke (1984) Obtained average daily weight gain of 35.40 g when green forage was fed with an average 79.90, pellet/day. Free choice forage feeding was also found to reduce pellet intake by 50% with no adverse effect on body weight.

This study was therefore carried out to identify which of these forages Tridax, Aspillia, Calapogonium and centrosema-have optimum potential in supporting the growth performance of rabbits.

MATERIALS AND METHODS

A total of sixteen weaner rabbits were allocated in equal number at random to 4 respective forages using the Completely Randomized Design (CRD) and were housed individually in cages. The treatments were centrosema (T_1), calapogouim (T_2), Aspillia (T_3) and Tridax (T_4). Each of the treatments was replicated 4 times; the animals were fed concentrate feeds and the different forages free choice for one week. This was intended to allow them adjust and get used to the experimental diets. The forages were always cut the previous day and kept over night to reduce the moisture content before feeding the following day.

Their initial weights were taken at the end of the acclimatization period and then 50 g of each forage was fed to each designated animal, while 50 g of commercial growers mash was fed across the treatments. Clean water was served ad libitum to the animals. Data were collected on feed intake, weight gain and feed conversion ratio on weekly basis. The experiment lasted for sixty days. Data collected were analyzed by variance procedure, while the Duncan's multiple range test (Steel and Torrie, 1980) was used to separate significantly different means.

RESULTS AND DISCUSSION

The chemical composition of forages is presented in Table 1. The crude protein values (%) of the forages were

Table 1: Proximate composition of the experimental forages

Nutrients	Centrosema	Calapogonium	Aspillia	Tirdax
Crude protein (cp)	20.45	21.02	5.31	24.40
Ether extract (EE)	2.17	2.52	1.37	3.22
Crude fibre	15.32	18.36	10.17	18.36
Ash	4.30	5.90	11.85	6.14
Nitrogen free				
Extract (NFE)	37.50	31.04	31.04	37.60
Dry Matter (DM)	20.26	21.10	30.15	10.28

Table 2: Result showing performance of rabbits fed the experimental forages

Parameters	Centrosema	Calapogonium	Aspillia	Tirdax
Feed Intake (g)	479.02±15.00 ^c	595.54±2.10 ^b	618.75±38.00 ^b	1115.00±57.40 ^a
Weight gain (g)	66.47±13.70 ^b	73.96±14.60 ^b	49.25±8.30 ^b	97.14±18.60 ^a
Fed conversion				
Ratio (g)	6.70±5.50	752.00±6.10	15.49±6.90	5.35±6.80

^{ab}: Means in the same row bearing different superscripts are significantly ($p < 0.05$) different

20.45, 21.02, 5.31 and 24.40 for Centrosema, Calapogonium, Aspillia and Tirdax, respectively while the crude fibre values (%) were 15.32, 18.36, 10.17 and 18.36 for these forages which were within the range given by Adegbola *et al.* (1985).

The mean feed intake values (Table 2) were 479.03, 595.45, 618.75 and 1115.18 g for Centrosema, Calapogonium, Aspillia and Tirdax, respectively. Tirdax was significantly better ($p < 0.05$) than the others. Calapogonium and Aspillia were not significantly different ($p > 0.05$) from each other, whereas both of them were significantly different from Centrosema which was the poorest. The variation in feed intake could be attributed to the nature and quality of each of the forages for according to Aduku *et al.* (1986) increased forage intake is obtained from forages that are leafy and succulent in nature compared to the non-succulent and woody plants.

In respect of weight gain, Tirdax with a mean value of 97.14 g was significantly ($p < 0.05$) better compared to Calapogonium (73.69 g), Centrosema (66.47 g) and Aspillia (49.25 g). Tirdax was significantly ($p < 0.05$) different from the other forages while there was no significant ($p < 0.05$) difference between Aspillia, Calapogonium and Centrosema. The high performance of rabbits placed on Tirdax could be attributed to the high nutritive value of the forage as well as the succulent nature of the leaves and stems. This is in line with the works of Cheeke (1983) and Aduku *et al.* (1984). Rabbit placed on Centrosema and Calapogonium equally performed well. This could be due to the high crude protein levels of these forages. The poor performance of rabbits on Aspillia is attributed to the poor nutritive status of the forages.

Feed conversion ratio showed no significant ($p > 0.05$) difference among treatment means. They ranged between 5.35 and 15.30 higher than the range of 2.5 to 3.5 reported by Oyawole (1989) as the average feed conversion ratio for weaner rabbits on a kg of feed/body weight gain. Among the diets, Tirdax showed a better

efficiency with a ratio of 5.35 compared to Calapogonium (7.50), Centrosema (6.70) and Aspillia (15.49). This variation may be due to the nature of the feed and the genetic make up of the animals. According to Aduku and Olukosi (1990) factors which include both genetic and environmental affect the performance of animals.

Rabbits have the ability to utilize forage materials. Exploiting this attribute will be of advantage to local rabbit producers who may not be able to afford the cost of commercial diets. Oturu (1994) found that mucuna forage can be added to the diets of rabbit in a 3:1 concentrate to forage ratio. In some other studies, Biobaku and Ekpenyong (1991) had daily gain of 13.90 and 9.40 g when water lettuce and water hyacinth formed 25 and 20% levels, respectively in rabbit diets. Other workers found rabbits to consume a wide variety of forages even though they will prefer some to others (Aduku *et al.*, 1989; Abdulmalik, 1994).

The result from this study shows that Tirdax, Calapogonium and Centrosema (with Tirdax as the best) have higher potential as rabbit feed than Aspillia. It therefore implies that in times of scarcity (as in the dry season) any of these three forages that is available in a mixed feeding regime with commercial mash can be used to successfully raise rabbits without adversely affecting their growth.

REFERENCES

- Abdulmalik, M.E., 1994. Rabbit Research at NAPRI and Animal Science dept. A.B.U. Zaria. NAPRI Seminar Series, pp: 3-4.
- Adegbola, T.A., E.U. Tibi and D.C. Adowa, 1985. Feed Intake and Digestibility in Rabbit on all forages plus concentrate and all concentrate diet. J. Anim. Prod. Res., 5: 15-16.

- Aduku, A.O. and J.O. Olukosi, 1990. Rabbit Management in the Tropics: Production, Processing, Utilization, Marketing Economics, Practical Training. Res. Future Prospects, pp: 43-56.
- Aduku, A.O., N.I. Dim and W. Hassan, 1989. Evaluation of tropical green forages for dry season feeding of rabbits. *J. Applied Rabbit Res.*, 11: 246-266.
- Aduku, A.O., P.N. Okon, P.C. Njoku, A.A. Aganga and N.I. Dim, 1986. Evaluation of Cowpea (*Vigna Unguiculata*) and Peanut (*Arachis Hypogaea*) haulms as feed stuffs for weaning rabbits in tropical environment (Nigeria). *J. Applied Rabbit Res.*, 9: 178-180.
- Biobaku, W.O. and T.E. Ekpenyong, 1991. Effect of feeding graded level of water lettuces and water hyacinth on the growth of rabbits. *J. Applied Rabbit Res.*, 14: 101-104.
- Cheeke, P.R., 1984. Rabbit Nutrition and feeding: Recent advances and future perspectives. *J. Applied Rabbits Res.*, 7: 31-37.
- Davidson, N.J. and D. Spread Bury, 1975. Nutrition of New Zealand White. *Pro. Soc.*, 24: 75-83.
- Dematerova, M., C.L. Periera and A.C. Date, 1991. Rabbit Anim. Zootechnia (FAO-PANES), 69: 36-43.
- Harris, D.J., P.R. Cheeke and N.N. Pattan, 1984. Effect on Fryer rabbit performance of supplementing a pelleted diet with alfalfa or grass hay. *J. Applied Rabbit Res.*, 7: 148-150.
- Lebas, F., P. Conduct, R. Rouviiier and H. Depochambean, 1986. The rabbit husbandry, health and production. *FAO Animal Production and Health Series*, Rome, 21: 235.
- Otaru, R.A., 1994. Determination of concentrate and forage diet on growth performance of weaner Rabbits. ABU Zaria.
- Oyawale, E.O., 1989. The case of increased rabbit production in Nigeria. *Agro Forum*, 1: 6-7.
- Pote, L.M., P.R. Cheeke and N.N. Pattan, 1980. Utilization of diets high in alfalfa meal by weaning Rabbits. *J. Applied Rabbit Res.*, 3: 5-10.
- Slade, L.M. and H.F. Hintz, 1969. Comparison of digestion in Horses, Ponnies, Rabbits and Guinea pigs. *J. Anim. Sci.*, 28: 842-843.
- Steel, R.G.D. and J.H. Torrie, 1980. Principles and procedures of statistics 2nd McGraw-Hill Book Co. New York.