

INCREASING LEVELS OF RAMIE (*BOEHMERIA NIVEA*) HAY ON THE DIETS OF FATTENING RABBITS

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ABSTRACT

In Brazil, ramie (*Boehmeria nivea*) is used like fiber source and is offered on the hay form. This study evaluated the effects of increasing levels of ramie hay in the diet on the daily weight gain (DWG), feed intake (FI) and feed conversion (FC) of fattening rabbits. The experiment was conducted in Department of Animal Science, Federal University of Santa Maria, Brazil, during April to June, 2002. Twenty one White New Zealand breed males 44 days old, were housed individually in cages and assigned to three dietary treatment: 0 %, 20 % and 40 % of ramie hay. Data of the experiment were statistically analyzed by analysis of variance as a block design. The results for DWG were: 29.85, 28.95 and 25.60 g/day; for FI 73.62, 67.74 and 60.89 g/day and for FC 2.49, 2.33 and 2.39, according to the order of treatments mentioned. The authors conclude that the increase in the supply of ramie hay to fattening rabbits has a negative response on the productive performance of animals, when those already receive high levels of fiber on the diet.

Key words: ramie hay, fattening rabbits, fiber.

INTRODUCTION

The rabbits have a capacity to utilize plant materials with more efficiency than rather others monogastrics. Moreover, the need of fiber source is a very important question in the rabbit health, once time, enteritis are registered when the levels of fiber on the diet are considered lower (CHEEKE, 1987). The particular digestive physiology of rabbits, with a developed cecum and the function of cecotrophy, where the products fermented in cecum are re-intake by the animal to new absorption of materials that their origin on the fermentative process guarantee the real particularity of rabbits had almost same capacity of ruminants in utilize cellulose like source of energy and plant materials like form to obtain nutrients.

Many types of forage are adequate to the rabbit feeding, as such alfalfa (*Medicago sativa*), elephant-grass (*Pennisetum purpureum*), grasses and legumes in general. In Brazil, is mostly frequent the use of ramie (*Boehmeria nivea*) as source of fiber in the rabbit feeding. Ramie is a arboreus specie, with 2 meters height and is adapted in

subtropical climate. His nutritional value is low, but has a fast development and is a cheap vegetative culture, has been an alternative to the small farmers.

This study evaluated the influence of increasing levels of ramie hay in the diets of fattening rabbit productive parameters, as daily weight gain, feed intake and feed conversion.

MATERIALS AND METHODS

The experiment was conducted in the Rabbit Sector of Department of Animal Science, on the Federal University of Santa Maria, Brazil. The climate is subtropical, with regular rainfall and defined seasons of year. The period of experiment was April to June, 2002, during 63 days.

It was utilized twenty-one rabbits, males, of White New Zealand breed, with initial age of 44 days. They were housed in individual cages, where received *ad libitum* water and pelleted concentrate in a mud vessel and the ramie hay in a metallic frame where the animals could consume hay without materials losses. Concentrate and ramie hay were offered at same time. The nutritive value of pelleted concentrate and ramie hay are in Table 1.

Table 1. Nutritional value of pelleted concentrate and ramie hay (as dry matter basis) supplied to the fattening rabbits in the experiment.

	Pelleted Concentrate	Ramie Hay
Dry matter (%)	87	86
DE (kcal/kg)*	2800	2000
Crude Protein (%)	14	17
Crude Fiber (%)	20	20
Calcium (%)	2.5	3.8
Phosphorus (%)	0.5	0.19

* DE calculated

The animals were divided in three treatments, with 7 animals in each treatment, utilizing a randomized blocks design. The criterion for the blockage was the birth date. The treatments followed the levels of ramie hay offered and they were 0, 20 and 40 % of inclusion on the diets of animals. The animals were weighted in start of trial and later, live weight and feed consumption was recorded at weekly. To estimate feed consumption, offer feedstuffs and surplus feedstuffs were weighted every day, when was made renovation of feed supply. The feed consumption refers for total value, with intake of pellet concentrate and ramie hay. The results were analyzed by GLM (SAS, 1996) procedure and were defined regression equations for each one of variables.

RESULTS AND DISCUSSION

The results for daily weight gain and feed intake are in Figure 1 and 2, respectively and statistical values from GLM procedures to variables evaluated during experiment are in Table 1. Observe that the daily weight gain and feed intake decrease ($P < 0.0237$) with the additional supply of ramie hay on the diet of animals. These data agree MENDES *et al.* (1980), which worked with ground ramie at levels of 0, 25 and 50% of inclusion on the diet and obtained averages daily gains of 22.3, 22.1 and 6.5 g/day, respectively. The increase of ramie hay on the diet causes also an increase on quantity of indigestible material, what reduce the energetic availability of feed and consequently decrease the daily weight gain.

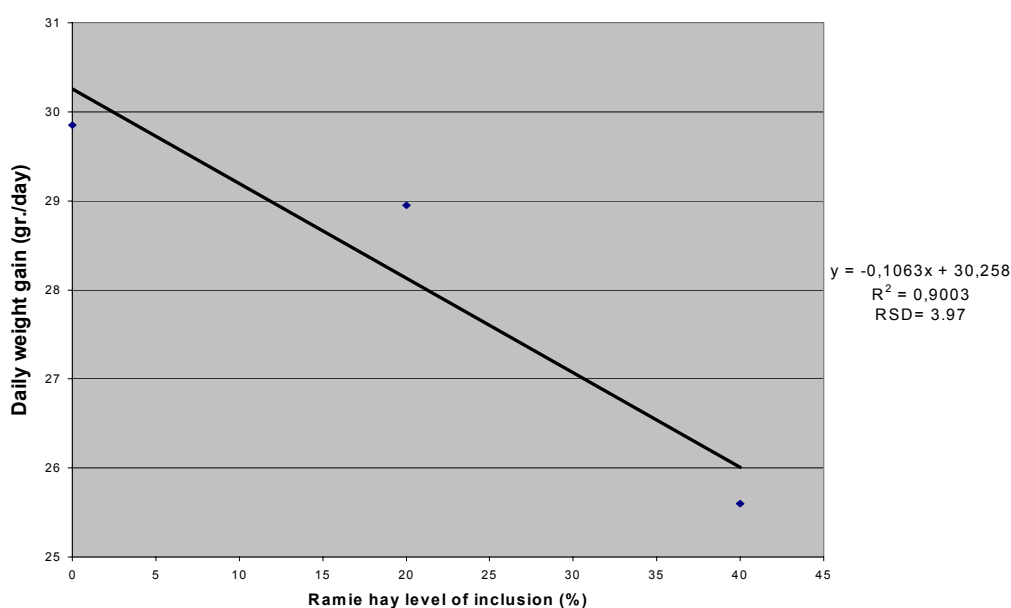


Figure 1. Daily weight gain of fattening rabbits receiving different levels of ramie hay on the diet.

A major liveweight is expected when the proportion concentrate:hay is 70:30 (SANCHEZ *et al.*, 1981) and this is observed when the offer was until 20 % due the average daily gain had been similar ($P < 0.01$) (29.85 gr/day vs. 28.95 gr/day to 0 and 20% of inclusion, respectively). But, when the level of offer was 40 % of ramie hay, the daily weight gain reduce for 25.60 gr./day, because there is a decrease in an energy available for gain, due the reduction of digestibility of the diet.

Feed intake also is affected by the increase of ramie hay on the diet ($P < 0.0306$, Figure 2). CHEEKE (1987) refer at the ramie like unpalatable, when administered in high levels. DE BLAS *et al.* (1986) found in high levels of fiber, an increase in the intake, like a manner to compensate low digestibility, but in our work, as the level of fiber increase on the diet, had a reduction in intake. The levels of fiber offered by concentrate and with

increasing of ramie hay collaborate in the high level of fiber on the diet. Moreover, the digestive net capacity also may reduce when the level of fiber increase for a physical effect and this will be possible to prove with lower gut content weight.

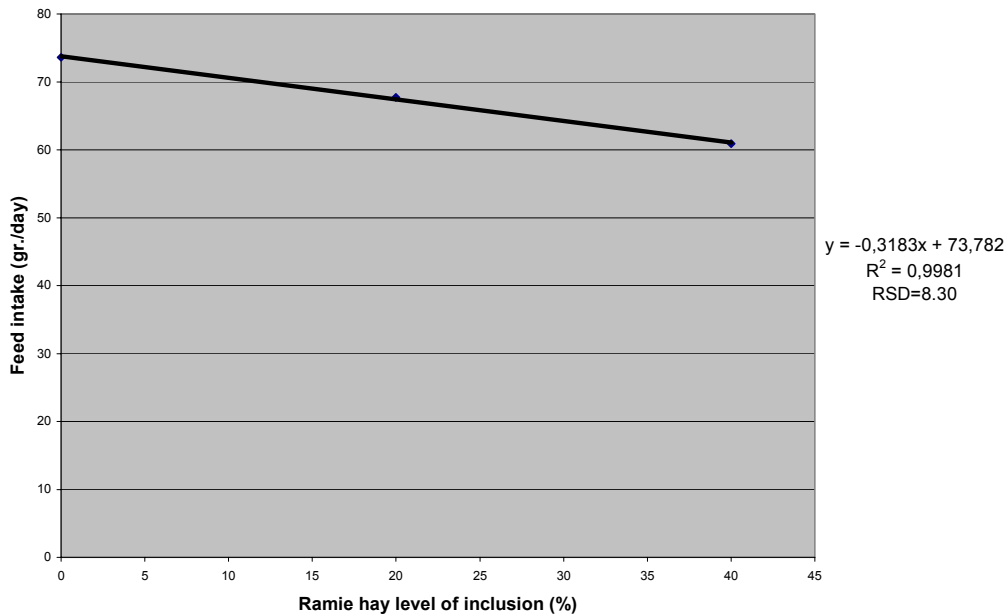


Figure 2. Feed intake of fattening rabbits receiving different levels of ramie hay on the diet

Table 2. Statistical values from GLM procedures to variables evaluated during experiment

Variable	Statistical significance		R ²	CV (%)	RSD
	Blocks	Treatment			
Daily weight gain	0.0332	0.0465	0.7038	10.62	2.99
Intake	0.0857	0.0171	0.6882	10.35	6.98
Feed Conversion	0.0150	0.3298	0.7027	7.67	0.18

Feed conversion is showed in Figure 3. The values of 2.49, 2.33 and 2.39 to 0, 20 and 40 % of ramie hay offer on the diets of fattening rabbits are very disperses (P=0.0242) and suffered effect of the blocks (level of significance to blocks: P=0.015; level of significance to treatments: P=0.3298). LOPES *et al.* (1997) observed that the feed conversion of rabbits improve with the major availability of digestive energy, either when more digestible to be the diet, better will be the feed conversion. But, in our work, feed conversion has a tendency to decrease with major levels of offer to ramie hay, what disagree with studies of LOPES *et al.* (1997).

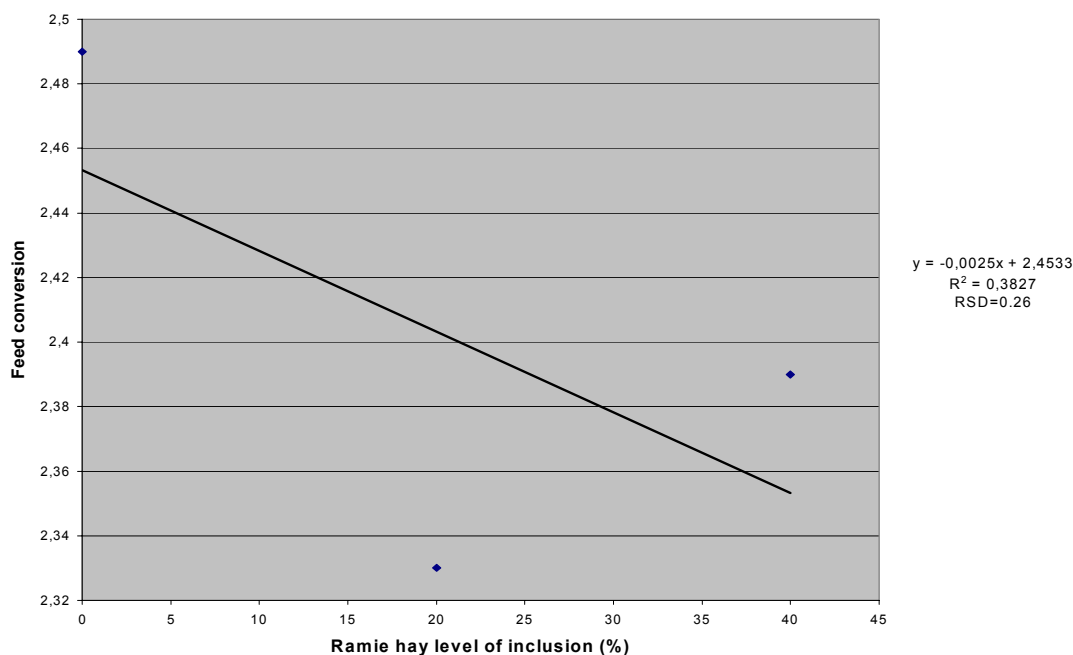


Figure 3. Feed conversion of fattening rabbits receiving different levels of ramie hay on the diet.

CONCLUSION

Increasing of ramie hay on the diet of fattening rabbits has a significantly negative response on the productive performance. Rabbits feed with until 20 % ramie hay offered on the diets presents a satisfactory performance. More studies are necessary, principally, to evaluate digestive and physiological influence to increase of ramie hay on the diets of rabbits.

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