

## ABSTRACT

Feeding represents the greatest cost in any animal production scenario, accounting for 60-80% of total production costs in rabbit farms worldwide. However, to the authors' knowledge, such costs have not been evaluated in Puerto Rico's (PR) rabbit industry. Thus, the current study evaluated the feed intake and associated costs of rabbit production in PR. Experimental rabbits were obtained from Californian does mated to a New Zealand Red (NZR; n=21; from 3 does) or a Flemish Giant buck (FG; n=31; from 4 does). Weaning and sexing were carried out at 21 and 42 days of age, respectively. Rabbits had *ad libitum* access to commercial concentrate feed (17% crude protein) and water and were harvested at 91-93 days of age. Weekly individual feed intake was determined by the following equation ((offered feed – rejected feed) / rabbits per cage). Concentrate feed cost was \$0.53/kg. Feed intake and cost related data were determined. Total feed intakes per rabbit of 10,117.84, 8,907.82, 9,075.37, and 9,486.99g were observed in the NZR females, NZR males, FG females, and FG males, respectively. Such feed intakes represented concentrate feed costs of \$5.36, \$4.72, \$4.81, and \$5.03 in the respective rabbit groups. The amount of feed required to produce 1 kg of rabbit meat using NZR females, NZR males, FG females, or FG males was 4.28, 3.99, 3.44, and 3.49 kg, respectively. Assuming that feeding represents 80% of total costs, this is translated to total production costs of \$2.83, \$2.65, \$2.28, and \$2.31 for each kg of rabbit meat produced by the NZR females, NZR males, FG females, and FG males, respectively. The current study provides an idea about the production costs of rabbit meat in PR. These values should be taken into consideration when establishing the sale value of this product.

## INTRODUCTION

The greatest costs in any animal industry is associated with feeding, which in rabbit production accounts for 60-80% of total costs (Quiñonez and Martin, 2006; Macias-Rodríguez and Usca-Mendez, 2017). This is important because McNitt et al. (2003) reported that for a young rabbit to grow 1 kg of live body weight, 3.25 to 4.5 kg of concentrated food are required. In fact, if the concentrated food available for the rabbits is of low quality, greater amounts will be needed (McNitt et al., 2003). Thus, feeding costs should be taken into consideration when the sale value of rabbit meat is established. According to Cortes (2011), in 2010 average rabbit meat price at the supermarket in Puerto Rico was \$7.52 / kg. Currently, local supermarkets are selling rabbit meat at \$14.06 / kg. However, to the authors' knowledge the production costs of Puerto Rico's rabbit meat has not been studied.

## OBJETIVES

The current study aimed to evaluate the amount of feed a rabbit raised under Puerto Rico's conditions eats until harvest (91-93 days old), as well as to study the related costs.

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## METHODOLOGY

- Experimental rabbits were maintained at a farm in San Germán
- Rabbits were obtained from Californian does mated to:
  - a New Zealand Red (NZR; n=21; from 3 does)
    - or
    - a Flemish Giant buck (FG; n=31; from 4 does)
- Rabbits were weaned at 21 days of age
- Rabbits were sexed at 42 days of age
- Rabbits had *ad libitum* access to:
  - commercial concentrate feed (17% crude protein)
  - water
- Rabbits were harvested at 91-93 days of age
- Weekly individual feed intake was determined by the following equation:
  - ((offered feed – rejected feed) / rabbits per cage)
    - Pre-weaning- includes the doe
- Concentrate feed cost was \$0.53/kg.
- Before sexing- 10-11 rabbits / cage
- After sexing- 4-5 rabbits / cage



**Figure 1.** One of the Californian rabbit does (A; 4.5 kg of body weight), as well as the Flemish Giant (B; 6.54 kg of body weight), and New Zealand Red (C; 2.95 kg of body weight) bucks used to produce the experimental rabbits.

## RESULTS AND DISCUSSION

Determining rabbits' feed intake is essential to have an idea of its production costs (Lebas et al., 1996). In the current study total feed intakes per rabbit (until 91-93 days of age) of 10,117.84, 8,907.82, 9,075.37, and 9,486.99g were observed in the NZR females, NZR males, FG females, and FG males, respectively (Table 1). In their study, Lebas et al. (1996) reported a feed intake of 140 to 150 g / day, on a dry matter basis. Similarly, Rodríguez (1999) observed daily feed intakes in meat rabbits of 142 g. Also in the present study, the amount of feed required to produce 1 kg of rabbit meat using NZR females, NZR males, FG females, or FG males was 4.28, 3.99, 3.44, and 3.49 kg, respectively (Table 1). Rodríguez (1999) reported that a New Zealand doe with its kits will require 1.81 kg of food to produce 0.45 kg of live body weight. According to McNitt et al. (2000), 7 kg of rabbit's food are required to produce 2 kg of body weight. These represents a production cost between \$2.28 to \$2.83 / kg of rabbit meat raised under Puerto Rico's conditions (Table 1).

**Table 1.** Rabbits' individual feed intake<sup>1</sup> and related costs when harvest at 91-93 days of age.

	Feed intake during pre-weaning <sup>2</sup> (g)	Feed intake during post-weaning (g)	Total feed intake (g)	Feed cost <sup>3</sup> (\$)	Total estimated production cost <sup>4</sup> (\$)	Average carcass weight <sup>5</sup> (g)	Rabbit's meat cost (\$/kg)	Feed required to produce 1 kg of meat (kg/kg)
NZR females	2,555.28	7,562.56	10,117.84	5.36	6.70	2,366.24	2.83	4.28
NZR males	2,555.28	6,352.54	8,907.82	4.72	5.90	2,230.16	2.65	3.99
GF females	2,645.59	6,429.78	9,075.37	4.81	6.01	2,640.91	2.28	3.44
GF males	2,645.59	6,841.40	9,486.99	5.03	6.29	2,716.51	2.31	3.49

Experimental rabbits were obtained after mating Californian does with a New Zealand Red (NZR) or a Flemish Giant (FG) bucks.

<sup>1</sup>Individual feed intake = (feed offered – feed rejected)/ rabbits per cage.

<sup>2</sup>During the pre-weaning period feed intake reflected the intake of both the doe and their rabbit kits.

<sup>3</sup>Commercially available rabbits concentrated food was used with a cost of \$0.53 / kg.

<sup>4</sup>Based on the estimations of Quiñonez and Martin (2006) and Macias-Rodríguez and Usca-Mendez (2017), where feeding represents 60 to 80% of total production costs in rabbits farms.

<sup>5</sup>Data previously submitted for consideration at the Journal of Agriculture of the University of Puerto Rico.

## CONCLUSION

The current study provides a general idea about the production costs of rabbit meat in PR. These values should be taken into consideration when establishing the sale value of this product. This will help the economic viability of this sector.

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