

# Evaluation of rabbit growth performance and meat quality as influenced by genotype

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**Objectives:** The objective of the study was to evaluate the effect of rabbit strain on growth performance, meat quality and carcass characteristics.

**Materials and Methods:** South Africa is a developing country with a rapid population growth and due to the high population growth rate, there is a shortage of animal protein consumption. In addition, most of its people are living under poverty datum line. Rabbit production can be used to alleviate poverty, minimize protein deficiency and can be utilized as an inexpensive alternative source of animal meat protein, especially in rural areas. Rabbits can convert 20% of the protein consumed to muscle which is higher than beef (18%) and other livestock which makes them a suitable species to cater for food insecurity in both urban and rural set-ups. However, it is important to determine which breed would be best suitable for sustainable farming in such areas that would yield better growth and desirable meat quality within a short interval. Hence a study focusing on investigating differences in rabbit strain on growth performance, meat quality and carcass characteristics was conducted. The study was conducted at the University of KwaZulu-Natal, Ukulinga Research farm Pietermaritzburg, South Africa. A total of forty-eight rabbits from 6 commercial rabbit strains (Chinchilla Giganta, New Zealand White, New Zealand Red, Californian, American Sables, and Cinnamon) were used for this study. The rabbits were randomly selected at the weaning stage, 35 days of age and housed separately in mesh wire cages with two rabbits in each cage. The rabbits were fed commercial pelleted diet (Crude protein 16%, Fibre 17%, Moisture 12%, Fat 2.5%, Calcium 1.5% and Phosphorus 0.7%) two times a day in the morning (8am and afternoon 4:30pm), until they reached 9 weeks of age at which the commercial slaughter weight is usually reached. Rabbits were weighed on a weekly basis and water was provided to them ad libitum. At the end of trial, rabbits were transported to a slaughterhouse for slaughter. After slaughter, hot carcass was weighed, hung upside down and stored in a cold room at 4°C for 24 hours. The chilled carcass weight was measured with the temperature of the carcass at 5°C. Hot carcasses were suspended in a ventilated area for 15-30 minutes and chilled at 3-4°C for 24 hours. Both the hot and chilled carcasses excluded the head, kidney, liver, heart, lungs, thymus and oesophagus, which were removed to obtain the reference carcass (commercial carcass).

**Meat quality measurements:** (pH, Color - L\* (lightness) a\* (redness), b\* (yellowness) were measured on the left longissimus dorsi. Shear force and WHC were also determined. All sets of data were statistically analysed using GenStat 18.2 software. All measurements were processed with two-way ANOVA.

**Results and Discussion:** No significant difference was observed between live weight gain of the different breeds, when comparing between the mean values. The findings showed that there were significant differences between carcass characteristics of breed. Breeds like New Zealand white and Californians reached slaughter weight faster compared to other breeds. Significant difference ( $p < 0.05$ ) was observed in color of the meat and water holding capacity whilst no differences in texture were observed ( $p > 0.05$ ). No significant differences were observed for the pH values of the Longissimus dorsi between the different breeds at pH45 and pH24. Lowest pH values were observed after 24 hours post slaughter.

**Conclusion:** Differences on meat characteristics and growth performance among rabbit strains has been obtained hence New Zealand white and Californians could be recommended to be farmed in the region.

**Key words:** Commercial breeds, Growth performance, Meat quality, Average daily feed intake, Water holding capacity