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## **ADIPOSIY ASSESSMENT OF RABBIT CARCASSES PRODUCED IN THE ALGERIAN LOCAL CONDITIONS OF PRODUCTION**

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### **ABSTRACT**

The aim of this study was to assess the adiposity of rabbit carcasses produced in the Algerian local conditions of production, in Tizi-Ouzou area. Depending on the availability (deliveries by the breeders) of the rabbits to be slaughtered, four visits were made to the slaughterhouse at intervals of a few weeks, during which data were randomly collected on eighty-one rabbits on which the following parameters were recorded: age, sex, live weight before slaughter, weight of the cold carcass and the adiposity of the carcasses according to the French score method, assigning the carcasses from one to five in order of increasing fatness. Distribution of the data according to age (80 or 90d) and feeds (three types) led to the constitution of three lots: "FeedA80d", "FeedB90d" and "FeedC90d". Male and female parity was well respected in the three lots. The energy concentration was at the same level in the three diets (13.8 Mj/Kg) and seems to exceed widely the requirements for this type of rabbits. About half of all carcasses were scored as 3 i.e. moderately fattened. When carcasses scored 2 and 3 are taken together, the rate reaches 75% and the proportion of carcasses scored 4 and 5 taken together reaches 25%. As expected, the rabbits with the highest live weights at slaughter recorded the best cold carcass weights. Under Algerian local production conditions, breeders produce rabbit carcasses with an acceptable or even good weight (1.3 kg) and average adiposity, in a fattening period of 7 to 8 weeks.

**Key words:** Rabbit, Carcass, Feed, Age, Fat.

### **INTRODUCTION**

In terms of rabbit breeding in Algeria, the Wilaya (district) of Tizi-Ouzou presents several assets such as the important number of rabbit breeding farms compared to the national level (1st region), the organisation of breeders into association and the availability of four slaughterhouses specialised in rabbit slaughtering (Mouhous et al., 2019).

According to Benabdelaziz et al. (2020), while the circuit of rabbit's meat commercialization in this region is dominated by the informal sector, the production is available and done via slaughterhouses, wholesaler intermediaries, hotels, restaurants, butchers and individuals. Furthermore, according to Kadi et al. (2021), consumers' demand for this meat is greater than the local market supply.

The main constraint to the development of the rabbit breeding in the region, often mentioned by the breeders, is the high cost but also the lower quality of the available feeds (Mouhous et al., 2017). In addition, there is a clear relationship between dietary supply and composition of the rabbit meat (Hernández and Dalle Zotte, 2010) and the average adiposity of rabbit carcasses is mainly represented by perennial fat in relation to the weight of the cold carcass (Blasco et al., 1992).

The aim of this study is to assess the adiposity of rabbit carcasses produced in the Tizi-Ouzou area, in Algeria.

## MATERIALS AND METHODS

### Animals and experimental design

The study was carried out at a private slaughterhouse located outside the industrial zone in an enclosed area in the village of Djebba, municipality of Ouagunoun (Tizi-Ouzou, Algeria). With a slaughtering capacity of 500 rabbits / day, this slaughterhouse is specialised in the slaughtering, packaging and delivery of fresh and frozen rabbit and quail meat. However, this capacity is never reached because of the quantities delivered, which are often weak. The slaughterhouse has a sanitary approval delivered by the veterinary inspection of the district (wilaya) of Tizi-Ouzou. However, the slaughterhouse works only sparsely, i.e. depending on the availability of rabbits to slaughter. In fact, depending on the availability (deliveries by the breeders) of the rabbits to be slaughtered, four visits were made to the slaughterhouse at intervals of a few weeks, during which data were randomly collected on eighty-one rabbits.

Rabbits were slaughtered by severance of the carotid artery and jugular vein without fasting beforehand. On the randomly chosen rabbits, the following parameters were recorded: age (according to the breeders who delivers the rabbits), sex, live weight before slaughter and weight of the cold carcass (after sweating for 24 hours in the refrigerator at 4°C). According to local market tradition, cold carcass includes the head, the extremities of the limbs with coat (sleeves), the kidneys, as well as perirenal fat and inter scapular fat. The adiposity of the carcass was then estimated according to the French score method using the reference scale of the AFNOR V47-001 (2004) standard where note 1 = kidneys not covered with fat and note 5 = kidneys entirely covered with fat. In addition, the breeders to whom the randomly selected rabbits belonged were asked to provide a sample of the feed consumed by the rabbits that were delivered to the slaughterhouse. The feed samples collected in this way were then taken to the laboratory for chemical analysis.

It soon became clear from the herders' responses that there were two different ages and three different feeds. Consequently, distribution of the data according to these criteria (age and feed) allowed the constitution of three lots: Lot 1 or "FeedA80d" (Feed A and 80 days), Lot 2 or "FeedB90d" (Feed B and 90 days) and Lot 3 or "FeedC90d" (Feed C and 90 days). Male and female parity was well respected in the three lots: 50% in lot 1, 48 and 52% in lot 2 and 49 and 51 in lot 3.

### Chemical Analyses

The chemical composition of the feeds was carried out according to harmonised European procedures (EGRAN, 2001): moisture, total nitrogenous matter (N x 6.25, Dumas method, Leco), Weende or crude fibres and Crude Fat.

### Statistical Analysis

The recorded and/or calculated data were subjected to a one-way analysis of variance (ANOVA) using software R 3.6.1.

## RESULTS AND DISCUSSION

### Feeds characteristics

Feeds characteristics reported in Table 1 point out that the energy concentration, at the same level in the three diets, seems to exceed widely the requirements for this type of rabbits (10.2 MJ/kg according to De Blas and Wiseman, 2020). According to the literature as reviewed by Dalle Zotte (2000), this energy excess will affect not only feed intake but also the carcass adiposity. Protein contents vary from one feed to another and range from 13.6% in diet A to 18% in diet B i.e. a 4-point difference. Only feed C meets the recommendations (15.4% to 16.2%) of De Blas and Wiseman (2020) for this type of rabbits. Crude fibre content appears to be within the standards recommended for a mixed feed (14.5 to 15.5%, as is the case here. This is also the case for the fat content which is within the standards (<3.5%).

**Table 1:** Chemical composition and nutritive value of the diets.

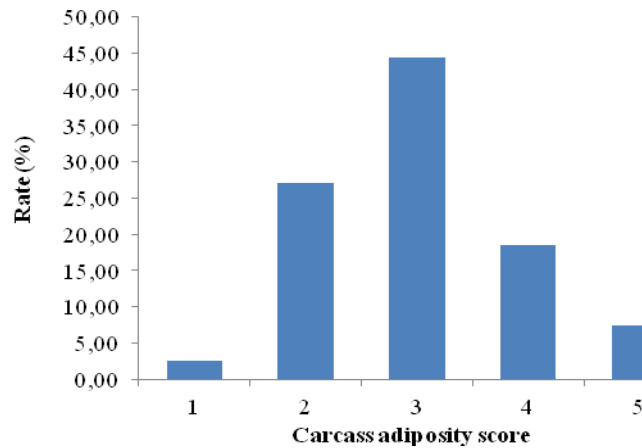
	Dry Matter (%)	Crude Fibre (%)	Crude Protein (%)	Crude Fat (%)	DE (MJ/Kg MS)*	MAD** (g/Kg MS)
Lot 1 FeedA80d	91.53	17.80	13.60	2.30	13.78	84.466
Lot 2 FeedB90d	95.07	13.97	17.99	2.68	13.93	122.9224
Lot 3 FeedC90d	92.34	15.47	15.64	2.25	13.87	102.3364

\* Estimated according to the equation of Villamide et al. (1989).

\*\* Estimated according to the equation of Villamide and Fraga (1998).

### Carcass adiposity

About half of all carcasses (Figure 1) were scored as 3 according to the AFNOR (2004) scale which ranges from 1 to 5, i.e. moderately fattened. When carcasses scored 2 and 3 are taken together, the rate reaches 75%. However, it should be pointed out that the proportion of carcasses scored 4 and 5 taken together reaches 25%.



**Figure 1:** Proportion of carcasses' adiposity scores according to AFNOR V47-001 standard (2004).

Taking into account the parameters of age and the feed consumed (Table 2), it is the group of rabbits aged 90 days and consuming feed C that presents the least fatty carcasses (score 2.69 and  $p < 0.001$ ). This situation was contrary to what was expected. According to the age and to the nutritional content of the feed, it was group 1, where the rabbits were 80 days old and had consumed the lowest feed, which should have the least fat carcasses. The adiposity of the carcasses is also similar in rabbits that consumed feed A or B, despite having different ages (80 and 90 days respectively). As expected, the rabbits with the highest live weights at slaughter (Lot 2 and Lot 3) recorded the best cold carcass weights.

**Table 2:** Slaughter performances of the rabbits of the three groups.

Parameters	Lot 1 FeedA80d	Lot 2 FeedB90d	Lot 3 FeedC90d	SEM	Probability value
Live weight (g)	2160 a	2356 b	2368 b	0.035	<0.001
Cold carcass weight (g)	1.246 a	1.348 b	1.347 b	0.017	<0.001
Carcass adiposity score	3.37 b	3.36 b	2.69 a	0.179	0.004

Means with different letters on the same line differ significantly.

## CONCLUSIONS

It should be noted from this study that, under Algerian local production conditions, breeders produce rabbit carcasses with an acceptable or even good weight (1.3 kg) and average adiposity, in a fattening period of 7 to 8 weeks. These results should be confirmed with further studies and a larger sample size.

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