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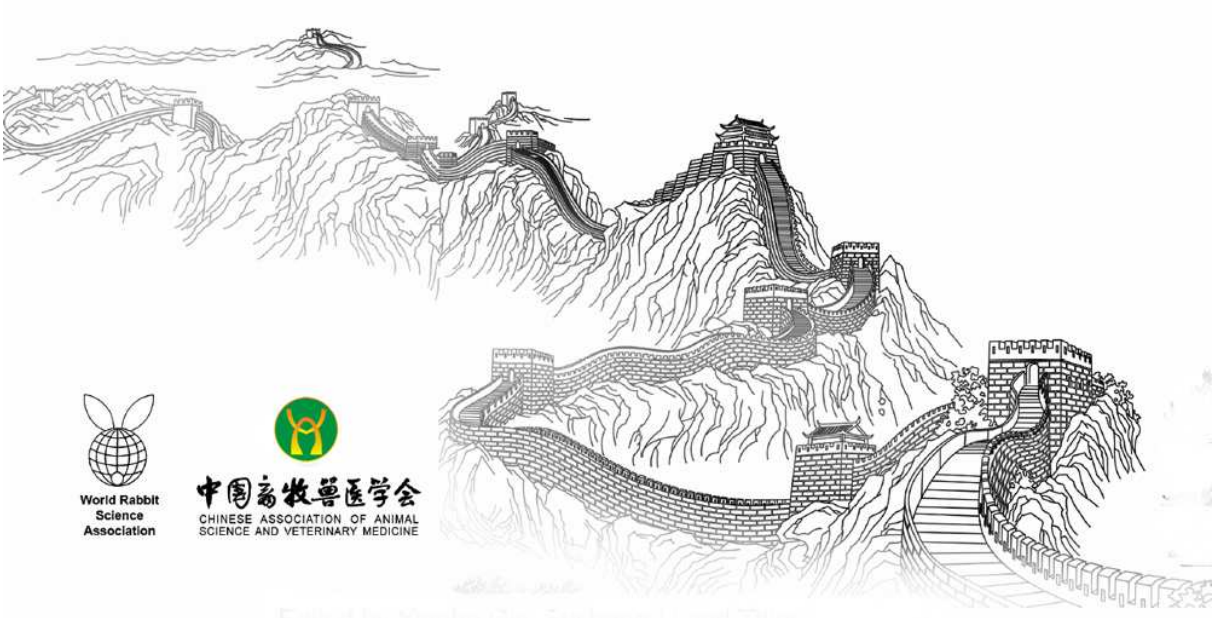

EVALUATION OF THE CARCASS QUALITY AND YIELD AT SLAUGHTER IN RABBIT OF LOCAL ALGERIAN POPULATION REARED IN THE AURES AREA

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ABSTRACT

The study was aimed to evaluate the slaughter performance of local rabbit from Algerian population reared in aures area (Est of Algeria). 100 rabbitweaned at 28 days of age were randomly housed (3-4 rabbit /cage). The rabbits were fed pellets ad libitum and slaughtered at 77 days of age and their body weight was around 1999.5 ±483.5 g. The following traits were recorded : body weight, average daily gain at birth to slaughter, average feed consumption from weaning to slaughter, slaughter age, carcass weight , meat/bone ratio, fat content, prime cuts weight (fore part, loin and hind part) and dressing percentage. The results indicate a dressing percentage of 55%, the ratio to commercial carcass of the fore part, hind part and loin was15%, 24.3%, and 29.7% ($p < 0.05$) respectively. Our rabbits have a good meat to bone ration (6.7, $p<0.0001$) but a high adiposity (3%, $p<0.0001$).

Key words: Rabbit, carcass traits, growth performance, local population, Algeria.

INTRODUCTION

Rabbit breeding for Algeria may present a significant source of protein given the large deficit of this nutrient (Gacem et *al.*, 2008; Berchiche et *al.*, 2012).The use of rabbit breeding is justified by its many strengths, among others, his short life cycle, high prolificacy: 50 rabbitswith a live weight of 2.4 Kg slaughtered per year / rabbitwhichis a significantamount of meat (60-65 Kg per doe / year) of good qualityorganoleptic (Combes et *al.*, 2005).Severalstudies on carcass traits of rabbits lapins (Lakabi et *al.*, 2008; Lounaouci et *al.*, 2009; Volek et *al.*,2014; Cardinali et *al.*, 2015) show the considerable influence of the growth parameters: age, weight, maturity, early growth on carcass quality. However the continuing evolution of consecutive production performance to optimize feeding and breeding techniques progress, warrants further study in this area.

This study relates to the rabbit local Algerian population reared in Aures area in an objective to evaluate the quality and yield of carcasses.

MATERIALS AND METHODS

Animals and experimental design

This study was carried out at the Veterinary Department of Batna University, which has a local fattening, including aeration is done by using a fan and lighting is natural (provided by two windows).The fattening trial was conducted on 100 rabbits male sex, from 60 litters born during the period which runs from 02/18/ until 05/17/2014 and belonging to a local population reared in the Est of Algeria (the Aures area: Batna, Khenchela, Umm El bawagui).After weaning at 28 days, kits from

different litters in good health condition, having the best weight are identified by tagging the ears. Rabbits were housed in groups (3-4 rabbits /cage) in wire cages (62 cm long, 52 cm wide and 35 cm high) of flat-deck-type.

From weaning (28 days), the animals were fed *ad libitum* with a balanced pelleted diet for growing rabbit whose composition is given in Table 1, drinking water was also available *ad libitum* from nipple drinkers.

Table 1 : Ingredients and chemical composition of experimental diet.

Ingredients	**%**
Soybean meal 44	17
Maize	30
Alfalfa	35
Wheat Bran	15
CMV	2.9
Chemical composition(g/100g)	
Protein	16.8
Fat	2.5
Crude fiber	13.3

Measurements

Feed intake was monitored week by week and cage by cage. The rabbits are individually weighed the morning at weaning, and then once a week at a fixed time (09h) until slaughter (77 ± 1days.). Animals are individually weighed again before and after slaughter in the morning. The carcasses (without head and sleeves) are weighed after 24 hours of sweating to 4 °C. To assess performance, the following criteria were measured according to the standards of the World Rabbit Science Association (Ouhayoun and Dalle-Zotte, 1996): the weight of the cold carcass, the interscapular fat, perirenal fat, the weight of the fore part, the weight of the loin, the weight of hind part, a hindleg is cooked in an oven at 80 °C for 2h 30 min and meat/bone ratio was calculated. The liver and kidneys are weighed separately.

Statistical analysis

Data isenteredwith Excel 2013 and all the variables are analysed statistically using the software MedCalc Version 15.2.1 - © 1993-2015 MedCalc Software bvba by using the "t" test of Student. The level of statistical significance was 0.05. Results are expressed as mean ± standard deviation and the degree of significance of differences.

RESULTS AND DISCUSSION

Rabbitsgrowth performance

The measurements released during testing have identified an initial average weight of 412 ± 84 g, feed intake in the period 28-77 days was 89.3 ± 14.5 g with an overall conversion index of 2.7 (Table 2).

Table 2: Evolution of live weight according to age.

Rabbits number	**100**
Live weight at 28d of age (g)	412 ± 84
Live weight at 77d of age (g)	1982 ± 165
Daily weight gain (g)	32.3 ± 3.5
Daily feed intake (g)	89.3 ± 14.5
Feed conversion ratio	2.7

Slaughter performance

The slaughter performance of local rabbit population are reported in Table 3. The average live weight at slaughter at the age of 77 days registered is1999.5 ± 483.5 g. The weight of the warm and chilled carcass are 1055± 271 g and 1037 ± 272 g, respectively.

Lounaouci on the white population of rabbit (2012) reports an average live weight at slaughter at the age of 11 weeksidentical to ourresults. But on the weight of the warm and chilled carcass, there is a gap of 351.1 g and 309.4 g in favor of the white population, respectively. Cardinali et al. (2015) on the white New Zealand rabbit reported an average slaughter weight (80 days old) of 2277 g while Tumova et al., (2014) in an evaluation test of differences in the composition of different sizes of rabbit carcasses and different races recorded an average weight at slaughter (90 days old) of 1827 g in the golden rabbit Czech population (small size) which remains below our result. In the rabbit studies on the consequences of selection on body weight at fixed age on muscle characteristics and meat, since the weight of the commercial carcass remains constant, the increase of the growth rate leads to a reduction of the slaughter age.

Table 3: Yield at slaughter and carcass characteristics of local rabbit population reared in the Aures region.

Criteria	Rabbits, no	Mean	ES	t	P	Test value
Live weight at slaughter (g)	100	1999.5	483.5	41.35	<0.0001	0.05
Warm carcass weight (g)	100	1055	271	39.60	<0.0001	0.05
Chilled carcass weight (g)	100	1037	272	38.77	<0.0001	0.05
Fore part weight (g)	100	161.3	42	38.3	<0.0001	0.05
Hind part weight (g)	100	260.5	60.5	43.01	<0.0001	0.05
Hindleg weight (g)	100	131.23	30.2	43.34	<0.0001	0.05
Loin weight (g)	100	321.1	87.3	36.56	<0.0001	0.05
Liver weight (g)	100	89.5	28.9	31	<0.0001	0.05
Kidneysweight (g)	100	15	4.2	35.3	<0.0001	0.05
Interscapular fat (g)	100	12	7	13.8	<0.0001	0.05
Perirenal fat (g)	100	36.9	21.4	13.3	<0.0001	0.05
Bone weight (g)	100	12.8	2.4	52	<0.0001	0.05
Dressing out percentage (%)	100	55	13.1	41.4	<0.0001	0.05
Ratio to commercial carcass (%)						
Fore part	100	15	1.6	88.6	<0.0001	0.05
Hind part	100	24.3	3.1	77.5	<0.0001	0.05
Loin	100	29.7	3.5	82.7	<0.0001	0.05
Liver	100	8.4	2.5	32.7	<0.0001	0.05
Kidneys	100	1.3	0.6	20.4	<0.0001	0.05
Adiposity	100	3	1.7	15.4	<0.0001	0.05
Meat/bone ratio	100	6.7	1.7	37.7	<0.0001	0.05

The carcass yield remains satisfactory (55%), compared to the projected value between 50 and 60% for the standard rabbit of medium size. At the standard age of slaughter and for other strains hybrid rabbits (Pascual et al., 2014) show a carcass yield between 55.4% and 57.6%.
The high yields at slaughter can be attributed to *ad libitum* feeding practiced in the local traditional farming, since the work on the effects of dietary restriction on growth and body composition according to Pla (2004), the rabbits subjected to food restriction present low yields at slaughter. The average carcass yield, as observed by different authors depends on age but especially the final slaughter weight. Weight at slaughter has an important effect on performance, but also on meat qualities of the carcass (meat/bone ratio, adiposity).

In our study, our rabbits have yields (%) of fore part, hindpart and loin of 15 ± 1.6%, 24.3 ± 3.1% and 29.7 ± 3.5%, respectively. Our results are lower than those recorded by Zslot et al. (2009) on the White Pannon and those of Eiben et al. (2012) on the New Zealand rabbit 25%, 38.2%, 34.2% and 26, 1%, 35.5%, 31.9%. This difference can be explained by livestock conditions (building anddiet), and genetic type.

The average body fat of rabbit carcasses represented essentially by perirenal fat weight reported to the cold carcass (Blasco et al., 1992) is high (3%) compared to that recorded by Lounaouci (2012) on the white rabbits (1.1%) and identical to that registered (3%) by Ouhayoun et al. (1990). In Algerian conditions on local Kabyle population, Berchiche et al., (2000); Lakabi et al., (2008) and Lounaouci et al., (2009) reported an adiposity of 2.36%, 1.9% and 1.80% at 12 weeks of age, respectively. Fat is a tissue of late development and a higher content (3.70%) is observed in the early maturing breeds which concord with our results (Tumova et al., 2014).
In our study we found a weak positive correlation between growth rate and fatness (R = 0.22 to P = 0.2708) which agrees with the results of. With regard to the liver is an isometric growth member and similar percentages should be observed regardless of the degree of physiological maturity animals studied The kidneys are also cited among the early growth organs. But in this trial we recorded a high average liver and kidney weight (89.5 ± 28.91 g and 15± 4.2 g) representing percentages of 8.47% and

1.37% reported to the cold carcase. Compared to the values indicated by Zslot et al. (2009) in white pannon. Paci et al., (2013) on local Italian rabbits and Rotolo et al. (2014) in New Zealand white rabbit (4.96% and 1.32%, 5.3% and 0.13%, 2.70% and 0.58%, respectively). This difference can be explained by the low slaughter weight of our rabbits. The meat/bone ratio that allows us to estimate the weight of muscle and bone tissues of the carcass was 6.76 ± 1.78. Our result is approach to Lounaouci results on the white population (2012) is 7.51 ± 0.66 at 79 days of age and Xiccato et al. (2013) on crossed Hyplus rabbits (7.53).

CONCLUSION

In Algeria, one of the main factors limiting the development of the rabbit production remains the lack of a balanced diet available at reasonable prices. The average performance can be increased by improving farming conditions, the extension of the duration of study and monitoring of a sample of the population under more controlled conditions before deciding on these zootechnical characteristics.

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