STUDIES REGARDING QUANTITATIVE MEAT PRODUCTION OBTAINED AT SLOW GROWING HYBRIDS

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Abstract

In a world which is in a continuous change, consumers are usually aware by the relation between meat quality and safety and animals' welfare and many of them consider that chickens reared in free range system had superior sensorial qualities. The aim of the study was to evaluate the differences between growing performances (slaughtering yield, rate of cut portions and muscular mass) and abdominal fat quantity of broiler chickens with slow growing.

For elaboration of the current study were chosen 3 hybrids, reared in extensive system, in blind shelters and with access in paddock during summer; rearing duration of chickens was 56 days. So, were constituted three batches, as follows: batch Lc1 - Ross 308 hybrid chickens; batch Lexp1 - Hubbard hybrid chickens and batch Lexp2 - HB Color hybrid chickens.

Calculus of slaughtering yield show the fact that the best values (69±0.003%) were at chickens from batch Lc1, followed by chickens from batch Lexp1 (65±0.003%) and by chickens from batch Lexp2 (62±0.003%).

Regarding the rate of anatomical portions, the established mean rates for breast with bone were 37% at batch Lc1, 35% at batch Lexp1 and of only 30% at batch Lexp2; the ones for thighs with bone were 34% at batch Lc1, 35% at batch Lexp1 and 34% at batch Lexp2, the values for wings were at levels of 12% for Lc1, 12% for Lexp1 and 14% for Lexp2, while back represented 17% from carcasses at batch Lc1, 19% at the ones belonging to batch Lexp1 and 22% for Lexp2.

In according with the obtained results we can say that Hubbard hybrid is the most suitable one for slow growing, because recorded the most equilibrated rate for slaughtering yield related to the percentage of cut portions.

Key words: hybrids, slow growth, slaughtering yield, cut portions

INTRODUCTION

Quality of poultry meat is an extremely complex notion which could be evaluated from different points of view. So, from the point of view of consumers and slaughtering industry interests, chickens for meat must have not only high slaughtering yields and a harmonious corporal conformation but also must have good sensorial and nutritional characteristics [7]. In a world which is in a continuous change, consumers are usually aware by the relation between meat quality and safety and animals' welfare [4; 2] and many of them consider that chickens reared in free range system had superior sensorial qualities [8].

In a study published in 2011, Mikulski et al. [6] reported that corporal mass, meat production and its quality are caused mainly by gene-type, and access in open spaces didn't affect their growing performances of meat yield. For sure, multiple factors, including gene-type, age, sex, diet, density, environment and pasture intake, influence the growing and performances of poultry for meat [1].

Qualitative and quantitative appreciation of carcasses is considered an important indicator of poultry processing activity, because implies compliance of quality standards in according with the classification and yield which is expected to be obtained [3; 5].

The aim of the study was to evaluate the differences between growing performances (slaughtering yield, rate of cut portions and muscular mass) and abdominal fat quantity of broiler chickens with slow growing.

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MATERIALS AND METHODS

For elaboration of the current study were chosen 3 hybrids, reared in extensive system, in blind shelters and with access in paddock during summer; rearing duration of chickens was 56 days.

So, were constituted three batches, as follows: batch Lc1 - Ross 308 hybrid chickens; batch Lexp1 - Hubbard hybrid chickens and batch Lexp2 - HB Color hybrid chickens.

For rearing and exploitation of the studied hybrids were utilised 3 types of fodder recipes (tab. 1).

Table 1 Applied fodder recipes in the current study

Foddering period	Studied batch		
	Lc1	Lexp1	Lexp2
Starter	ME=2950 kcal/kg	ME=2900 kcal/kg	ME=2900 kcal/kg
	CP=20.5%	CP=21.5%	CP=22%
Growing	ME=2950 kcal/kg	ME=2950 kcal/kg	ME=2950 kcal/kg
	CP=21.5%	CP=19.5%	CP=19.5%
Finishing	ME=3000 kcal/kg	ME=3000 kcal/kg	ME=2950 kcal/kg
	CP=18%	CP=18%	CP=16.9%

Daily mean consumption of mixed fodders realised by the studied hybrids on the whole period (0-56 days) was 89 g/head/day for Ross-308 ones (batch Lc1), 149 g/head/day for Hubbard (batch Lexp1) and 137 g/head/day for HB Color (batch Lexp2). The total consumption of mixed fodders was 4416 g/head/period for Ross 308, 5800 g/head/period for Hubbard and 4698 g/head/period for HB Color.

At the age of 56 days 20 chickens were random selected from each batch. Chickens were individually weighted and after that slaughtered. Due to the fact that was evaluated three different hybrids from the point of view of technological parameters, slaughtering yield was established after a refrigeration period of 12 hours. This one was calculated in according with the formula: (mass in cold carcass)/(live mass) ×100.

The resulted carcasses after slaughtering of chickens were cut in four anatomical portions: breast with bone; thighs with bone; wings 3 segments and back, and the rate of cut anatomical portions was calculated by reporting of each weight to the mass of refrigerated carcass.

The obtained data were statistically processed with ANOVA single-factorial algorithm, which is included in Ms Excel software.

RESULTS AND DISCUSSION

Slaughtering yield

After effectuated weightings, were observed mean slaughtering masses of 2.25±0.013 kg at chickens from batch Lc1 (Ross 308), 2.24±0.014 kg at batch Lexp1 (Hubbard) and 2.15±0.009 kg at Lexp2 (HB Color). The studied character was very homogenous, all the calculated values for V% being lower than 10% (1.797-2.869%). From statistical analyses were observed very significant differences between batches Lc1 vs. Lexp2 and Lexp1 vs. Lexp2.

After refrigeration of obtained carcasses resulted mean masses of 1.56±0.011 kg at batch Lc1, 1.45±0.012 kg at batch Lexp1 and 1.34±0.007 kg at batch Lexp2. Even if the studied character was very homogenous (V%=2.188-3.099), were identified very significant statistical differences between all those 3 batches.

Calculus of slaughtering yield show the fact that the best values area (69±0.003%) were obtained for Ross 308 chickens (Lc1), followed by Hubbard chickens (Lexp1) (65±0.003%) and by HB Color ones (Lexp2) (62±0.003%), mentioning that between batches were the same type of statistical differences like at carcass' mass. The studied character presented a very good homogeneity at the level of studied batches (V%=2.030-2.297) (tab. 2).

Table 2 Slaughtering yield for the studied hybrids

Quality parameters	Batch	Statistical estimators (n=20)		ANOVA	
		$\bar{X} \pm s_{\bar{x}}$	V%	Comparisons	Signification
Live mass of carcass (kg)	Lc1	2.25±0.013	2.563	Lc1 vs. Lexp1	ns
	Lexp1	2.24±0.014	2.869	Lc1 vs. Lexp2	***
	Lexp2	2.15±0.009	1.797	Lexp1 vs. Lexp2	***
Cold eviscerated carcass (kg)	Lc1	1.56±0.011	3.099	Lc1 vs. Lexp1	***
	Lexp1	1.45±0.012	3.567	Lc1 vs. Lexp2	***
	Lexp2	1.34±0.007	2.188	Lexp1 vs. Lexp2	***
Slaughtering yield (%)	Lc1	69±0.003	2.030	Lc1 vs. Lexp1	***
	Lexp1	65±0.003	2.203	Lc1 vs. Lexp2	***
	Lexp2	62±0.003	2.297	Lexp1 vs. Lexp2	***

ANOVA within rows, between groups for different superscripts, one by one comparison:
ns = not significant (P>0.05); significant = * (P<0.05); distinguished significant = ** (P<0.01); highly significant = *** (P<0.001).

Rate of anatomical portions

Comparing those three batches between them by the percentage of portions resulted at carcass' cut, was observed the existence of very significant statistical differences.

Concretely, the established mean rates for breast with bone were 37% at batch Lc1, 35% at batch Lexp1 and of only 30% at batch Lexp2, the ones for thighs with bone were 34% at batch Lc1, 35% at batch Lexp1 and 34% at batch Lexp2, the values for wings were placed at levels of 12% at Lc1, 12% at Lexp1 and 14% at Lexp2, while back represented 17% from carcasses of batch Lc1, 19% for the ones belonging to batch Lexp1 and 22% for batch Lexp2 (fig. 1).

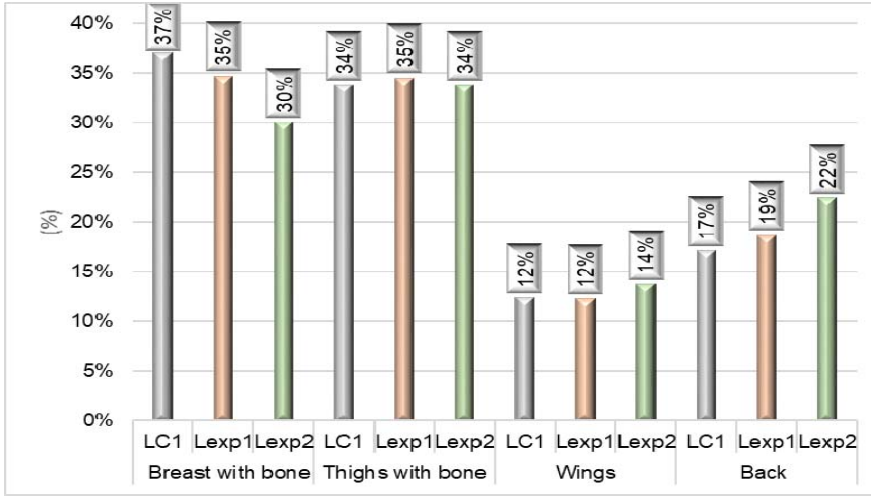

Fig. 1 Rate of cut anatomical portions in the carcasses of studied hybrids

From the anatomical portions, breast and thighs are considered to be the most valuable, in the situation analysed by us, those two cumulated portions represented 71% at batch Lc1, 70% at batch Lexp1 and 64% at Lexp2.

Having in view that consumer market prefer chicken breast in a cut form (without bone and skin) we separate the components; from this point of view pectoral muscular mass represented 19% at batch Lc1, 23% at Lexp1 and 25% at Lexp2, skin was situated at levels of 4% for batches Lc1 and Lexp1 respectively, 3% for Lexp2, difference being represented by stern and clavicle (fig. 2).

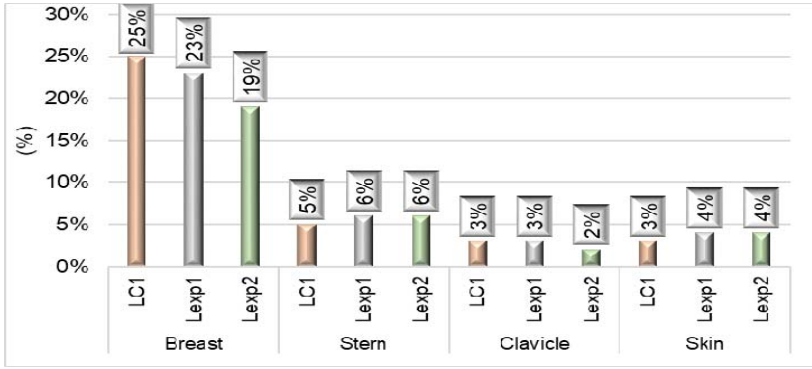

Fig. 2 The obtained results after cutting of breast at studied chickens

Regarding rate of abdominal fat existent in the carcasses which were obtained, Ross 308 hybrid recorded the highest level (2.35%), followed by Hubbard hybrid (2.15%), while HB Color recorded the lowest values (1.85%) (fig. 3).

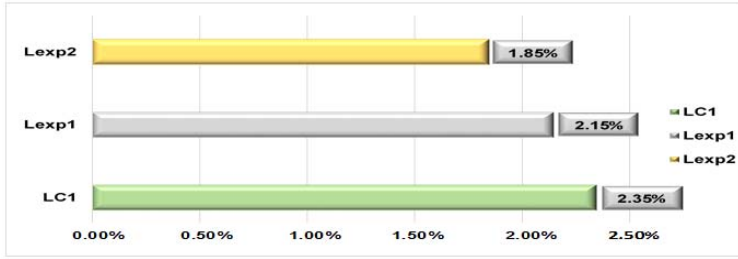

Fig. 3 Rate of abdominal fat at studied hybrids

CONCLUSIONS

Having in view the obtained results the following conclusions could be drawn:

Ross 308 hybrid could be used for slow growing because obtained very good yields and an advantageous rate of cut portions but with a higher quantity of abdominal fat.

Hubbard hybrid is the most suitable one for slow growing; this one recorded the most balanced rate of slaughtering yield related to rate of cut portions.

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