

Correlation of Age and Slaughter Weight on Carcass and Non-carcass Female Sheep During Iedul Adha



Endy Triyannanto¹, Siti Muyasaroh², Wisnu Widiarto³

¹Department of Animal Products Technology, Faculty of Animal Science, Universitas Gadjah Mada

²Vocational High School 2 Sukoharjo, Jl. Solo-Wonogiri, Sukoharjo, Central Java

³Department of Animal Production, Faculty of Animal Science, Universitas Gadjah Mada

Corresponding email: endy.triyannanto@ugm.ac.id

ABSTRACT

Slaughtering intensity of local female sheep breed in Indonesia was increased at local slaughtering house during the period of Iedul Adha (moslem ceremony of slaughtering specific cattle which held in every year) especially for small and medium industries as satay restaurant. Those slaughtering was related to the decreasing amount of male sheep in the market for ceremony. In total 60 females sheep were separated in three age categories (less than one year; 1–1,5 years; and 1,5–2 years old) and two slaughter weight categories (10–14,99 kg and 15–20 kg). Both factors of age and slaughter weight were analyzed to the contribution of carcass and non-carcass percentages related to the butcher preferences. Data were collected from slaughtering house at Bantul district, Yogyakarta including age, slaughter weight, carcass and non-carcass (head, skin, legs, heart, liver, lungs, and digestive tract) weights and analyzed using ANOVA method. We present how the age and slaughter weight contribute on the different parts of carcass and non-carcass percentages vary from both parameter sets. Results showed that slaughter weight significantly influenced carcass and non-carcass percentages ($P < 0,05$), while age significantly influenced carcass, skin, legs, heart, liver, lungs, and digestive tract percentages ($P < 0,05$), except for head weight percentage. It was concluded that slaughtering female sheep above one year old resulted in higher percentage of carcass. We suggested to slaughter female sheep above one year old and 15 kg slaughter weight during Iedul Adha period, which might help to control slaughtering lokal female sheep in their growth period. More thorough analysis using social-economic analysis might give more proper explanation of this phenomenon.

INTRODUCTION

Intensive slaughter on female sheep in slaughterhouse in Indonesia increases especially during Iedul Adha (moslem ceremony of slaughtering specific cattle). It is highly related with the decrease of the number of male sheep available in the market because the slaughter is only focused on male cattle at Iedul Adha. The breeding ability of cattle is described as the growth speed, the carcass percentage, and the production characteristic. Growth is the development or the growth of tendons, bones, and other parts of the body (Ensminger, 1986).

The purpose of cattle slaughter is to obtain the optimum carcass and meat. In general, the result of the slaughter can be divided as two major parts i.e. carcass and non-carcass (Forrest et al, 1975). Carcass is the main body parts after being reduced by non-carcass factors i.e. blood, head, legs, internal organs (heart, liver, spleen, digestion tract, reproduction) (Soeparno, 2005). Meanwhile, non-carcass is the other result of cattle slaughter that can be grouped as edible offal and non-edible offal. The edible offal consists of head (brain, tongue, and head muscle), blood, trachea, lungs, spleen, heart, pancreas, skin, legs, and digestion tract. In contrast, the non-edible offal covers horns, nails, and bones.

Hence, the measurement of certain body parts can be used as a clue in predicting or measuring the living weight of slaughter cattle (Williamson and Payne, 1993). This research aims to find out the variations of weight of local female sheep aged less than 1 year old up to 2 years old. Moreover, it aims to observe the influence of age and slaughter weight on carcass percentage and non-carcass percentage (skin, head, heart, lungs) on female sheep slaughtered in slaughter house.

MATERIALS AND METHOD

This research was done in during Iedul adha period 2007, located in slaughterhouse Kresen, Bantul, Yogyakarta. 60 female sheep were identified and grouped based on weight and age during slaughtering. Female sheep were grouped based on age by observing the difference of front teeth and it was discovered that 30 sheep aged 1–1.5 years old and 30 female sheep aged 1.5–2 years old. However, grouping based on slaughter weight discovered that 30 sheep with average weight between 10–14.9 kg and 30 female sheep with slaughter weight of 15–20 kg.

Sheep slaughtered and then skinned, separated from the head, all internal organs and four legs measured to find out the carcass weight. Data analysis was conducted by ANOVA method.

RESULTS AND DISCUSSIONS

Carcass percentage

Table 1. Average Carcass Percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	34,71	38,09	45,89	39,56 ^a
II	40,29	43,25	47,98	43,84 ^b
Average	38,10^a	40,67^b	46,94^c	

^{a b c} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

The result of the analysis of table 1 showed that slaughter weight showed real difference on carcass percentage ($P < 0,05$). Carcass weight percentage in group I was higher than in group II. It indicates that the higher the slaughter weight is, the more carcass will be produced, in that body composition is highly related with body weight influencing carcass composition (Soeparno, 2005), it is caused by the bone proportion, tendons, and fat as the main carcass element. Body weight is strongly related with body composition.

The data results showed significant difference on average carcass percentage in every age group. The average carcass percentage of sheep aged 1.5–2 years old was higher than that of sheep aged less than 1–1.5 years old.

Non Carcass

The research revealed that the average of non-carcass percentage based on slaughter weight and cattle weight as follows:

Table 2. Average head percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	8,73	8,38	8,04	8,38 ^a
II	7,11	6,71	6,51	6,77 ^b
Average^{ns}	7,92	7,54	7,27	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

^{ns} non significant

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 3. Average skin percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	11,36	10,98	10,27	10,87 ^a
II	10,13	9,38	8,10	9,20 ^b
Average	10,75^a	10,18^{ab}	9,19^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 4. Average of leg percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	3,65	3,50	3,25	3,47 ^a
II	2,78	2,66	2,44	2,63 ^b
Average	3,21^a	3,08^{ab}	2,85^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 5. Average heart percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	2,81	2,43	1,96	2,40 ^a
II	2,11	1,97	1,82	1,96 ^b
Average	2,46^a	2,20^a	1,89^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 6. Average liver percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	0,85	0,70	0,70	0,75 ^a
II	0,60	0,52	0,50	0,54 ^b
Average	0,72^a	0,61^{ab}	0,60^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 7. Average lungs percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	2,33	2,11	1,60	2,01 ^a
II	1,62	1,58	1,46	1,55 ^b
Average	1,98^a	1,84^a	1,53^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

Table 8. Average digestion tract percentage (%) of local female sheep

Slaughter Weight	Age (Year)			Average
	<1	1-1,5	1,5-2	
I	10,23	9,41	8,91	9,52 ^a
II	8,59	7,87	7,57	8,01 ^b
Average	9,41^a	8,64^{ab}	8,24^b	

^{a b} Mean in the same column with different superscripts are significantly different at $P < 0,05$

± sd already measured

Slaughter Weight I = 10 - 14,90 Kg

Slaughter Weight II = 15 - 20 Kg

± sd already measured

The data on table 2–8 showed that slaughter weight significantly gave different result ($P < 0,05$) on non-carcass percentage (head, skin, legs, heart, lungs, and digestion tract). It was clearly seen that Group I showed higher result than Group II. Furthermore, age also gave absolutely different result ($P < 0,05$) on non-carcass variable except for the head that was probably caused by the growth of the local female sheep. The data above also showed that the higher the slaughter weight was, the smaller the non-carcass proportion was (Setiyono, 1987).

The age factor also showed result that the older the cattle were, the smaller the non-carcass percentage was. Sugeng (1987) states that the growth speed is different starting from the form of fetus; each part of the body experiences different growth spurt and the animal's non-carcass element experiences earlier growth than the carcass so that the older the animal is, the smaller the non-carcass percentage is.:

CONCLUSION

Slaughter weight contributes significant influence on carcass percentage and non-carcass percentage of female sheep (skin, legs, head, heart, liver, lungs, and digestion track) during iedul adha period. Age contributes significant influence on carcass percentage, skin percentage, legs, heart, lungs, and digestion track whereas age does not give any influence on head percentage.

REFERENCES

- Ensminger, M.E. (1986). Animal Science, 6th Ed. Illinois: The Interstate Printer and Publisher Inc.
- Forrest, J. C., E. D. Aberle, H. B. Hedrick, M. D. Judge and R. A. Merkel. (1975). Principles of Meat Science. San Fransisco: W. H. Freeman.
- Setiyono. (1987). Hubungan Kualitas Fisik Dengan Komposisi Fisik dan Kimia Karkas dan Daging Domba Lokal Jantan yang diberi Pakan dengan Level Energi dan Berat Potong yang Berbeda (Tesis S2). Yogyakarta: Gadjah Mada University Press.
- Soeparno. (2005). Ilmu dan Teknologi Daging, 4th Ed. Yogyakarta: Gadjah Mada University Press,.
- Sugeng, Y.B. (1987). Beternak Domba. 2nd Ed. Jakarta: Penebar Swadaya.
- Williamson, G dan W. J. A. Payne. (1993). Pengantar Peternakan di Daerah Tropis. Yogyakarta: Gadjah Mada University Press.