Post-mortem indices of black-and-white breed

M R Kudrin, G Y Berezkina, A I Shklyaev, L A Shuvalova and I A Deryushev
Izhevsk State Agricultural Academy, Izhevsk, Russia

E-mail: kudrin_mr@mail.ru

Abstract. The research findings showed that the carcass weight of cows after fattening made 325.20±18.23 kg, and in cows that were not on feed it was 251.34±10.23, which was 73.86 kg less compared to cows sold after fattening. The carcass yield made 46.70 and 44.26±0.61% or 2.44% higher, respectively. The carcass weight of first-calf heifers after fattening made 193.78±2.81 kg, and in first-calf heifers that were not on feed it was 171.00±2.98, which was 22.78 kg less compared to first-calf heifers after fattening. The carcass yield made 40.80 and 38.50±0.46% or 2.30% higher, respectively. The carcass weight of young cattle after fattening made 183.2±4.49 kg, and in young cattle that was not feed it was 136.93±5.69 kg, which was 46.27 kg less compared to young cattle sold after fattening. The carcass yield made 45.70±0.63 and 38.70±0.70% or 7.00% higher, respectively. The carcass yield in all age-sex groups corresponds to the indices for black-and-white breed. Not a single carcass of slaughtered animals is qualified as “super”, “prima”, “extra” and “excellent” category because they do not meet the requirements of GOST according to the carcass weight. The carcass of slaughtered animals is mainly qualified as “good”, “satisfactory” and “low” category. The results of the slaughtering of the researched animals by age-sex groups are as follows. The first-calf heifers after fattening belong to “good” category; because their carcass weight is in the range of 187.3-204.1, class G, subclass 1. The first-calf heifers without fattening correspond mainly to “satisfactory” category, because their carcass weight is in the range of 163.5-183.6 kg, class D and subclass 2. The heifers between the age of 8 month and 3 years old after fattening are mainly qualified as “excellent” category, because their carcass weight is in the range of 166.8-193.9 kg, class G, subclass 1. The heifers between the age of 8 month and 3 years old without fattening are mainly qualified as “low” category, because their carcass weight is in the range of 112.8-153.5 kg, class D and subclass 2.

1. Introduction
Dairy cattle breeding gives the bulk of all beef consumed in the country. These are animals sold for slaughter at a young age after fattening, culled cows and bulls, dairy heifers and bulls-eunuchs. Improving of a fattening and processing technology, as well as increased consumer demand for products with the lowest fat content, contributes to the increasing use of a dairy cattle for the production of lean beef. The final product of the technology of beef production is carcass of the cattle, slaughtered for meat, which is thought as meat on the bones [1-6].

It has been established that by good organization of growing and fattening of young cattle, it is possible to obtain a high yield of meat products not only from beef breed, but also from dairy or dairy-meat cattle breed [7-10].
The cattle of the black-and-white breed occupies one of the first places in milk production among all the world’s species and is distinguished by satisfactory meat qualities. The culled dairy cows and the fattening part of dairy herds remain the main source of raw materials, giving about 95% of all domestic beef. Meat obtained from dairy animals is not considered to be meat abroad [11-14].

The research was conducted in 2016-2017 on black-and-white breed of “Uromskoe” LLC of Malopurginsky District, Udmurt Republic.

Research objective is to study the beef production criteria after slaughter of fed and non-fed cows and young cattle.

In accordance with the established objective the following tasks had been identified: to study the beef production criteria (carcass weight, slaughter yield) of fed and non-fed cows and young cattle.

2. Experimental
To make this study, it was analyzed the relevant documentation on the slaughter of cattle for meat (calculations were made to determine the carcass yield of cows and young cattle before and after fattening).

To estimate the post-mortem indices of cows and young cattle, not less than ten animals were taken in each age-and-sex group.

After the slaughter of cows and young cattle the following indicators were taken into account:

- carcass weight (body of the slaughtered animal without head, skin, internal organs, internal fat, tail, forelimbs along the wrist joint, hind limbs along the locks);
- the carcass yield (the ratio of the carcass weight to the preslaughter body weight, expressed as a percentage);
- the category of fatness of young cattle by the carcass weight.

For research purposes a commercial invoice on sending and acceptance of animals and the accounting reports are used. Mathematical data processing was conducted.

3. Results and considerations
Beef production in “Uromskoe” LLC of Malopurginsky District of the Udmurt Republic is mainly carried out due to the culled cows and young cattle.

For the year of 2016 only 234 heads were sold for processing enterprises. The total body weight of realized cattle made 113534 kg or the body weight of one head averaged 485 kg.

We have studied the beef production parameters of cows and young cattle after slaughter in accordance with the requirements of GOST R 54315-2011- Cattle for slaughter. Beef and veal carcasses, semi-carcasses and quarters. Specifications.

Based on the results of slaughter we made an assessment of cattle according to the carcass weight. The carcass weight of cows after fattening made 325.20±18.23 kg, and in cows that were not on feed it was 251.34±10.23, which was 73.86 kg less compared to cows sold after fattening. The carcass yield made 46.70 and 44.26±0.61% or 2.44% higher, respectively (table 1).

Table 1. Parameters for the preslaughter body weight and carcass yield of mature cattle (cows after having two or more calves).

| Age-sex group | Preslaughter body weight, kg | Carcass weight, kg | Carcass yield, % | Classification |
|---------------|----------------------------|-------------------|----------------|---------------|
| Cows on feeding | 696.0±28.39 | 325.20±18.23 | 46.70 | (MC) |
| Cows without fattening | 567.0±15.58 | 251.34±10.23 | 44.26±0.61 | (MC) |

The carcass weight of first-calf heifers after fattening made 193.78±2.81 kg, and in first-calf heifers that were not on feed it was 171.0±2.98 kg, which was 22.78 kg less compared to first-calf heifers
after fattening. The carcass yield made 40.80 and 38.50±0.46% or 2.30% higher, respectively (table 2).

**Table 2.** Parameters for the preslaughter body weight and carcass yield of first-calf heifers (young heifers having the first calf).

| Age-sex group                     | Preslaughter body weight, kg | Carcass weight, kg | Carcass yield, % | Requirements (lower limits) by body weight, kg no less | Classification |
|----------------------------------|------------------------------|--------------------|------------------|-------------------------------------------------------|----------------|
| First-calf heifers after fattening | 474.8±6.87                  | 193.78±2.81        | 40.80            | Extra                                                 | (FCH)          |
| First-calf heifers without fattening | 444.0±4.29                  | 171.0±2.98         | 38.5±0.46        | Excellent                                             | (FCH)          |

The carcass weight of young cattle after fattening made 183.2±4.49 kg, and in young cattle that was not on feed it was 136.93±5.69 kg, which was 46.27 kg less compared to young cattle sold after fattening. The carcass yield made 45.70±0.63 and 38.70±0.70% or 7.00% higher, respectively (table 3).

**Table 3.** Parameters for the preslaughter body weight and carcass yield of young cattle (young heifers between the age of 8 months and 3 years old).

| Age-sex group                                      | Preslaughter body weight, kg | Carcass weight, kg | Carcass yield, % | Category    | Requirements, lower limits, CC, kg | Class | Subclass |
|---------------------------------------------------|-----------------------------|-------------------|------------------|-------------|-----------------------------------|-------|----------|
| Young heifers between the age of 8 months and 3 years old after fattening | 400.50±4.64                | 183.2±4.49        | 45.7±0.63        | Excellent   | 400                               | G     | 1        |
| Young heifers between the age of 8 months and 3 years old without fattening | 353.25±8.43                | 136.93±5.69       | 38.7±0.70        | Good        | 350                               | D     | 2        |

In addition, beef from young cattle is divided into categories, classes and subclasses by the carcass weight in accordance with the requirements of GOST. All the data obtained are indicated in the table 4.
Table 4. Parameters of the carcass weight of young cattle.

| Age-sex group | Preslaughter body weight, kg | Carcass weight, kg | Requirements (lower limits) by body weight, kg no less | Class | Sub-class |
|---------------|-----------------------------|-------------------|------------------------------------------------------|-------|-----------|
| First-calf heifers after fattening | 474.8±6.87 | 193.78±2.81 | Good | G | 1 |
| First-calf heifers without fattening | 444.0±4.29 | 171.0±2.98 | Satisfactory | D | 2 |
| Young heifers between the age of 8 months and 3 years old after fattening | 400.50±4.64 | 183.2±4.49 | Good | G | 1 |
| Young heifers between the age of 8 months and 3 years old without fattening | 353.25±8.43 | 136.93±5.69 | Low | D | 2 |

Figure 1 shows the comparative characteristics of cattle after fattening and without fattening according to the carcass weight.

Figure 1. Comparative characteristics of cattle after fattening and without fattening according to the carcass weight.

The researched findings showed that not a single carcass of slaughtered animals was qualified as “super”, “prima”, “extra” and “excellent” category, because they do not meet the requirements of GOST according to the carcass weight. The carcass of slaughtered animals was mainly qualified as “good”, “satisfactory” and “low” category. The results of the slaughtering of the researched animals by age-sex groups are as follows. The first-calf heifers after fattening belong to “good” category, because the carcass weight is in the range of 187.3-204.1, class G, subclass 1. The first-calf heifers
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4. Conclusion
Thus, it should be noted that the carcass yield of cows made 46.70 and 44.26%, in the first-calf heifers it made 40.80 and 38.50% and in young cattle it made 45.70 and 38.70%. The carcass yield in all age-sex groups corresponds to the parameters for the black-and-white breed.

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