...CES AND QUALITY OF BEEF PRODUCED IN ESTONIA

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...RACT: The aim of this study was to determine the growth rate, some quality characte-
...tics of cattle carcasses and beef derived from Red Estonian and Black-and-White
...onian dairy breeds.

...t constitutes ca 39 % of total meat production in Estonia. The main sources of beef
... the young fattening bulls, culled cows, heifers and first lactation heifers. Ca 60 %
... beef is produced from young fattening bulls. The mean live weight of young bulls at
...ughtering was 420-460 kg and the age about 20-22 months. The carcasses of the young
...ls were estimated to be the best but the carcasses of culled cows and heifers were
... acceptable due to the high proportion of subcutaneous fat as well as fat in the body
...ity.

...e results obtained with the Red Estonian young bulls showed that the proportion of
...cutaneous fat increased after 18 months of age and therefore carcass quality was
...reasing.

...order to get desirable beef carcasses meeting the demands of customers and meat
...dustry, body fat must be reduced by regulating the feeding of cattle and by partial
...troduction of crossbreeding programs.

...ODUCTION: Cattle breeding in Estonia is mainly specialized in milk production and
...ding of pure-bred cattle and therefore the main aim of the cattle breeding is milk pro-
...ction and rearing of the cattle with high breeding value. Beef production is the supple-
...tary branch of dairy cattle breeding and it must take place without any damage to the
...h objective of cattle breeding.

...ULTS AND DISCUSSION: In Estonia mainly two dairy breeds - the Estonian Red and Estonian
...ck-and-White - have being bred. The proportion of both breeds is nearly the same but
... last years the importance of Black-and-White Estonian dairy breed begins to prevail
...er the Red Estonian dairy breed due to the higher milk production. The local Estonian
...y breed and pure beef breeds are of little importance.

...erlier the Estonian dairy breeds were considered to be dual-purpose because alongside
...h the relatively high milk production, the cattle had satisfactory or even good fatte-
...ng and beef qualities.

...nsequently the main objective of Estonian cattle breeding is and will be the rearing of
...ttle with high milk yield together with high fat and protein content.

... Red Estonian cattle breeding the sires of Red Danish bulls with Swiss blood as well as
...e sires of American Swiss and Red-and-White Holstein breed will be used. For improving

the Black-and-White Estonian dairy breed the Dutch Black-and-White sires has been used. In last years the Holstein sires from USA, Germany and other countries were imported and used.

The structure of meat production in Estonia is as follows (in live weight):

cattle	39 %
pigs	47 %
poultry	9 %
sheep	2 %
other species	3 %

The weight of beef in total meat production has increased and from the point of view of the more wholesome nutrition it is a positive tendency but in connection with the remarkable increasing of beef price and the decreasing of its quality the consuption of beef has been decreasing. The main sources of beef are the young fattening bulls, culled cows, heifers and first lactation cows. Ca 60 % of beef is produced from young fattening bulls. Some data characterizing the carcasses of Red Estonian cattle are given in Table 1. Until now the agricultural policy was in a great deal governed by Ministry of Agriculture of the former Soviet Union and consisted mainly in increasing beef production tasks for Russia. Therefore it was necessary to increase the milk production from one side and to increase the beef production from the other side as in selling beef to Russia it was possible to buy concentrates for favourable prices. The problem of beef quality wasn't of great importance. The following numbers give an approximate survey of the beef production plans:

year 1988

total number of cattle in Estonia	821 000
among them cows	303 400
slaughtered (in live weight), tons	257 400
beef production plan, tons (mainly to Russia)	48 000

In cattle breeding there was the situation when dairy cattle were fed with the feeds of higher quality and the feeding of slaughter animals i.e. mainly young fattening bulls was not sufficient. The low level of feeding can be seen from the data of daily mass gains: the average in Estonia has been on the level of 400 to 700 g. At the same time in young bulls, reared for A.I. service, these figures are from 900 to 1 000 g. The shortage of digestive protein in rations influences the daily mass gains significantly. The average live weight of the slaughter cattle has been increasing despite of the unfavourable feeding conditions. The average live weight of young bulls at slaughtering has been 420-460 kg and the age about 20-22 months. The data of experimental bulls are given in Table 2.

eral breeding measures have being used in order to increase the beef production and mprove its quality. One of these methods is progeny testing of young fattening bulls beef production and the elucidation of the possibilities of using the breeding bulls d good or at least satisfactory beef production qualities in dairy cattle breeding. results of progeny testing of young bulls for beef production prevailed the average s of young fattening bulls. The average daily mass gain of the test bulls was approxi- ly 900-1 000 g. The test bulls were slaughtered at the age of 13-14 months having the e weight 413-459 kg, average carcass weight 245-260 kg. There was no significant ference between the bulls of the Red Estonian and Black-and-White Estonian breed but es were differences in beef production qualities and feeding efficiency between the s of different sires.

until now the attention was mainly paid to the quantity of beef production and not to quality, the rearing of pure beef breeds was out of question. In recent years the titude has changed and Hereford cattle are being reared in 20 different-type farms. The ut 54 animals of Hereford breed were imported in 1978. Until now 465 animals of Here- rd breed from Russia, 140 from Finland and 125 from Denmark have been bought. The aim Hereford cattle rearing in Estonia was to use the grasslands that were not suitable main branches of agriculture. Therefore the rearing of Hereford cattle turned out to semi-extensive and as a result, not very high mass gains had been achieved. In spite the comparatively weak feeding, the organoleptic qualities of the beef from Hereford ng fattening bulls were better in comparison with the data of other breeds (Table 3). improving the breeding qualities of the Hereford cattle in Estonia the sires from land are used. The semen of other beef breeds as Limousine, Piedmontese and Angus will used for crossbreeding of less valuable Red Estonian and Black-and-White Estonian cows.

CLUSIONS: Until now the quality of saleable beef of Estonian dairy breeds was satis- tory in spite of the unbalanced and even insufficient feeding. The changed political economic situation forces to take different measures for improving the feeding of ughter cattle and to use different breeding methods (progeny testing, crossbreeding) r improving the quality of beef.

Table 1. Mean live weights, meat yield weights and mean percentage of muscle and fat tissue (Red Estonian breed)

Description	Age, months	Carcass weight, kg	Muscle tissue, %	Fatty tissue, %
Young fattening bulls	16-18	170-230	72.3-73.0	2.9-5.4
Heifers	24-28	205-217	69.0-71.2	4.2-8.3
1st lactation cows	30-36	210-250	70.3-72.0	3.6-6.4
Adult cows	48-72	222-267	67.0-71.9	5.2-11.3

Table 2. Mean live weights and meat yield weights of young slaughtering bulls

Breed	No	Live weight at the age of 6 months, kg	Average weight gain, g	Live weight at the age of 12 months, kg	Average weight gain, g	Final live weight, kg	Age at slaughtering, days	Meat weight, kg
Red Estonian	206	163	712	312	816	450	536	230
Black-and-White Estonian	220	156	701	305	816	451	532	234

Table 3. Results of taste panel evaluation of beef (by 6-point scale)

Breed	Odour	Flavour	Tenderness	Juiciness	Total
Hereford	5.3	5.1	5.1	4.8	20.3
Red Estonian	4.7	4.8	4.7	4.4	18.6
Black-and-White Estonian	4.3	4.5	4.5	4.4	17.7
Charolais	4.4	4.3	3.8	4.1	16.6