PRODUCTION OF HIGH QUALITY BEEF IN ACCORDANCE WITH EUROPLEAN TRENDS

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Contents: In our country, fattening of cattle is mainly based on heads of Domestic Spotted breed. Future of Serbian export of meat is first of all in production of beef of such quality which satisfies the demand and requirements of the market. In this regard and based on previous experiences of production for known buyers and according to their demand/request beef was exported to Italian, Greek and remaining markets. Prerequisite for any export of beef from Serbia is: identification and registration of all heads of cattle on the territory of the Republic of Serbia, application of international standards of control and monitoring of the production process and application of EU regulations relating to animal welfare.

Beside mentioned conditions it is also necessary to provide high quality fattening material – female calves for production of “baby beef” type and male calves for prolonged fattening. Contrary to increased demand for fattening heads of cattle, there is trend of decrease of number of cattle for fattening, especially calves and young cattle. One of the ways for efficient and fast production of high quality calves for fattening is application of the method of industrial crossing of Domestic spotted cattle of lower productive traits. Based on obtained results and realized economical effects we can recommend that method of industrial crossing should include 20-25% of female population of Domestic Spotted breed. The quality of meat obtained from crosses of F1 generation will fully satisfy requirements of consumers, especially those who have been traditional importers of our beef (Italy and Greece).

Key words: cattle, EU regulations, stress, crossing, breed, economical effects

Introduction

Our country was well known as exporter of beef to European countries, especially to Italy and Greece. Export of beef was expanding until Italy (1974) and Greece (1980) became members of the European Economical Community. For example, in 1974 we exported 50.500 t/year to Italian market and in year 1980 51.310 t to Greek market (Tojagić et al., 1989) and there were 25 registered slaughter houses with EU certificate. Today there are only two such slaughter houses (Knjaževac and Cajetina) with EU certificate and allowed quota of 9.984 t of beef which we are not capable of realizing.

Possibility of marketing of beef

Future of Serbian meat export is in the production of beef of such quality which would satisfy and meet all requirements of the market. In this regard and based on our previous experience and practice in production of beef for already known buyers and in accordance with their requests, direction of export could be following:

1. Export to traditional Italian markets

Italian market demands high quality of beef. The Italy's most developed province Toscana demands so called "baby beef" quality. This is meat from young cattle not older than one year and average live weight of 450 kg – bulls and 400 kg heifers.

There is special interest on this market for meat of "baby beef" quality from female high quality young cattle. In regard to quality of meat pink colour of meat is demanded, equal marbling and fat tissue of white to light yellow colour. In regard to processing, mainly sides of beef (round + loin – back part/rump with
6 ribs) and equally cut quarters. Equally cut quarters or compensated was could be marketed in limited quantities which also confirms the choosiness of this market.

2. Export to traditional Greek markets
Greek market as traditional importer of our meat demands meat from bulls slaughtered with over 500 kg of live weight and carcass weight of over 250 kg. In regard to processing on this market compensated equally cut carcass or carcasses are demanded. Carcasses of good conformation and covered well with fat tissue are in demand on this market.

3. Other markets
Other markets for marketing of beef from Serbia are mainly markets of the countries of Near and Middle East. Requests on these markets relate mainly to religious way of slaughtering of animals and in regard to quality – traits of quality emphasized on Italian and Greek markets are not insisted upon here.

Prerequisites for export of beef

Today, our farmers and meat industry firms are very much interested in returning to markets of EU countries, however serious obstacle is that EU regulations on housing and transport conditions, as well as slaughter house depot and slaughtering are still not applied in Serbia.

Prerequisites for export of beef are:
1. Identification and registration of all heads of cattle on the territory of Republic of Serbia.
2. Application of international standards of control and monitoring of the production process.
3. Application of EU regulations on animal welfare.

- Identification and registration of all heads of cattle on the territory of Republic of Serbia. This is condition sine qua non, therefore the Ministry of Agriculture of Republic of Serbia has made the Regulation on identification and registration of cattle in 2004 (Regulation, 2004). One of the conditions for export of beef has been fulfilled.
- Implementation of international standards of control and monitoring of production process includes first of all implementation of HACCP (Hazard Analyzed Critical Control Point), GMP (Good Manufactory Practice) and GVP (Good Veterinarian Practice).
- Application of EU regulations relating to animal well fare «Protocol on protection and welfare of animals - OJ 340/97»
- Application of EU regulations relating to welfare of farm animals (O J L323/78, O J L221/98, O J L019/2000) especially calves – directives relating to minimum space provided for animals (O J L340/91, O J L025/97, O J L076/97)
- Application of EU regulations relating to animal welfare in slaughter house depots and slaughtering methods (O J L137/98, O J L340/93).

Significance of the application of these EU regulations and directives is to provide minimum demands relating to welfare of certain animal species and in this way reduce stress factors which are especially damaging in production of beef. Meat obtained from stressed animals has special characteristics (dark, firm, dry) – so called DFD meat. DFD-meat, as consequence of stress (Sahye 1953), doesn't have the traits of normal meat. Main reason of rejections from foreign buyers is colour of meat. Dark appearance of DFD meat is consequence of used muscle glycogen due to the effect of stress factors on organism immediately prior to slaughtering. Results of the research on correlation between colour of meat and pH value (Price and Tennessen, 1981; Aleksić, 1986, 1995) indicate that there is direct effect of pH on meat colour. Many authors – meat scientists, (Lawrie, 1966; Lister 1981, Aleksić, 1986, 2000) as proof of their statement that colour of meat depends on pH value state the fact that perigonal meat treated with buffer of pH value 7.0 becomes even more dark and if the same meat is treated with buffer of pH=5.3 light colour of meat is obtained, (Freeden et al., 1974). Second reason for rejection of carcasses with DFD traits by foreign buyers
is firmness. Specific firmness of DFD meat is caused by its great water binding capacity (WBC) (Lawrie, 1966; Fischer, 1981; Aleksić 1985, 1992, 1995). High pH 3.4 value of DFD meat doesn’t allow the degradation of formed actomyosin complex resulting in firm consistency of DFD meat. Water binding capacity (WBC) of meat is a culinary and technological trait which in normal circumstances would determine the choice of optimal processing method of meat. DFD-meat has greater water binding capacity (Aleksić 1986, 1991, 1995, Confort and Egbert, 1985). Dransfield, (1981) who concluded that DFD meat has more gentle texture but poor taste and aroma compared to normal meat. Occurrence of DFD meat is characteristic for all countries with intensive livestock production and DFD meat is by 10 to 30% cheaper than normal meat (Aleksić et al., 1992). Modern meat science is investigating the effect of stress prior to slaughtering since it is thought that only healthy animals provide meat of necessary quality. Therefore it is necessary to reduce stress factors to minimum, especially stress factors prior to slaughtering (Aleksić, 1995, 2003).

Conclusion

Considering the needs of developed countries in regard to import of high quality beef, Republic of Serbia has to provide in fast and efficient way sufficient quantities of meat of top quality in the near future. Beside application of EU regulations and standards aiming to reduce the stress factors it is necessary to provide high quality fattening material – female calves for production of “baby beef” type and bull calves for prolonged fattening. Contrary to increased demand for fattening heads of cattle there is trend of decrease of number of calves and young bulls. There are approx. 750,000 cows and heifers in Serbia today (Rep. Bureau of Statistics). Domestic Spotted breed of Simmental type participates with 50% and Domestic Spotted cattle with lower productive traits with 40%, remaining 10% are other breeds and crosses.


Based on obtained results and realized economical effects we can recommend the method of industrial crossing for 20–25% of female breeding population of Domestic spotted breed (Aleksić, 1995, 1997). At the same time, high quality meat from crosses of F1 generation will completely satisfy the requirements of consumers, especially traditional importers of our meat (Italy and Greece).

PROIZVODNJA KVALITETNOG JUNEČEG MESA U SKLADU SA EVROPSKIM TRENOVIMA

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Rezime

U našoj zemlji tov junadi se uglavnom zasniva na grilima domaće šarene rase. Budućnost srpskog izvoza mesa leži pre svega u proizvodnji junečeg mesa takvog kvaliteta koji odgovara zahtevima odgovarajućeg tržišta. U tom smislu na osnovu našeg dosadašnjeg iskustva i prakse proizvodnje junečeg mesa za poznate kupce i tržišta a prema njihovom zahtevu možemo podeliti u tri grupe i to: za italijansko, grčko i ostala tržišta. Preduslov za bilo kakav izvoz junečeg mesa je: identifikacija i registracija svih goveda na teritoriji R Srbije, primena međunarodnih standarda kontrole praćenja procesa proizvodnje i primena regulativa EU koji se odnose na dobrobit životinja u cilju minimiziranja stres faktora, a samim tim i trupova sa simptomima DFD mesa. Pored preduslova primene regulativa i standarda EU potrebno je obezbeđiti kvalitetan tovni materijal odnosno ženska telad za proizvodnju tipa “baby beef” a muška za produženi tov.
Nasuprot povećanim potrebama za grlima za tov, imamo opadanje broja teladi i junadi. Jedan od načina brze i efikasne proizvodnje kvalitetne teladi za tov je primena metode industrijskog ukrštavanja goveda domaće šarene rase nizih proizvodnih osobina. Na osnovu dobijenih rezultata i ostvarenih ekonomskih efekata možemo preporući da se metodom industrijskog ukrštavanja treba obuhvatiti 20-25% plotinjan od ukupne populacije domaće šarene rase. Istovremeno, kvalitete mesa meleza F1 generacije u potpunosti zadovoljava sve zahteve potrošača, posebno onih (Italija, Grčka i dr.) koji su tradicionalni uvoznici našeg junečeg mesa.

**Ključne reči:** Goveda, regulative EU, stres, ukrštanje, rasa, ekonomski efekti.

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