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SERBIA IN THE IMPLEMENTATION OF SEUROP STANDARD FOR BEEF CARCASS CLASIFFICATION: LEGISLATION, PARAMETARS AND EVALUATION CRITERIA (PART A)

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Review paper

Abstract: Agriculture of the Republic of Serbia is going through significant reforms in legislation and agricultural policy, during this EU pre-accession period, in order to comply to one of the most important EU policies – Common Agricultural Policy (CAP). The potential and tradition of Serbia in production of beef, on one hand and EU market needs on the other, impose the need for timely preparations from the legislative and technological aspect and human resources. Present study gives the review of major legislative regulations and main parameters of SEUROP beef classification system in sense of definition, presentation and categorization of carcass, as well as criteria in conformation evaluation and fat cover of the carcass.

Key words: beef, SEUROP classification, conformation, fat cover, EU legislation

The state and potential of beef production in Serbia

Beef is from the nutritional aspect very valuable food stuff in human nutrition. In our country, production and consumption of this meat has a negative trend for several years, and in regard to frequency of its use in nutrition it takes third place behind pork and poultry *(Ostojić et al. 2005; 2006)*. Despite the great potential and tradition in production of beef for foreign markets *(Aleksić et al., 2007)*, Serbia is not benefiting from its export opportunities on the market of European Union (EU) in view of exported quantity of beef of 2.289 tons in 2001, and in other years the export quantities didn't even exceed 2000 tons. Preferential export quota of 8.700 tons can be achieved with fattening of 100.000 young cattle, and presently in Serbia less than 12.000 young cattle is fattened per year.

In order to improve the present situation in regard to cattle population, which has annual rate of decrease of 3,31% since 1998 *(Petrović M.M. et al.,2011)*, it is necessary to implement and carry out succesfully agro-economical policy and strengthen farmers' associations with objective to influence to greater extent the degree of market risk.

In addition to quantity, very important are also activities focused on improvement of the quality of beef carcasses and meat, from economical aspect (yield of edible parts, conformation and fat cover of carcasses) as well as from the aspect of technological processing and consumption (sensory and technological properties, share of tissues, etc.). In studies by domestic authors *(Ostojić-Andrić et al., 2011[a]; 2011[b]; Aleksić et al., 2011; Sretenović et al., 2011; Ostojić-Andrić et al., 2009; Miščević et. al., 2007; Ostojić et. al., 2007)* possibilities and solutions are presented how to increase the yield and quality of beef by improvement of genotype, nutrition and technology. However, it is necessary that the government, as well as the economy, through their regulatory systems, contribute to strengthening of the position of this potentially profitable production.

Legislation in Serbia and European Union

Stated indicators of the condition in production of beef are very unfavourable in the context of liberalization of domestic market and realization of foreign currency inflows from export of beef, as well as preparation of the country to join EU. One set of rules and practices in the process of harmonization with EU is implementation of cattle carcass classification according to EU standards. In European Union, based on regulations adopted in 1981 (Regulations (EEC) No. 1208/81, No. 2930/81) the process of scoring and classification of cattle carcasses on slaughter line was initiated, first optionally and since 1995 (Regulation (EEC) No. 1186/90) classification is obligatory. It was preceded by forming of common beef market of countries members of European Economical Community (EEC) in 1968, with obligation of price notification (Regulations (EEC) No. 805/68). Although these regulations were originally used for monitoring of market prices, today they are used for forming of prices paid to suppliers of young cattle and are of importance for commerce.

In Serbia, Rulebook on quality of slaughter livestock, poultry and wild game ("Official Journal of SFRY", No. 34/74) is still valid, as well as the Standard for classification of beef in carcasses and carcass sides for industrial processing with mandatory implementation (JUS E.C.1. 022/74), based on descriptive system of visual scoring of conformation and fat cover of carcass, similar to EU standard. Based on stated regulations carcasses are categorized on slaughter line in veal, young beef and beef. Classification continues in four classes (E, I, II, VK) based on carcass mass, conformation, fat cover and marbling of meat, as well as colour,

structure and consistency of muscle and fat tissue. According to major carcass parts, meat is marketed as meat of I, II and III category, and meat belonging to none of the categories, and veal only as meat of I, II and III category. Implementation of these regulations in Serbia is partial since meat is categorized only based on the age of cattle and categorization of meat.

Introduction to SEUROP classification system

SEUROP classification enables prediction of the amount of meat in major carcass parts, and this is basis for payments to producers of young cattle. Price of young cattle paid to the farmer is determined by multiplying the weight of the carcass and price for determined class within the category (A-E). EU member countries are obligated to carry out the classification in all slaughterhouses which slaughter over 75 fattening cattle per week, at the level of annual average. Much attention is focused on selection, training and control of persons in charge of classification, or, which is rarely, the classification is automated. Selection of the model of classification supervision is very delicate, and this should be taken into consideration when establishing it because it can include several subjects/stakeholders (slaughterhouses, agencies, institutes, ministries, etc.).

The parameters and criteria for the classification

In order to enable the uniformity of adult bovine carcass classification in EU countries, parameters and criteria are precisely determined by the legislation, as well as possibility of deviation from the basic models of their implementation. In this way the meaning of following terms is precisely defined: adult bovine animals, carcass presentation and carcass category; criteria in conformation scoring and fat cover of carcasses as well as identification of carcasses.

Definition of adult bovine animals

The term “Adult bovine animals” means bovine animals of live weight of over 300 kilograms. Member States may decide that the Community scale shall apply to carcasses of bovine animals aged on slaughter 12 months or more (Commission regulation (EC) No 1249/2008 Article 2 and Part IV(2) of Annex III to Reg. 1234/2007).

Carcass definition

According to the Council Regulation (EC) No 1234/2007 and Article 42.1, by rules determined in Annex V:

1. Carcass is the body of slaughtered animal after bleeding, evisceration and removing of the skin.
2. Carcass side is product obtained by cutting of the carcass referred to in Point 1. Symmetrically through the middle of each cervical, dorsal, lumbar and sacral vertebrae and through the middle of chest bone and ischio-pubic symphysis.

Carcass presentation

Carcass presentation is presentation of carcass prepared for classification. According to Council Regulation (EC) No 1234/2007 and Article 42.1, the carcass presentation according to rules determined by Annex V is as follows:

1. Carcasses and carcass sides shall be without the head and legs; head is separated from the carcass in the atlanto-occipital joint, and legs in carpal-metacarpal or tarsal-metatarsal joint.
2. Thoracic and organs of the abdominal cavity shall be removed from the carcass, with or without kidneys, kidney and pelvic fat.
3. Sex organs and muscles, as well as udder and accompanying fat tissue, also shall be removed from the carcass.

However, stated rulebooks and regulations enable choice and implementation of ten different types of carcass presentations. Carcass weight in various presentations is adjusted/corrected according to reference weight by introduction of correction factors for each type of presentation (Commission regulation (EC) No 1249/2008, Annex III). For instance, carcass of 400 kg in presentation 1 has reference weight of 404,8 kg as result obtained by multiplication of the actual weight with correction factor 101,2%, whereas the carcass of the same weight in presentation 4 has correction factor 97,85% and reference weight of 391,4kg (Table 1)

Table 1. Comparative outline of differences between carcass presentations 1 and 4

Code	Thin skirt	Thick skirt	Tail	Kidneys	Kidney fat	Pelvic fat	Removal of ext.fat
1	-	-	-	-	-	-	yes
4	+	+	+	+	+	-	yes

Carcass category

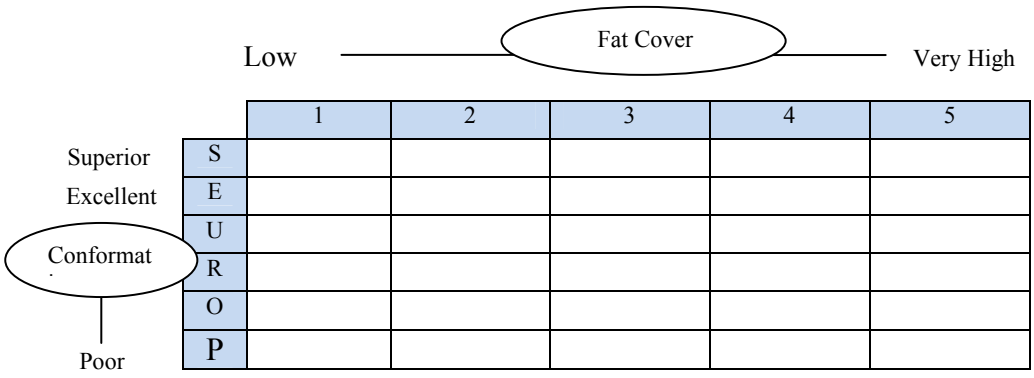
Determination of the carcass category is defined by Council Regulation (EC) No 1234/2007 based on signs of gender, age, executed castration and calving on animal carcass. Differentiation of gender is done based on size of muscle region around *crus penis* and shape of *symphysis pubis,* whereas the age is estimated based on the degree of ossification of the cartilages. In table 2 the scale comprising total of five categories A-E of adult bovine carcass categorization is presented:

Table 2. Categories of adult bovine carcasses (A-E)

A	Young bull	Carcasses of uncastrated young male animals of less than two years of age
B	Bull	Carcasses of other uncastrated male animals
C	Steer	Carcasses of castrated male animals
D	Cow	Carcasses of female animals that have calved
E	Heifer	Carcasses of other female animals

Carcass classification

Scheme 1. Classification of carcasses by scoring of conformation (S-P) and fat cover (1-5)



Criteria for scoring of carcass conformation

The scoring of carcass conformation is done by description of the profile expression (concave-convex) and development of muscles in three major carcass parts: leg, shoulder and back. Rulebooks define the scoring possibility by using main classes (S,E,U,R,O,P) with or without sub-classes (maximum three within each class), as decided by each EU member individually. Class S is used only in countries where there is basis for its use (double-muscled cattle). Table 3 shows the use of sub-classes in scoring of conformation in EU countries:

Table 3. Using conformation subclasses in EU countries

Model	N	EU countries
Main classes	6	CZ, CY, I, LT, AT, SK
Subclasses	14	D, DK, E, EST, EL, F, FIN, H, L, NL, PL, P, SLO, S
Subclasses only for several main classes	7	BG, IRL, LV, ENG/W, N-IRL, RO, SCOT
Main classes and subclasses	1	B

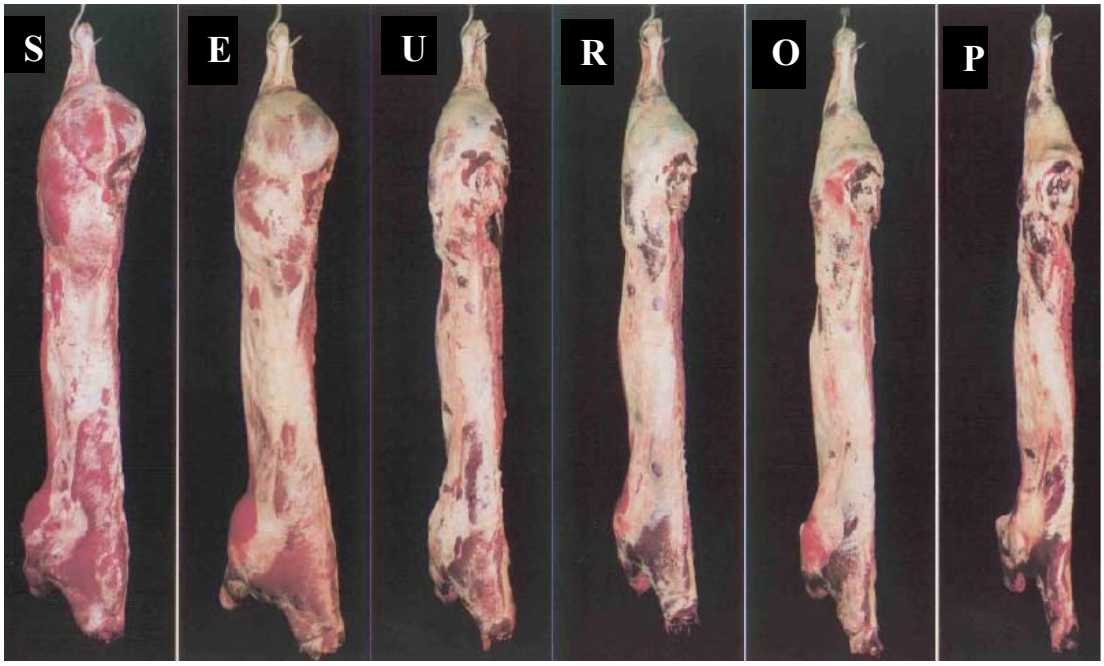


Figure 1. Carcass sides of different conformation classes (S-P)

Table 4. Criteria for classification of bovine carcasses in regard to conformation

	S - **Superior**	E- **Exceptional**	U- **Very good**	R- **Good**	O- **Fair**	P- **Poor**
Profiles	all profiles extremely convex	all profiles convex to super-convex	profiles on the whole convex -	profiles on the whole straight -	profiles straight to concave -	all profiles concave to very concave
Round	very highly rounded double-muscled visibly separated seams Topside spreads very markedly over the symphysis	topside spreads markedly over the symphysis	rounded Topside spreads over the symphysis	well-developed Topside and rump are slightly rounded	average development to lacking development	poorly developed
Back	very wide and very thick, up to the shoulder Rump very rounded	wide and very thick, up to the shoulder Rump very rounded	wide and thick, up to the shoulder Rump rounded	still thick but less wide at the shoulder	average thickness to lacking thickness Rump: straight profile	narrow with bones visible
Shoulder	very highly rounded	very rounded	rounded	fairly well-developed	average development to almost flat	flat with bones visible

Criteria for scoring of carcass fat cover

Carcass fat cover is scored by assessment of fat cover of major carcass parts on the outside and fat cover of the thoracic cavity. Measuring of the weight and classification of carcasses shall be done at the latest 60 minutes after slaughtering, because of loss and impact of aponeurosis on carcass appearance.

Table 4. Using fat cover subclasses in EU countries

Model	N	EU countries
Main classes	12	BG, CY, CZ, DK, EST, F, I, LT, AT, RO, SK, FIN
Subclasses	10	D, EL, H, LV, L, NL, PL, P, SLO, S
Subclasses only for several main classes	4	IRL, ENG/W, N-IRL, SCOT
Main classes and subclasses	2	B, E

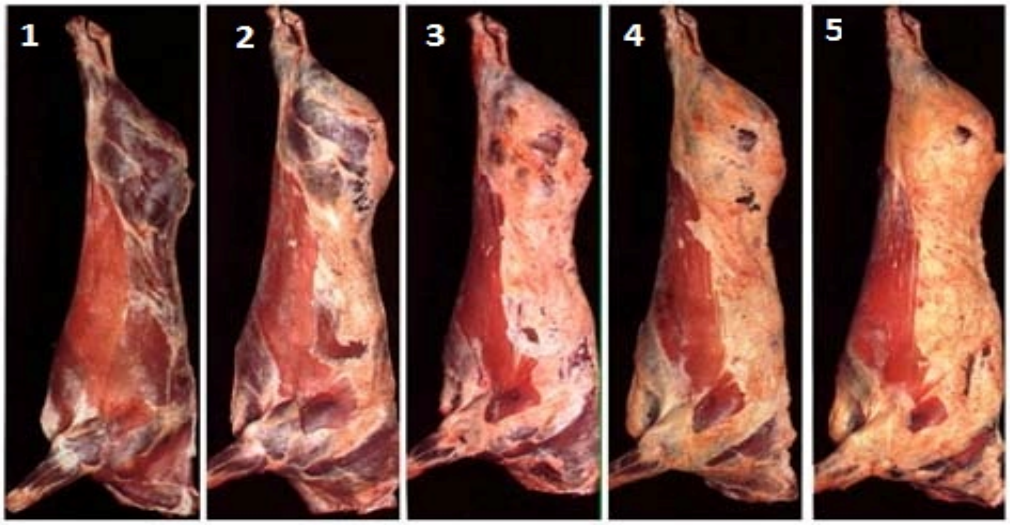


Figure 2. Carcass sides of different classes in regard to fat cover (1-5)

Table 5. Criteria for classification of bovine carcasses in regard to fat cover

	1-Low	2- Slight	3- Average	4- High	5-Very high
Outside of the carcass	None up to low fat cover	Slight fat cover, flesh visible almost everywhere	Flesh with the exception of the round and shoulder, almost everywhere covered with fat	Flesh covered with fat, but on the round and shoulder still partly visible – The seams of fat on the round are prominent	Entire carcass covered with fat – The round is almost completely covered with fat, so that the seams of fat are no longer clearly visible
In the thoracic cavity	No fat within the thoracic cavity	Within the thoracic cavity the muscle is clearly visible between the ribs	Slight deposits of fat in the thoracic cavity - Within the thoracic cavity the muscle is still visible between the ribs	Some distinctive fat deposits in the thoracic cavity – Within the thoracic cavity the muscle between the ribs may be infiltrated with fat	Heavy deposits in the thoracic cavity – Within the thoracic cavity the muscle between the ribs is infiltrated with fat

Carcass identification

Identification of carcasses can be done by placing marks or labels on specific position on the carcass. For this purpose an indelible and non-toxic ink is used and the letters and figures must be not less than two centimetres in height. They are placed on the hindquarters on the striploin at the level of the 4ª lumbar vertebra and on the forequarters, on the brisket between 10 and 30 centimetres form the cut edge of the sternum. Marks contain category, conformation and fat grade.

Identification of carcasses is done by using unalterable, resistant and immovable labels (not smaller than 50 cm^2) which contain data on animal's registration number, slaughterhouse registration number, mass of warm/chilled carcass, category, conformation and fat grade, date of slaughter etc.

Conclusion

SEUROP grid system is designed to enable "common EU language" to describe the quality of carcasses as well as analysis of data of the animals' sex, category, carcass weight, classification results and prices which is of great importance for implementation of EU market support measures (e.g. private storage, public intervention, exceptional support measures). Also, considering the quality-based payment, this is important tool used to bring incentives to improvement of genotypes, nutrition and technology in cattle breeding. SEUROP classification, similar to some other classification systems (American USDA quality grade, Meat Standards Australia-MSA) could be imrpoved by introduction and inclusion of meat quality properties (tenderness, taste, colour, intramuscular fat, etc.) which would to great extent satisfy specific needs of customers. However, for Serbia, and in view of potential export opportunities to EU markets in the pre-accession period, timely and adequate adjustment to legislation and agricultural policy of the Union by applying experiences and recommendations of member countries is of great importance.

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Srbija pred implementacijom SEUROP standarda za klasifikaciju goveđih trupova: zakonska regulativa, parametri i kriterijumi ocene (deo A)

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Rezime

Poljoprivreda Srbije u pretpristupnom periodu EU, prolazi kroz značajne reforme zakonodavstva i agrarne politike kako bi se prilagodila jednoj od najznačajnijih EU politika- Zajedničkoj poljoprivrednoj politici. Potencijal i tradicija naše zemlje u proizvodnji junećeg mesa sa jedne i potrebe tržišta EU sa druge strane, nameću potrebu za blagovremenim obavljanjem priprema u zakonodavnom, tehničkom i kadrovskom smislu. SEUROP standard je koncipiran da omogući "zajednički EU jezik" koji opisuje kvalitet junećih trupova kao i analitiku baze podataka o životinjama, rezultatima klasifikacije i cenama što je od velikog značaja za primenu različitih mera podrške na tržištu unije. Obzirom da ovaj sistem podržava isplatu odgajivačima prema kvalitetu trupova, ovo je i važan instrument kojim se podstiče rad na unapređenju genotipova, ishrane i tehnologije u govedarstvu. U radu je dat pregled najvažnijih zakonskih regulativa i osnovnih parametara SEUROP klasifikacije juneceg mesa u smislu definicije, prezentacije i kategorizacije trupa kao i kriterijuma u oceni konformacije i prekrivenosti trupa lojem.

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