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### Seroepidemiological Examination of Contagious Diseases in Breeding Rams – Preliminary Examinations

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#### Abstract

Contagious diseases of rams play an important role in the epizootiology of diseases in sheepbreeding. The trade of rams or exchange is common between flocks, therefore this is one of the ways for the contagious diseases to spread among the flocks, especially since a considerable number of breeders does not comply with the recommendations for health check of rams. In the region, where the research was carried out for many years Brucellosis caused by *B. melitensis* and *B. Abortus* was not diagnosed. These examinations have been carried out the years according to the State Monitoring Program. A total of 88 rams originating from 32 flocks in 19 settlements was examined. The average age was  $3.1 \pm 1.43$  year. The examined rams were of Merinolanscaf breed (43), Ile-de-France breed (20), Suffolk breed (9), Tsigai (6), Charollais 3 and crossbreed 7 (7.95%). The number of rams raised on pastures was 24 (27.27%), and the animals were on the pastures as long as weather conditions remained favourable. The other were in the stables with or without yards.

Serology methods were applied in examining Brucellosis caused by *Brucella ovis* (ram epididimitis), leptospirosis, Q fever, chlamydiosis and maedi-visna. The highest percentage of seropositive rams was against maedi-visna (6.81%), than chlamydiosis (5.68%), *B. ovis* (3.41%) and leptospirosis (1.14%). In rams that most of the year spend on pastures, the prevalence was the highest (41,67%), while in the animals raised in stables or enclosed area it was 7.8%. Further studies are needed to determine the presence of infectious diseases in different breeds and different systems of animal breeding in order to determine risk factors for disease transmission between the flocks.

**Key words:** breeding rams, infectious diseases, seroprevalence.

#### Introduction

Land utilization for agricultural purposes in the region of lawland in the Province of Vojvodina, the Republic of Serbia, is very high. Sheep are raised mostly in the limited yards with significant part of food industry by-products used for nutrition. Pasture raised sheep are predominant in the areas where the soil is not suitable for agriculture. Sheep are raised for meat production, and a significant increase can be observed in the last years (Bosnjak, 2008).

Sheep contagious diseases play an important role in sheep health management. Rams are often the object of trade and exchange, so contagious diseases spread among the flocks, especially having in mind the fact that a considerable number of breeders does not respect the recommendations for health check of rams. In the region, where the research was carried out, brucellosis caused by *B. melitensis* and *B. abortus*, was not diagnosed for one year. The previous researches have shown the presence of

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leptospirosis, Q fever, brucellosis caused by *B. ovis*, chlamydiosis, maedi-visna and other sheep contagious diseases.

#### Material and methods

Serology methods were used for detecting the presence of brucellosis (*B. ovis*), leptospirosis, Q fever, chlamydiosis and maedi-visna diseases. The rams were examined on the request of livestock breeding service or on the request of the owners. Serology examinations for *B. ovis*, Q fever and chlamydiosis were carried out using ELISA method, commercial diagnostic kits (IDEXX). In diagnosing the diseases, the methods were based on the detection of antibodies against different agents. Leptospirosis detection was carried out by dark field microscopic agglutination. The following strains were examined: *L. pomona*, *L. icterohaemorrhagiae*, *L. grippityphosa* i *L. hardjo*. Ram blood samples were examined for maedi-visna virus using ELISA method, commercial diagnostic kit, produced by Pourquier.

#### Results and discussion

A total of 88 rams originating from 32 flocks in 19 settlements were examined. The average age was  $3.1 \pm 1.43$  year. The examined rams (43) were of Merinolandschaft breed (48.86%), 20 rams of Ile-de-France breed (22.73%), 9 rams of Suffolk breed (10.23%), 6 rams of Tsigai (6.82%), 3 rams of Charollais (3.41%) and 7 crossbreeds (7.95%). The number of animals of different breed used in this research does not correlate to the situation on the field, because most of the sheep are Tsigai and their crossbreeds (Pihler – personal communication). This discrepancy is the consequence of the examination requests made by the selection service and the owners. The number of rams raised on pastures was 24 (27.27%). The animals stay on the pastures as long as the weather conditions remain favourable, and the others are in the stalls with or without yards.

#### Serology examinations

The examination detected rams seropositive to *B. ovis*, leptospirosis (*L. pomona*), chlamydiosis and maedi-visna (Table 1). A total number of seropositive rams was 15 (17.04%).

**Table 1** the number of seropositive rams and seroprevalence according to infective diseases.

Number of examined rams	Number of seropositive rams (seroprevalence)				
	<i>B. ovis</i>	Q fever	Leptospirosis	Chlamydiosis	Maedi-visna
88	3 (3.41%)	0	1 (1.14%)	5 (5.68%)	6 (6.81%)

The tested area may be considered endemic for Q fever (Vidic et al., 2003), and in the last decade of the 20th century this disease was presented as the leading zoonoses (Petrovic et al., 2003). Having this in mind, it is surprising that none of the rams were positive, since in the previous serology testing the seroprevalence was 12% (Vidic et al., 2003), and in the cases with sheep miscarriage it was 19.6% (Vidic et al., 2007)

Antibodies against *B. ovis* were detected in 3 rams, what makes 3.41%. All three rams originated from the same settlement, and were from two flocks. These flocks share the pastures with other animals, so it can be assumed that the infection has spread in this area. In the previous epizootiological testing, carried out in the same area, the prevalence of *Brucella ovis* was 0.3% (Vidic et al., 2005).

A thorough research on *Chlamydomphila abortus* in sheep has not been carried out in this area. In the cases of abortion the infection was detected, which was in different extent. In this testing the seroprevalence was 5.68%. Seropositive rams were present in 4 flocks from different areas.

Maedi-visna infection was detected in 6 rams, mostly in Merinolandschaft breed (Table 3). According to the unpublished findings, the largest number of seropositive sheep were in Tsigai sheep flocks. In the previous testing the seroprevalence to this diseases was 16.25% (Vidic et al., 2008).

The animals are usually raised in two ways: 1) one half of the year animals are out on the pastures, 2) animals are in stalls with or without yards. The rams raised on the pastures were seropositive in 41.67%, and the percentage of seropositive animals raised in stalls was only 7.81%. A display of seropositive animals according to the infection and the way of management is given in the Table 2.

**Table 2** the number of seropositive rams on pasture or stables

No. Of tested rams (N 88)	Number of seropositive rams			
	<i>Br. ovis</i>	Leptospirosis	Chlamydiosis	Maedi-visna
Total	3	1	5	6
On pasture 24	3	-	4	3
In stalls 64	-	1	1	3

Regarding the analyses among breeds, it can be pointed out that no rams of Ile-de-France breed were seropositive to the diseases (Table 3). This can be explained by the fact that most of the animals were kept in a stall with yards and by the fact that 65% derive from three remote settlements where other rams of different breeds were not seropositive for any contagious disease.

**Table 3** the number of seropositive rams among different breeds

Breeds	No of rams	Number of seropositive rams			
		<i>B. ovis</i>	Leptospirosis	Chlamydiosis	Maedi-visna
Merinolandschaf	43	3	1	1	5
Ile-de-France	20	-	-	-	-
Suffolk	9	-	-	2	-
Tsigai	6	-	-	1	1
Charollais	3	-	-	-	-
Crossbreed	7	-	-	-	-

In two rams of Suffolk breed specific antibodies against *Chlamydomphila abortus* were detected, but it should be noted that they were raised together with Tsigai sheep and derived from an flock free from infections in study.

### Conclusion

Infectious diseases are present among the breeding rams. Probably, this is the reason for the spread of the diseases among the flocks with unknown health status. Most of the infected rams resided on free pastures, and brucellosis caused by *B. ovis* was diagnosed in a small geographic area. Further investigations are to be carried out in order to detected the prevalence among different breeds, different management systems and determine the risk factor for disease transmission among the sheep and flocks.

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