

2008

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MICROBIOLOGICAL ANALYSIS OF RIVER PËRLEPNICA DURING SPRING SEASON 2008

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SUMMARY

The main objective of this investigation is to assess the quality of water, of the river Përlepnica during spring season, 2008 year, through the microbiological analysis. River Përlepnica located in south - east part of Kosovo, who pass through the village Përlepnica, nearby the city Gjilani. Samples for microbiological analyses are collected in three localities along the river.

Based on achieving results led us to conclude: The waters of water of river "Përlepnica" it is high polluted by bacteria at all locality. Registered the high number of all microorganism, at all locality.

On base of coliform bacteria according to Tumpling system the waters of "Përlepnica" river belongs at second to third class of pollution.

Key words: microbiological, analysis, water, river, Përlepnica

INTRODUCTION

Water is one of the most important wildlife habitats. The water provides environment to fish,

(García et al., 2004).

(Sial et al., 2006; Pelczar et al., 1986).

(Ganoza et al., 2005; Roe and Cardinale, 2005; Hörman, 2005; Fenwick, 2006).

(PVC)
(3)

plants and animals.

There are several sources of water pollution which work together to influence the overall quality of the river water (García et al., 2004). The commonly cited sources of water pollutants are the industries, municipal wastes, domestic wastes and agrochemicals and other industrial discharge products. There is also run-off of rain water from drains and other waste leakages from urban areas that contribute to contamination of the main river supplies.

As a result, the net activities mentioned above add up to the various pollutants such as organic and inorganic chemicals and toxic heavy metals that find their ways to the river water system (Sial et al., 2006; Pelczar et al., 1986).

Several developing and developed countries have embarked on programmes to endeavour to reduce contamination of rural water sources by waterborne diseases (Ganoza et al., 2005; Roe and Cardinale, 2005; Hörman, 2005; Fenwick, 2006).

MATERIAL AND METHODS

The samples for this analysis were collected with two-litre sterile polyvinyl chloride (PVC) plastic water bottles from three (3) designated sampling point in river

9.00, 12.00,

HACH.

Streptococcus faecalis,

, SS

1,

Përlepnica.

These samples were collected from three localities. The water samples were collected for both physiochemical and microbiological analysis.

Samples were collected during the day at 9.00 am, 12.00 pm, from each sampling station. The objective of the sampling was to collect a portion of material small enough in volume to be conveniently transported to and in lab, while still accurately representing the material being sampled. The preservation method for storage was refrigeration.

Water samples were analysed for physiochemical and microbiological quality and chemical characteristic (TDS, conductivity, pH, salinity) were determined by digital aparature HACH.

Bacteriological Analysis

In the bacteria isolation, nutrient agar for heterotrophic bacteria, bile aesculin agar for Streptococcus faecalis, Violet red agar for total coliform bacteria, SS agar for salmonela and shigella, saborud agar for fungi, were used. All media were prepared and sterilized as instructed by manufacturer.

RESULTS AND DISCUSSION

From Table 1, it was noted that the water samples had higher number of bacteria. The higher number of heterotrophic bacteria is

(3), 440
 /10 ml .
 (269/10 ml).
 330 .
 -
 /10 ml . , 104
 (50/10 ml).
 75 /10 ml
 .
 -
Streptococcus faecalis -
 230 /10 ml (3),
Streptococcus
faecalis (68 /10
 ml).
 140 /10 ml/
 - SS .
 (3), 100 /10 ml .
 SS -
 (45/10 ml).
 78 /10 ml/
 .
 -
 (3), 57 /10 ml .
 (28

registered at locality three (3) with 440 colony/10 ml water. The low number of heterotrophic bacteria is registered in first locality (269/10 ml water). While at second locality are registered the 330 colony of bacteria.

The higher number of total coliform bacteria is registered at third locality, 104 colony/10 ml water. The low number of total coliform bacteria is registered in first locality (50/10 ml water). While at second locality are registered 75 colony/10 ml water.

The higher number of *Streptococcus faecalis* bacteria is registered at locality three (3), 230 colony/10 ml water. The low number of *Streptococcus faecalis* bacteria is registered in first locality (68 colony /10 ml water). While at second locality are registered 140 colony/10 ml water).

The higher number of SS bacteria is registered at locality (3) three, 100 colony/10 ml water. The low number of SS bacteria is registered in first locality (45/10 ml water). While at second locality are registered 78 colony/10 ml water.

The higher number of fungi is registered at locality (3) three, 57 colony/10 ml water. The low number of fungi is registered in first locality (28/10 ml water). While at

/10 ml). - second locality are registered 32 colony/10 ml water.

32 / 10 ml/ .

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Table 1. Microbiological analysis of waters of river Përlepnica during spring season 2008

Group of bacteria	Amount of samples of water	Locality		
		1	2	3
Heterotrophic bacteria	10 ml	269	330	440
Total coliform bacteria	10 ml	50	75	104
Streptococcus faecalis	10 ml	68	140	230
SS	10 ml	45	78	100
/ Fungi	10 ml	28	32	57

- The results of the bacteriological analysis of drinking water from river Përlepnica showed that most river water are contaminated with coliforms and pathogenic bacteria. However, there are no lytic bacteriophages (Scott et al., 2002).

- Wastes from agricultural processes, which are usually discharged into surface water have been reported to serious environmental and human health concern (Adams and Kolo, 2006).

- Fecal coliforms are the best indicators for the assessment of recent fecal pollution, mainly caused by raw and treated sewage, and diffuse impacts from the farm land and pasture (Kavka and Poetsch, 2002).

- The results showed the high variability in levels and number of

<p>(Yehia and Sabae, 2011).</p>	<p>2</p>	<p>- bacterial indicators in month and seasons in Përlepnica river may be due to the variation of environmental conditions such as turbidity, temperature, salinity, dissolved oxygen and organic matter,(Yehia and Sabae, 2011).</p>
<p>12 , 13C. (mS/m (</p>	<p>456 mS/m) 597)</p>	<p>- At Table 2 we present the physico-chemical parameters of waters of river Përlepnica. In this study, the temperature ranged from 12 to 13C. Values of conductivity ranged 456 mS/m (first locality) till 597 mS/m (third locality).</p>
<p>(TDS)</p>	<p>456 () 597 ()</p>	<p>- Values of conductivity ranged from 456 (first locality) till 597 (third locality).</p>
<p>500</p>	<p>335.2 () , 495 () ,</p>	<p>- The values of total dissolved solids (TDS) of river Përlepnica is 335.2(first locality), till 495(third locality), all of them are within the recommended range 500 and above.</p>
<p>(0.2%).</p>	<p>(SAL)</p>	<p>- Values of salts (SAL) it is same at all localities (0.2 %)</p>
<p>pH</p>	<p>7.7 () - 8.7 ()</p>	<p>- The pH range of 7.7(first locality) – 8.7 (third locality) could be considered as being within the acceptable range for natural water.</p>
<p>pH</p>	<p>6.5-8.5 pH</p>	<p>- The pH of the river water fulfil the safe standard range of 6.5-8.5</p>

1998). (WHO, 1998).
 pH recommended by WHO (WHO, 1998).
 Values of oxygen ranged from 7.6 (first locality) – 5.5 (third locality). While at second locality is 6.6 mg/l.

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Table 2. Physico-chemical parameters of waters of river Përlepnica during spring season 2008

/ Parameters	/ Locality		
	1	2	3
/ Temperature, °C	12 °C	12.2 °C	13 °C
/ Conductivity, mS/m	456	490	597
/ TDS, mg/l	335.2	397.2	495
/ SAL %	0.2	0.2	0.2
pH	7.7	8.6	8.7
O ₂ mg/l	7.6	6.6	5.5

CONCLUSIONS

- In conclusion, proper well location and construction, control of human activities to prevent sewage from entering water body is the keys to the avoiding bacteria contamination of drinking water.

- It is evident that water borne diseases are due to improper disposal of refuse, therefore programmes must be organized to educate the general populace on the proper disposal of refuse, treatment of sewage and the need to purify our water to make it fit for drinking because the associable organisms are of public health significance being implicated in

one form of infection or the other.

The results of characterization of this water effluent show that the water has high pollution potentials and so need to be treated before disposal.

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MORPHOLOGICAL AND FUNCTIONAL PROPERTIES OF COW UDDERS OF MONBELIARD BREED

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SUMMARY

Morphological and functional features of the udders of cows Monbeliard breed are considered.

The survey was conducted in the experimental base of RIMSA Troyan. Object of the study were 35 cows Monbeliard breed divided into three groups. They were investigated udders of cows on the first, second and third and longer lactations.

Morphological and functional properties of the udder show balanced development in the target species. The distance between the front teats of cows in first lactation was 5.3 cm, 8 cm at the rear, and the distance from the lowest point of the udder to the floor is 69 cm. This shows that the requirements for udder to machine milking.

Adult animals superior first calf cows a distance between the front nipples 3.2 cm, a distance between the rear nipples 3.7 cm in distance from the most inferior point of the udder to the ground 5.9 cm, a width of the udder 9 cm in length udder 8 cm and scope of the udder 22 cm.

5,3 cm

8 cm

69 cm.

3,2 cm,

3,7

cm

5,9 cm,

9 cm,

8 sm

22 cm.

28,8 dm³,
 3,9 dm³, 13,5 %,
 11,7 dm³, 40,6%.

- The volume of the udder in first calf cows is 28.8 dm³ in second lactation
- cows is an increase of 3.9 dm³, or by 13.5%, while the animals of the third and more lactations increased by 11.7 dm³, or 40.6%.

Key words: udders, properties, form, reduction

INTRODUCTION

- Main conditions for increasing
- milk production and improving the
- efficiency of dairy cattle breeding
- appearing quality and use of the
- genetic potential productivity.

(2013) ,
 1400 ,
 started, there is stocked sperm.

- Clove and Atanassov (2013) considered that the use of Monbeliard in Bulgaria has not been studied. At the same time, in selection control over 1400 cows is initiated closely, bull production is

(2009) .
 According Zayats and Gridyushko (2009) milk production in cows largely depends on the development of the udder and its capacity. In this selection signs

- evaluation of the udder is an indicator for increasing milk
- production in cattle.

- An important criterion determining the suitability of cows to industrial technologies are the quality of the udder and its adaptation to machine milking. The need to assess and team shape and properties of the udder is determined by the fact that these signs have a hereditary basis and

(
Demmrich, 1986).

., 2004;

transmitted to offspring by both mother and father through. The structure of the udder depends on

- the ratio of the alveolar and
- connective tissue and the development of blood vessels under the skin (Savelev et al., 2004; Demmrich, 1986).

Aim of the study was to

- evaluate the morphological and
- functional properties of the udders of cows Monbeliard breed cattle and their suitability for machine milking, as well as to detect and identify undesirable exterior flaws.

MATERIAL AND METHODS

35

The survey was conducted in the experimental base of RIMSA Troyan. Object of the study were 35 cows Monbeliard breed divided

- into three groups. They were investigated udders of cows on the first, second and third and more lactations.

The main objectives of the study were to:

- assess udder shape and measurements;
- determine the speed of lactation.

- Objectivity and accuracy in measuring the udder, it was done by the beginning of milking. Doing following measurements:

- Width udder – taken with measuring tape in the widest place

;
 - Length udder – this is the circulation of the measuring tape from the front end to the rear udder;
 ;
 - Scope of udder – measured with a measurement strip circumferentially on the basis of the udder;
 ;
 - Depth udder – a measurement bandwidth measurement is made from the base of the udder to the base of teat;
 ;
 - Length biting– this is the length in inches of the base by the end of the teats;
 ;
 - Biting – thickness measured diameter in the upper third of the measured teat;
 ;
 - Distance between biting – line between inside two adjacent nipples;
 ;
 - Distance of udder to the ground – with measurement tape measure distance from the lowest point of the udder to the ground;
 ;
 - Decrease of udder – its width, length, depth and breadth are measured to the milking and after milking. At the level of received measurements to make conclusions about the degree of filling of the udder and its structure.

INTER PULS -
 - 1 7.

Milking the cows was done with milking station INTER PULS - Italy, small milking room – 1 X 7.

Measurement data were processed biometrically and presented in tables.

RESULTS AND DISCUSSION

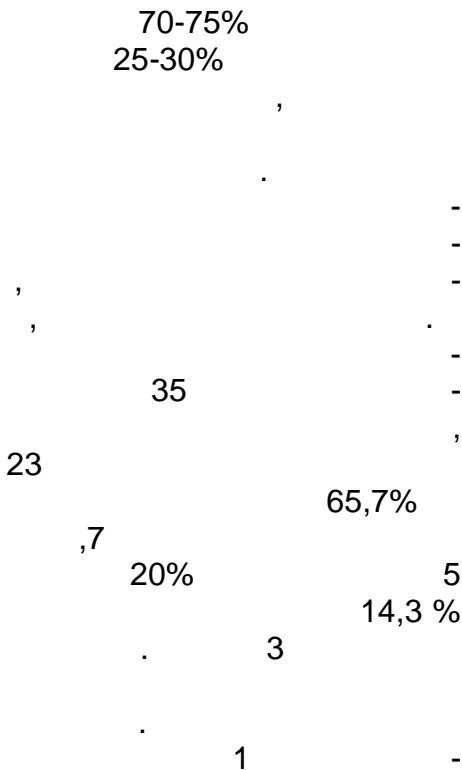
- In countries with developed cattle udder qualities are seen as a prerequisite in the selection of animals. During operation of the cows in mechanized farms are current problems suitability to machine milking and storage of the normal condition of the udder.

- For machine milking are best suited udders with structure 70-75% alveolar tissue and 25-30% connective tissue and Has a boat, and resembling a cup round with evenly developed quarters.

- The shape of the udder characterized its configuration, the ratio of the length, width and depth.

- In visual evaluation of the tested 35 cows Monbeliard breed found that 23 of them have resembling a cup. Has a boat and udder or 65.7% of the flock, 7 cows have udders circular or 20% of the flock and five cows have udders or goat 14.3 % of the herd. At 3 cows observed unwanted sign polimastiya.

- Table 1 presents data from the measurement of the udder in cattle first calf cows and adults.



1.

(±n)

Table 1. Basic measurements of the udder of cows of different lactations (M ± n)

/ Measurements	/ Lactations		
	I	II	III and more
Width udder cm	41±2,0	46±3,1	50±1,5
Length udder cm	39±1,5	41±1,8	47±1,3
Range udder, cm	86±1,9	93±2,2	108±2,1
Depths of the forequarters, cm	31±4,3	31,1±4,6	32±5,1
Depth of hindquarters, cm	36±1,1	39,2±0,9	41±1,2
Distance from the lower part of the udder to the ground, cm	69±1,4	71±1,6	74,9±1,8
Length of the front teat, cm	9±0,2	10±0,1	11±0,2
Length of hind teat, cm	8±0,5	8,2±0,7	9,1±0,8
Diameter of the front teat, cm	19±0,2	19,1±0,1	19,3±0,4
Diameter of the rear teat, cm	18±0,6	19,05±0,9	19,2±0,7
Distance between the front teat, cm	8±1,0	10±0,9	10,2±0,9
Distance between the rear teat, cm	5,3±2,7	8,1±0,9	9±1,8
Volume of the udder, dm ³	28,8±3,1	32,7±2,7	40,5±1,8
Decrease, %	12,9±0,8	13,2±1,1	15,4±1,5
Speed lactation, kg/m	1,67±0,9	1,89±1,15	2,11±1,1

From the data presented in the table shows that the measurement of udders of cows from first, second and third and more lactations showed an increase with increasing order of lactation.

The distance between the front biting in cows in first lactation is 5.3 cm at the rear teats is 8 cm

5,3 cm,

8cm,
69 cm.

–

2 cm,

2,8 cm,

-

2 cm, 7 cm,
0,1-3,2 cm,
5 cm, 2 cm.

3,2 cm,

3,7

-

5,9 cm,
9 cm,
8 cm
22 cm.

28,8 dm²,

dm², 13,5%, 3,9

dm², 40,6%. 11,7

- and the distance from the lowest time of the udder to the ground is 69 cm.

- In a second lactation cows all measurements show minor increase compared to first lactation cows – in distance between the front nipples 2 cm in distance between the rear nipples 2.8 cm in length from the lowest point of the udder to the ground 2cm in scope 7 cm in depth from 0.1 to 3.2 cm, width 5 cm, length 2 cm.

Adult animals superior first calf cows a distance between the front nipples 3.2 cm, a distance between the rear nipples 3.7 cm in distance from the most inferior point of the udder to the ground 5.9 cm, a width of the udder 9 cm in length udder 8 cm and scope of the udder 22 cm.

The volume of the udder in first calf cows is 28.8 dm² in second lactation cows is an increase of 3.9 dm², or by 13.5%, while the animals of the third and more lactations increased by 11.7 dm², or 40.6%.

CONCLUSIONS

- Morphological and functional properties of the udder show balanced development in the target species. The distance between the front teats of cows in first lactation was 5.3 cm, 8 cm at the rear, and

5,3 cm, 8 cm,
-
69 cm.

the distance from the lowest point of the udder to the floor is 69 cm. This shows that the requirements for udder to machine milking.

3,2 cm, 3,7
-
5,9 cm,
9 cm,
8 cm
22 cm.

Adult animals superior first calf cows a distance between the front nipples 3.2 cm, a distance between the rear nipples 3.7 cm in distance from the most inferior point of the udder to the ground 5.9 cm, a width of the udder 9 cm in length udder 8 cm and scope of the udder 22 cm.

28,8 dm², 3,9
dm², 13,5 %, 3,9

The volume of the udder in cows in first lactation is 28.8 dm², in cows in second lactation is observed an increase of 3.9 dm², or by 13.5%, while the animals of the third and more lactations there is increase by 11.7 dm², or 40.6%.

dm², 40,6%. 11,7

- In cows of Monbeliard breed
- are met individuals with uneven dairy quarters, with thin, long and short, pear-shaped accessory, flask-whirling and biting. There are observed rare cases of polimastiya.

- The evaluation of the udder
- by sight and by measurements allows scrapped adverse selection from the perspective cows.

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