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PREVALENCE OF DIFFERENT CLINICAL FORMS OF MASTITIS IN LIVESTOCK FARMS

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Abstract: This study investigated the prevalence of subclinical and clinical mastitis and the distribution of clinical mastitis types in cows kept on livestock farms and in household farms in Samarkand Region. Mastitis was diagnosed using a newly developed rapid mastitis diagnostic test, the California Mastitis Test (CMT), and methods for determining the somatic cell count in milk. As a result of the examinations, mastitis was detected in 132 cows, of which 73 (55.3%) had subclinical mastitis and 59 (44.7%) had clinical mastitis. Among the clinical forms of mastitis, catarrhal-purulent mastitis had the highest prevalence (44.1%), followed by fibrinous mastitis (27.1%), hemorrhagic mastitis (15.3%), and serous mastitis (13.5%). The obtained results demonstrate that subclinical mastitis is widespread in livestock farms, while catarrhal-purulent mastitis predominates among the clinical forms of the disease. These findings are of significant scientific and practical importance for improving the early diagnosis, prevention, and treatment of mastitis.

Keywords: mammary gland, mastitis, subclinical mastitis, clinical mastitis, catarrhal-purulent mastitis, fibrinous mastitis, serous mastitis, hemorrhagic mastitis, NeoMast Test, California Mastitis Test, somatic cell count.

Introduction. Mastitis is one of the most common diseases in dairy cattle and is associated with substantial economic losses in livestock production. The disease leads to decreased milk production and milk quality, increased treatment costs, deterioration of reproductive performance, and, in some cases, premature culling of cows. Therefore, early detection of mastitis, assessment of its prevalence, and investigation of its clinical forms are important areas of modern veterinary practice. Mastitis occurs in subclinical and clinical forms. Subclinical mastitis is characterized by the absence of obvious clinical signs; however, inflammatory processes develop in the mammary gland and changes occur in the composition of milk. This form often remains undetected for a long period and may persist in the herd as a source of infection, potentially contributing to the subsequent development of clinical mastitis.

Clinical mastitis is characterized by pronounced inflammatory signs in the mammary gland, changes in the physicochemical properties of milk, and disturbances in the general condition of the animal. Currently, the California Mastitis Test (CMT), Dimastin, somatic cell count, and other laboratory diagnostic methods are widely used for mastitis detection. These methods make it possible to identify subclinical mastitis before the appearance of obvious clinical signs, thereby facilitating timely treatment and reducing economic losses. In the Republic of Uzbekistan, data on the prevalence of mastitis and the distribution of its clinical forms across different livestock farms remain limited.



Date: 9th August-2026

Purpose of the research. The purpose of this study was to determine the prevalence of clinical mastitis in cows kept on different livestock farms and in household farms in Samarkand Region, assess the distribution of serous, fibrinous, catarrhal-purulent, and hemorrhagic forms of clinical mastitis, and comparatively analyze the prevalence characteristics of different clinical forms of mastitis.

Material and methods: The study was conducted on cows kept at the “Tohir Yusuf Chorvasi,” “Agro Gold Spring,” “Khujaobod Chorvasi,” and “Khosil-Uboydulla-Bobur UAU” livestock farms located in Narpay and Pstdargom districts of Samarkand Region, as well as on cows kept in household farms. A total of 516 cows were examined. Clinical examinations were performed using generally accepted veterinary examination methods. The general condition of the animals, body temperature, appetite, external appearance of the udder, palpation findings, and macroscopic changes in milk were assessed.

For the diagnosis of subclinical mastitis, milk samples were collected and examined using a newly developed rapid mastitis diagnostic test, and methods for determining the somatic cell count in milk. Based on the examination results, the cows were divided into subclinical and clinical mastitis groups. In cows diagnosed with clinical mastitis, the clinical forms of the disease were differentiated into serous, fibrinous, catarrhal-purulent, and hemorrhagic mastitis based on differential clinical diagnosis. All results obtained during the study were expressed as percentages and comparatively analyzed by farm.

Results and their analysis: Clinical and laboratory examinations of cows kept on the selected livestock farms and in household farms were conducted to determine the prevalence of clinical mastitis and the distribution of its clinical forms among mastitis-affected animals. Among the 132 cows diagnosed with mastitis, 59 cows (44.7%) had clinical mastitis.

Analysis of the distribution of clinical mastitis by farm showed that at the “Tohir Yusuf Chorvasi” farm, clinical mastitis was detected in 7 cows. Of these, 2 cows (28.6%) had serous mastitis, 2 cows (28.6%) had fibrinous mastitis, and 3 cows (42.8%) had catarrhal-purulent mastitis (Figures 1–2). No cases of hemorrhagic mastitis were recorded at this farm.



Date: 9th August-2026



Figure 1. Cow with two udder teats affected by catarrhal-purulent mastitis.

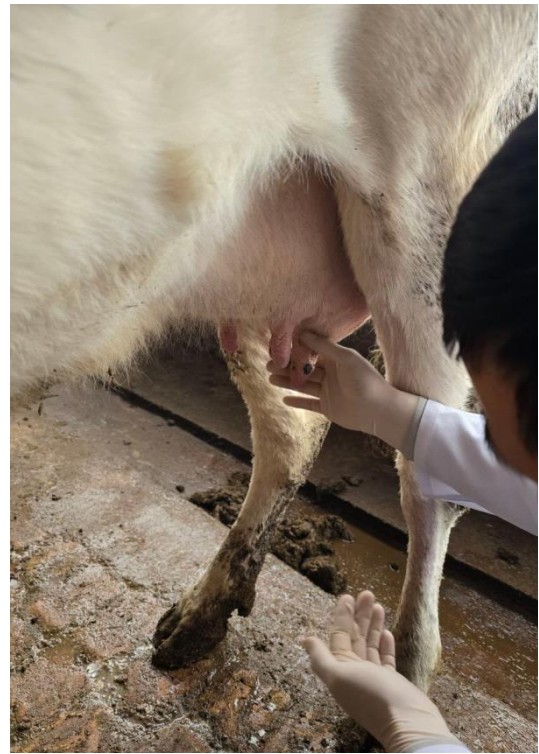


Figure 2. Cow with one udder teat affected by catarrhal-purulent mastitis.

At the “Agro Gold Spring” livestock farm, 22 cows with clinical mastitis were identified. The highest proportion was represented by catarrhal-purulent mastitis (Table 1). Specifically, 10 cows (45.5%) had catarrhal-purulent mastitis, 6 cows (27.3%) had fibrinous mastitis, 3 cows (13.6%) had serous mastitis, and 3 cows (13.6%) had hemorrhagic mastitis. In this farm, the prevalence of catarrhal-purulent mastitis over other clinical forms was also noted.

Table 1

№	Farm name	Number of cows with clinical mastitis	Clinical types of mastitis							
			Serous mastitis		Fibrinous mastitis		Catarrhal-purulent mastitis		Hemorrhagic mastitis	
			b/s	%	b/s	%	b/s	%	b/s	%
1	Tohir Yusuf chorvasi	7	2	28,6	2	28,6	3	42,8	—	—
2	Xujaobod chorvasi	12	2	16,7	3	25	4	33,3	3	25
3	Agro gold spring	22	3	13,6	6	27,3	10	45,5	3	13,6

Date: 9th August-2026

4	Xosil-Uboydulla-Bobur UAU	9	–	–	3	33,3	4	44,4	2	22,3
5	Cows kept in the care of the population	9	1	11,1	2	22,3	5	55,5	1	11,1
	Total	59	8	13,5	16	27,1	26	44,1	9	15,3

Distribution of Clinical Mastitis Forms among Cows at the Studied Farms

At the “Khujaobod Chorvasi” farm in Pastdargom district, among 12 cows diagnosed with clinical mastitis, 4 cows (33.3%) had catarrhal-purulent mastitis, 3 cows (25.0%) had fibrinous mastitis, 3 cows (25.0%) had hemorrhagic mastitis, and 2 cows (16.7%) had serous mastitis.

At the “Xosil-Uboydulla-Bobur UAU” livestock farm, 9 cows with clinical mastitis were examined. Of these, 4 cows (44.4%) had catarrhal-purulent mastitis, 3 cows (33.3%) had fibrinous mastitis, and 2 cows (22.3%) had hemorrhagic mastitis. No cases of serous mastitis were recorded at this farm.

Among the cows kept in household farms, 9 animals with clinical mastitis were identified. Of these, 5 cows (55.5%) had catarrhal-purulent mastitis, 2 cows (22.3%) had fibrinous mastitis, 1 cow (11.1%) had serous mastitis, and 1 cow (11.1%) had hemorrhagic mastitis. The predominance of catarrhal-purulent mastitis was also evident in this group.

Overall, among the 59 cows with clinical mastitis, catarrhal-purulent mastitis was detected in 26 cows (44.1%), making it the most prevalent clinical form. Fibrinous mastitis was detected in 16 cows (27.1%), hemorrhagic mastitis in 9 cows (15.3%), and serous mastitis in 8 cows (13.5%).

The obtained results demonstrate that catarrhal-purulent mastitis predominates among the clinical forms of mastitis. This may be associated with more pronounced inflammatory and exudative processes in the mammary gland parenchyma and, in some cases, with delayed initiation of treatment or failure to detect subclinical mastitis in a timely manner. Therefore, regular screening of herds, early detection and treatment of subclinical mastitis, and systematic monitoring of udder health are important measures for preventing the development of severe clinical forms of mastitis.

Conclusion: The conducted study demonstrated that clinical mastitis is one of the common pathological conditions among cows kept on livestock farms and in household farms in Samarkand Region. Among the 132 cows diagnosed with mastitis, 59 (44.7%) had clinical mastitis. Among the clinical forms of mastitis, catarrhal-purulent mastitis accounted for the highest proportion (44.1%), followed by fibrinous mastitis (27.1%), hemorrhagic mastitis (15.3%), and serous mastitis (13.5%). The predominance of catarrhal-purulent mastitis indicates that purulent-inflammatory processes represent a significant component of clinical mastitis in the studied farms. The results confirmed that catarrhal-purulent mastitis occurred more frequently than other clinical forms across all studied farms. This emphasizes the importance of timely detection of mastitis at the



Date: 9th August-2026



subclinical stage, regular clinical monitoring, and the wider implementation of modern diagnostic methods, including the NeoMast Test developed at the Veterinary Research Institute, California Mastitis Test (CMT), somatic cell count determination, and other diagnostic techniques, to reduce the development of severe clinical forms of mastitis. The findings provide a basis for improving early diagnosis and prevention of mastitis in livestock farms and for developing effective veterinary measures aimed particularly at preventing the development of catarrhal-purulent mastitis.

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Date: 9th August-2026

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