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Determination of Bovine Mastitis in Cows by Considering the Different Parameters Like Lactation, Age, Breed, Quarters, Herd, and Season Wise in Kurnool, A. P.

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ABSTRACT

Mastitis in dairy cattle is the persistent, inflammatory reaction of the udder tissue. Mastitis, a potentially fatal mammary gland infection, is the most common disease in dairy cattle. Hence, this paper was distributed to work out the existence of mastitis victimization three diagnostic tests by the different risk factors like lactation, age, breed, quarters, herd and season. The results shows that surf field mastitis check (SFMT) is that the most sensitive check for identification of bovine mastitis, the aged cows with later a part of lactation amount were additional vulnerable to bovine mastitis, and exotic breeds like Holstein freshen (HF) were additional liable to bovine mastitis. The existence of subclinical and clinical mastitis was additional in single and two quarters, severally, and therefore the rate of bovine mastitis was additional in unorganized herds. The study shows that SCM is directly related to lactation amount, age, and environmental factors of the cow and clinical mastitis is additional related to breed of the cow and environmental conditions

Keywords : Bovine Mastitis, SCM, SFMT

I. INTRODUCTION

Mastitis is inflammation of secretary organ mammary gland affecting all the species of farm animals and is of nice concern to farm trade. Mastitis is incredibly common in cows of each developed and developing countries. Bovine mastitis may be classified into two varieties, clinical mastitis and SCM. Clinical mastitis is detected by the changes in physical look of milk, swelling, mastitis, and rise in temperature of mammary gland whereas animals with SCM don't exhibit any gross changes in milk or mammary gland and may be detected solely through laboratory tests [1]. The designation of SCM is a lot of problematic since milk seems traditional.

However, the supplying and monetary concerns attached sampling all cows for medical specialty culture have precluded this method from being wide adopted. Milk culture identifies the presence of mastitis pathogens however doesn't offer a live of degree of mastitis related to infection. The dairy farm business is facing a good reversal owing to high existence and incidence of mastitis in nourishment animals. SCM affects the quality of the milk and amount inflicting nice economic loss for producers [2, 3]. Annual losses in dairy farm business owing to mastitis was close to a pair of billion greenbacks in USA and 500 million greenbacks in Bharat, during which subclinical mastitis is chargable for close to seventieth of economic losses [4] as most dairymen and farmers square measure still unaware of impact of SCM. Since India is a country various agro climatologically conditions it's vital to understand the existence of bovine mastitis during a specific region for designing correct therapeutic, preventive, and management live for bovine mastitis. Diagnosis of bovine mastitis depends on the employment of assorted tests and comparative study of those tests during a specific region is extremely essential for epidemiologic investigations. However, a scientific study involving the comparison of various tests for the

identification of SCM in cows isn't out there in the literature despite the fact that they square measure used habitually as diagnostic tests either alone or together. Hence, the study aims to check 3 mastitis diagnostic tests for his or her ability to work out the existence of mastitis in cows by considering completely different risk factors like quarters, age, breed, lactation, herd, and season. Early designation of mastitis is significant as a result of changes within the mammary gland tissue happen a lot of earlier before they become apparent. Numerous ways, supported physical and chemical changes of milk and isolation of organisms, area unit used for designation of subclinical mastitis [8, 9].

II. METHODS AND MATERIAL

A. Source of Animals

The study was administrated in Kurnool District of Andhra Pradesh, India. 263 cows were used within the study. The milk samples of cows from four quarters were aseptically collected severally and tested for the presence of mastitis by victimization 3 totally different tests. The procedure was followed monthly for a amount of 1 year. The information touching on age, lactation, and breed were recorded. The existence of clinical mastitis in cows made up our minds by examination of changes within the mammary gland, namely, mastitis, rise in temperature, swelling, hardness of mammary gland, changes in milk colour, and reduction in milk quality and amount.

B. Diagnostic Tests Used

The milk samples from every quarter of animal were tested by SFMT [5], sodium lauryl sulphate test (SLST) [6], and white side test at (WST) [7] to understand variety of mastitis. For the diagnoses of SCM the positive reaction to those tests alongside the absence of clinical signs was used.

C. The Existence

The existence was expressed in percent by using the following formula:

Existence (%) = (Number of animals positive)/ (Number of animals tested)×100 (1)

D. Test-Wise Existence of Subclinical and Clinical Mastitis in Cows:

The three simple and rapid chemical tests, namely, SFMT, SLST and WST, were used for the diagnosis of bovine mastitis in cows.

E. Age-Wise Existence of Subclinical and Clinical Mastitis in Cows

To know the age- wise existence of mastitis, Cows aged 3 to 13 years were used.

F. Lactation-Wise Existence of Subclinical and Clinical Mastitis in Cows

To know the lactation wise existence of mastitis, Cows in between 1^{st} and 8^{th} months of lactation period were tested.

G. Breed-Wise Existence of Subclinical and Clinical Mastitis in Cows

The breed-wise existence of mastitis was studied by using different breeds like non-descriptive (ND) breeds Holstein friesian, Jersey, and Deoni,.

H. Quarter-Wise Existence of Subclinical and Clinical Mastitis in Cows

To know the quarter-wise existence of mastitis, the milk samples from each quarter of animal were tested.

I. Herd-Wise Existence of Subclinical and Clinical Mastitis in Cows

Herds were categorized into two types, namely, organized and unorganized herds.

III. RESULTS AND DISCUSSION

Statistical Analysis

The statistical analysis was done with the data for lactation, age, breed, herd, and season-wise existence of subclinical and clinical mastitis was successfully analysed. Comparison of proportions and chi-square test were used to recognize if statistically important association existed between the age teams, lactation period, different breeds, different season,

and types of herd. For all the analysis performed $P < 0.05$ was taken as statistically significant [10].

TABLE 1 : Diagnosis test Comparison for the subclinical and clinical mastitis in cows

Test type	Total Numbers examined	Subclinical		clinical	
		Positive	Percentage	Positive	Percentage
SFMT	263	121	46	21	8
SLST	263	103	39.1	14	5.5
WST	263	92	34.9	12	4.7

TABLE 2 : Association of sub clinical and clinical bovine mastitis between age groups

Age	Total numbers examined	Subclinical positive			clinical positive		
		SFMT	SLST	WST	SFMT	SLST	WST
3-6.	94	26	24	19	6	4	3
7-10.	125	70	64	60	11	7	7
>10	44	15	15	13	4	4	3
x^2 values	263	8.97*	15.4*	18.91*	0.51	1.34	1.06

*Significant: p<0.05.

TABLE 3 : Lactation-Wise

Test Type	Total numbers examined	Subclinical		Clinical	
		Positive	Percentage	Positive	Percentage
1st Lactation					
SFMT	40	16	40	2	5
SLST	40	10	25	1	2.5
WST	40	10	25	1	2.5
2nd Lactation					
SFMT	33	16	48.4	1	3
SLST	33	16	48.4	1	3
WST	33	12	36.3	1	3
3rd Lactation					
SFMT	67	31	46.2	6	8.9
SLST	67	25	37.3	4	5.9
WST	67	20	29.8	4	5.9
4th Lactation					
SFMT	55	22	40	3	5.2
SLST	55	22	40	1	1.8
WST	55	22	40	0	0
5th Lactation					
SFMT	30	22	73.3	5	16.6
SLST	30	20	66.6	4	13.3
WST	30	18	60	4	13.3
6th Lactation					
SFMT	18	10	55.5	2	11.1
SLST	18	8	44.4	2	11.1
WST	18	8	44.4	1	5.5
7th Lactation					
SFMT	12	3	25	1	3.6
SLST	12	1	8.3	1	3.6
WST	12	1	8.3	0	0.0
8th Lactation					
SFMT	8	1	12.5	1	3.4
SLST	8	1	12.5	0	0
WST	8	0	0	0	0
x^2 values					
SFMT	263	23.06*		5.73	
SLST	263	30.79*		8.14	
WST	263	20.28*		10.6	

*Significant: P<0.05.

TABLE 4 : Breed-wise

Test Type	Total numbers examined	Subclinical		Clinical	
		Positive	Percentage	Positive	Percentage
Nondescriptive					
SFMT	52	21	40.8	2	3.8
SLST	52	17	32.7	1	2.5
WST	52	15	29.4	1	2.5
Deoni					
SFMT	58	21	36.1	1	1.8

SLST	58	16	28.2	0	0
WST	58	16	22.5	0	0
Jersey					
SFMT	69	33	47.8	7	10.1
SLST	69	24	35	4	5.1
WST	69	24	35	2	2.8
Holstein Friesian					
SFMT	84	46	54.7	11	13.2
SLST	84	32	38	9	10.7
WST	84	37	44	9	10.7
x^2 values					
SFMT	263	5.6		7.73	
SLST	263	1.74		9.28*	
WST	263	4.52		11.35*	

*Significant :P<0.05

TABLE 5 : Season-Wise

Test Type	**Total numbers examined**	Subclinical		Clinical	
		Positive	**Percentage**	**Positive**	**Percentage**
Winter					
SFMT	60	26	43.3	8	13
SLST	60	19	31.6	8	13
WST	60	19	31.6	6	10
Summer					
SFMT	78	22	28.2	7	8.9
SLST	78	16	20.5	4	5.1
WST	78	15	19.2	4	5.1
Monsoon					
SFMT	67	42	62.6	15	22.3
SLST	67	37	56.7	12	17.9
WST	67	35	52.2	12	17.9
Postmonsoon					
SFMT	58	32	55.1	9	15.5
SLST	58	30	51.7	9	15.5
WST	58	27	46.5	8	13.7
x^2 values					
SFMT	263	19.56*		5.26	
SLST	263	23.97*		6.18	
WST	263	20.34*		6.28	

*Significant :P<0.05.

TABLE 6 : Quarter-Wise

Test Type	**Total numbers examined**	Subclinical		Clinical	
		Positive	**Percentage**	**Positive**	**Percentage**
One quarter					
SFMT	263	74	28.2	8	3
SLST	263	70	26.5	6	2.2
WST	263	68	26	0	0
Two quarters					
SFMT	263	34	12.8	22	8.2
SLST	263	34	12.8	16	6
WST	263	26	10.0	16	6
Three quarters					
SFMT	263	13	5.1	3	1.0
SLST	263	10	3.8	0	0
WST	263	8	3.2	0	0
four quarters					
SFMT	263	21	8	15	5.8
SLST	263	16	6.2	7	2.8
WST	263	16	6.2	3	1.0

TABLE 7 : Herd-Wise

Test Type	**Total numbers examined**	Subclinical		Clinical	
		Positive	**Percentage**	**Positive**	**Percentage**
Organized herds					
SFMT	112	14	12.5	2	1.7
SLST	112	12	10.7	2	1.7
WST	112	12	10.7	2	1.7
Unorganized herds					
SFMT	151	51	33.7	10	6.6
SLST	151	43	28.4	7	4.6
WST	151	37	24.5	6	3.9
x^2 values					
SFMT	263	15.66*		3.47*	
SLST	263	12.27*		1.59	
WST	263	8.06*		158.4*	

*Significant :P<0.05.

IV. CONCLUSION

In this paper we found that the most sensitive for the designation of bovine mastitis is SFMT. The lactation and age wise existence study indicates older age and cows with later a part of lactation stage were a lot of prone to bovine mastitis. The breed wise existence of bovine mastitis showed the exotic breeds like HF and Jersey were a lot of susceptible to bovine mastitis than indigenous cows. Season wise study showed that cows square measure a lot of sensitive to bovine mastitis throughout monsoon. The quarter wise existence of bovine mastitis indicated that preparation of teats and mamma for milking is poorly practiced during this region, hence, preventive measures like laundry of teats with clean water and drying utterly before milking, The study additionally indicated that cows in organized herds square measure less exposed to the bovine mastitis. The current analysis explored the very fact that there exists a major relationship between age of the cow and also the subclinical mastitis however there is no important association between age and clinical mastitis. Equally important association exists between lactation amount of cow and subclinical mastitis however not showing in clinical mastitis. But there is no important relationship between breed of the cow and subclinical mastitis however important association exits between breed of cow and clinical mastitis diagnosed by SLST and WST. Season-wise existence analysis indicates that there's a powerful association between seasons and therefore the subclinical mastitis however no such association exists between season and therefore the clinical mastitis. The study conjointly indicated that cow herds and subclinical mastitis have high important high important association whereas no major association was recorded between herds and clinical mastitis except once designation with WST. Considering the results of this investigation it is terminated that subclinical mastitis is directly related to age, lactation amount and environmental factors of the cow and clinical mastitis is a lot of related to the breed of the cow and environmental conditions. The present study specifies that surroundings factors play a serious role in each subclinical and clinical mastitis, thus it's counselled to keep up hygienically conditions conditions within the herds for dominant the bovine mastitis.

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