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INCIDENCE OF HOOF DISORDERS IN BOVINE OF SOUTH GUJARAT

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Abstract: Door to door surveillance of 3241 animals (1480 cattle and 1761 Buffalo) was carried out in and around Navsari district and nearby districts, Gujarat, from which 125 clinical cases related to hoof disorders were identified. The hoof affections were classified as per species, breeds, age, location, lesions, feeding practices and flooring. Amongst these 125 (3.86%) clinical cases of hoof disorders, 77 (2.38%) cases in cattle and 48 (1.48%) buffaloes were recorded. The breed wise distribution of hoof disorders in affected cattle revealed highest rate of occurrence in Holstein Friesian 54/77 (70.13%) followed by Gir 15/77 (19.48%) and crossbred 08/77 (10.39%), whereas, in buffaloes highest incidence was recorded in Mehsani 31/48 (64.58%), followed by nondescript 08/48 (16.67%), Jaffrabadi 06/48 (12.50%) and Surti 03/48 (06.25%). Hind limbs were found affected to a greater extent (82; 66%) as compared to fore limbs (43; 34.4%). Housing condition was the key factor in occurrence of hoof problems in cattle and buffalo population. The prevalence rate was higher among cattle (7.94%) and buffaloes (3.08%) tied permanently on the pakka floor with limited housing area for exercise.

Keywords: Hoof disorders, cattle, Pakka floor, Gujarat.

Introduction

Globally, livestock production is growing rapidly as a result of increasing demand for animal products. This holds also true for the dairy industry, the centre of which are dairy cows whose well being, health and welfare are important for successful milk production and economic success. Lameness and claw disorders constitute a significant health and welfare problem in modern dairy farming (Somers, 2004). Foot and leg disorders tend to increase along with increased production and more confined management systems (Beusker, 2007). Compared to the cow's natural environment when grazing, today's confined dairy systems hardly achieve requirements for comfortable lying, standing and walking; and hygiene is often poor (Bergsten, 2010). Lameness was ranked third in losses from dairy diseases, following mastitis and fertility problems (Baggot, 1982) and it is a recognized

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problem in most dairy herds throughout the world. Producers and herd managers agree, it is an ever-present challenge and with modern dairy management practices, lameness rates continue to rise (Burgi, 2006). The majority of lameness (>90%) involves the foot. Claw diseases are a primary cause of lameness in most herds and are predisposed by laminitis and confinement on concrete (Manson and Offer, 2007). The hoof is a complex structure that plays a key role in many aspects of the animal's overall health and productivity. Although an animal with hoof problems may be able to function, chances are that optimal animal production and performance will be reduced depending upon the severity of the problem (Hepworth *et al*., 2004). Manure slurry, mud, and otherwise wet conditions seem to favour the occurrence of diseases; however specific data to support these thoughts is limited (Shearer and Amstel, 2000). Nutritional status of animal also plays a vital role. Each essential nutrient for the hoof horn plays a unique role in the production of normal high-quality hoof horn and all must be present in optimal amounts for hoof horn to have maximum strength and cementing (Seymour, 1998). The key to preventing lameness is by making the correct lameness diagnosis (Burgi, 2006) and by maintaining a sound hoof management, animal owners can reduce their economic losses and increase their chances for profit in the future (Hepworth *et al*., 2004).

Material and Method

In a study, door to door surveillance of 3241 animals (1480 cattle and 1761 Buffalo) was carried out in and around Navsari district and nearby districts, Gujarat, from which 125 clinical cases related to hoof disorders were identified. Herd details and managemental information were recorded followed by collecting information of affected animal such as species, breed, age, lactation and sex of the animal; hoof problem faced; and other relevant information were collected from the livestock owners in predefined proformas. The affections were classified as per species, breeds, age, anatomical location of the affection, lesions, feeding practices and flooring.

Results and Discussion

Species wise prevalence of hoof problems was higher I n cattle (5.20%) as compared to buffaloes (2.73%). The incidence of axial rotation was highest in cattle (35.06%), while, incidence of overgrown hooves (54.17%) was highest in buffaloes.

Table 1: Overall incidence rate of hoof disorders recorded during the survey

	Cattle	Buffalo	Total
Total number of animals surveyed	1480	1761	3241
Clinical cases of hoof disorders	77	48	125
Percentage (%)	5.20	2.73	3.86
Prevalence rate (%) on the basis of overall population surveyed	2.38	1.48	3.86

Chart 1 and 2: Breed wise incidences of hoof disorders in cattle and buffalo population surveyed

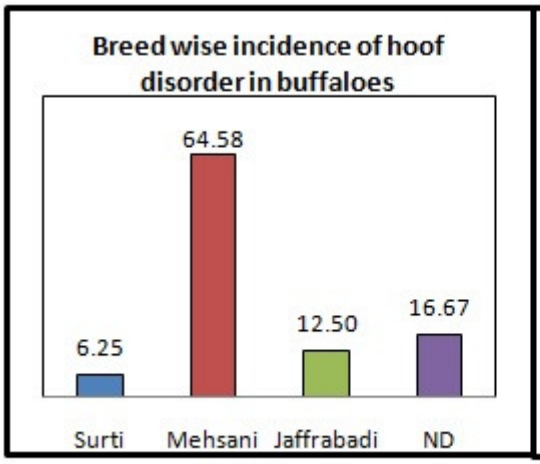


Figure 1

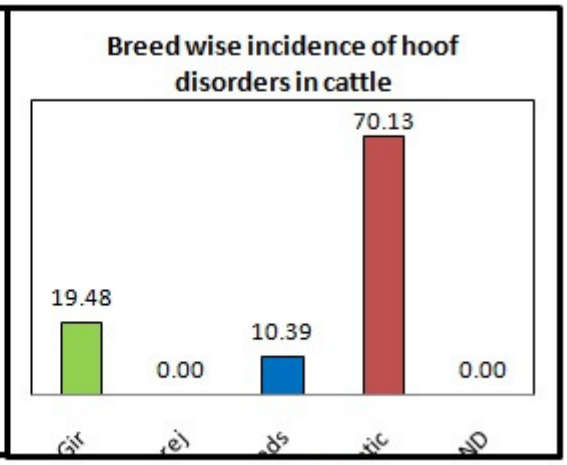


Figure 2

Chart 3: Prevalence of foot lesions as per Lactation

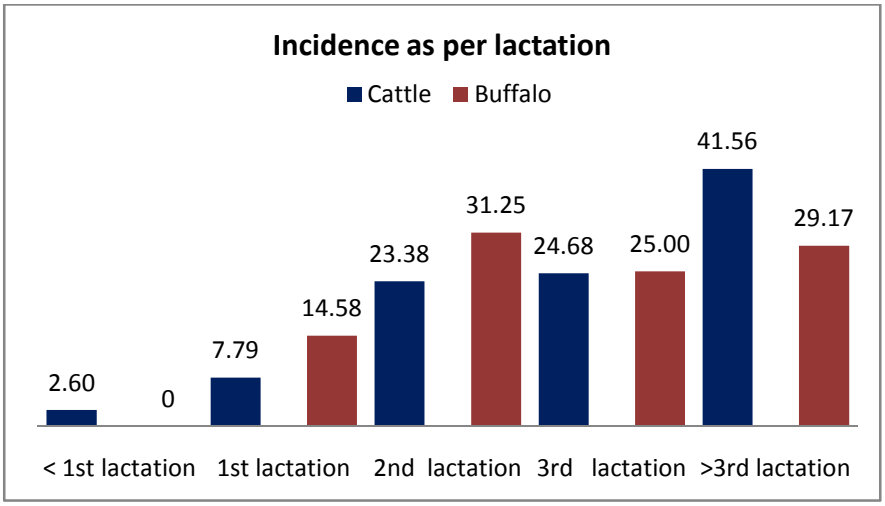
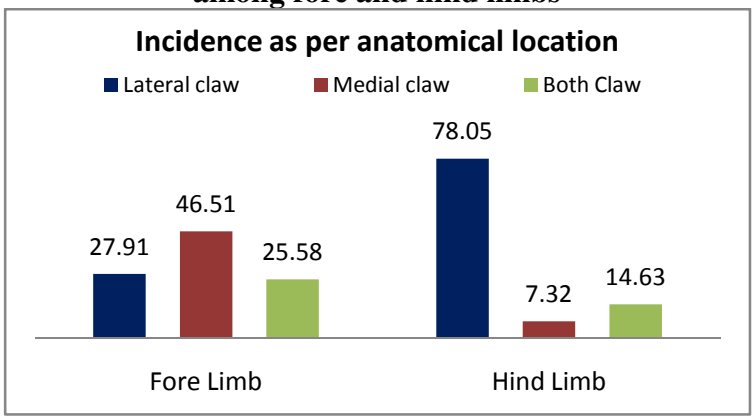


Chart 4: Anatomical location wise incidences of hoof lesions in lateral and medial claw among fore and hind limbs



Housing condition was the main factor in occurrence of hoof problems in cattle and buffalo population. The prevalence rate was higher among cattle (7.34%) and buffaloes (3.08%) tied permanently on the pakka floor with no access to exercise with limited housing area. Cattle maintained on kachcha floor without any facilities for exercise showed higher prevalence (4.15%) as compared to those given access to physical exercise in mixed flooring (2.86%). However, contrary results were observed in buffaloes tied over kachcha floor with prevalence (2.19%) than in buffaloes maintained over mixed type flooring (2.30%; **Table 2**).

Table 2: Floor type wise incidences hoof lesions

Species	Kachha floor		Pakka floor		Mixed		Overall	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Cattle	13/313	4.15	50/681	7.34	14/486	2.86	77/1480	5.20
Buffalo	7/319	2.19	31/1007	3.08	10/435	2.30	48/1761	2.73
Total	**20/632**	**3.16**	**81/1688**	**4.80**	**24/921**	**2.60**	**125/3241**	**3.86**

Out of 125 affected animals, 27/661 (4.08%) were maintained on high concentrate diet, 69/1732 (3.98%) on normal concentrate diet and 29/848 (3.42%) animals were maintained on the low concentrate diet **(Table 3)**.

Table 3: Feeding practices wise incidences of hoof disorders

Feeding practices	No. of affected animals	Population surveyed	Percentage (%)
>50% of Milk Production	27	661	4.08 (27/661)
50% of Milk Production	69	1732	3.98 (69/1732)
< 50 % of Milk Production	29	848	3.42 (29/848)
Total	125	3241	3.86 (125/3241)

The incidence in cattle (5.20%) was higher as compared to that in buffaloes (2.73%). The incidence rate indicated in present study is less than that of 25 to 38 per cent reported in exotic dairy cattle (Prentice and Neal, 1972; Whitaker, 1983; Shearer, 1992; Smillie *et al.,* 1996; Cook, 2002) and also less than 9.2 to 58 per cent in zebu and cross bred dairy cattle of north India (Gogoi *et al.,* 1981; Kalasi *et al*., 2002; Jain *et al*., 2006). Incidence of hoof disorders in buffaloes (2.73%) is less than that of Mahla (2010) who reported 12.88 per cent which may be due regular access to grazing.

Our results are in concurrence with that of Mahla (2010) who reported highest incidence in cattle (22.91%) and buffaloes (17.05) maintained on pakka floor than in cattle (12.61%) and buffaloes (10.68%) maintained on kachcha floor.

Conclusion

The present survey covered 3241 animals, out of which 1480 cattle and 1761 buffaloes. Amongst these 125 (3.86%) clinical cases of hoof disorders, 77 (2.38%) cases in cattle and 48 (1.48%) buffaloes were recorded. Species wise prevalence of hoof problems was higher in cattle (5.20%) as compared to buffaloes (2.73%). The breed wise distribution of hoof disorders in affected cattle revealed highest rate of occurrence in Holstein Friesian 54/77 (70.13%) followed by Gir 15/77 (19.48%) and crossbred 08/77 (10.39%), whereas, in buffaloes highest incidence was recorded in Mehsani 31/48 (64.58%), followed by nondescript 08/48 (16.67%), Jaffrabadi 06/48 (12.50%) and Surti 03/48 (06.25%).

In cattle and buffaloes, the lowest incidence of hoof disorders (1.6%) was recorded in young animals (upto heifer stage) and highest incidence (36.8%) in the adult animals (higher than 3rd lactation). In case of buffaloes, maximum hoof lesions were observed in 2nd lactation animals (31.25%) while in cattle, more foot lesions were recorded in older animals (41.56%). Hind limbs were found affected to a greater extent (82; 66%) as compared to fore limbs (43; 34.4%). Within the limb, lateral claw was found most affected in hind limb (64; 78.05%) and medial claw in fore-limb (20; 46.51%). However, in certain animals, both claws were affected in fore-limb (11; 25.58%) and in hind limb (12; 14.63%).

Housing condition was the key factor in occurrence of hoof problems in cattle and buffalo population. The prevalence rate was higher among cattle (7.94%) and buffaloes (3.08%) tied permanently on the pakka floor with limited housing area for exercise. Cattle maintained on kachha floor without any facilities for exercise showed higher prevalence (4.15%) as compared to those given access to physical exercise in mixed flooring (2.86%). However, contrary results were observed in buffaloes tied over kachcha floor with low prevalence (2.19%) than in buffaloes maintained over mixed type flooring (2.30%).

Out of total 3241 animals surveyed, 661 (20.39%) were maintained on higher amount of concentrate (more than 50% of milk production) feed in the diet followed by 1732 (53.44%) animals on normal amount of concentrate feed (50% of milk production) in the diet and rest 848 (26.16%) on the low amount of concentrate feed (less than 50% of milk production) in the diet. Out of 125 affected animals of the total, highest incidence 27/661 (4.08%) was observed amongst the animals maintained on concentrate diet more than 50 per cent of milk production, followed by 69/1732 (3.98%) and 29/848 (3.42%) in animals maintained on normal and low amount of concentrate in diet.

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