

Short Communication

A REVIEW OF DISEASE CONDITIONS DIAGNOSED IN THE DAIRY UNIT OF A RESEARCH FARM IN ZARIA, NIGERIA FROM JANUARY 1, 2004 TO DECEMBER 31, 2006

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INTRODUCTION

One of the most important functions of domestic farm animals is the conversion of human inedible forages, by-products and crop residues into high quality human food in the form of meat, milk, and eggs (Bradford, 1989). Good livestock husbandry equates with looking after animals properly and maintaining them in good health in order to obtain optimum production of their products (Radostits *et al.*, 1994). Disease in farm livestock has always been a problem of considerable importance to farmers. Poor health has remained one of the main factors limiting livestock production especially in Africa (de Haan and Nissen, 1985). Diseases can have a significant effect on dairy farmers and occasionally dairy produce markets (Forster, 2005). Research by governmental and association agencies has led to higher and greater use of dairy products and especially discovery of new industrial uses of milk by-products (NDC, 2004). Nevertheless, the current low performance of Nigerian cattle is as a result of infectious and non-infectious disease factors and especially the methods of husbandry and nutrition. The progressive deterioration in veterinary care bordering mainly on the lack of basic inputs and consumables for animal health management has led to the emergence and re-emergence of numerous diseases dramatically exemplified in the major epidemics of rinderpest (de Haan and Nissen, 1985) and in recent times bird flu (Layne, 2006). The present study was aimed at reviewing, and highlighting the age, sex and seasonal distribution of diseases diagnosed, over a period of 3 years, in the dairy section of a research farm located in Zaria.

KEY WORDS: Review, Diseases, Dairy Unit, Research Farm

MATERIALS AND METHODS

The records of diseases diagnosed in the Dairy Unit of a Research Farm over a three-year period starting from January 1, 2004 to December 31, 2006 were collected and analysed. Only cases with complete information on age, sex, breed and the month or season of occurrence were included in the study. The cattle population in the Dairy Unit was divided into three age categories for the purposes of this study: calves, from day old to less than 6 months; weaners, from six months to less than one year of age; and adults from one year of

age and above. Information on some management practices in the farm like the feeding regimens, weaning of calves and housing of the animals were obtained from the farm records. Disease diagnosis was generally carried out using history, clinical manifestations and laboratory findings.

The diseases diagnosed in the Unit were divided into ten groups for the purpose of this study. The 10th group is made of "Other diseases" which included conditions like vaginal prolapse, uterine prolapse, abscesses, premature / still birth, retained placenta, animals that died of starvation,

electrocuted or of unknown causes. The skin diseases recorded were Streptothricosis (*kirchi*) and lumpy skin disease (LSD), while diseases / conditions grouped under "Traumatic injuries" were lameness, open wounds and injuries, fractures and dislocations.

The cases were analysed to determine the frequency, and the distribution of the different diseases in terms of age, sex and seasonality occurrence using ratio-to-moving average.

RESULTS AND DISCUSSION

The results show that 1,402 cases were diagnosed in the Dairy Unit of the Research Farm over the three-year period of study (Table I).

A summary of the diseases diagnosed among the various age categories (Fig.1), showed that the calves had the highest number of cases (43.8%)

while the weaners had the least (15.3%). Though the differences in the level of affection among the age categories may not have been appreciable, it is a known fact that younger animals are more prone to contracting diseases than the older ones because the immune system is yet to be fully developed (Tyler, 1990).

Odds ratio values obtained for the various age categories indicated that there was a significant association between the calves and the disease conditions when compared with the weaners ($P < 0.05$). The association was however not significant when compared with the adult animals ($P < 0.05$). In general, odds ratio values showed no association between the males and females in the level of affection (Tables II and III). Highest mortality rates are usually observed in young and particularly newly born animals before they become adapted to an independent life (Tyler, 1990).

TABLE 1: Disease Conditions diagnosed in the Dairy Unit of a Research Farm at Zaria according to age, 2004 - 2006

Disease Conditions	Age Category Affected (%)			Total No. of animals affected / %
	Calves	Weaners	Adults	
Heart water (Cowdriosis)	37 (6.0%)	28 (13.0%)	16 (0.6%)	81 (5.8%)
Snake bite	13 (2.1%)	6 (2.8%)	8 (2.4%)	27 (1.9%)
Helminthoses	98 (16.0%)	11(5.1%)	53 (11.2)	162 (11.6%)
Coccidiosis	114 (18.6%)	1(0.5%)	18 (10.7%)	133 (9.5%)
Pinkeye Disease (Infectious Kerato-Conjunctivitis)	119 (19.4%)	63 (29.3%)	134 (40.8%)	316 (22.5%)
Skin Diseases	37 (6.0%)	78 (36.2%)	229 (7.7%)	344 (24.5%)
Mastitis	0 (0%)	0 (0%)	9 (2.9 %)	9 (0.6%)
Calf Scours	97 (15.8%)	0 (0%)	0 (0%)	97 (6.9%)
Traumatic Injuries	39 (6.4%)	25 (11.6%)	63 (10.7%)	127 (9.1%)
Others	60 (9.7%)	3 (1.4%)	43 (13.0%)	106 (7.6%)
Total	614 (43.8%)	215(15.3%)	573 (40.9%)	1402 (100%)

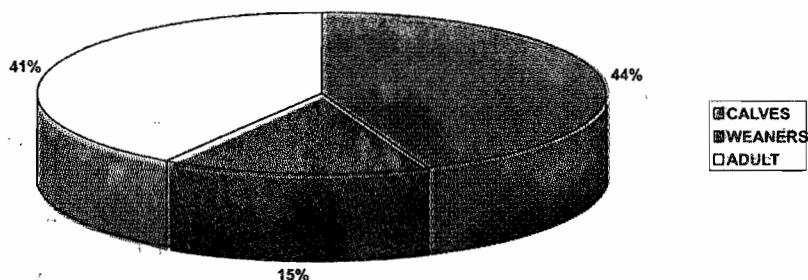


Fig. 1: Summary of the diseases diagnosed among the age categories in the Dairy Unit of a Research Farm in Zaria, 2004 - 2006

TABLE II: Diseases diagnosed among the males in a Research Farm in Zaria 2004 – 2006

Disease Conditions	Year / No. of Males Affected			Total no. / Percentage of males affected over the 3-yr period
	2004	2005	2006	
Heart water	1	8	19	28 (5.6%)
Snake bite	7	6	0	13 (2.6%)
Helminthoses	36	27	13	76 (15.3%)
Coccidiosis	55	7	7	69 (13.8%)
Pinkeye	31	38	48	117 (23.6%)
Skin Diseases	0	2	73	75 (15.1%)
Mastitis	0	0	0	0 (0%)
Calf Scours	4	40	11	55 (11.1%)
Traumatic Injuries	10	11	19	40 (8.1%)
Others	6	11	7	24 (4.8%)
Total no. affected each year	150 (30.2%)	150 (30.2%)	197 (39.6%)	497 (100%)

TABLE III: Diseases diagnosed among the females in the Research Farm 2004 – 2006

Disease Diagnosed	Year / No. of Females Affected			Total no. / Percentage of males affected over the 3-yr period
	2004	2005	2006	
Heart water	5	31	17	53 (5.9%)
Snake bite	6	6	2	14 (1.6%)
Helminthoses	37	22	27	86 (9.5%)
Coccidiosis	50	8	6	64 (7.1%)
Pinkeye	74	80	45	199 (21.9%)
Skin Diseases	13	12	244	269 (29.7%)
Mastitis	5	1	3	9 (1.0%)
Calf Scours	1	28	13	42 (4.6%)
Traumatic Injuries	17	34	36	87 (9.6%)
Others	22	49	11	82 (9.1%)
Total no. affected each year	230 (25.4%)	271 (29.9%)	404 (44.6%)	905 (100%)

Fig. 2 shows that pinkeye and the skin diseases (22.5% and 24.5% respectively) were the highest recorded cases within the study period, while mastitis in the cows was the least diagnosed (0.6%). Similarly both diseases were the highest recorded among all the age categories for the same period (Fig. 3).

Pinkeye is usually acute and tends to spread rapidly. In cattle, dry, dusty environmental conditions, shipping stress, bright sunlight and irritants, grasses and flies tend to predispose and exacerbate the disease. Flies serve as vectors and young animals are mostly affected (Aiello and Mays, 1998). Again, almost all the predisposing factors are prevalent in the location where this review was carried out. It is therefore not surprising that this condition is endemic throughout the year.

The most common disease of calves is 'scouring'. Scouring may be due to mechanical causes, nutritive causes or to infection. Scours caused by infection are usually more serious because there is

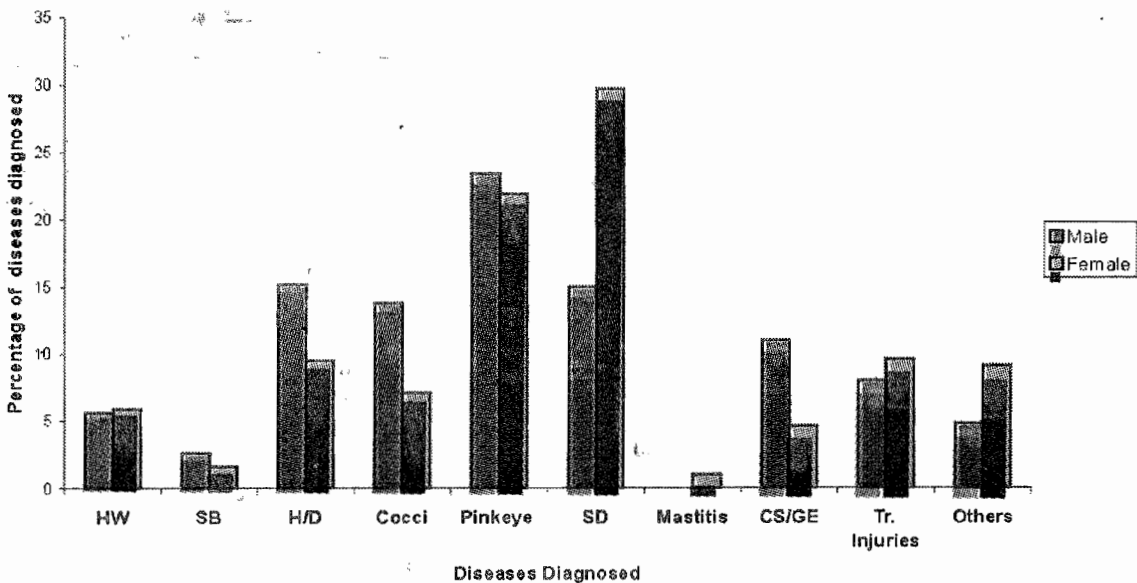
great danger of death of the infected animal, and because large proportions of the calves are affected (Tyler, 1990). This is evident in the figures of the cases of calf scour diagnosed.

Clinical coccidiosis occurs more frequently under conditions of poor sanitation and overcrowding or after stresses of weaning, shipping, sudden changes of feed or severe weather. It predominantly affects young animals, but may occur in older animals that have had little previous exposure to coccidia (Aiello and Mays, 1998). With the poor sanitary condition of the Dairy Unit the high frequency of diagnosis of this disease could be justifiable. Pneumonia often occurs when a calf is suffering from scours. The young calf is also particularly vulnerable to attack by internal parasites (Tyler, 1990).

The adult animals closely followed the calves in terms of the percentage of diseases diagnosed. Skin diseases, namely, dermatophilosis (*kirchi*) and lumpy skin disease contributed significantly to this very high percentage among the adult animals (Table I).

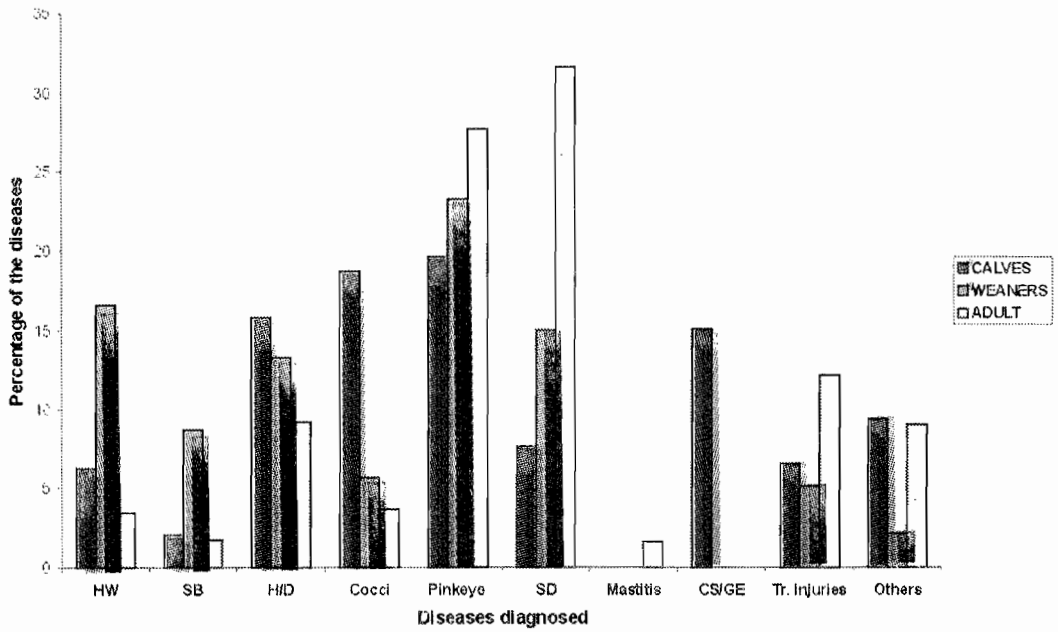
The development, prevalence, and seasonal transmission of *kirchi*, commonly called streptothricosis in cattle, goats and horses and caused by *Dermatophilus congolensis* is influenced by factors such as prolonged wetting by rain, high humidity, high temperature and various ectoparasites that reduce or permeate the natural barriers of the integument (Aiello and Mays, 1998). Poor husbandry and management practices over the years might have contributed immensely to this. Lumpy skin disease, the second skin disease diagnosed in the study period was also quite prevalent in the study period. It is an infectious, eruptive, occasionally fatal disease of cattle characterized by nodules on the skin and other parts of the body (Aiello and Mays, 1998).

Secondary infection often aggravates the condition. Traditionally, it occurs in Southern and Eastern Africa but in recent years has extended South West through the continent into Sub Saharan West Africa. The causal virus is related to that of the sheep pox virus. It mostly occurs mostly in wet summer weather (about the equivalent of rainy season in the area of study) but may occur in winter (dry season). Lumpy skin disease appears epidemically and sporadically (Aiello and Mays, 1998). This statement agrees with the frequency of its diagnosis within the study period (Table III; Fig. 4). Most often the disease occurs when quarantine restrictions fail (Aiello and Mays, 1998).



Legend: HW Heart water disease; SB Snake bite; HD Helminthoses/Diarrhoea; Cocci Coccidiosis; Pinkeye Pinkeye disease; SD Skin diseases; CS/GE Calf scours/Gastroenteritis; Tr.Injuries - Traumatic injuries

Fig. 2: Diseases diagnosed among the sexes in the Dairy Unit of a Research Farm in Zaria



Legend: HW Heart water disease; SB Snake bite; HD Helminthoses/Diarrhoea; Cocci Coccidiosis; Pinkeye Pinkeye disease; SD Skin diseases; CS/GE Calf scours/Gastroenteritis; Tr.Injuries - Traumatic injuries

Fig. 3: Diseases diagnosed, according to age category, in a Research Farm located in Zaria, 2004 - 2006

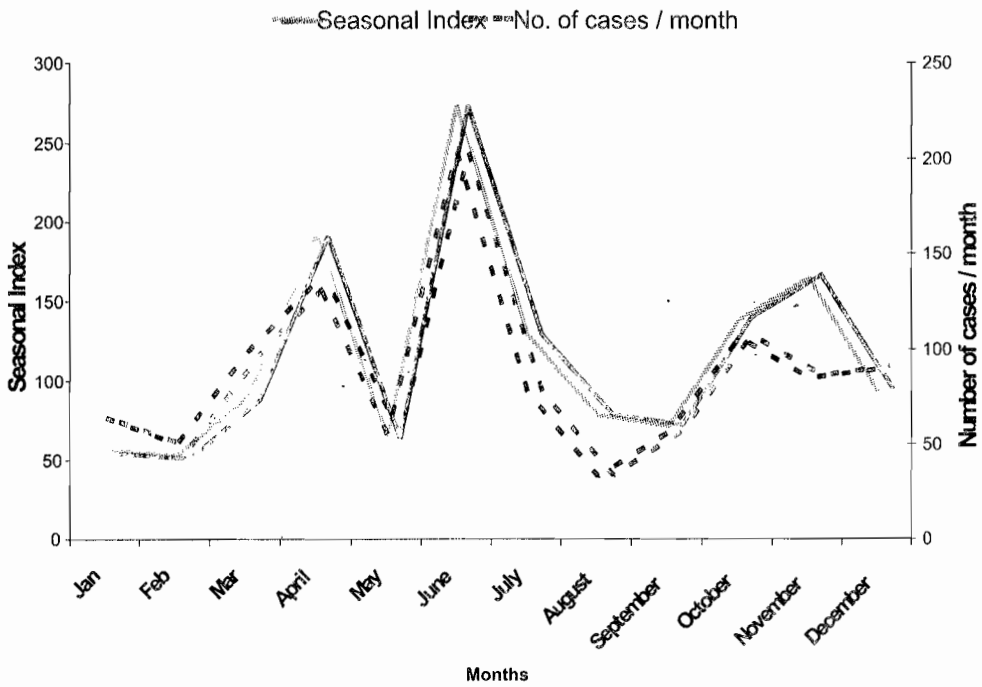


Fig. 4: Seasonal distribution of diseases diagnosed in a research farm located in Zaria, 2004 - 2006

TABLE IV: Monthly distribution of cases diagnosed in a Research Farm located in Zaria, January 2004 to December 2006

Month	2004 No. of Cases	2005 No. of Cases	2006 No. of Cases	Total No. of Cases Diagnosed Monthly
January	9	14	34	57
February	16	17	20	53
March	7	13	70	90
April	101	66	25	192
May	23	26	15	64
June	104	74	96	274
July	28	24	77	129
August	8	15	55	78
September	24	32	15	71
October	14	67	57	138
November	30	26	108	164
December	16	47	29	92
Totals	380	421	601	1402

Despite differences in the number of cases diagnosed among the sexes, the odds ratio values show that these differences are not significant. In other words, the sex of the animals did not play any significant role in the frequency of the diseases diagnosed. It is however important to note that skin diseases were most frequently diagnosed disease among the females than the males in 2006. Though the analysis of the three-year data on a monthly basis revealed no seasonal pattern, it is pertinent to point out that the frequency of the diseases afflicting the animals were more at the beginning of rainy season (April), middle (June) and at the early dry season months (October, November, and December). It is understandable that if the necessary adjustments and / or readjustments in management practices are not made as changes in seasons occur, there is the probability that the number of diseases precipitated would increase.

In general, it is worth noting that the other diseases recorded in this study, though not as frequently

diagnosed as those that had been highlighted in this discussion, must have contributed directly or indirectly in lowering the productive efficiency of the animals. This could especially be true for many of the diseases grouped under “traumatic injuries” and “other diseases”. Also snake bites which always led to the loss of the animals bitten made some important contributions over the years of study.

It is however gladdening to note that within the period of study there was no record of such highly infectious / contagious and economically devastating diseases like tuberculosis or brucellosis. This is not surprising as information obtained from the farm indicated that the animals were usually subjected to regular vaccinations against these important diseases. These diseases are important, not only because of the effects they have on the animals, and their productive efficiency, but because of their zoonotic implications (Kahn, 2006). Farms established to

conduct research in animal production including management for higher productivity would certainly be expected to be ahead of privately-owned farms in the management and control of livestock diseases. This apparently is not the situation given the level of dilapidation of infrastructures and the lack of the needed inputs for quality veterinary care in the area of study. It is not unlikely that lack of the necessary funds and perhaps, bureaucracy, must have been contributory to the prevailing situation.

Nevertheless there is need to step up the quality of the veterinary care in the Unit and carry out effective repairs on the infrastructures, especially repairs as minimal as closing up the holes, cracks and crevices through which rodents and dangerous reptiles like snakes gain access into the pens. Given the fact that most of the diseases diagnosed within the study period are mostly management and preventable diseases, there is need to ensure effective supervision of staff concerned in the day-to-day care of the animals so that prompt actions are always taken when they are indicated. In other words, adequate biosecurity measures should be maintained in the farm. While developing and maintaining biosecurity is difficult, it is the cheapest, most effective means of disease control available, and no disease prevention programme will work without it (Anon. 2006). It is also necessary to emphasize the importance of providing appropriate incentives to the workers.

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