

STUDY OF DISEASES OF BUFFALO AND BEEF CATTLE IN THE SUBDISTRICT OF JONGGOL, WEST JAVA

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ABSTRACT

Using a questionnaire and collection of blood and faecal samples, a disease investigation survey was conducted on buffalo and beef cattle in the Jonggol subdistrict of Bogor, West Java. The main purpose was to obtain information on some economically important diseases in these animals indicating possible areas for further research. The study revealed that poor herd productivity and fascioliasis were the most frequent problems. The poor herd productivity was associated with a lack of mature male animals.

INTRODUCTION

Due to budget restrictions, research into animal health focusses on some selected diseases thought to cause the most significant economic loss. Measurement of the economic impact of a disease involves studying mortality and morbidity rates, prevalence and incidence rates, and the effects on weight gain.

The aim of this study is to ascertain the importance of selected diseases of buffalo and beef cattle in an area of the Kabupaten Bogor, and to attempt to delineate important areas for further research.

MATERIALS AND METHODS

Questionnaire

Using a carefully designed questionnaire, 59 buffalo farmers and 130 cattle farmers were interviewed. The questionnaire attempted to obtain information on herd structure, management practices, disease incidence, mortality rates and reproductive performance.

Laboratory Disease Investigation Procedures

Blood, serum and faecal samples were collected from a sample of 50 adult buffalo and 50 adult beef cattle for studies on haematology, serological profiles and the presence of helminth eggs respectively using standard methods.

RESULTS

Questionnaire

Herd Structures

The number of buffalo and cattle owned by the respondents were 201 and 282 respectively or a mean of 3.4 buffalo and 2.2 cattle per farmer. Seventy two percent of the buffalo farmers kept 2-5 animals whereas 88% of the cattle farmers kept 1-3 animals. A summary of the relevant herd structures is shown on Table 1. Very few mature males were present and the majority of animals were below 4 years of age.

Details on Farmers

The mean ages of the buffalo and beef cattle farmers were 44 (range 24-64) and 40 (range 15-65) years respectively. Their educational level was low with only 31% having attended elementary school. The rearing of animals was an essential component of rice cultivation.

The principal use of both buffalo and beef cattle was draught power for ploughing. Seventy two percent of the cattle and 88% of buffalo over 2 years of age were used for ploughing during the rice planting period.

Animal Health

The questionnaire was an incomplete method for describing specific animal health problems as owners

Table 1. Age and sex distribution

		Age (Years)									
		1	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	Total
Beef Cattle	numbers ♂	23	24	8	0	1	0	0	0	0	56
	numbers ♀	22	62	63	42	27	8	2	1	0	226
	ratio ♂/♀	1.04	0.39	0.13	0	0.04	0	0	0	0	0.25
Buffalo	numbers ♂	20	32	5	2	1	0	0	0	0	60
	numbers ♀	12	30	36	20	20	15	5	0	3	141
	ratio ♂/♀	1.67	1.07	0.14	0.10	0.05	0	0	—	0	0.42

did not recognize subclinical conditions. However, overall mortality rates in both animal species were low.

Reproductive Performance

Age at first calving and calving interval in both buffalo and cattle are shown in Figure 1. The age at first calving in cattle and buffaloes was 3.5 years and 4.0 years respectively with mean calving intervals to the fifth calf of 2.1 and 2.2 years respectively.

Laboratory Disease Investigation Procedures

Haematology

The results of the haematological parameters studied are shown in Table 2. The red and white cell counts, PCV and haemoglobin concentrations were normal in both species in all age groups using the values of Sharma *et al.* (1973).

Faecal Egg Counts

The concentrations of nematode and trematode eggs in the faecal samples collected are shown in Table 3. The mean nematode egg counts were low in

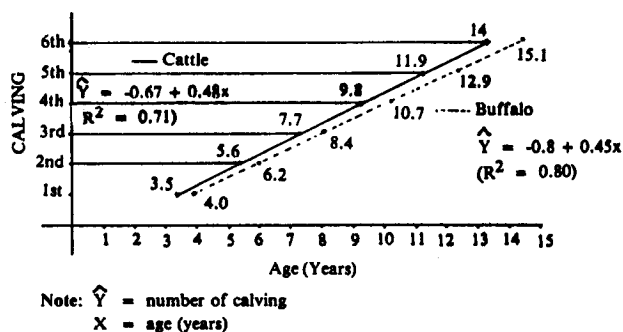


Figure 1. Reproductive performance of beef cattle and buffalo

all age groups of both species. Significant numbers of both species were infected with the trematodes *Fasciola* spp. and *Paramphistoma* spp. with an increasing prevalence with age in the former. Paramphistomes were the most common parasite in both buffalo and cattle being present in 67% and 78% respectively of samples. However, the economic significance of these high prevalence is unknown.

Serology

None of the sera had antibodies to *Brucella abortus*. Seven cattle sera were positive with low

Table 2. Haematological values of buffalo and beef cattle

Age (years) and sex	Buffalo (mean ± S.D)				Beef cattle (mean ± S.D)			
	PVC (%)	Hb (g/dl)	RBC (10 ⁶ /ul)	WBC (10 ³ /ul)	PVC (%)	Hb (g/dl)	RBC (10 ⁶ /ul)	WBC (10 ³ /ul)
0-1.0 ♀	33.0 ± 2.6	11.9 ± 1.2	6.9 ± 1.2	11.2 ± 2.2	29.4 ± 7.1	10.7 ± 2.3	6.5 ± 2.0	10.6 ± 3.0
♂	32.5 ± 2.8	12.0 ± 0.7	6.8 ± 0.8	10.8 ± 1.9	28.4 ± 4.1	10.7 ± 1.7	7.2 ± 1.5	3.4 ± 3.9
1.1-2.0 ♀	34.1 ± 2.2	12.5 ± 0.5	6.5 ± 0.4	12.2 ± 2.8	28.9 ± 4.0	10.7 ± 2.0	6.3 ± 0.9	9.3 ± 1.8
♂	35.0 ± 2.4	12.7 ± 0.4	7.1 ± 0.6	9.2 ± 4.1	30.0 ± 3.3	11.8 ± 2.0	6.8 ± 1.1	12.5 ± 0.9
2.1-3.0 ♀	33.6 ± 2.8	12.3 ± 0.3	5.9 ± 0.7	8.7 ± 1.8	27.67 ± 6.0	10.2 ± 2.0	5.6 ± 1.0	8.2 ± 2.3
♂	—	—	—	—	24.0 ± 4.0	9.5 ± 1.7	4.9 ± 1.2	7.6 ± 0.6
3.1-4.0 ♀	31.8 ± 2.8	12.1 ± 0.4	5.6 ± 0.7	12.6 ± 2.9	31.7 ± 4.9	11.0 ± 1.7	5.5 ± 1.0	11.1 ± 1.7
4.1-5.0 ♀	32.0	11.9	6.0	12.0	31.0 ± 2.2	11.7 ± 1.2	6.2 ± 1.3	8.7 ± 2.1
5.1-6.0 ♀	35.5 ± 3.6	12.1 ± 0.6	5.8 ± 0.6	8.2 ± 2.3	25.2 ± 2.5	9.5 ± 1.2	4.8 ± 0.5	10.6 ± 2.4
6.1-7.0 ♀	31.0 ± 2.2	11.2 ± 1.4	5.7 ± 0.7	11.7 ± 3.6	26.8 ± 1.3	9.6 ± 1.1	5.2 ± 0.6	9.4 ± 2.4
7.1-8.0 ♀	32.2 ± 2.5	12.1 ± 0.3	5.3 ± 0.4	8.5 ± 0.7	—	—	—	—
8.1-9.0 ♀	32.7 ± 3.4	12.1 ± 1.0	5.3 ± 0.8	10.2 ± 1.2	—	—	—	—
Mean	33.3 ± 3.0	12.1 ± 0.8	6.0 ± 0.9	10.7 ± 2.8	28.9 ± 5.2	10.5 ± 1.8	5.7 ± 1.6	9.4 ± 2.4

Table 3. Percentage of animals, and mean helminth eggs per gram faeces from buffalo and cattle

	Buffalo						Beef Cattle					
	Fasciola		Paramphistomum		Nematoda		Fasciola		Paramphistomum		Nematoda	
	%	EPG	%	EPG	%	EPG	%	EPG	%	EPG	%	EPG
Calf	14	30	50	145	57	128	25	10	67	55	50	365
Heifers	36	22	82	158	18	20	27	21	93	84	0	0
Bulls	0	0	67	95	67	680	67	89	67	90	67	680
Cow	40	16	75	109	20	35	40	20	75	110	20	30

titres to *Leptospira* (3 *hardjo*, 3 *tarrasovi* and 1 *pomona*). One buffalo serum only was positive to *L. pomona*.

DISCUSSION

Although the questionnaire was designed to be easily answered by farmers, many responses were thought to be unreliable. As a result, much information such that relating to nutritional status was not included in this paper.

The biggest problem found in this study was the poor herd productivity. The first calving in both species was very late being more than 3 years and calving intervals were very long at more than 2 years. This compares with a good management system in which the first calving is expected at the age of two years and calving interval is one year. Low herd productivity was not apparently related to disease but was probably caused by poor management practices. The main reason was the scarcity of adult males in both buffalo and cattle population (see Table 1) due to excessive sales of these animals. This simplistic explanation appears logical and herd productivity could probably be improved by the introduction of artificial insemination or an increase of village bulls.

The incidence of clinical disease and death was very low. The general health of both species at the time of the survey was good as indicated by haematological parameters and direct observation of the animals. Brucellosis and leptospirosis appeared not to be significant problems as very few animals showed a positive reaction on serological testing.

Although a high proportion of both species were infected with flukes, the number of fluke eggs per gram faeces was usually low. The habitat of the study area is suitable for the snail intermediate host of *Fasciola gigantica* and thus fascioliasis is probably endemic throughout the area.

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