THE SITUATION OF LIVER FLUKE INFESTATION IN CATTLE IN BALI

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Abstract. From 1975 to 1982, the prevalence of liver fluke infestation in Bali cattle of the island of Bali, Indonesia varied between 29% and 46%, and from 1983 to 1988 prevalence rates varied between 6% and 22%. Changes in prevalence rates were more closely associated with water levels in pastures than with other variables in pastures, such as temperatures and pH. Mass-fasciolicide treatment of traditionally reared Bali cattle was economical. The decrease in the prevalence of liver flukes in Bali cattle since 1983 was associated with (1) the introduction of a rice planting system which alternated rice with other crops, and (2) with mass-fasciolicide treatments conducted by the veterinary services.

INTRODUCTION

The island of Bali is a fertile island in the southeastern island of the Indonesian archipelago. A mountain range runs across the middle of the island from east to west dividing the island into lowlands (0–500 M), which cover 56% of the island, and highlands (>500 M), which cover the remaining 44% of the island (Suweta, 1982).

The annual rainfall is high in the southern lowlands and highlands (1540–2249 mm/yr) and low in the northern lowlands and highlands (900 mm/yr). Thus, adequate water is available for irrigation throughout the year in the southern lowlands of the island. Most of the highlands are arid or semi-arid areas because it is difficult to irrigate those areas (Suweta, 1982).

The range of pH of the soil in Bali varies from slightly acid to slightly alkaline (6.2–8.0). The temperature varies from 18.7°C to 28°C and provides an excellent climate for development of the intermediate host and free living stages of liver flukes. The most important factor influencing transmission of liver flukes is the availability of water throughout the year (Suweta, 1982).

In Bali there are 426,478 head of cattle (Anon, 1988) that are reared as working animals in open pastures.

The objective of this paper is to review liver fluke infestation in Bali cattle on the island of Bali.

MATERIALS AND METHODS

The materials presented in this paper were collected from results of research carried out in Bali and from data obtained from the veterinary services of the government.

RESULTS

The prevalence of liver fluke infestation in Bali cattle on the island of Bali has decreased over the past 15 years. In 1978, Suweta *et al* (1978) reported that 56% of Bali cattle, slaughtered in Sanggaran, Denpasar, were infected with liver flukes. A more comprehensive study was later conducted by Suweta (1982). He divided the island of Bali into topological areas based on water condition, pH and temperature in pastures. He found that the average prevalence of liver fluke infestation in Bali cattle on the island of Bali was 3.5%.

A summary of liver fluke infestation in Bali cattle on Bali is presented in Table 1. From 1975 to 1982 prevalence ranged from 29% to 46%, and since 1983 prevalence has ranged from 6.5% to 22%.

Table 1

The prevalence of liver fluke infestation in Bali cattle in Bali.

Year	Cattle		Prevalence (%)
	Observed	Infested	
1975	32,059	10,479	32.69
1976	40,200	18,090	45.00
1977	32,192	9,367	29.10
1978	33,842	9,970	29.46
1979	31,586	9,042	28.63
1980	35,288	14,725	41.73
1981	34,887	15,987	45.83
1982	39,883	13,983	35.06
1983	50,149	11,253	22.44
1984	56,750	11,363	20.02
1985	59,733	11,102	18.59
1986	57,263	3,700	6.48
1987	70,778	6,682	9.44
1988	59,657	9,083	15.22

Mass-fasciolicide treatments, using Bilevon (R) injections every three months in arid, semi-arid and wet areas produced an increase of 8.7 kg body weight/cattle/year. Treatments using Fascol-Super drenching every three months in arid and semi-arid areas produced an increase of 23.2 kg body weight/cattle/9 months (Suweta, 1984, 1986).

DISCUSSION

Since 1983 the prevalence of the fluke infestation on the island of Bali has decreased due to (l) rotation of rice planting with alternative crops in areas of abundant water supply and (2) mass fasciolicide treatments conducted by the veterinary services.

The prevalence of liver fluke infestation in Bali cattle was more closely associated with the abundance of water in pastures than with the pH or temperature of the environment. The changes in pH (6.2–8.0) and temperature (18.7° to 28.0° C) in Bali where liver flukes were prevalent were small. This was illustrated by the significantly higher prevalence of liver fluke infestations in cattle raised in rice fields irrigated throughout the year. The prevalence of liver flukes was also high in one relatively dry area where the water supply was not abundant. However, this relatively dry area was surrounded by three large lakes and the overall annual rainfall was high.

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