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Sero - Epidemiological Evidence of Animal Brucellosis In Nepal

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Abortion in animals was known to exist in Nepal since the dawn of history but the involvement of brucellosis in such cases remained obscure. Problems like shortage of technicians and inadequate technical skill were the main impediments to pay due attention in the investigation of this disease. Further, the limited technical resources in the field of veterinary science had to be diverted more towards the control of much severe animal hazards like rinderpest, hemorrhagic septicemia etc, as a result of which brucellosis and similar other conditions could not be tackled on priority.

Since last few years technicians in various disciplines were trained and interest in diverse fields of veterinary medicine was extended. Sero-diagnosis of brucellosis in limited number of domestic animals was initiated about a couple of years ago in this country and the interim reports were published (Joshi, Pyakural and Shukla 1974, a, b). In another set of experiments positive antibodies against brucellosis have also been

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detected from the serum of human beings coming from different regions of Nepal (Pyakural et al 1977). The present communication comprises a part of previous investigation in which efforts have been made to make a longitudinal sampling of diverse species of animals existing in diverse geographical areas having diverse climetic conditions of the country.

MATERIALS AND METHODS

The number and species of serum doners from various geographical areas involved in this experiment are given in table 1. These sera were collect from September 1975 through Eebruary 1977.

Table 1. Number and species of serum doners and their geographical distribution.

Place	Animal	Number
Solukhumbu	Yak and Nack★	31
Jumla	Yak, Nak & Chauri☞	83
"	Cattle	12
Kathmandu	Cattle	103
"	Pig	19
"	Goat	24
Pokhara	Buffalo	53
Lumle☒	Goat	43
"	Sheep	22
Chitwan	Cattle	24
Biratnagar	Cattle	72

★ Female of yak

☞ F 1 Cross between yak and zebu cow nak and zebu bull

☒ A village about 15 Km. from Pokhara in Gandaki Zone.

Plate and tube agglutination tests were performed according to the standard procedures using *Brucella abortus* plain and coloured antigens procured from IVRI, Izatnagar, India. Result were interprated on 50 percent agglutination basis as laid down by FAO/WHO expert committee (1964).

Table 2 prevalence of brucellosis in animals

Date of collection	Place	Animals	Prevalence					
			Plate test		Tube test		No doubtful/No. tested	Percentage doubtful
			No. Positive/No. tested	Percentage Positive	No. Positive/No. tested	Percentage Positive		
6-9-15	Solukhumbu	Yak & Nak	7/31	22.58	7/31	29.03	2/31	6.68
11 - 1975	Jumla	Yak, Nak and Chauri Cattle	21/83 2/12	25.30 16.66	23/83 1/12	27.71 8.33	3/83 1/12	3.61 8.33
4 - 1976	Kathmandu	Cattle	16/103 2/19	15.53 10.52	18/103 2/19	17.47 10.52	5/103 0/19	4.85 0
"	"	Pig	0/24	0	0/24	0	0/24	0
"	"	Goat						
27-6-1976	Pokhara	Buffalo	10/53	18.86	12/53	22.64	5/53	9.43
23-12-1956	Lumle	Goat	0/43 1/22	0	0/43 1/22	0	0/4	0
"	"	Sheep		4.54		1.54	0/22	0
23-12-1976	Chitwan	Cattle	2/24	8.33	2/24	8.33	2/24	8.33
17-2-1977	Biratnagar	Cattle	1/72	1.38	1/72	1.38	4/72	2.88

RESULTS AND DISCUSSION

The results of plate and tube agglutination tests are presented in table 2.

This observation has revealed that among all species of animals coming from the terai (that part of gangetic plain which lies in Nepal) and the valley, buffaloes from Pokhara were the highest reactors (22.64%). Contrary to that of the cattle population, animals from Kathmandu were positive for brucellosis at a very high percent (17.47%) as compared to those coming from Biratnagar (1.38%). Agglutinins against brucella were also incriminated in the sera of swine and sheep, whereas 67 goat sera available for this study were found to be negative which, however, does not rule out the possibility of the existence of caprine brucellosis in the country. This needs further investigation.

Yak, nak and chauris share the same roof with humans and they perhaps live very close to man than any other animals in the altitudes of Nepal. So the high percentage of reactors against brucellosis in this group of animals belonging to Solukhumbu (altitude 4000 meters) in the east and Jumla (3500 meters) in the west has become of great concern from public health point of view (Pyakural et al 1977).

Unlike many other countries, there is a close association of people, cattle, water buffaloes, sheep and goats in the interiors of Nepal. It will be equally interesting to make a sample survey of human sera of these areas, which are likely to react against brucellosis in high percentage. It is equally worth attempting to detect the presence of brucella agglutinins in the sera of cowboys and other professional persons such as veterinarians to form a tentative opinion regarding the incidence of the disease in human population.

Brucellosis is, probably, one of the major disease of public health significance which is cosmopolitan in its existence. Some of the developed countries of the world were able to limit this disease beyond their territory adapting strict control measures like quarantine, segregation and slaughter of the declared sero - positives followed by vaccination of the young stock (Cameron 1957, Renoux 1957, Thansen 1957, Mingle 1958).

Slaughter of cow and female animals is contraband by law in Nepal. Other control measures like quarantine, seggrigation or even isolation of infected animals which can be helpful to reduce the incidence of the disease are not enforced by any agency so far. However, legal provisions available under the existing "Infectious disease control Act" can ensure the control of brucellosis and similar other communicable diseases if the bi-laws ennuunciated under this law are inacted effectively. Over and above the act should empower certain agency or authority under the government which can make firm decission in any matters concerning diseases communicable from animal to man.

Despite legal securities, in the present situation, the only possible measures which can be implemented to reduce the intensity of this disease in Nepal is to organise intensive sample survey program of representative number of animals from diverse geographical areas of the country, at least once in a year, and to isolate or seggrigate the seropositives so that they will not be used for further breeding. Serological monitering of the doubtful ones could be done repeatedly every 6 months. This should be supported with proper disposal of aborted fetus and after-births and vaccination of the healthy calves within 6 months of their age. If possible scheme to compensate the farmers for their infected stock should also be introduced to discourage any possible socio - economic objections which are likely to arise on the part of the farmers. If such program can not be workedout for whole dimension of the country at a time in the initial stage it will be worth to keep the livestock farms which are the nucleus of improved breeds, free from contagious abortion. Thus the disease control activity may later on be extended in other parts of the country from village to village and panchayat to panchayat. In case such control measures are not introduced immediately the agriculture based economy of the country, which is mainly dependent on livestock may have to experience an acute set back in the days to come.

Subsiquently the sero - diagnosis should be coupled with isolation

of brucella organisms at least from few representative cases which is not so far attempted in this country.

Acknowledgement

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Prevalence of Parasitic Infestation in Yaks, Chauries and Kirkho cattle of Khumbu Valley

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INTRODUCTION

Khumbu Valley is located in the north of Solukhumbu district, base of Mount Everest which is an attractive place for tourists. Kathmandu to Syangboche or to Lukla is approximately 12-14 days walk or 45 minutes flight by pilatus porter. The main ethnic people living in this area are Sherpa. There are three types of permanent of Sherpa settlements in Khumbu region: main villages, winter settlements and summer settlements. The altitude of these settlements ranges from 12,000 feet to 17,000 feet. Traditionally every Sherpa family engages to some extent in agriculture, trade with Tibet whereas the majority being engaged in yak-breeding.

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Very few studies have been made so far to ascertain the economic importance of parasitic infestations in yaks, naks, chauries, and other hilly cattle.

Three regular preliminary survey studies were carried out during the year 1974, 1975 and 1976 in the Khumbu Valley. to assess the magnitude of parasitic infestation in these animals.

MATERIALS AND METHODS

Fecal samples from Yaks, Naks, Zopkioks, Chauries, Tolmu and Kirkho cattle of 10 villages of Khumbu valley including His Majesty's Government Yak Breeding Farm of Syangboche, were taken randomly in 1974, 1975 and 1976 for parasitic findings. Total estimated population of Yaks, Naks, Chauries and other cattle of these 10 villages of Khumbu valley is 2,538 which is shown separately in Table 1.

Total fecal samples of animals examined for parasitic infestation during these periods were 154, 195 and 167 respectively. Fecal samples were tested only for fascioliosis, paramphistomiasis, strongyloidosis and coccidiosis infestations. The feces were examined both in the field areas as well as in Central Veterinary Laboratory, Tripureswar, which were brought by pilatus porter.

RESULTS

A total of 154 fecal samples examined in 1974 of which 14 were positive for liverfluke, 23 for paramphistom 57 for strongyloid and 6 for coccidia. In 1975 total samples examined were 195, of which 15 were positive for liverfluke, 23 for paramphistom, 56 for strongyloid and 8 for coccidia infestations. Of 167 samples examined in 1976, 8 were positive for liverfluke, 11 for paramphistom, 52 for strongyloid and 3 for coccidia infestation. Incidence rate of parasitic infestation in different animals is presented in Table II. Overall in chauries and zopkioks liverfluke incidence rate was found very high. Chauri had 25.0% 17.1% and 6.67% and Zopkiok had 10.9%, 11.6% and 5.0% during 1974, 1975 and 1976 respectively.

DISCUSSION

Yaks and Naks of government yak breeding farm were found positive for liverfluke. These animals were probably carrying this disease before they were brought to Solukhumbu from Tibet because some of them had diarrhoea when they were examined immediately after their arrival in Nepal. From this result it was assumed that liverfluke infestation in yaks and other cattle was present in some part of Tibet. Chauries and zopkioks were found positive in higher percentage than other animals. This possibly showed that these animals might have got infestation from low altitude of Solukhumbu district such as Solu, Sallary areas where these animals migrate during winter season for transportation and grazing. The low land pasture is quite suitable for the growth and survival of the snail "*Lymnaea auricularia varruefscens*" (Joshi & Tewari, 1975), which is the intermediate host of fasciola.

In Nepal, very few studies have been done previously on prevalence of parasitic infestation in Yaks, Chauries, sheep, goats and other animals, domesticated in higher altitudes. (SATA 1973, Joshi et al 1975, Pradhan et al 1976, Johsi 1976).

Table II

Incidence Rate of Parasitic Infestation

Types of Animals	1974					1975					1976				
	Total samp-les	FA	PA	stron-gy	Coc.	Total samp-les	FA	PA	stron-gy	Coc.	Total samp-les	FA	PA	stron-gy	Coc.
Yak	7	14.3	14.3	8.6	-	10	-	-	-	-	14	14.29	-	7.14	-
Nak	45	4.4	2.2	46.6	-	50	2.0	2.0	20.0	-	58	5.17	-	20.69	-
Chauri	20	25.0	15.0	40.0	5	35	17.1	11.4	34.2	5.7	30	6.67	6.67	26.67	3.33
Zopkiok	55	10.9	20.0	27.2	5.4	60	11.6	20.0	33.3	8.1	20	5.0	5.0	75.00	10.00
Tolmu	2	-	-	50.0	-	5	20.0	-	40.0	-	5	-	20.0	20.00	-
Kirko	25	-	32.0	40.0	8.0	35	-	17.1	34.2	2.9	40	-	12.50	37.50	-
Total	154	13.65	16.70	37.0	6.13	195	12.68	12.63	32.34	5.57	167	7.78	13.45	31.17	6.67

FA = Fasciola

PA = Paramphistom

Strongy = Strongyloid

Coc = Coccidiosis

Table 1.

Total Estimated number of Yaks, Naks, Chauries
and other cattle in Khumbu Valley in 1976

Village owners	Cattle	Yaks	Naks	Zopkioks	Chauries	Tolmu	Kirkho	Total
1. Sya- ngboche Yak bree- ding Farm, H. M. G.	1	6	72	-	-	-	-	78
2. Namche bazar	25	1	30	300	65	22	75	493
3. Khumjung	30	4	134	40	28	26	82	314
4. Khunde	22	2	154	46	12	26	22	262
5. Tengboche	1	1	20	12	5	2	2	42
6. Milingbo	7	5	25	6	11	1	15	63
7. Pangboche	40	4	204	16	22	6	23	275
8. Phortse	30	12	132	22	33	4	16	219
9. Jaro	5	1	12	4	5	1	2	25
10. Thamichok region	120	5	545	94	43	25	55	767
Total	281	41	1328	540	224	113	292	2538

SUMMARY

Epidemiological survey on the prevalence of parasitic infestation in yaks, naks, chauries, zopkioks, tolmu and kirko cattle was conducted for the first time in Khumbu Valley of Solukhumbu district. The incidence of parasitic infestation in chauries and zopkioks was higher than in yaks and naks. This might be because chauries and zopkioks pick up infection from low swampy areas of Solukhumbu district in winter season which are generally considered to be the store house of snails. The overall liverfluke infestation was 20.0% and 10% in chauries and zopkioks, respectively. Few more animals including tolmu and kirko cattle were found positive for strongyloid infection.

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Observation of Post Exposure Antirabies Vaccine Treatment in Animals of Morang District

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Rabies is a highly fatal viral infection of the central nervous system of warm-blooded animals. Affected animals, primarily carnivores transmit the disease by injecting the saliva containing virus through bite wound into the healthy hosts. The disease is also transmitted by vampire bats, Squirrels, mongoose, musk rats, raccoons, skunks and chipmunks also.

The prevalence of Rabies in Biratnagar is recorded very high mostly in the breeding season of carnivores. Number of rabied dog bite animals brought for post-infection treatment in the Veterinary Hospital Biratnagar are generally high in this season of the year.

The eradication of rabies from Nepal is very difficult unless due considerations are not given to some of the following important points such as - i) controlled movement of wild carnivores ii) adoption of proper rabies control measures iii) availability of post-infection immunisation facility in all places of the country iv) licensing and timely vaccination of pets. The purpose of this observation is to undertake a follow-up study of antirabies vaccine inoculation in animals exposed to rabied dogs.

MATERIALS AND METHODS

Antirabies vaccine (inactivated virus-ovine nerve tissue 5 P. C. treated with carboic acid) supplied by Veterinary Laboratory, Tripureswar, Kathmandu was used for inoculation against various species of animals bitten with rabied dogs. The detail of the experiment is presented in the table.

TABLE

S. No.	Name and address of Owner	Animals	Date, size and site of bite	Date, Dose and course of A. R. V. Inoculation	Remarks
1	Bom Prasad Pokhrel Kanchanbari	Cow	22/12/76 Superficial ear	25/2/76 20 ml, 14 ear	—
2	Rudra Bahadur Thapa Babiya	18 buffaloes	23/2/76 one buffalo ox, rabies in flock	25/12/76, 20 ml, 7, days	—
3	Radha Krishna Dhakal Bakhri	1 cow	1/1/77 supeficial ear	6/1/77, 20 ml 14 days	—
4	Gocharn Chaudhary Bakhri	1 ox	3/1/77, deep, hock joint of left-hind leg	6/1/77, 20 ml 14 days	—
5	Saraswati Prasad Rijal Itahari	1 calf	3/2/77 mother rabied	3/2/77, 20 ml 14 days	—
6	Madhav Sapkota Biratnagar 3	1 cow	6/2/77 deep, nose	3/2/77, 20 ml 14 days	—

7	Padma Bahadur Basnet Biratnagar 3	1 cow	19/2/77, deep, right buttock	22/2/77, 20 ml 14 days	—
8	Keshab Prasad Aryal Biratnagar 2	1 cow	14/3/77 deep left hind leg, below the heck	17/3/77, 20 ml 14 days	—
9	Jaluram Maji Lall Biratnagar 8	1 cow	14/3/77, deep base of ear	17/3/77, 20 ml 14 days	—
10	Pulahit Sahu Biratnagar 10	1 ox	21/3/77 sepeficial muzzle,	24/3/77, 20 ml 7 days	—
11	Jagannath Sastri, Biratnagar 4	1 calf	mother rabid	1/4/77, 10 ml 7 days	—
12	Raghupati Jute Mills Biratnagar	6 cows	1/4/77, deep Muzzle	3/4/77, 20 ml 14 days	5 cows (i) cow ± one died of rabies on 18th day of bite.
13	Rameswor Paudyal Biratnagar 1	2 calves	2/4/77 superficial nose	3/4/77, 10 ml 10 days	—
14	Waris Lall Kamath Bakhri 3	Buff. ox	16/4/77, superficial muzzle	17/4/77, 20 ml 7 days	—
15	Chabiram Baskota Biratnagar 10	Buff. she-calf	22/4/77, deep, nose	25/4/77, 10 ml 7 days	—
16	Dhani Lall Yadav Gatwa 1	1 she calf	Mother rabid	26/4/77, 10 ml 7 days	—
17	Remesh Prashad Pokhrel Tintolia	Dog	2/4/77 superficial ear	9/2/77, 5 ml 7 days	—
18	Bishnu Shrestha Biratnagar 10	Dog	2/4/77, deep, neck	3/4/77, 5 ml 7 days	—

19	Lok Bahadur Shrestha Biratnagar 8	Dog	2/4/77, deep muzzle	8/4/77, 5 ml 5 days	—
20	Madhab Prasad Nepal Biratnagar 11	Dog	9/4/77, superficial ear	10/4/77, 5 ml 10 days	—
21	Ganesh Prasad Rijal Munalth, Biratnagar	Pup	14/4/77, superficial neck	15/4/77, 2 ml 7 days	—
22	Sukhdev Singh Biratnagar 10	Dog	29/4/77, superficial ear	30/4/77, 5 ml 7 days	—
24	Rajendra Shrestha Biratnagar	Dog	29/4/77, superficial ear	30/4/77, 5 ml 7 days	—

Disease Not see = - ve
Disease seen = + ve

ARV = antirabies vaccine

The inoculation of antirabies vaccine 5% was done when bite cases were brought to the hospital for necessary treatment.

13 bovines of different age and sex groups were inoculated subcutaneously and treated only for 7 days. 3 cases of canines of different ages were inoculated antirabies vaccines for 10 days, whereas 4 such animals received antirabies vaccine only for 7 days. The dose of vaccine prescribed in these animals is presented in the table.

RESULTS AND DISCUSSION

Of 46 rabies bite cases treated in this experiment only one developed clinical rabies during the course of treatment. Out of, 6 local cows of Raghupati Jute Mills, Biratnagar bitten by clinically confirmed rabid dog on 1. 4. 1977 and treated with 5% samples vaccines 48 hours after the exposure one animal developed rabies on the eitheenth day of contact. This may be because, the development of symptoms after the bite depends upon a number of factors such as - (i) number of active virions inoculated (ii) site of the bite (iii) depth of the bite wound (iv) virulence of the virus particle etc. The development of rabies in one animal of the Jute Mills during the course of this experiment might have been, probably related to any one of the above factors. Corollary to that, the possibility of vaccination break down during the course of antirabies treatment in few cases are not also uncommon.

Whereas in other cases the antirabies vaccine was found to be succesful to protect the animals from the disease. Rabies being a disease of out-of-human-reach to treat after the development of syptoms, it is always advisable to undergo vaccine therapy even in suspected cases of contact irrespective of the confirmity of the disease in biting animals (Johns 1966). Moreover, the virus of rabies has been demonstrated in the saliva of dogs 0-8 days befor the onset of first systoms, which further substantiates, to argue in favours of immediate antirabies treatment after the bite of nondescript dog (Merchant and Packer 1967).

SUMMARY

Of 46 animals which include 7 canines and 39 bovines, treated with 5% carbolised antirabies vaccine produced in Veterinary Laboratory, Kathmandu only one cow of Raghupati Jute Mills developed clinical rabies after eighteenth day of treatment and died.

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Studies on Right and Left Ovarian Activities in Crossbred Heifer

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Reports are available revealing variation in the right and left ovarian activities based on clinical investigation of cows and heifers either of follicular development or on presence of corpus luteum or side of pregnancies.

Asdell (1964) observed that the right ovary tends to produce more ovulations than the left. A corpus luteum count showed 60.2% in the right ovary. Chaudhary (1964) conducted studies in Harijana heifers and observed 33 cases (70.21%) of ovulations in the right ovary and 14 cases (29.79%) in the left ovary. Madan and Razden (1967) studied the functional activity of the ovaries and observed that percentage of corpus luteum in right and left ovaries was 59.8 and 40.1 respectively. The purpose of this study was to note the activities of the ovaries in relation to pregnancies in cattle.

Present address : Livestock farm, Rampur, Nepal.

MATERIALS AND METHODS

The present study was undertaken in the heifers of crossesbred herd of the livestock production research project at I. V. R. I. Izatnagar. Observation was recorded on 39 heifers which showed oestrus during the tenure of study. Each heifer after insemination was followed by per rectum examination on 10th to 12th day of insemination and 20th day, 40th day to 45th day of insemination. On 10th to 12th day the heifers were examined per rectum for the presence of corpus luteum in the ovary in which the follicular development was noted during the oestrus. The animals which were not found in heat on 20th day of insemination, a record on the status of corpus luteum was maintained and such heifers were then examined at 40th day for the confirmation of pregnancy.

RESULTS AND DISCUSSIONS

The results of the right and left ovarian activities as observed during the examination of these heifers per rectum have been presented in table. From the table it appears that right ovary recorded more number of graafian follicles and corpora lutea as compared to left ovary. On the basis of follicles palpated in the ovary during oestrus, right ovary was found to be active in 71.64% as against 28.36% for the left ovary. The right ovary recorded 64.0% of the graafian follicles as compared to 36.0% in the left ovary in first oestrus while in second and later oestruses together, the respective frequency was 76.19% and 23.81%. Similarly on the basis of number of corpora lutea palpated in the ovary of both sides, it was found that right ovary recorded 72.55% of corpora lutea as compared to 27.45% in the left ovary. The right ovary had 60% corpora lutea as compared to left ovary (40.0%) after first oestrus, whereas the respective figures were 77.7% and 22.3% for second and above oestruses together. Thus in overall oestruses 71.64% of graafian follicles and 71.54% of corpora lutea were palpated in the left ovary.

Table - 1

RIGHT AND LEFT OVARIAN ACTIVITIES (IN PERCENTAGE) IN HALFBRED HEIFERS
(POOLED TOGETHER)

Side of Ovary	Graafian follicles						Corpus luteum					
	First heat			Second heat and above			Overall			First heat		
	No.		Percentage		No.		Percentage		No.		Percentage	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
Right Ovary	16	54.00	32	76.19	48	71.64	9	60.00	28	7.77	30	72.55
Left Ovary	9	36.00	10	23.81	19	28.36	6	40.00	8	22.3	14	20.45
Total	25	100.00	42	100.00	67	100.00	15	100.00	93	100.00	51	100.00

As per the literatures reviewed the right and left ovarian activities have been reported to be 57.9% and 42.1% respectively in Haryana cow (Ahuja et al 1961) and in Haryana heifer the activities were 70.21% and 29.79% (Chaudhary, 1964) and 60.2% and 39.8% (Asdell, 1964). Right ovary functioning more than the left as found in the present study is in agreement with the findings of the other workers mentioned above.

The cause for the variation in the right and left ovarian activities in cattle is still not properly understood. Although some obvious explanation such as anatomical location of the rumen in its close proximity to the left ovary may exert some influence in showing its function or difference in the blood supply of the two ovaries by inducing sufficient pressure due to rumen gas to diminish blood flow to left ovary have been presented (Salisbury, and Van Demark, 1961; Hafez 1974) but due to nonavailability of supporting proof the subject is still debatable.

SUMMARY

In the present study it was observed that the Right ovary was found to be more active than the left in respect of the development of follicles (71.64%) and the presence of corpus luteum (72.53%). Sixty percent of the first heats in these heifers were found to be ovular whereas in the second and subsequent heats together the percentage of ovular heat was 66.6% (over all 63.79%).

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Short Communication

Studies On The Influence Of Age On The Intercalving Period Of Crossbred Buffaloes Of Tarahara Livestock Farm

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OBJECT

The present study has been undertaken to find out the corelation of conception with the numbers of lactation in the crossbred buffaloes.

In Tarahara Livestock Farm the majority of buffaloes are pure Murrah and only few are crossbred buffaloes. Therfore because of the paucity of the buffalo, the present study has been confined on the performance of three buffaloes only. The No. of the buffaloes under study are 266, 237 and 244.

Table showing the intercalving period in crossbred buffaloes.

No. of Lactation	No. 266	No. 237	No. 244	Average
1st.	20.15	17.00	13.00	16.71
2nd	13 15	12.00	14.00	13.00
3rd	20.14	x	12.17	16.15
Average	17.81	014.5	13.56	

DISCUSSION

This study has been aimed at to evaluate the breeding efficiency of crossbred buffalo in Tarahara Livestock Farm. A similar study has also been made with the Murrah buffalo of the Tarahara herd.

As with the previous case, we could not find any significant difference on the intercalving period upto certain stage of lactation. So here also we do not find any considerable difference on the calving pattern of crossbred buffaloes. In some individual case some difference do occur but such isolated case is not because of the breed, but may be because of some limiting factor with the particular animals.

Therefor as it was mentioned in the previous report our present study do not suggest any effect of age upto certain stage of lactation, however this study is limited on the performance of three animals only and as such the data incorporated in this study is not sufficient to assert anything positively.

Trypanosomiasis In Cavillary Horses In Kathmandu

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Tripureswar, Kathmandu, Nepal.

Trypanosomiasis is a protozoan disease of world wide importance. During the months of August and September 1974 out break of this disease claimed the lives of 7 mules and 2 horses in Royal Army Cavillary. This disease was diagnosed in the laboratory for the first time in Nepal and act was taken to treat the sick animals to control the outbreak.

CLINICAL SIGNS AND SYMPTOMS:

The temperature pattern exhibited by the sick animals was mostly intermittent in nature. The maximum temperature recorded was 105.4 whereas the minimum being 101°C. The visible mucous membranes were pale. Petechial haemorrhages were noticed in the conjunctiva. The most striking feature of this disease was huge oedematous swelling in the lower part of the body including brisket, abdomen, the part between the two thighs extending up to the legs whereas the appetite was good during the course of these symptoms. Besides these and other appreciable symptoms serious discharge from the nose gradual loss of flesh and general weakness.

Terminal Symptoms:- Among the animals in which the disease took a fatal course the main symptoms noticed were swelling in the region of head and neck anorexia, subnormal temperature and incoordination of the gait. Just before death animal showed circling tendency, excitement and finally collapse.

INVESTIGATION:

Postmortum examination:- Two carcasses were opened. The lesions noticed were slight enlargement of the spleen and liver. Serous exudate in the abdominal cavity and haemorrhagic spots on the serosa. Moderate inflammation of gastrointestinal mucous membrane were also remarkable.

BLOOD CULTURE EXAMINATION:

Blood culture done on bacteriological medium from 6 representative cases of mules at the height of temperature revealed no growth of pathogenic bacteria.

Blood smear examination:- Blood smears were made from the same 6 cases stained with Lishman's and examined under oil immersion lens. Of 6 blood smears examined 5 showed normochronic macrocytic type of anaemia whereas, the sixth one had a number of flagellated protozoa situated extracellularly. Both thick and thin blood smears were made from 10 sick animals and 10 in contact apparently healthy stock. These slides were found to contain the protozoa. 6 blood smears from all the sick group of mules found to contain the protozoa. The protozoa were present in all the thick smears whereas only one thin smear was positive for the parasite. In this case also thick smears were found to be better to detect the presence of trypanosomes as in the case of Goel and Singh (1977). The remaining slides were negative for the parasite. The trypanosomes were 30 microns long and 2 microns wide with free flagella. Morphologically they were similar to *Trypanosoma evansi*. This investigation concluded this disease to be surra.

TREATMENT:

Symptomatic treatment: Prior to the initiation of this investigation symptomatic treatment was conducted by army veterinary officers. Parenteral administration of oxytetracyclin and oral use of Nuvimin (vitamin mineral mixture SQUIB, India) for 7 days was found to give no encouraging results.

After the disease was diagnosed as trypanosis in this laboratory a course of Berinil (Hoechst) was tried as other drugs were not available locally. This treatment also proved to be of no effect.

Antrycide prosalt (RF) was administered parenterally in the recommended dose to the sick and exposed mules. Animal under treatment recovered very fast and their general condition improved quickly. Many of the animals manifested some sign of toxicity such as, sweating, tremour, restlessness for about 10-15 minute after the administration of this drug. The painful local reaction lasted for sometime. Difficult breathing of the emphysematous type was persistent in some of the treated animal for much longer period.

COUNTROL MEASURES:

A search was undertaken to find the vectors responsible to transmit the disease and blood sucking flies and soft ticks were recovered from the stable. Attempts were made by cavillary unit to protect the animal from such blood suckers by spraying and using wire netting in the stable with success.

REFERENCES:

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3. PRESENTATION

The manuscripts should be typed double space on one side of white bond paper with a margin of 2.5 cm. on each side. They should be submitted in duplicate with each copy including all tables and figures. The heading of each includes only the title, author (s), institution and the city. The title should be as short as possible without damaging the clarity.

The articles should be divided into the following headlines-
(a) Introduction (b) Materials and Methods (c) Results (d) Discussion

(e) Summary (f) Acknowledgement and (g) References. The results and discussion can be combined if the authors so desire.

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Tables should be typed (double spaced) on separate papers, numbered consecutively in arabic numerals and collected at the end of the manuscript. Each table should have a descriptive title. The approximate position of the tables and figures should be indicated in the manuscript by a marginal note.

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References should be written in the style followed by the current Bulletin.

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The summary or conclusion should be written as a running matter and must be in the form of an abstract containing the most pertinent data in the briefest form normally it should not exceed 200 words.

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Errata for volume 6, 1977

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		Thansen	Thamsen
9	9	Showld	Should
19	3	Jha	Jha ★
19	last	Printed	★ Printed
20	23	palated	palpated
22	2	have	have
26	14	incorporated	incorporated
27	5	act	action
27	9	105·4	105·4° F
27	10	101·C	101° F
27	18	wereas	whereas
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