

PRELIMINARY REPORT ON GESTATION LENGTH, SEX RATIO AND
SEASONAL INFLUENCES ON CALVING RATE OF SWAMP BUFFALO
IN KHON KAEN PROVINCE

รายงานเบื้องต้นเกี่ยวกับอิทธิพลของฤดูกาลต่ออัตราการคลอดลูก,
ระยะเวลาตั้งท้องและอัตราส่วนเพศของลูกของควายปลัก
ที่ขอนแก่น

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than 600 inseminated buffaloes were recorded. The purposes of the present study were (1) to investigate seasonal influences on calving rate (2) gestation length between male and female calves (3) sex ratio.

Materials and Methods

Data were collected between the year 1977 to 1980 from breeding records of Khon Kaen A.I. Station. There were 616 inseminations on 497 heads of swamp buffalo which 78.90% was swamp buffalo semen. One hundred and eighty five heads of born calves were swamp buffaloes while only 36 heads were Murrah-Swamp crossbred calves. Although the artificial insemination in swamp buffalo at Khon Kaen Province started in February 1977, only 13 inseminations were performed during the first 20 months. Results during October 1978 to September 1980 were analysed to investigate seasonal influence on calving rate. The studied period was divided into 6 periods which were depicted in table 1.

Table 1. Temperature (°C) and rainfall in each season at Khon Kaen Province*

Month and year	Temperature (°C) ($\bar{X} \pm S.D.$)	Median of rainfall (mm.)	Relative humidity ($\bar{X} \pm S.D.$)
1978 - 1979	October-January ¹	1.05	67.63 ± 4.66 ⁴
	February-May ¹	54.40	60.94 ± 9.78 ⁴
	June-September ²	230.85	77.65 ± 3.64 ⁵

1979-1980	October-January	24.31 ± 1.31 ^{2,3}	0	62.79 ± 3.14 ⁴
	February-May	29.34 ± 2.29 ³	33.85	59.77 ± 7.76 ⁴
	June-September	28.45 ± 0.14	248.20	70.67 ± 3.89 ⁵

* From Division of Climatology, Meteorological Department

1 ; P < 0.05 2 ; P < 0.05 3 ; P < 0.05 4 & 5 ; P < 0.05

The period from October to January, February to May and June to September were assigned to be winter, summer and rainy seasons respectively.

From calving records, it can be referred to the inseminated month and calving rate was used to represent conception rate for each month that the inseminations were performed.

Calving rate of swamp buffalo in each season was analysed by using Chi-Square test and T-test.

Gestation of male and female calves were recorded and analysed by T-test. All of differences between each season was analysed by T-test.

The born calves from the first insemination to December 1980 were recorded and computed for sex ratio.

Statistical analysis was tested by the methods described by Snedecor and Cochran (1980).

Result

During 1978-1979 calving rate in winter, summer and rainy seasons were 45.45, 66.67 and 23.07% respectively as shown in Figure 1. During summer, calving rate was shown significantly higher ($P < 0.05$) than during rainy although it was also higher than during winter but the difference was not significant ($P > 0.05$), the difference was not significant between winter and rainy ($P > 0.05$).

During winter, summer and rainy seasons between 1979 to 1980 calving rate in each season were 38.82, 42.74 and 8.33% respectively. Calving rate in winter and summer was not significantly different ($P > 0.05$) but calving rate between winter and rainy as well as summer and rainy were significantly different ($P < 0.05$) of which rainy season was the lowest.

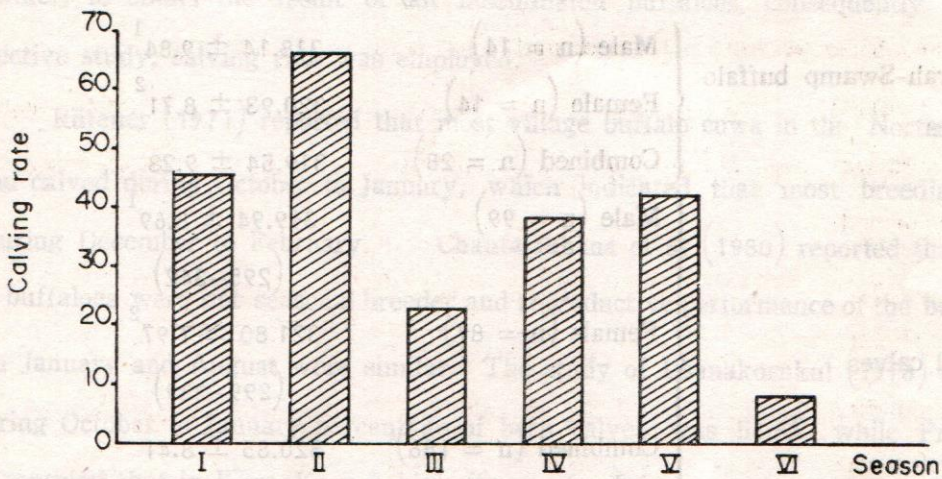


Figure 1 Calving rate of swamp buffaloes in each season of the year

- | | |
|--------------------------------|--------------------------------|
| I October 1978 - January 1979 | II February 1979 - May 1979 |
| III June 1979 - September 1979 | IV October 1979 - January 1980 |
| V February 1980 - May 1980 | VI June 1980 - September 1980 |

Gestation length between male and female and combination were shown in

Table 2.

Table 2. Gestation length of Swamp buffalo in Khon Kaen Province

Trait		Gestation length (days)
		X ± S.D.
Swamp buffalo calves	Male (n = 85)	320.24 ± 8.51 ¹
	Female (n = 73)	321.97 ± 7.88 ²
	Combined (n = 158)	321.04 ± 8.27
Murrah-Swamp buffalo calves	Male (n = 14)	318.14 ± 9.84 ¹
	Female (n = 14)	320.93 ± 8.71 ²
	Combined (n = 28)	319.54 ± 9.23
Total calves	Male (n = 99)	319.94 ± 8.69 ¹ (295-342)
	Female (n = 87)	321.80 ± 7.97 ² (299-339)
	Combined (n = 186)	320.85 ± 8.41 (295-342)

1 and 2 different was not significant ($P < 0.05$)

Sex ratio between male and female calves was 1 : 0.94.

Discussion

Calving rate was high during summer of the two years studied. The main reason why it was low during rainy season should be the effect of cropping season, as these animals are raised primarily for work. After cropping season, physical condition of buffalo is much better because of resting consequently the percentage of calving increased in winter and highest in summer.

Goswami and Nair (1963) reported that conception rates in buffaloes increased when environmental air temperature and relative humidity were low. In Khon Kaen, humidity during winter and summer was lower than during rainy as shown in Table 1. Percentage of calving is lower than conception rate due partly to lose records as farmer are scattered in this province and abortions as reported by Virakul et al (1980). It is unlikely to obtain the result of all inseminated buffaloes, consequently in this retrospective study, calving rate was employed.

Rufener (1971) reported that most village buffalo cows in the Northeast of Thailand calved during October to January, which indicated that most breeding took place during December to February. Chantalakhana et al (1980) reported that Thai swamp buffaloes were not seasonal breeder and reproductive performance of the buffaloes between January and August were similar. The study of Usanakornkul (1978) showed that during October to January percentage of born calves was 54.8%, while Prucsa Sri (1976) reported that in Khon Kaen a high figure of calving season concentrated within October to March. Pongpairoj (1978) also reported that at Surat Thani Livestock Station during May to June, a number of born calves was the highest (42.66%).

Although gestation length in female is approximately 1-2 days longer than those in male calves but the difference is not significant. Virakul et al (1980) reported that gestation length in male and female crossbred calves were 313 ± 7.35 and 315 ± 7.35 days respectively with overall 313.86 ± 6.81 days which is shorter than this study it might be due to small number of cows studies ($n = 14$). While Wetchrutpimol and Mongkonpunya (1978) reported 336.4 ± 2.11 days and 332.86 ± 16.49 days reported by Leenanuruksa et al (1978), and Ratanadilok Na Puket et al (1971) 332.2 days with the range of 315-317 days. Pongpairoj et al (1978) reported sex ratio between male and

female 0.87 : 1 as well as Haber and Usanakornkul (1981) reported 1.6 : 1 similar to our result 1 : 0.94.

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