

## **Gestation length and birth weight of Kenana cattle under village conditions in the Gezira State**

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### **Summary**

198 Kenana calves (114 males and 84 females) in Barakat area of the Gezira Scheme were involved in this study during (1990/1992). an overall mean calf birth weight of 24.60±0.30kg during 283.72±0.21 days of gestation.

Sex of calf highly affected both gestation length and calf birth weight (P<0.001) male calves gestated 2-days longer and about 1kg heavier at birth than females.

A significant season influences on gestation length and calf birth weight the longest gestation (P<0.001) and heaviest weight (P<0.05) by the wet summer calvers in contrast to the shortest length of gestation and lightest weight attained by the dry summer ones.

Sex of calf and calving season of this study affects both gestation length and calf birth weight, male calves and wet summer longer and have heaviest weight

### **Introduction**

Gestation length is among the most important traits in cow-calf operations. In domestic cattle the trait is known to be influenced by several genetic and non-genetic factors season of calving (Messine *et al.*, 2007), breed and sex of calf (Reynolds *et al.*, 1990). Birth weight is an important trait not only for breeding purposes, but also the revenue from sale proceeds of animal industry usually depends on animal's weight particularly when they are reared for meat, dairy industry birth weight of dairy heifers is an important indication of their future performance (Isa *et al.*, 2013). Birth weight is highly dependent on nutrition and is also influenced by genotype, parity, sex and season of calving (Kertz *et al.*, 1997 and Isa *et al.*, 2013).

The present study was initiated with the objective of determining the influence of sex and season of calving on gestation length and calf birth weight of Kenana calves in the Gezira State.

### **Materials and Methods**

#### Animals:

198 multi-parious Kenana cows randomly derived from eight cattle herds located in four villages in Barakat area of the Gezira Scheme, longitude 33° 20E and latitude 14° 20N. the animals were of approximately similar body weight and age (between the second and the third parity). The study was conducted in the period from 1990-1992.

#### Housing:

Cows were penned into traditional earth-bedded unshaded yards fenced with *Acacia* shrubs.

#### Management:

Feeding practices in the Gezira depends on grazing natural pastures of mostly annual grasses during the rainy season. They also depends on crops residues during summer and some green forages during winter season. Concentrate supplementation was also

practiced by some farmers before or during milking time. Cows were traditionally milked with their calves present once per day and mated naturally with bulls permanently resided within the herds with no special milking yard.

Calf birth weight was taken immediately in the first 24 hours using a spring scale (Maximum capacity load of 150kg). Seasons were classified in to dry-summer (March-June), wet-summer (July-October) and winter (November-February).

Statistical analysis:

The data were analyzed using the Statistical Package for Social Sciences (SPSS) Mc Graw Hill 1983. The least squares fixed model was fitted.

$$Y_{ijk} = U + X_i + S_j + E_{ijk}$$

Where

$Y_{ij}$  = The trait in question, gestation length or birth weight.

$U$  = The overall mean underlying the trait.

$X_i$  = The effect of sex (1= male; 2= female).

$S_j$  = The effect of season (1= wet summer; 2= dry summer; 3= winter season).

$E_{ij}$  = The error.

**Results and Discussion**

**Table 1.** presents the overall mean of gestation length and calf birth weight of 198 Kenana calves (283.72±0.21 days and 24.60±0.30kg, respectively. The effect of sex was highly significant in both traits **table 2.** (P<0.001) Male calves gestation was 2-days longer and 1kg heavier at birth compared to their females counterparts (25.05±0.39 vs. 24.14±0.46) as shown in **table 1.**

**Table 1.** Effect of sex and season of calving on gestation length and calf birth weight of Kenana cattle

Factor	N	Gestation length (days)		Birth weight (kg)	
		LSM	SE	LSM	SE
Overall	198	283.72	0.21	24.60	0.30
<u>Sex</u>					
Male	114	284.59 <sup>a</sup>	0.72	25.05 <sup>a</sup>	0.39
Female	84	282.48 <sup>b</sup>	0.32	24.14 <sup>b</sup>	0.46
<u>Season</u>					
Dry summer	51	280.77 <sup>c</sup>	0.31	23.66 <sup>c</sup>	0.45
Wet summer	86	286.61 <sup>a</sup>	0.41	25.41 <sup>a</sup>	0.58
Winter season	61	283.77 <sup>b</sup>	0.37	24.72 <sup>a</sup>	0.53

LSM = Least squares means.

SE = Standard errors

Means with different superscripts differs significantly.

Season of calving, **tables (1, 2)** exerted a significant effect on gestation length and calf birth weight. A significantly (p<0.001) longer gestation (286.61±0.40 days) and significantly heavier birth weights (25.41±0.58 kg) were displayed by wet summer calves. The gestation length of the dry summer calves was shorter (280.77±0.31 days) and the birth weight of calves was lighter (23.66±0,45kg).

**Table 2.** Analysis of variance of gestation length and birth weight of Kenana cattle by sex and season of calving

Source	DF	Gestation length			Birth weigh		
		MS	F	P	MS	F	P
Sex	1	293.620	35.034	0.000	39.831	2.297	0.13
Season	2	448.074	66.587	0.000	52.036	3.001	
Error	194	8.381	-	-	17.341	-	0.50

Differences in gestation length have been reported among cattle breeds. Most previous evidence suggested longer days in gestation for European breeds (Reynold *et al.*, 1990). Alim (1960) estimated a gestation length of 283.0 days in a herd of Kenana cattle. This is close to the results of the present study. However, Osman (1972) in a study on Baggara cattle found a higher estimate of 287.2 days.

In agreement with the results obtained by Saeed, *et al.*, (1987) sex of calf in this study showed a definite influence ( $P < 0.001$ ) on gestation length which was 2-days longer for male carrying calves. Similar results (Norman *et al.*, 2009 and Jainudeen and Hafez, 2000) were attributed this trend to the different endocrine functions of male and female fetuses which interact differently with endocrine control of the parturition. They indicated that as gestation length increases, birth weight also increases from 0.3 to 0.8 pounds per day.

The current gestation length was highly affected by calving season ( $P < 0.001$ ) with the shortest length obtained by in the dry summer **table 2**.

The studied village Kenana herds secured an average birth weight lower than their counterparties at Um Banein Station (Saeed *et al.*, 1987) and Nisheshiba Research Station (Khalafalla, 1977). Compared to Asiatic breeds Kenana seems to deliver heavier weights than the local Iraqi (21.25 to 22.34kg) and Sahiwal (21.6kg) as reported by (Said, 1978 and Khan *et al.*, 1999) respectively.

The effect of sex on birth weight in this study was in favour of male calves. This is similar to the findings of study on Holstein, Friesian x Kenana and Butana crossbred calves (Kertz *et al.*, 1997 and Abd ElAziz *et al.*, 1991) respectively. They found heaviest weights for bull calves and stated that birth weight was highly affected by breed and sex of calf.

Calving season in this study was a significant factor affecting birth weight. The dry summer calves exhibited a significant reduction in birth weight ( $P < 0.05$ ). Mustafa *et al.* (2003) claimed similar findings in Red Sindhi cattle. There was a tendency in their data for lower weights during April/June. Apori and Hagan (2014) indicated that elevated temperatures resulted in directing a greater proportion of blood flow towards the extremities to keep cool, thereby decreased nutrients flow to the fetus resulting in a decreased birth weight. The present results are at variance with the findings reviewed by Osman (1972); Kocak *et al.* (2007) and Akdag *et al.* (2011). These might be attributed to different breeds at various managerial and ecological conditions and the usage of various statistical methods in evaluating the data.

## Conclusion

Gestation length and birth weight were influenced by sex and season of calving that male calves gestation was longer and resulted in heavier birth weights than females. The wet summer season was the most desirable season of birth that resulted in a heavier birth weights.

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