

WEIGHT OF CALVES AND PERIOD OF GESTATION IN SOME INDIAN BREEDS OF CATTLE

BY R. W. LITTLEWOOD, N. D. A.

Weight of calves. In the Live-stock section of the Madras Agricultural Department, the calves borne in the different herds are weighed at birth and the present note is the result of the analysis of the records of the weights of calves at birth for the past 11 years in the herds of (1) Kangayam (2) Sind (3) Ongole.

Sex and weight of calf. In all the above three herds, it is found that the weight of calf is significantly higher for the bull calf than for the heifer calf. Table 1 summarises the results obtained both by the method of comparison of the means for the two sexes with their respective standard errors and also by the method of $2 \times n$ classification (Fisher's).

Table I. Sex and weight of calf.

Breed	Mean weights of calf.		Alternative method.		
	Bull	Heifer	Deviation S. E. D.	X 2	P = '05
Kangayam	44.6 ± .41	41.4 ± .35	5.87	52.5	28.869
Ongole	62.0 ± .67	57.7 ± .53	5.00	57.9	30.144
Sind	44.9 ± .47	41.7 ± .52	4.57	27.1	26.296

The increase in the mean weight of bull calf over the heifer is significant, indicating that sex has an influence.

In addition to the above general indication, it is seen from table I that in the Ongole herd, the average weights of calves in both the sexes are considerably higher than in the other two breeds, Kangayam and Sind.

It is quite probable that it may be the characteristic of the Ongole breed that the calves at birth are well developed, but the figures in Table II showing the weight of calves at birth in the same breed born for the same bulls, but from cows bred in different stations as Chintaladevi and Hosur, show clearly the influence of locality.

Table II.

Chintaladevi.					Hosur.			
Bull No.	Bull calves No.	Heifer calves No.	Average weight.		Bull calves No.	Heifer calves No.	Average weight.	
			Bull calf.	Heifer calf.			Bull calf.	Heifer calf.
			lb.	lb.			lb.	lb.
6	18	25	69.3	60	12	9	50	46
14	3	1	66.0	62	20	8	62	54
31	3	5	58.3	58	13	16	60	53

As regards the management of the stock in both places, the feeding of the stock was similar for concentrated rations but for forage, the Chintaladevi stock received cholam straw grown on the farm and the Hosur received spear grass hay. The analysis of soils in both the

places (Table III a and III b) show that the lime content of Hosur soil is definitely poor when compared with Chintaladevi soil.

Hosur Livestock Research Station.

Composition of soils of paddocks from which samples were drawn.

Table III. a.

	Paddock No.			
	3	35	32	38
Lime as Cao	0.14	0.28	0.28	0.11
Total Potash	0.23	0.45	0.31	0.15
Available Potash	0.024	0.010	0.020	0.013
Total Phosphoric acid	0.05	0.05	0.04	0.04
Available Phosphoric acid	0.0016	0.0019	0.0045	0.0086
Nitrogen	0.042	0.072	0.074	0.057

Generally the four paddocks were poor in lime and phosphate; Nos. 3 and 38 in nitrogen in addition.

Table III. b.

Chintaladevi Livestock Research Station The following are the results of analyses of four soil samples from the Livestock Research Station, Chintaladevi—1924.

	Black soil.		Red soil.	
Loss on ignition	4.45	6.42	6.40	3.97
Insoluble mineral matter	81.60	75.26	67.79	81.47
Iron Oxide (FeO_3)	3.81	4.57	5.87	4.74
Alumina (Al_2O_3)	4.02	8.41	11.45	7.80
Lime (CaO)	3.29	2.50	4.18	0.44
Magnesia (MgO)	0.53	0.41	0.21	0.43
Phosphoric acid (P_2O_5)	0.029	0.025	0.025	0.019
Potash (K_2O)	0.22	0.29	0.73	0.49
Soda (Na_2O)	0.51	0.38	0.37	0.46
Sulphuric acid (SO_3)	0.12	0.067	0.076	0.074
Carbonic acid (CO_2)	2.38	2.26	3.00	Trace
Nitrogen (N)	0.023	0.027	0.033	0.038
Available phosphoric acid (P_2O_5)	0.0054	0.0066	0.0005	0.0014
Available potash (K_2O)	0.0059	0.0069	0.0029	0.009

The following are the details regarding the sex and weight of calf in the different herds.

Kangayam Herd. 531 calves have been born to 16 different bulls, of which 274 were heifers and 257 bull calves. The average weight of these calves works out to 45.2 lb. for a bull and 41.7 lb. for a heifer, the highest weight being 62 lb. both for a bull and heifer calf and the lowest weight 25 lb. for a bull and 21 lb. for a heifer calf.

One bull produced 47 calves, the average weight of the calves being bulls 49.6 lb. and heifers 45.5 lb. Some bulls produced more heifer calves than bull calves and vice versa; bull No. 35 has 43 bulls and 73 heifer calves to his credit whereas No. 132 has 25 bulls and 11 heifers.

Sind Herd. 15 different bulls have produced 277 calves of which 140 are heifers and 137 bull calves. The average weights of these are bulls 45 lb. heifers 41.5 lb. The highest weight for a bull calf is 66 lb. and for a heifer 56 lb. the lowest weights being bull 26 lb. and heifers 27 lb.

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The Bull No. 118 produced 24 calves, the average weights being bulls 51 lb. and heifers 43 lb.

Bull No. 8 has produced 18 heifer calves and 6 bull calves and No 38 has 11 heifers and 4 bull calves to his credit whereas Bull No. 115 has produced 15 bull and 7 heifer calves.

Ongole Herd. Chintaladevi Farm:— 248 calves were born to 9 bulls of which 120 were bull and 128 heifer calves. The average weight works out to 65 lb. for bull calves and 59.5 lb. for heifer calves. The highest weight for a bull calf is 83 lb. and for a heifer 84 lb. the lowest being, bull calf 34 lb. and heifer calf 38 lb.

Bull No. 8 has produced 72 calves, 40 of which are heifers and bull No. 125 produced 37 calves, 21 of which are bulls and 16 heifers.

43 calves were born to Bull No. 6 18 bull calves averaged 69.3 lb. each and 25 heifer calves 60 lb. each.

Hosur Farm. 10 Ongole bulls produced 199 calves of which 109 were bulls and 90 heifer calves. The average weight works out to bulls 60.3 lb. and heifers 54 lb. the highest weights recorded being bull calf 80 lb. heifer calf 84 lb.

Bull No. 14 produced 28 calves, 20 of which are bull and 8 heifer calves.

20 calves were born to one bull, of which 11 bull calves average 63 lb. and 9 heifers 59.5 lb. each.

Period of gestation in cows. Breeders generally accept the average period of gestation of cows as 285 days; if a cow goes longer than this, their opinion is that the calf will most probably be a bull calf. The writer has gone through his records and worked out the average period of gestation in cows of the Ongole, Kangayam and Sind breeds. The breeder's acceptance of 285 days gestation period holds good for most cows of the Kangayam and Sind breeds, but not for the Ongoles. For some unknown reason the period of gestation for Ongole cows is 3 to 4 days longer on the average than the two former breeds.

There were cases in all the 3 breeds where some cows calved earlier than 277 days and some over the 300 days periods but these have been omitted.

Table IV. Sex and period of gestation.

Breed.	Mean period of gestation.			Alternative method.	
	Bull.	Heifer.	Deviation S. E. D.	X ²	P=.05
Kangayam	286.6±.30	284.1±.26	6.65	57.33	35.172
Ongole	289.8±.32	288.5±.30	2.80	33.46	36.415
Sind	286.3±.41	284.5±.38	3.00	36.17	35.172

Table IV shows for the Ongole in the period of gestation for cows (a) a significant increase in both the heifer and bull calves born (b) sex of calf has also a significant relationship with the period of gestation.

I wish to thank Mr. K. Ramiah, Paddy Specialist, for his kind assistance in working out the results statistically.