ISBN 978-34777-2-2

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Proceedings of 4th Annual Conference of
Animal Science Association of Nigeria
September 14 - 16, 1999

IITA Conference Center
International Institute of Tropical Agriculture,
IITA, Oyo Road, Ibadan.

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Ibadan, Nigeria, September 14-16, 1999.

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Published 1999

ISBN 978 - 34777-2-2

Printed by: T. Olabode Printers, 122 Obafemi Awolowo Way, Oke-Ado Market, Ibadan. Tel: 02-2311496, 2317197.

Members of LOC of the 4th Annual Conference: G.N. Egbunike, M.K. Adewumi, A.D. Ologhobo, E.A. Iyayi, A.O.K. Adesehinwa, B.B. Taiwo, F.C. Nworgu, F.O. Adetoro, A.M. Raji and A. Larbi

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Body dimensions of N'dama cattle in humid South West Nigeria

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Introduction. Body size and shape are traits of economic importance in beef cattle business. Body size has been largely estimated by scale weights while the shape has generally been described by visual appraisal, giving rise to subjective scores and such desciptions as blocky, rangey and compact (Ibe and Ezekwe, 1994). To improve genetic potential for traits of economic importance in beef cattle, breeders cannot continue to rely on skills of visual appraisal. Development of more objective measures for production traits rather than traditional methods of visual appraisal became the highpoint of beef cattle production. One of such objective measures is the use of body dimensions in breeding programmes.

However, various linear body traits have traditionally been assessed and recorded in many countries (Zarnecki et al, 1985) and their relationship with body, shape and production have been investigated by previous workers (Wilson et al, 1969; Jeffery and Berg, 1972; Buvandran et al, 1980; Brown et al, 1983, 1984). Linear body measurements taken on live animals have been widely used in research work as a simple means of recording certain aspects of the animal's growth and shape

Materials and methods. The data in this study was collected from pure N'Dama herd reared at Fashola Stock farm, Oyo State, Nigeria. The farm is located in latitude 7° 45' N and longitude 3° 43' with annual rainfall of 1045mm, temperature of 28.29°C and relative humidity of 67.6%. The body measurements of interest in this study were: head to shoulder (HDS), shoulder to taildrop (STD), height at withers (HTW), heart girth (HGT) and body length (BLT).

Conventionally, the head to shoulder measurement is taken from the base of the ears to the top of the head to the first thoracic vertebrate using a flexible tape (Sharples and Dumelow, 1990) while the shoulder to taildrop is the distance from the scapula to the first thoracic vertebrate (Orheruata, 1988). Height at withers is the higher point over the scapula vertically to the ground measured with a caliper with a vertically sliding arm (Fisher, 1975). The author described heart girth as the smallest circumference posterior to the forelegs at right angles to the body axis. The body length is the distance from the first thoracic vertebrate to the tail (Orheruata, 1988).

The data set were subjected to statistical analysis using least-square mixed model procedures (Harvey, 1987).

Results and Discussion. The least square analysis of variance on the effect of calf sire, calf sex, birth year and birth season on linear measurements of N'Dama calves at 24 months old are shown in Table 1

Table 1: Least square analysis of variance for some body measurements at 24 months old

Source of Variation	df	HDS	STD	HTW	HGT	BLT
Total	134					
Calf size	7	12.83	88.09	11.63	57.67	106.05
Calf sex	1	13.79	2.29	2.41	275.51*	0.71
Birth year	3	8.53	222.89*	163.29*	110.72	285.36*
Birth season	3	9.15	39.58	37.47	124.89	45.63
Reminder	119	22.31	47.10	31.95	53.90	84.76

HDS= Head to shoulder, STD= Shoulder to taildrop, HTW= Height at withers, HGT= Heart girth, BLT= Body length. *= P< 0.05.

Effect of birth year on BLT and STD shows that longest calves were born in 1951 while shortest were born in 1949. Tallest calves (103.77± 1.31) were born in 1952 while the shortest (98.89±1.22) were born in 1951 when HTW was considered.

There was a general decline in the effect of non-genetic factors on body measurements of calves at 24 months. This observation may be attributed to increased adaptability of calves to changes in the environmental conditions. Furthermore, there was no effect due to calf sex and calf sire at this age.
The least square analysis of variance on the effect of calf sire, calf sex, birth year and birth season on linear measurements of N'Dama calves at 30 months old is shown in Table 2.

Table 2: Least square analysis of variance for some body measurements at 30 months old.

Source of Variation	df	HDS	STD	HTW	HGT	BLT
Total	134					
Calf sire	8	24.13	38.11	9.05	20.24	68.24
Calf sex	1	46.47	36.11	34.29	217.12**	179.42*
Birth year	4	11.35	160.56**	194.08**	402.24**	147.18*
Birth season	3	9.94	19.88	4.48	138.84*	51.93
Remainder	117	14.30	22.27	16.94	42.56	45.06

*= P< 0.05, **= P<0.01

This study indicated that birth year strongly influenced STD, HTW and HGT (p< 0.01) and BLT (p< 0.05). Calf sex influenced (p< 0.01) HGT strongly and for BLT (p< 0.05). Birth season of calf influenced (p < 0.05) HGT measurements at 30 months old. Other factors, however, had no effect on any trait.

Calves with the shortest STD (85.28cm) were born in 1951 but those with the longest (93.93cm) were born in 1949. The corresponding values for HTW were 107.15cm (1949) and 111.71cm (1052). The range for HGT measurements was between 157.35cm (1948) to 111.71cm (1952). These values were also recorded for early dry and early wet seasons.

However, non genetic factors had no effect on most of the linear measurements at 30 months old. This may probably be due to increased adaptability of the young calves to unfavourable environment as they approach maturity.

All these findings were in agreement with the work of Alade (1990) who obtained calves with the shortest STD (85.45cm) in 1951 but those with longest (93.56cm) were born in 1949.

Conclusion. Sequel to the above findings, it could be observed that birth year influenced linear measurements and that sire of calf and sex of calf had no influence on linear measurements taken at 24 and 30 months old on pure N'Dama bred calves at Fashola stock farm.

References

Alade, N. K. (1990). M.Sc Thesis, Department of Animal Science, University of Ibadan.
Brown, C.J, Brown Jr.A.H.,and Johnson,Z.(1983). Agric. Expt. Sta., University of Arkansas,Divison of Agric., Fayelterville Bull. 863,
Brown,C.J, Brown Jr. A.H. and Johnson Z(1984). Ark Agric. Expt. Sta. Bulletin 863:.7
Buvanendran, V, Umoh,J.E. and Abubakar,B.Y.(1980). J. Agric. Sci., Camb. 95:.219-224..
Fisher, A. V. (1975),Livest. Prod. Sci. 2:.357-366.
Hawey, W.R, (1987). Mixed model conputer programme (LSMLMW) Pc e version, Ohio State University.
Ibe, S.N and Ibekwe,A.G. (1994) Nig. J. for Animal Production
Jeffery,H.B. and Berg, R.T.(1972).Can.J.Anim. Sci. 52:.23-37.
Orhemata, M.A.(1988).M.Sc. project, Department of Animal Science, University of Ibadan.
Sharples, T. and Dumelow, J. (1988) Farm Build. and Eng. 21:23
Wilson,L.L,Gillooly, J.E, Rugh,M.C, Thompson, C.E.and Purdy,H.R.(1969). J. Anim. Sci. 28:.789-795.
Zarnecki,A., Ronningen,K and Stoleman,M (1987) Tierzuchtg Zuchtgsbiol 104.28-34.