Greener Journal of Agricultural Sciences
ISSN: 2276-7770
Vol. 14(4), pp. 194-198, 2024

https://gjournals.org/GJAS
DOI: https://doi.org/10.15580/gjas.2024.4.120124184

Growth performance of indigenous cattle breeds in Ethiopia: A review

Fikadu Wodajo Tirfie

Ethiopian Institute of Agricultural Research (EIAR), Holetta Agricultural Research Center, P.O. Box 2003 Addis Ababa or 31 Holetta, Ethiopia.

ARTICLE INFO

Article No.: *120124184*
Type: *Review*
Full Text: *PDF, PHP, HTML, EPUB, MP3*
DOI: *10.15580/gjas.2024.4.120124184*

Accepted: *11/12/2024*
Published: *31/12/2024*

Corresponding Author
Fikadu Wodajo Tirfie
E-mail: *fikadutirfie@gmail.com*

Keywords: *Growth performance, indigenous breed, weight*

ABSTRACT

This review is about the growth traits of indigenous cattle breeds such as birth weight, weaning weight, six months weight, yearling weight and average daily weight gain from birth to weaning under Ethiopian conditions. All published materials cited in order to provide some information on values of growth traits of indigenous cattle. Ethiopia is a home for different agro-ecological zones and many indigenous livestock species. But their performance is very low. The minimum and maximum birth weight performance for indigenous breeds was 17.5±2.25 kg and 23.68±0.21kg, respectively. The yearling weight performance of indigenous cattle was minimum 58 kg and maximum 85.7 kg with 76.29±0.45 to 440 gram range of daily gain at weaning. Improving management, selection, crossbreeding with exotic should be needed to enhance growth performance of indigenous cattle.

INTRODUCTION

Ethiopia is naturally endowed with appropriate climatic conditions, various agro-ecological zones, and a home for many livestock species, making it ideal for livestock production (Belay, 2017). Ethiopia has the highest animal population in Africa, with 60,392,019 cattle, 31,302,257 sheep, 32,738,385 goats, and 60,042,295 fowl (CSA, 2018). Ethiopia currently recognizes about 28 local cow breeds (Abraham and Abebe, 2018). However, their productive and reproductive output is very poor, and the sector has stayed undeveloped and its potential has not been utilized efficiently and effectively (Nitsuh, 2018).

Accurate performance assessment and data generation could provide useful evidence for creating a future national breeding strategy (Abdinasir and Eskil, 2001). Some research has been conducted on the development rate of some Ethiopian indigenous cattle breeds (Sendros et al., 2003; Jiregna et al., 2004; Getinet et al., 2009; Melaku et al., 2011; Elias, 2015; Assemu et al., 2016). Therefore, the purpose of this paper is to review and summarize data on the growth performance of Ethiopia's local cattle breed, which has been studied by various scholars in different parts of the Ethiopia with an emphasis on early growth traits.

Growth performance of local cattle breeds in Ethiopia

Growth performance is a chosen parameter for both beef and dairy herds. Growth performance of dairy cattle includes birth weight, weaning weight, six months weight, yearling weight and average daily weight gain. The growth performances of local cattle breeds of Ethiopia reported by different scholars are presented in Table 1.

Birth weight

Various scholars in various parts of Ethiopia have examined and assessed the birth weight performance of some indigenous cattle breeds (on-farm and on-station). The minimum birth weight performance for local breeds such as Horro was 17.5±2.25 kg at Bako agricultural research center and Horro Gudurru cattle breeding and improvement ranch, Ogaden was 21.5±0.29 kg at Haramaya University, Fogera was 20.7±0.11 kg at Metekel Cattle Breeding and Multiplication Ranch and Sheko was 16.12±0.22 kg at Bench Maji Zone, south western Ethiopia (Jiregna et al., 2004; Getinet et al., 2009; Melaku et al., 2011; Elias, 2015), respectively. According to various experts, the birth weight of the Fogera breed varied from 20.7±0.111 to 23.68±0.21 kg (Addisu and Hegede, 2003; Addisu et al., 2010; Melaku et al., 2011; Almaz et al., 2016; Assemu et al., 2016). Boran breed birth weight results varied from 22.9 to 23.7 kg (Sendros et al., 2003; Amsalu, 2004; Aynalem et al., 2011).

Weaning weight

The weaning weight performance of the Horro breed in Bako Agricultural Research Center was 39.8±0.39 kg (Habtamu et al., 2012), which was lower than the other Ethiopian local breeds such as Boran and Barka at research center farm under station management system, which were 95.2±1.3 kg and 92 kg, respectively. (Sendros et al., 2003). Under various production systems, indigenous cattle weaning weight performance was different. The difference in findings may be explained by differences in location and management methods.

Six months weight

According to a study performed at the Horro Gudurru Cattle Breeding and Improvement Center and the Bako Agricultural Research Center, the performance of Horro cattle at six months weight was 61.6±16.6 kg (Jiregna et al., 2004). Similarly, the Boran breeds weighed 79±1.51 kg at HARC at the same age (Aynalem et al., 2011).

Yearling weight

Different studies (Habtamu et al., 2012; Elias, 2015; Addisu et al., 2010; Getinet et al., 2009) recorded the yearling weight results of Ethiopian local breeds (Horro, Sheko, Boran, Fogera, and Barka), as shown in Table 1. Boran's efficiency was found to be 130.1, 129.3, and 111.2 kg by Sendros et al. (2003), Amsalu (2004), and Aynalem et al. (2011), respectively.

Pre-weaning average daily body gain

Pre-weaning average daily body gain (PrWADG) performance for local Ethiopian cattle ranged from 280 g/day for Fogera at Metekel cattle breeding and improvement ranch to 630 g/day for Begait at medium input herd management on-station level (Almaz et al., 2016; Gebretnsae, 2018). According to Genet's (2019) estimate, the PrWADG of Boran at Dida Tuyera Ranch was 440 g/day (Table 1).

Table 1. Growth performance of local cattle breeds in Ethiopia

Genotype	Site of study	BW(Kg)	WW(Kg)	SMW(Kg)	YW(Kg)	PrWADG(g)	Source
Boran	On Station	22.9±0.3	95.2±1.3	-	129.3±1.8	401.4±7.1	
Barka	On Station	22.6±0.5	92±1.9	-	124.5±2.5	385.3±10	(Sendros *et al*., 2003)
Horro	On Station	19.9±0.4	88±1.6	-	123±2.2	377.6±8.4	
Fogera	MCBIR	23.68±0.21	114.2±1.91	-	146.8±3.25		(Addisu and B.P. Hegede, 2003)
Horro	HGCBIR&BARC/ on-station	17.5±2.6	-	61.6±16.6	-	-	Jiregna *et al*., 2004)
Horro	BARC/on –station	18.4	-	68	85.7	-	(Mulugeta *et al*., 2006.)
Boran	HARC/on –Station	22.59±0.35	-	-	117.86±2.32	-	(Berhanu, 2008)
Ogaden	On -station(HU)	21.5±0.29	91.65±1.67	91.65±1.67	136.3±2.36	-	(Getinet *et al*., 2009)
Fogera	ALRC /on-station	22	-	68.2	113	-	(Addisu *et al*., 2010)
Boran	On-station	23.3±0.36	54±1.2	79±1.51	111.2±2.35	-	(Aynalem *et al*., 2011)
Fogera	MCBMR/on-station	20.7±0.11	88.6±1.3	-	-	297±3.63	(Melaku *et al*.,2011)
Horro	BARC/on-station	18.34±0.14	39.8±0.39	-	70.5±1.14	270.8±4.7	(Habtamu *et al*., 2012)
Horro	On-farm& station /WU	17.5±2.25	-	88.5	109.5		(Demissu, 2013)
Sheko	Bench Majie/on-farm	16.12±0.22	58.84±0.51	58.84±0.51	85.07±0.5	76.29±0.45	(Elias, 2015)
Fogera	MCBIR/on-station	21.01±0.03	88.64±0.33	-	-	0.28±0.001(280±1)	(Almaz *et al*., 2016)
Fogera	ALRC/on-station	21.4±0.09	102±0.77	-	-	-	(Assemu *et al*.,2016)
Begait	On-farm &on-station	21.9	-	98.1	158	-	(Gebretnsae, 2018)
Boran	Dida Tuyera Ranch/on-station	20.5	118.81	-	-	0.44(440)	(Genet, 2019)

BW, Birth Weight; WW, Weaning Weight; SWW, Six Month Weight; YW, Yearling Weight; PrWADG, per-weaning average daily body gain; ALRC, Andassa Livestock Research Center; BARC, Bako Agricultural Research center; HARC, Holetta Agricultural Research center; MCBIR, Metekele Cattle Breeding and Improvement Center; HGCBIR, Horro Gudurru Cattle Breeding and Improvement Center; HU, Haramaya University; WU, Wollega University; Kg, Kilo Gram; g, gram

SUMMARY AND CONCLUSION

The information presented in this review indicated that the performance of indigenous cattle breeds of Ethiopia is variable. From all indigenous cattle breed of Ethiopia Boran had better early growth performance whereas Horro had the lowest performance. The performance of cattle is might be limited by several constraints that include natural uncontrolled and unorganized breeding practice, high prevalence of diseases, limited feed availability and lack of recording system. Improving management of feeding, housing system, disease control, crossbreeding with exotic and seasonal breeding should be needed to enhance growth performance of indigenous cattle.

REFERENCES

Abdinasir Ibrahim and Eskil Brannang. (2001). Growth performance of crossbred dairy cattle at Asella livestock farm, Arsi, Ethiopia. Ethiop. J. Sci., 24(1). pp. 35-49.

Addisu Bitew and B.Prabhakar Hegede. (2003). Reproductive and growth performance of Fogera cattle and their F1 Friesian crosses at Metekel ranch, Ethiopia: In Yilma Jobre and Getachew Gebru (Eds), Challenges and Opportunities of Livestock Marketing in Ethiopia. Proc. 10th Annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 22-24, 2002. ESAP, Addis Ababa.pp.119-126.

Addisu Bitew, Mengistie Taye, Adebabay Kebede, Getinet Mekuriaw, Asaminew Tassew, Tezera Mulugeta and Gebeyehu Goshu. (2010). Milk yield and calf growth performance of cattle under partial suckling system at Andassa Livestock Research Centre, North West Ethiopia. Livestock Research for Rural Development. 22(8).

Abraham Assefa and Abebe Hailu. (2018). Ethiopian indigenous cattle breed's diversity, distribution, purpose of keeping, and their potential threats. J.bio.innov7 (5), pp: 770 -789.

Almaz Bekele, Z. Wuletaw, A. Haile, S. Gizaw and G. Mekuriaw. 2016. Genetic parameter estimation of pre weaning growth trait of Fogera cattle at Metekel ranch, North West Ethiopia. International journal of scientific research in science and technology. 2(5). Pp.15-21.

Amsalu Sisay. (2004). Growth Performance of Boran Cattle and Their Simmental Crosses in Ethiopia. In: Asfaw Yimegnuhal and Tamrat Degefa (Eds). Farm Animal Biodiversity in Ethiopia: Status and Prospects. Proceedings of the 11th Annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 28-30, 2003. ESAP, Addis Ababa.pp.223-239.

Assemu Tesfa, (2015) Estimation of Genetic and Non Genetic Parameters for Growth and Reproductive Performance Traits of Fogera Cattle Breed. M.Sc. Thesis. Bahir Dar University, Bahir Dar.pp.10

Assemu Tesfa, Dilip Kumar, Solomon Abegaz, Getinet Mekuriaw, Tewodross Bimerew, Adebabay Kebede, Addisu Bitew, Yeshewas Ferede, Hailu Mazengia and Mekonnen Tilahun. (2016). Growth and reproductive performance of Fogera cattle breed at Andassa Livestock Research Center. Livestock Research for Rural Development.28 (1). pp. 1-17.

Aynalem Haile, B.K. Joshi1, W. Ayalew, A. Tegegne & A. Singh. (2011). Genetic evaluation of Ethiopian Boran cattle and their crosses with Holstein Friesian for growth performance in central Ethiopia. J. Anim. Breed. Genet. 128. pp. 133–140.

Belay Zeleke. (2017). Status and growth trend of draught animals' population in Ethiopia. Research Article. J Dairy Vet Anim Res.; 6(1). pp. 238–241.

Berhanu Belay. (2008). *Genetic Evaluation of Dairy Cattle Sires in Central Highlands of Ethiopia.* Doctor of Philosophy (PhD) Dissertation, Deemed University, Haryana, India. Pp. 328.

CSA, (2018). Federal Democratic Republic of Ethiopia, Central Statistical Agency (CSA) *Report on livestock and livestock characteristics.* Addis Ababa, Ethiopia.

Demissu Hundie, Fekadu Beyene and Gemeda Duguma. (2013). Early Growth and Reproductive Performances of Horro Cattle and their F1 Jersey Crosses in and around Horro Guduru Livestock Production and Research Center, Ethiopia. Sci. Technol. Arts Res. J., 2(3). pp. 134-141.

Elias Bayou, A. Haile, S. Gizaw and Y. Mekasha. (2015). Evaluation of non-genetic factors affecting calf growth, reproductive performance and milk yield of traditionally managed Sheko cattle in southwest Ethiopia. Springer Plus 4:568. Pp.1-17

Gebretnsae Mezgebea, Solomon Gizaw and Mengistu Urge. (2018). Growth, Reproductive and Productive Performance of Begait Cattle under Different Herd Management Systems in Northern Ethiopia. Tropical Animal Health and Production (Spriger). Pp.86-91.

Genet Zewdie. (2019). Estimates of Co-Variance Components and Genetic Parameters of Growth Traits in Boran Cattle Breed at Dida Tuyera Ranch, Southern Ethiopia. MSc Thesis. Department of Microbial Cellular and Molecular Biology Addis Ababa University, Addis Ababa, Ethiopia. pp. 62.

Getinet Mekuriaw, Workneh Ayalew and P B Hegde. (2009). Growth and Reproductive performance of Ogaden cattle at Haramaya University, Ethiopia. Eth. J. Anim. Prod. 9(1). pp. 13-38.

Habtamu Abera, Solomon Abegaz and Yoseph Mekasha. (2012). Influence of non-genetic factors on growth traits of Horro (Zebu) and their crosses with Holstein Friesian and Jersey cattle. Academic

Journals. International Journal of Livestock Production Vol. 3(7). pp. 72-77.

Jiregna Dessalegn, Ulfina Galmessa, Mulugeta Kebede and Addisu Yadetta. (2004). Growth Performances and Mortality rate of Horro Calves under different weaning system: InTamrat Degefa and Fekede Feyissa (Eds), the Role of Agricultural Universities/Colleges in Transforming Animal Agriculture in Education, Research and Development in Ethiopia: Challenges & Opportunities. Proceedings of the 13th Annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 25- 27, 2004. Addis Ababa. pp. 92-52.

Melaku Menale, Zeleke Mekuriaw, Getinet Mekuriaw and Mengistie Taye. (2011). Pre-weaning growth performances of Fogera calves at Metekel cattle improvement and multiplication ranch, North West Ethiopia. Livestock Research for Rural Development. 23(9).

Mulugeta Kebede, J.P.C. Greyling and L.M.J. Schwalbach. (2006). Pre- and Post-Weaning Growth and factor affecting in Horro (Bos Indicus) Cattle. In: Tamrat Degefa and Fekede Feyissa (Eds). Institutional arrangements and challenges in market-oriented livestock agriculture in Ethiopia: Proceedings of the 14th annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, September 5–7, 2006. Part II: Technical Papers. ESAP, Addis Ababa.pp.154-164.

Nitsuh Walelign. (2018). Productive and Reproductive Performance of Crossbred Dairy Cattle at Menkorer Agro Industry Enterprise Dairy Farm Debre Markos Ethiopia. MSc Thesis. Haramaya University, Haramaya. Pp.74.

Sendros Demeke, F. W. C. Neser and S. J. Schoeman. (2003). Early growth performance of Bos Taurus x Bos indicus cattle crosses in Ethiopia: Evaluation of different crossbreeding models. J. Anim. Breed. Genet. 120. pp. 39–50.

Cite this Article: Fikadu, WT (2024). Growth performance of indigenous cattle breeds in Ethiopia: A review**.** *Greener Journal of Agricultural Sciences*, 14(4): 194-198, https://doi.org/10.15580/gjas.2024.4.120124184.