



Determination of Some Growth and Development Characteristics Between Birth and Twelve Months Age in Yerli Kara Cattle

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ABSTRACT

This study was carried out for the purpose of determination of some growth and development characteristics in the period between birth and twelve months of age in Yerli Kara cattle. The animal material of the study was composed of 104 Yerli Kara calves located in Ankara province. In the study, live weight, withers height, rump height, chest girth, body length, chest depth and front wrist girth values at birth were found as 14.85 kg, 58.00 cm, 60.10 cm, 54.41 cm, 49.36 cm, 24.25 cm and 7.40 cm respectively. The same values at the age of three months were found as 49.37 kg, 73.95 cm, 76.84 cm, 83.45 cm, 79.14 cm, 35.45 cm and 9.46 cm respectively. Values at the age of six months in these calves were

detected as 81.22 kg, 87.29 cm, 90.35 cm, 99.36 cm, 92.93 cm, 42.79 cm and 10.58 cm respectively. Values at the age of twelve-month were determined as 97.29 kg, 92.15 cm, 95.55 cm, 106.22 cm, 98.07 cm, 45.26 cm and 10.74 cm in the same order. Average daily gains values were found 0.360 kg in the period between birth and 3 months of age, 0.333 kg from 3 to 6 months, and 0.102 kg from 6 to 12 months. The results showed that the body measurements of animals in this study are generally lower than the values reported in literature. Therefore, a selection program considering this fact will be useful for the development of native Yerli Kara cattle maintained at the farm operations of Ankara province.

Keywords: Average daily gain, Body measurement, Live weight, Yerli Kara cattle

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1. Introduction

Turkey has a great potential in terms of cattle presence and it is among the leading countries in the world with 18 million cattle. 9.23% of these cattle are indigenous breeds (TUIK 2020). In this context, Yerli Kara cattle which is the best locally adapted breed to the inefficient conditions is the domestic cattle breed with the highest number and largest living area in Central Anatolia of Turkey (Boztepe et al. 2015; Ünal et al. 2019). They are grown extensively in mountainous regions, and primitive maintenance, feeding and barn conditions.

Growth and development characteristics are of great importance in cattle which is the most important source of meat and milk production. In cattle breeding, as a measure of growth and development, various body measurements are taken as basis. The most important of these parameters is birth weight. Birth weight is the easiest and most reliable measure of prenatal growth and an important factor affecting postnatal growth and development (Akbulut et al. 2001; Karabulut et al. 2012). Özhan et al. (2012) have reported that the calves with an average birth weight of 32 kg grew up faster than the calves with an average of 23 kg in a herd. Therefore, it is also of great importance in economic terms. Other body measurements such as withers height, rump height, chest girth, body length are also characters that are effective on growth and development (Akbulut et al. 2001; Bilgiç and Alç 2004; Wu et al. 2004; Karabulut et al. 2012). There are several factors that have effect on the birth weight and body measurements of a calf. The effected environmental factors can be listed as maternal age and weight at birth, maternal ability, nutrition, year and season of calving (Souza et al. 1994; Akbulut et al. 1998; Kaygısız et al. 1998).

There are limited number of studies showing about live weight and body measurements for Yerli Kara cattle. It is also important to determine the effect of environmental factors on these characteristics to reveal the growth and development performance up to one year in the conditions of the region where the Yerli Kara cattle is widely grown. This study was carried out to determine some growth and development characteristics in the birth and 3, 6 and 12 months of age of Yerli Kara calves maintained at different farms. In addition, average daily gains of the animals were determined in the specified periods.

2. Material and Methods

The animal material of this study was consisted of Yerli Kara Cattle grown in private farm operations located in Osmansin village, Çamlıdere district of Ankara. This breed has been conserving within the scope of the project of “Conservation of Domestic Genetic Resources and Sustainable Use” conducted by General Directorate of Agriculture Research and Policies (TAGEM). The study was carried out on a total of 104 heads Yerli Kara from 20 different farms. Calves under study was born in January, February, and March of 2018.

In this region, Yerli Kara breeding is mostly carried out as extensive livestock system which is also named as a traditional farming. The animals are kept in the barns during the winter, while they are raised in the pasture in summer. In spring and autumn periods, the animals are kept in the barn of the farms in the village at night, and they are sent to pasture around the village in the daytime. The animals are taken to the uplands of village in early May. In the summer period, the animals are grazed completely in the pasture during the day. They are kept in a corner of the pasture or surrounded barnyards by nights. No additional feed is given to the animals grazed in the pasture. In winter, animals are kept in completely closed village barns under poor care and feeding conditions. In the winter period, animals are fed with only straw and some farms provide very little additional meadow grass and concentrate feed. This situation causes to animals having a skinny and weak appearance after the winter months.

In the study, the data collected from 104 calves at birth and 3 months of age and from 102 and 97 calves at 6 and 12 months of age respectively. The data of birth period were taken within the first 24 hours after calves were born. Weights at 3, 6 and 12 months of age were taken in the mornings with an empty stomach. In addition to live weight (LW), withers height (WH), rump height (RH), chest girth (CG), body length (BL), chest depth (CD) and front wrist girth (FWG) were taken (Anonymous, 2020). Body weights and measurements of the animals were determined with a scale sensitive to 200 g, measuring stick and measuring tape.

The analyses of variance by Minitab 16 were used in the evaluation of data (Minitab 2010). The test of Tukey provided by Minitab were realized for multiple comparisons. Live weights and body measurements including average daily gains of calves were analyzed by using the following statistical model (General Linear Model procedure):

$$Y_{ijklm} = \mu + a_i + b_j + c_k + d_l + e_{ijklm}$$

Where; Y_{ijklm} : observed data; μ : Overall mean; a_i : i. effect of calf's gender (1:female, 2:male); b_j : j. effect of maternal age (2-3, 4-6, 7+); c_k : k. effect of birth month (1:January, 2:February, 3:March); d_l : l. effect of farms (1. farm, ... 20. farm); e_{ijklm} : random error.

3. Results and Discussion

3.1. Growth and development

The mean and standard errors (SE) for live weight and body measurements at birth, 3, 6 and 12 months of ages are given in Tables 1, 2, 3 and 4, respectively.

Table 1- The least square mean (LSM) and standard error (SE) values of live weight and body measurements in Yerli Kara cattle at the birth period

Character	n	LW (kg)	WH (cm)	RH (cm)	CG (cm)	BL (cm)	CD (cm)	FWG (cm)
General	104	14.62±0.359	57.68±0.451	59.80±0.468	53.91±0.515	48.84±0.612	23.96±0.277	7.28±0.077
Gender								
Female	50	14.15±0.446	57.30±0.560	59.37±0.581	52.96±0.640 ^b	48.67±0.760	23.84±0.344	7.01±0.095 ^b
Male	54	15.10±0.448	58.06±0.561	60.24±0.583	54.86±0.642 ^a	49.02±0.763	24.08±0.345	7.55±0.095 ^a
P values		0.079	0.254	0.213	0.015	0.696	0.555	0.001
Maternal Age								
2-3	18	13.18±0.685 ^b	55.72±0.859 ^b	58.01±0.892 ^b	51.83±0.982 ^b	46.70±1.167 ^b	22.95±0.528 ^b	7.04±0.146 ^b
4-6	52	15.39±0.401 ^a	58.47±0.502 ^a	60.59±0.522 ^a	55.42±0.574 ^a	49.94±0.682 ^a	24.73±0.309 ^a	7.46±0.085 ^a
7+	34	15.29±0.535 ^a	58.85±0.670 ^a	60.82±0.696 ^a	54.48±0.766 ^a	49.90±0.911 ^a	24.20±0.412 ^a	7.35±0.114 ^a
P values		0.012	0.007	0.020	0.006	0.035	0.011	0.035
Birth Months								
January	21	15.43±0.682	57.92±0.855	59.95±0.888	54.96±0.977	48.42±1.161	24.81±0.526 ^a	7.27±0.145
February	46	14.78±0.441	57.40±0.553	59.54±0.575	53.99±0.632	48.03±0.752	24.76±0.340 ^a	7.38±0.094
March	37	13.66±0.506	57.72±0.634	59.92±0.659	52.78±0.725	50.09±0.861	22.31±0.390 ^b	7.19±0.108
P values		0.074	0.811	0.843	0.167	0.132	0.001	0.296
Farms								
P values	104	0.122	0.812	0.781	0.328	0.131	0.761	0.254

The differences between the averages expressed in different letters in the same column are important (P<0.05)

Table 2- The least square mean (LSM) and standard error (SE) values of live weight and body measurements in Yerli Kara cattle at 3 months of age

Character	n	LW (kg)	WH (cm)	RH (cm)	CG (cm)	BL (cm)	CD (cm)	FWG (cm)
General	104	47.41±1.117	73.47±0.816	76.32±0.828	82.83±0.759	77.57±0.811	34.96±0.432	9.42±0.078
Gender								
Female	50	45.98±1.386	72.92±1.013	75.69±1.027	82.16±0.942	77.16±1.001	34.43±0.537	9.17±0.097 ^b
Male	54	48.83±1.390	74.02±1.016	76.94±1.031	83.50±0.945	77.98±1.010	35.49±0.538	9.67±0.097 ^a
P values		0.088	0.362	0.312	0.238	0.496	0.100	0.001
Maternal Age								
2-3	18	41.98±2.128 ^b	70.94±1.556 ^b	73.67±1.577 ^b	79.61±1.447 ^b	74.98±1.546	34.01±0.824	9.16±0.149 ^b
4-6	52	49.59±1.244 ^a	73.52±0.909 ^{ab}	76.38±0.922 ^{ab}	83.76±0.846 ^{ab}	78.68±0.903	34.78±0.482	9.46±0.087 ^{ab}
7 +	34	50.66±1.660 ^a	75.95±1.214 ^a	78.90±1.230 ^a	85.13±1.128 ^a	79.06±1.206	36.10±0.643	9.65±0.117 ^a
P values		0.002	0.024	0.020	0.007	0.062	0.071	0.025
Birth Months								
January	21	47.57±2.117	73.61±1.548	76.10±1.569	82.13±1.439	76.31±1.538	34.56±0.820	9.38±0.149
February	46	47.36±1.370	73.23±1.002	76.06±1.015	82.79±0.931	77.78±0.995	34.87±0.531	9.41±0.096
March	37	47.29±1.571	73.56±1.148	76.79±1.164	83.58±1.068	78.62±1.141	35.46±0.608	9.47±0.110
P values		0.994	0.957	0.864	0.690	0.466	0.611	0.848
Farms								
P values	104	0.002	0.168	1.161	0.008	0.019	0.007	0.028

The differences between the averages expressed in different letters in the same column are important (P<0.05)

Table 3- The least square mean (LSM) and standard error (SE) values of live weight and body measurements in Yerli Kara cattle at 6 months of age

Character	n	LW (kg)	WH (cm)	RH (cm)	CG (cm)	BL (cm)	CD (cm)	FWG (cm)
General	102	78.19±1.705	86.46±0.610	89.67±0.619	98.31±0.789	91.62±0.895	42.11±0.370	10.45±0.081
Gender								
Female	48	75.81±2.151	85.83±0.769	89.24±0.781	98.05±0.996	91.40±1.129	42.13±0.467	10.19±0.102 ^b
Male	54	80.58±2.072	87.09±0.741	90.10±0.752	98.58±0.959	91.85±1.087	42.10±0.449	10.70±0.098 ^a
P values		0.059	0.160	0.345	0.650	0.734	0.962	0.001
Maternal Age								
2-3	18	70.26±3.182 ^b	84.10±1.138 ^b	87.04±1.155 ^b	94.59±1.473 ^b	88.47±1.670 ^b	40.84±0.690 ^b	10.13±0.151 ^b
4-6	50	81.72±1.937 ^a	87.45±0.693 ^a	90.67±0.703 ^a	99.98±0.897 ^a	92.61±1.017 ^a	43.14±0.420 ^a	10.50±0.092 ^{ab}
7 +	34	82.60±2.491 ^a	87.83±0.891 ^a	91.29±0.904 ^a	100.38±1.153 ^a	93.79±1.307 ^a	42.37±0.540 ^a	10.71±0.118 ^a
P values		0.003	0.015	0.006	0.002	0.026	0.013	0.006
Birth Months								
January	21	79.62±3.167	87.89±1.133	91.05±1.149	100.74±1.466 ^a	91.97±1.662	42.66±0.687 ^a	10.71±0.151 ^a
February	44	80.16±2.080	86.39±0.744	89.44±0.755	97.98±0.963 ^{ab}	92.97±1.091	42.58±0.451 ^a	10.52±0.099 ^{ab}
March	37	74.80±2.363	85.10±0.845	88.51±0.857	96.24±1.094 ^b	89.93±1.240	41.10±0.512 ^b	10.11±0.112 ^b
P values		0.151	0.124	0.192	0.044	0.119	0.042	0.002
Farms								
P values	102	0.001	0.016	0.021	0.001	0.003	0.024	0.001

The differences between the averages expressed in different letters in the same column are important (P<0.05)

Table 4- The least square mean (LSM) and standard error (SE) values of live weight and body measurements in Yerli Kara cattle at 12 months of age

Character	n	LW (kg)	WH (cm)	RH (cm)	CG (cm)	BL (cm)	CD (cm)	FWG (cm)
General	97	96.80±1.930	91.47±0.637	94.91±0.638	105.59±0.745	98.16±0.792	45.13±0.373	10.58±0.089
Gender								
Female	47	91.73±2.351 ^b	90.56±0.776	94.13±0.777	104.22±0.907 ^b	97.09±0.965	44.36±0.454 ^b	10.27±0.109 ^b
Male	50	101.86±2.351 ^a	92.38±0.776	95.70±0.777	106.96±0.907 ^a	99.23±0.965	45.90±0.455 ^a	10.88±0.109 ^a
P values		0.001	0.044	0.081	0.010	0.056	0.004	0.001
Maternal Age								
2-3	17	91.57±3.535	89.32±1.167 ^b	92.58±1.168 ^b	103.31±1.364	96.15±1.451	44.06±0.683	10.40±0.163
4-6	49	99.44±2.088	92.32±0.690 ^a	95.87±0.690 ^a	106.69±0.806	99.06±0.857	45.77±0.404	10.58±0.096
7 +	31	99.38±2.864	92.76±0.946 ^a	96.30±0.946 ^a	106.76±1.105	99.27±1.176	45.55±0.554	10.75±0.132
P values		0.111	0.035	0.020	0.063	0.146	0.078	0.182
Birth Months								
January	19	105.12±3.545 ^a	92.91±1.171	96.24±1.176	108.13±1.368 ^a	100.99±1.455 ^a	46.28±0.685 ^a	10.93±0.164 ^a
February	43	96.79±2.267 ^a	91.35±0.749	94.62±0.749	105.71±0.875 ^{ab}	99.24±0.931 ^a	45.17±0.438 ^a	10.55±0.105 ^{ab}
March	35	88.49±2.574 ^b	90.14±0.850	93.89±0.851	102.92±0.994 ^b	94.25±1.057 ^b	43.93±0.498 ^b	10.25±0.119 ^b
P values		0.001	0.132	0.228	0.005	0.001	0.014	0.003
Farms								
P values	97	0.001	0.001	0.001	0.001	0.001	0.004	0.001

The differences between the averages expressed in different letters in the same column are important (P<0.05)

Live weights at birth, 3, 6 and 12 months of ages were found to be 14.85 kg, 49.37 kg, 81.22 kg and 97.29 kg respectively. Live weight from birth to 12 months of age for above mentioned traits were lower than the reported ranges (Demirhan 2008; Kılıçel 2014; Ünal et al. 2019) of 16.97- 21.35 kg, 63.21 - 68.18 kg, 101.04 - 110.33 kg, 152.16 kg- 184.57 kg, respectively. In addition, all body size values reported in the birth period were found to be lower than all values reported in the same literatures. In these periods, only body length value was found to be similar to the literature reports. In the study, the effect of gender was determined to be significant ($P<0.05$) in only the FWG in all measurement periods (Tables 1, 2, 3 and 4). In terms of body measurements, in the birth period the effect of gender on WH, CG, CD and BL values were reported (Demirhan 2008; Kılıçel 2014; Ünal et al. 2019) to be not significant, and FWG values as significant ($P<0.05$) and these findings were consistent with the values in our study. Demirhan (2008) found that the effect of gender was not significant in WH, CG, BL values in the other three periods (3, 6, 12 months). Kılıçel (2014) found that the effect of gender on WH and CG values at 3 months of age CG value BL at 12 months of age was significant while the same values found to be not significant in other periods.

In the studies conducted with our other local breeds in Turkey, Ünal and Işık (2007) found significant ($P<0.01$) effect of gender on live weight and front wrist girth and not significant for withers height, body length, chest girth and middle rump width in the period of birth for the South Anatolian Red calves. Özlütürk et al. (2007) found that the effect of gender on live weights and body measurements in Eastern Anatolian Red calves were significant ($P<0.01$) in favor of male calves for birth, 3 and 6 months of age and not significant for 9 and 12 months of age.

In the studies conducted with other breeds, the effect of gender on live weight and body measurements of Holstein calves has been found by Hızlı et al. (2017) as significant ($P<0.01$) in birth and weaning (75 days) but not significant at the age of 6 months. Ayaşan et al. (2016) found a significant ($P<0.05$) effect in birth period but not significant for weaning (75 days) and 6 months old Holstein calves. Bayrıl and Yılmaz (2010) have not found a significant effect of gender on birth, weaning (60 days) and 6 months old weight in Holstein calves. Koçak et al. (2008) found a significant ($P<0.001$) effect of gender on the birth period weight in the Holstein, Brown-Swiss and Simmental calves grown in Lalahan Livestock Research Institute.

Abera et al. (2012) found that birth weight of the calves significantly ($P<0.05$) influenced by sex, where male calves were heavier than females at birth. However, female calves were superior ($P<0.05$) at weaning and yearling and also had faster growth rate than male calves. Villalba et al. (2000) found a significant ($P<0.05$) effect of sex on body weight in birth, 4, 5 and 6 months of age of Brown Swiss and Pirenaica breeds.

When the maternal age values in Tables 1, 2, 3 and 4 are examined, calves born from 4-6 years old cows and 7 years old cows and above were found to be superior to calves born from 2-3 years old cows in all measurement parameters, for the period of birth. In other periods (3, 6 and 12 months) the 7 years old age and above had higher values, and the 2-3 years old age group was found to be at the lowest values, in all measured parameters. The statistical difference between the groups was found to be significant ($P<0.05$) in all measurement parameters at birth and at 6 months of age. The effect of maternal age at 3-month was found to be significant ($P<0.05$) in LW, WH, RH and CG values. The 12-month period for this factor was found to be also significant ($P<0.05$) in WH and RH values. Demirhan (2008) found BW and WG values in the birth period, all values (LW, WG, CG, BL, WH) at 3 and 6 months of age, LW, WG, CG and BL values at 12 months of age in favor of calves born from first calving cows compared with calves of two or more calving cows. Kılıçel (2014) found the LW, WH, CG and BL values in favor of calves born from two or more calving cows compared with calves from first calving cows, in all measurement periods. Ünal et al. (2019) found the BW, WH, RH, CG, BL, CD and FWG values in the period of birth in favor of calves born from five years old and above calving cows compared with calves from four years and under calving cows.

In the studies conducted with our other local breeds for the effect of the maternal age, Ünal & Işık (2007) found not significant values for LW, WH, BL, CG, and FWG in the period of birth in the calves of South Anatolian Red calves. Özlütürk et al. (2007) found significant ($P<0.01$) values for live weights in Eastern Anatolian Red calves in favor of male calves in birth, 6 and 12 months of age and not significant at 3 and 9 months of age.

As for the studies conducted with other breeds, the effect of maternal age on live weight; Hızlı et al. (2017) found a significant ($P<0.01$) effect in birth, weaning (75 days) and 6 months weight for Holstein calves. Ayaşan et al. (2016) found significant ($P<0.05$) effect of maternal age on birth, weaning (75 days) and 6 months old weight in Holstein calves. Bayrıl & Yılmaz (2010) did not find any significant effect of maternal age on birth, weaning (60 days) and 6 months old weight of Holstein calves. Koçak et al. (2008) found significant ($P<0.001$) effect of maternal age on the birth weight in the Holstein, Brown-Swiss and Simmental calves grown in Lalahan Livestock Research Institute. Villalba et al. (2000) found a significant ($P<0.05$) effect of maternal age on 5 and 6 months of age weight but not significant in birth and 4 months of age in Brown Swiss and Pirenaica breeds calves.

In the current study, live weight and body size values generally were found to be lower than literature reports in all measurement periods. In the study area births are taken place in January, February and March. Therefore, the animals that will give birth in winter are housed in completely closed and stuffy barns, under insufficient care and feeding conditions. These situations prevent of calf development in the period of before and after birth. In addition, calves return from the pasture to the village after 7-8 months of age and housed the winter months on the farmings in the village. The animals cannot get enough nutrients here, which cause slower rate in the growth of the animals. This can explain the reason for the measurement values of

the 12-months calves, which are not significantly higher than the values of the six-months calves. The fact that other study results are better than the findings of the current study may be due to the better care and feeding of the animals in the institute environment.

Although the effect of gender in the growth periods of Yerli Kara cattle except for a few characteristics was statistically not significant, it was determined that the development of male calves was superior in all measurement periods (Tables 1, 2, 3 and 4).

This is the evidence of sex hormones affect growth positively and which is in coincide with the literature (Demirhan 2008; Kılıçel 2014; Ünal et al 2019). When according to the maternal age is examined, calves born from cattle of 4-6 years old age and 7 years old age and above were found to be superior to calves born from cattle of 2-3 years old age in all measurement parameters (Tables 1, 2, 3 and 4). This may be due to the fact that 2-3-year-old cows are not fully able to complete their development, and because they are the first calves in general, their maternity abilities do not fully develop and do not feed the calf adequately. In addition, since the calves are always with their mothers in Yerli Kara cattle, the effect of the maternal age continued in the following periods (6 and 12 months).

3.2. Average daily gains (ADG)

ADG values from birth to the 12th month in Yerli Kara calves presented in Table 5. In the study, ADG values were found to be 0.360 kg in the period between birth to 3 months, 0.333 kg in the period between 3 and 6 months and 0.102 kg in the period between 6 and 12 months. It can be said that the ADG of the animals are at the desired levels since values are above the targeted 300 g increase in both the periods between birth and 3 months and 3 and 6 months. The calf's genetic capacity, environmental factors and especially the milk provided by the mother to the calf determine the sucking period growth of the calves, and in this period, environmental factors have more effect than genetic factors (Alpan & Aksoy 2012).

Table 5- The least square mean (LSM) and standard error (SE) of average daily gains in Yerli Kara cattle between birth and 12 months of age

Period	n	Birth - 3 Months	n	3 - 6 Months	n	6 - 12 Months
General	104	0.360±0.010	102	0.333±0.012	97	0.102±0.006
Gender						
Female	50	0.350±0.013	48	0.320±0.016	47	0.087±0.006 ^b
Male	54	0.371±0.013	54	0.346±0.015	50	0.116±0.006 ^a
P values		0.184		0.146		0.001
Maternal Age						
2-3	18	0.316±0.020 ^b	18	0.305±0.023	17	0.125±0.011 ^a
4-6	52	0.376±0.012 ^{ab}	50	0.348±0.014	49	0.095±0.007 ^{ab}
7 +	34	0.389±0.016 ^a	34	0.346±0.018	31	0.086±0.009 ^b
P values		0.010		0.228		0.016
Birth Months						
January	21	0.353±0.020	21	0.347±0.023 ^a	19	0.142±0.011 ^a
February	46	0.358±0.013	44	0.355±0.015 ^a	43	0.096±0.007 ^b
March	37	0.370±0.015	37	0.297±0.017 ^b	35	0.068±0.008 ^c
P values		0.747		0.017		0.001
Farms						
P values		0.001		0.011		0.001

The differences between the averages expressed in different letters in the same column are important (P<0.05)

The values found in the current study comply with the information stated by Alpan & Aksoy (2012) who stated the ability of animals to utilize nutrients at the highest level therefore the highest level for the ADG. Also, it complies with the information that Estermann et al. (2003) reported that calves born at the end of the winter season are relatively higher ADG than other times. In addition, in accordance with the findings in the study, Casarus et al. (2002) reported that calves kept in pasture together with their mothers reached a lower live weight for those born in autumn compared to those born in spring in terms of 6-month live weight.

However, in the study, ADG slowed down significantly in period between 6-12 months. This may be due to the fact that this period coincides with the autumn and winter months and the animals is housed under insufficient care and feeding conditions of winter. Roth et al. (2008) reported that ADG slowed down in cases where weaning performed quickly in calves with weak body resistance and due to of the calves not being fed enough during this period. This information is accordance with the findings obtained in the current study.

4. Conclusions

The results determined in the research show that the live weights and body sizes of the calves are not at the desired level in the Yerli Kara cattle breed. In general, live weight and some body measurements were lower than the literature reports in all measurement periods. It was concluded that this might have been due to the maintenance and feeding conditions of farmer where the study was conducted. In addition, the animal material of this research was selected from different farms and also different breeder conditions. LW and body measurements of animals were taken in pasture conditions. Like these, it is thought that some uncontrollable environmental factors have negative effects. The fact that there is a limited number of resources related to the growth and development of Yerli Kara cattle is another negative factor in terms of comparison of the findings obtained. To prevent this, farmers need to make improvements in environmental factors. It is necessary to provide feed supplements at least to meet the nutrients needed by animals and to improve barn conditions. In addition, the application of adding outbred bulls to prevent inbreeding without disturbing the purity of the populations may prevent the problems that will occur genetically.

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Abbreviations and Symbols	
TAGEM	General Directorate of Agriculture Research and Policies
LW	live weight
WH	withers height
RH	rump height
BL	body length
CD	chest depth
FWG	front wrist girth
SE	standard error
n	number of materials
P	significance value
ADG	average daily gains

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