

Some Morphological Traits of Donkeys Raised in Iğdır, Turkey

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ABSTRACT: This research is the first to document the morphology of the donkeys in Turkey. The purpose was conducted to determine some morphological traits, frequencies of body coat colour and body measurements of donkeys raised in Province of Iğdır in Turkey. To this end, a total of 56 male and 38 female donkeys were measured into four age groups (1-3, 4-5, 6-7 and 8-13 years) between October and December 2010. Descriptive statistics results yielded the following means: withers height 99.1 cm, height at rump 101.0 cm, body length 103.0 cm, heart girth circumference 111.5 cm, chest depth 45.4 cm, chest width 29.1 cm, haunch width 34.8 cm, tail length 48.3 cm, limb length 53.7 cm, cannon circumference 13.4 cm, head length 48.4 cm and ear length 21.8 cm. Also the frequencies of body coat color of the sampled donkeys were 38.0% mouse gray, 21.2% white, 20.9 black and 19.9% brown. Age affected morphologic traits and there were significant difference between traits of heart girth circumference, head length ($P<0.05$) and withers height, height at rump, body length, cannon circumference, ear length ($P<0.01$). It could be said that they reached their mature body size at two years of age. It can be concluded that donkeys in Iğdır are small in size.

Keywords: Donkey, morphologic trait, body measurement, body coat colour

Iğdır'da Yetiştirilen Eşeklerin Bazı Morfolojik Özellikleri

ÖZET: Bu çalışma Türkiye'de eşeklerin morfolojik özellikleri hakkında yapılan ilk araştırmadır. Bu çalışma Iğdır'da yetiştirilen eşeklerin vücut rengi dağılımı ve ölçülerini belirlemek amacıyla gerçekleştirilmiştir. Çalışma Ekim-Kasım.2010 tarihleri arasında gerçekleştirilmiş ve 1-3 yaş, 4-5 yaş, 6-7 yaş and 8-13 yaş olmak üzere dört yaş grubuna ayrılan 56 erkek ve 38 dişi eşek kullanılmıştır. İncelenen eşeklere ait tanımlayıcı istatistik değerler cidago yüksekliği 99.1 cm, sağrı yüksekliği 101.0 cm, vücut uzunluğu 103.0 cm, göğüs çevresi 111.5 cm, göğüs derinliği 45.4 cm, göğüs genişliği 29.1 cm, sağrı genişliği 34.8 cm, kuyruk uzunluğu 48.3 cm, bacak uzunluğu 53.7 cm, ön incik çevresi 13.4 cm, baş uzunluğu 48.4 cm ve kulak uzunluğu 21.8 cm olarak bulunmuştur. Vücut rengi dağılımı için yapılan analiz sonucunda, renklerin dağılımı oransal olarak boz % 38.0, beyaz % 21.2, siyah 20.9 ve kahverengi % 19.9 olarak bulunmuştur. Yaşın etkisi; göğüs çevresi, baş uzunluğu ($P<0.05$), cidago yüksekliği, sağrı yüksekliği, vücut uzunluğu, ön incik çevresi ve kulak uzunluğu ($P<0.01$) özellikleri için istatistik olarak önemli bulunmuştur. Ergin vücut boyutlarına iki yaşında ulaştıkları söylenebilir. Iğdır'da yetiştirilen eşekler ufak yapılıdır.

Anahtar kelimeler: Eşek, morfolojik özellik, vücut ölçüsü, vücut rengi

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INTRODUCTION

The donkey (*Equus asinus*) also named as ass is an odd-toed ungulate in the Equidae family (Grinder et al., 2006). They are short-legged equid with the most noticeable different ears. An ear of donkey is much longer in proportion to their size than an ear of horse. Donkeys consist from a variety of sizes and breeds such as horses (Yanez et al., 2001).

In the donkey the mane and tail are coarse. The mane is stiff and upright, rarely lying over and the tail is more like a cow tail which is covered with short body hair for most of the length and ending in a tasselled switch. Donkeys do not have a true forelock, although sometimes the mane grows long enough to comb down between the ears toward the eyes (Yanez et al., 2001).

Donkeys in their nature are very friendly, calm, quite, patient, intelligent, cautious, playful, and eager to learn and enjoy the company of humans. They have great endurance. They are very cautious as well as agile on poor tracks. They are notorious for being stubborn, but this is due to some handlers' misinterpretation of their highly-developed sense of self preservation. Donkeys are hardy and will live longer than other species in the same conditions. Donkeys can resist water deprivation and have a lower water requirement per unit of weight than other domesticated animals, except the camel (Yarkin, 1962; www.nationmaster.com, 2011; www.en.wikipedia.org, 2011). Donkeys normally consume no more than 10 litres a day. A pregnant, lactating, or working donkey in a hot and dry environment may, however, consume about up to 20 litres a day (Jones, 2005).

Donkey use has many advantages. A donkey is comparatively cheap to buy. They are friendly towards humans and willing to work. They can turn in a small space and are easy to train. Donkeys need little supervision in work. They can utilise poor food well and need little water. Donkeys are not affected much by external parasites and live/work long years in good care. They have less impact on soils than cattle or machines and can survive droughts better than cattle. Donkeys are useful for calming, training and guarding other kinds of animal. They work better in pairs with a friend (Macaskill, 2011).

In Turkey donkeys are used as beast of burden. They are riding to ease the physical burden on humans.

Donkey owners are often smallholder and poor people who do not care and feed of their donkeys. Most of them scavenge on what plant matter is available. Hence Turkish donkeys are in small size and bad body condition. Especially donkey foals are fed inadequately, so they cannot grow well. They carry firewood, water, grains, hay, and goods in short distances. They escort sheep flocks and carry goods of shepherd and often a newborn lamb which cannot follow the flock. Turkish donkey owners rarely use their donkeys for ploughing, planting, and cultivating or cart traction. Obviously people replace animals when motor power is available, affordable, profitable and socially acceptable (Yarkin, 1962).

The aim of this study is to define some morphological traits of donkeys raised in Iğdır.

MATERIALS AND METHODS

Experimental animals: In this research 94 (56 male and 38 female) donkeys were analyzed those of data collected from Iğdır (39°55'N; 44°02'E) in East of Turkey (www.googleearth.com 2011). This research lasted between October and December 2010. The donkeys aged between one and 13 years. They were grouped into four age groups of 1-3, 4-5, 6-7 and 8-13 years, respectively.

Measurements: Body sizes of withers height (WH), height at rump (HR), body length (BL), chest depth (CD), chest width (CW), haunch width (HW), and limb length (LL) were measured using a measuring stick. Heart girth circumference (HGC), tail length (TL), cannon circumference (CC), head length (HL) and ear length (EL) were measured with a specially graduated metal measuring tape (Sönmez, 1973). The ages of donkeys were determined from the donkey owners.

Statistical analysis: Collected data were analyzed using the Minitab 15 statistical software program. Descriptive statistics for body dimensions were analyzed using ANOVA and Student's T-Test that also determined the effects of sex, region, body coat colour, and age group on the response variables of WH, HR, BL, HGC, CD, CW, HW, TL, LL, CC, HL and EL¹³ (Anonymous, 2011).

RESULTS AND DISCUSSION

Descriptive statistics and comparison results of morphologic traits in overall and different sexes are as seen in Table 1. There were no significant differences

between male and female donkeys for all morphologic traits. The frequencies of body coat colour as seen in Table 2. Body coat colour did not affect any body dimensions. Age affected morphologic traits and there

Table 1. Descriptive statistics and comparison results of the phenotypic traits of donkeys for different sexes

Traits	Overall (n=56)	Male (n=56)	Female (n=38)
	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$
WH (cm)	99.1±0.43	99.7±0.51	98.6±0.67
HR (cm)	101.0±0.43	102.3±0.43	100.9±0.73
BL (cm)	103.0±0.52	103.4±0.63	102.2±0.91
HGC (cm)	111.5±0.82	112.8±0.77	111.6±1.24
CD (cm)	45.4±0.44	45.6±0.53	45.5±0.58
CW (cm)	29.1±0.33	29.4±0.39	28.7±0.56
HW (cm)	34.8±0.31	35.0±0.40	34.5±0.48
TL (cm)	48.3±0.77	47.6±1.00	49.4±1.19
LL (cm)	53.7±0.30	54.1±0.39	53.1±0.44
CC (cm)	13.4±0.10	13.5±0.11	13.1±0.17
HL (cm)	48.4±0.35	48.8±0.48	48.0±0.49
EL (cm)	21.8±0.19	21.7±0.26	21.9±0.28

Table 2. The frequencies of body coat colour in donkeys

	Mouse Gray	Brown	Black	White
n	51	19	17	7
%	54.3	20.2	18.1	7.4

Table 3. Means of the phenotypic traits in different age in donkeys

Traits	1-3 years (n=20)	4-5 years (n=33)	6-8 years (n=23)	8-13 years (n=13)
	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$
WH (cm)	95.9A±1.00	99.4B±0.66	100.7B±0.56	99.9B±1.04
HR (cm)	96.9A±0.88	101.8B±0.65	102.7B±0.47	102.0B±1.08
BL (cm)	99.7A±1.30	103.4B±0.86	104.0B±0.81	104.4B±1.10
HGC (cm)	107.3a±2.32	112.1ab±1.14	113.8b±1.39	112.2ab±1.84
CD (cm)	42.9A±1.31	45.5AB±0.63	47.1B±0.61	45.7AB±0.90
CW (cm)	28.6a*±0.69	29.3a±0.56	29.7a±0.61	28.6a±0.84
HW (cm)	34.2a±0.65	34.8a±0.51	35.2a±0.42	34.9a±0.99
TL (cm)	50.2a±2.05	48.3a±1.32	47.0a±1.32	48.0a±1.53
LL (cm)	53.0a±0.51	53.9a±0.54	53.6a±0.58	54.2a±0.78
CC (cm)	12.8A±0.19	13.5B±0.15	13.6B±0.18	13.6B±0.26
HL (cm)	46.6A±0.88	48.7AB±0.52	48.8AB±0.50	49.6B±0.90
EL (cm)	21.6a±0.40	21.9a±0.33	22.2a±0.34	21.4a±0.53

a, b = P<0.05; A, B = P<0.01

* There were no significant differences between means indicated by the same letters in the same row and factor groups.

were significant difference between traits of HGC, HL ($P<0.05$) and WH, HR, BL, CC, EL ($P<0.01$). All body dimensions increased depending on age as given in Table 3.

In this study donkeys were categorized into four age group including 1-3, 4-5, 6-8 and 8-13 years of age as seen in Table 3. It was showed that the age group of 1-2 years was significantly different from the other three age groups. It could be said that after 2 years of age there was minor body growth rate. It can be concluded that donkeys in Iğdır are small in size.

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