



Determination of Some Environmental Factors Effect on Milk Yield for Anatolian Buffaloes Reared in Istanbul



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ABSTRACT

In this study, 1430 lactation yield records of Anatolian Buffaloes within “Anatolian Water Buffalo Breeding Project” and reared in Istanbul province and district were used. In this research effects of calving season, sex and region on daily milk yield (dMY), 305-day milk yield (305dMY) and lactation length (LL) were researched. The average of dMY, 305dMY and LL were calculated as 5.36 kg, 1449.85 kg and 215.97 days, respectively. The least mean square showed that the effects of calving season, sex and region on dMY, 305dMY and LL were statistically significant ($p \leq 0,05$).

Keywords: Anatolian Water Buffalo, environmental factors, milk yield, lactation period.

INTRODUCTION

While the number of buffaloes in the world, was 173 million in 2005, it was reported that the number was increased to 200 million in 2013. In 2014, due to the Project of Nationwide Improvement of Buffalo Breeding in Farm Condition, the number of buffaloes in Turkey, has increased to 107435 (Soysal 2009). In Turkey, by the year of 2014, 300 tons meat and 50000 tons milk were produced from buffaloes (Anonymous 2014b). This study aims at determining effects of some environmental factors on the milk yield of Anatolian water buffaloes reared in breeder conditions in province of İstanbul.

MATERIALS AND METHODS

Material of this study consisted of 1430 milk yield records from buffaloes that reared in 51 different businesses in province of İstanbul in the framework of Project of Nationwide Improvement of Buffalo Breeding in Farm Condition.

In this study, effects of calving season, sex and region on daily milk yield (dMY), 305-day milk yield (305dMY) and lactation length (LL) were analysed by Variance Analysis Technique (ANOVA; Least Squares Method).

The mathematical model that will be used to determine the effect of environmental factors, is given below.

Model:

$$Y_{ijkl} = \mu + a_i + c_j + d_k + e_{ijkl}$$

Definitions of symbols are as follows:

Y_{ijkl} : observation value of the investigated trait (daily milk yield, 305-day milk yield, and lactation length) of 1. cow, that in i. calving season, in j. gender, in k. region

μ : population average,

a_i : i. amount of effect of calving season (i: 1-4; spring, summer, autumn, winter),

c_j : j. amount of effect of gender (j: 1-2; male, female),

d_k : k. amount of effect of region (k: 1-9; Yolçatı, Danamandıra, Kızılcaali, Pirinççi, Nakkaş, Hacımışlı, Işıklar, Örcünlü, Boyalık, Baklalı, Tayakadın, Yassıören),

e_{ijkl} : error (the amount of random effects)

RESULTS AND DISCUSSION

Table 1. Characteristics of Anatolian water buffalo that determined by Animal Breeds Registration Committee of Turkey

Yield Characteristics	Min	Max	\bar{X}
Lactation Duration, day	112	449	232,83
Lactation Period Milk Yield, kg	186	2403	925,33
305-Day Milk Yield, kg			1230,8

Table 2. Descriptive statistics and significance test results for values of daily milk yield (dMY) and 305-day milk yield (305dMY) according to region, season

Village (Region)	n	dMY			305dMY				
		Min	Max		Min	Max			
Yassıören	54	3,66 ^a	1,31	1,74	6,48	1050,17 ^a	370,81	493,68	1949,88
Kızılcaali	5	4,48 ^b	1,96	1,50	6,59	1130,66 ^a	529,58	219,01	1571,72
Boyalık	91	5,08 ^{bc}	1,63	1,86	10,36	1422,61 ^b	507,17	339,43	2997,62
Baklalı	158	5,14 ^{cd}	1,54	1,60	15,58	1430,79 ^b	382,57	473,69	3074,88
Hacımışlı	83	5,21 ^{cd}	0,98	2,88	7,96	1460,42 ^{bc}	323,54	558,96	2210,06
Örcünlü	116	5,38 ^{ede}	1,37	1,80	8,88	1463,46 ^{bc}	337,47	583,51	2499,77
Nakkaş	270	5,41 ^{ede}	1,38	1,00	9,98	1422,02 ^b	389,29	296,06	2830,25
Işıklar	340	5,42 ^{ede}	1,04	2,83	10,60	1511,76 ^{bc}	329,32	413,41	2465,25
Tayakadın	115	5,68 ^{ede}	1,36	1,80	8,88	1638,29 ^c	393,79	534,06	2639,66
Pirinççi	90	5,77 ^{ede}	1,72	2,00	11,51	1405,15 ^b	301,40	558,72	2585,10
Danamandıra	11	5,79 ^{de}	2,16	3,19	9,61	1208,91 ^a	262,27	756,01	1664,91
Yolçatı	97	5,96 ^e	1,55	2,50	10,34	1425,91 ^b	470,75	366,65	2903,07
General	1430	5,36	1,42	1,00	15,58	1449,85	389,90	219,01	3074,88
P		0,027				0,05			
b		-0,005**							
Season									
Winter	93	5,19 ^a	1,49	2,50	10,05	1438,67 ^a	348,58	737,24	2585,10
Spring	540	5,20 ^a	1,25	1,00	10,28	1473,51 ^b	375,70	296,06	2903,07
Summer	608	5,45 ^b	1,48	1,50	11,51	1459,94 ^b	393,07	219,01	2997,62
Autumn	189	5,62 ^b	1,61	2,67	15,58	1355,29 ^b	426,07	353,10	3074,88
General	1430	5,36	1,42	1,00	15,58	1449,85	389,90	219,01	3074,88
P		0,01				<0,001			
b		-0,005**							

CONCLUSION

Generally, dMY, 305dMY and LL values that obtained in the conducted study, were seem to be in compliance with the values proposed by literature. In conclusion, considering the results obtained by study, determining the average dMY, 305dMY and LL values and determining the effects of factors that thought to influence them, will allow the taking of remedial measures in breeding selection, care-feeding, and herd management

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