

## Araştırma Makalesi

### GROWTH TRAITS OF NATIVE TURKISH GEES REARED IN DIFFERENT FAMILY FARMS DURING THE FIRST 12 WEEKS OF LIFE IN KARS

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#### Kars'ta Farklı Aile İşletmelerinde Yetiştirilen Yerli Türk Kazlarının 12 Haftalık Büyüme Özellikleri

**Özet:** Bu araştırma, Kars ilinde aynı merada geleneksel olarak beslenen Türk yerli kazlarının 12 haftalık büyüme özelliklerini ve otlatılan meranın besin madde içeriğini belirlemeye yönelik olarak yapıldı. Geleneksel besleme programı, ilk iki hafta *ad libitum* ıslatılmış ekmek ve sofra artıklarının verilmesi, kesime kadar merada otlatma şeklindedir. Araştırmada 6 farklı işletmeye ait 51 adet cinsiyet ayırımı yapılmamış kaz palazı kullanıldı. İşletme I, II, III, IV, V ve VI'daki palaz sayısı aynı sıraya göre 12, 10, 9, 6, 8 ve 6 idi. Palazların canlı ağırlığı 15 Nisan'dan 8 Temmuz'a kadar ikişer haftalık aralıklarla belirlendi. Otlatılan meradan 6 Mayıs ile 8 Temmuz arasında üçer haftalık aralıklarla ot örnekleri alındı. Besi sonu canlı ağırlıkları yukarıdaki sıraya göre 4029.0, 3525.7, 3206.8, 2975.0, 3317.1 ve 3227.8 g olarak bulundu ( $P<0.01$ ). Günlük canlı ağırlık artışı ilk 8 haftalık dönemde işletmeler arasında istatistiksel olarak farklı iken ( $P<0.01$ ) daha sonraki haftalarda farksızdı. Otlatılan mera otu örneklerinin kuru madde, ham protein, ham yağ, ham selüloz, ham kül, organik madde ve azotsuz öz madde içerikleri kuru madde bazında % 18.91 - 27.90, % 15.85 - 22.54, % 3.81 - 5.17, % 20.34 - 25.05, % 11.64 - 13.79, % 86.21 - 88.36 ve % 40.47 - 43.47 arasında bulundu. Sonuç olarak; pazarlama süresinin dikkate alınmadığı durumlarda palazları meraya dayalı olarak beslemenin ekonomik olabileceği, erken dönemlerde pazarlama düşünülürse birinci işletmeden elde edilen veriler göz önüne alındığında, meraya ilave beslemenin yapılabileceği kanaatine varılmıştır.

**Anahtar Sözcükler:** Kaz, büyüme özellikleri, besin maddesi içeriği, mera.

**Abstract:** The aim of this study was to determine growth traits of native Turkish geese grazed on same pastures and fed traditionally during the first 12 weeks of life and also to determine the nutrient composition of pasture where the geese were grazed in Kars. The traditional feeding scheme was *ad libitum* wetted bread and wastes of meal products for first two weeks, then grazing until slaughter. The study involved

51 unsexed goslings from six different farms. Number of goslings in Farm I, II, III, IV, V and VI were 12, 10, 9, 6, 8 and 6, respectively. The goslings in the Farm I was fed ground barley regularly, only. Live weight of the goslings were determined fortnightly from April 15 to 8 July. Pasture samples were also collected at a three week interval from May 6 to July 8. Final live weight of the geese were 4029.0, 3525.7, 3206.8, 2975.0, 3317.1 and 3227.8 g as above row ( $P<0.01$ ). Daily live weight gain differed between the farms in the first 8 weeks of life ( $P<0.01$ ) but not afterwards. Dry matter, crude protein, ether extract, crude fibre, ash, organic matter and nitrogen free extract of pasture ranged from 18.91 to 27.90 %, 15.85 to 22.54 %, 3.81 to 5.17 %, 20.34 to 25.05 %, 11.64 to 13.79 %, 86.21 to 88.36 % and 40.47 to 43.47 %, respectively on a dry matter basis. In conclusion, grazing goslings on pasture may be an economical choice when marketing time is ignored. If earlier marketing time is to be desired, supplemental feeding scheme can be practiced in addition to grazing, which is also supported by the data of the animals from the Farm I.

**Key Words:** Goose, growth traits, nutrient composition, pasture.

## Introduction

Turkish geese population reaches up to 1.400.000 (7), and 238.160 of this is reared in Kars (11). Goose rearing is practiced on small family farms in Kars located in the northeast of Turkey.

Goslings usually hatch from beginning to the middle of April in Kars. During the first two weeks of life, goslings are fed with concentrate, milk, uncooked egg, ground barley and wetted bread, according to availability. After this period the feeding almost relies on pastures until the end of September. Then the animals are subjected to an intensive feeding programme lasting approximately for one month using commonly carbohydrate originated feeds (i.e., barley and bread). Following the intensive feeding programme geese are slaughtered. This programme takes about 28 to 30 weeks but mature live weight might be reached earlier. This feeding practice appears to be economical but it lasts for a long time, involves excessive labour, and results in management problems.

Geese are herbivore poultry. In a review it is stated that domestic geese could grow on a good pasture (6), whereas other literature suggested supplementing the grass with an energy supply (12).

There have been no studies evaluating the growth traits of native Turkish geese grazing on pastures. The aim of this study was to determine growth traits of geese grazed on pastures and fed traditionally during the first 12 weeks of life and also to determine the nutrient composition of pasture where geese were grazed in Kars.

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## Materials and Methods

One-day-old 51 unsexed native Turkish goslings from six different family farms in Kars were used in this study. The number of goslings in Farm I, II, III, IV, V and VI were 12, 10, 9, 6, 8 and 6, respectively. The feeding schemas of the gosling groups were not programmed by the author, they were fed by the farmers traditionally. The breeders indicated that the feedings were based mainly on *ad libitum* wetted bread and wastes of meal product in the case of availability during the first two weeks of life. Goslings from different farms were grazed on the same pasture during the daytime from second to twelfth weeks and they were housed in traditional goose coop by night. Additionally, during the grazing period only Farm I, regularly gave ground barley about 5 % of live weight of goslings, other farms irregularly gave wastes by meal product and concentrates. Live weights of animals were determined from hatching to 12 weeks of life at two weeks intervals.

Plant samples were taken from the pasture where geese were grazing at a three-week interval on 6 May, 27 May, 17 June and 8 July. These intervals were taken to determine the changes on the nutrient composition of the pasture of which the samples were obtained during the vegetation period. Only vegetative part and leaves of plant were taken from pasture, as the goslings are not eating other parts of the plant. The samples were dried in an oven at 60 °C temperature then analysed for crude protein (CP), ether extracts (EE), crude fibre (CF) and ash content, according to the AOAC (1) procedures.

Data were subjected to analysis of variance using “one-way ANOVA” procedures; significant differences among the means were determined by Duncan’s multiple range test in SPSS (13).

## Results

Dry matter contents of pasture ranged from 18.91 to 27.94 % and concentrations of CP, EE, CF, ash, organic matter (OM) and nitrogen free extract (NFE) on a DM basis ranged from 15.85 to 22.54 %, 3.81 to 5.17 %, 20.34 to 25.05 %, 11.64 to 13.79 %, 86.21 to 88.36 % and 40.47 to 43.47 %, respectively. Depending on the stage of maturity DM and CF content of pasture gradually increased, CP decreased accordingly but EE and ash did not change (Table 1).

Average live weights of goslings were similar at hatching but significantly differed between the farms in subsequent weeks (Table 2). The finishing live weight of the geese ranged from 2975.0 to 4029.0 g (P< 0.01).

Daily live weight gain of the goslings gradually increased up to sixth weeks then decreased towards the end of the study. The least live weight gain was obtained between hatching and second weeks ranging from 6.23 to 13.19 g/d and the highest live weight gain was obtained between fifth and sixth weeks ranging from 57.41 to 90.34 g/d (Table 3). Daily live weight gains of the goslings during the first eight weeks statistically differed (P<0.01), but later weeks was not significant.

**Table 1:** Nutrient composition of pasture plant samples at different stages of maturity in Kars, %. **Tablo 1:** Vejetasyonun farklı dönemlerinde Kars’taki mera otlarının besinsel kompozisyonu, %.

Composition	Date			
	6th May	27th May	17th June	8th July
Dry matter	18.91	20.00	23.33	27.94
	----- % of dry matter -----			
Crude protein	22.54	18.08	17.05	15.85
Ether extract	4.00	3.81	5.17	4.88
Crude fibre	20.34	21.94	23.52	25.05
Ash	11.64	12.70	13.79	13.20
Organic matter	88.36	87.30	86.21	86.80
Nitrogen free extract	41.48	43.47	40.47	41.02

## Discussion

There was a gradual increase in the DM, CF and decrease in the CP but no substantial changes in the EE and ash content of the pastures during the study (Table 1). In this study, nutrient values of CP, EE and ash were higher, but DM and CF was lower than previous report (10). The discrepancies between the two studies were probably related to stage of maturity and locations. Only grazed part of plant was analysed in this study whereas whole plant was analysed in the previous research. Organic matter concentration was not affected by stage of maturity. The effect of stage of maturity on NFE concentration was inversely related to initial CF concentration than CP and EE concentrations. In overall, the decline in pasture quality was probably due to a reduced proportion of leaves and advanced maturity stage of plant.

Hatching live weight of the goslings was similar as previous studies reported for native Turkish geese (2-4). During the study significant differences in average live weights were observed between the farms. These differences resulted from different feeding scheme between the farms. This was supported by the highest live weight of

geese of Farm I, where animals were additionally fed ground barley about 5 % of live weight. Similarly, in a previous study it was found that the feeding male and female goslings by maize plus grass resulted in lower live weight when compared to concentrate fed animals (8).

Daily live weight gain of the goslings gradually increased during the first six weeks and reduced afterwards (Table 3). In this study, mean daily live weight of the goslings was lower during the first six weeks but higher during the second six weeks when compared to the figures reported in previous studies (2, 3). These results indicated that feeding scheme based on the pasture at first six weeks of the life is not sufficient to meet the nutrient requirements of the goslings so goslings should be given supplemental feed such as concentrate. This study reflected that geese can be deriving the sufficient nutrient requirement from pasture at advanced ages due to grinding activity of their large gizzard, enhanced enzymatic and ceecal activity as animal aged (5, 9).

**Table 2:** Live weight of the goslings raised in different farms in Kars during the first 12 weeks of life,  $\bar{x} \pm s_{\bar{x}}$ .

**Table 2:** Kars'ta farklı işletmelerde yetiştirilen palazların 12 haftalık dönemdeki canlı ağırlıkları,  $\bar{x} \pm s_{\bar{x}}$ .

Weeks	Farm I n = 12	Farm II n = 10	Farm III n = 9	Farm IV n = 6	Farm V n = 8	Farm VI n = 6	Overall n = 51
Hatching	97.5±1.67	98.4±1.14	94.2 ± 3.07	97.6±3.13	98.1±1.25	93.5±1.41	96.6±0.86
2	258.2±7.61b	247.5±9.96c	278.8±13.78a	185.0±5.48e	224.3±3.19d	214.3±6.12e	239.0±5.56
4	916.3±30.50a	974.8±36.47a	680.0±35.93b	587.7±5.25b	642.9±34.32b	703.2±56.76b	768.5±25.39
6	2181.0±46.51a	1778.8±90.48b	1500.0± 29.97c	1451.5±6.32c	1758.6±25.17b	1624.0±75.58c	1746.0±42.92
8	3031.0±93.75a	2521.4±55.95b	2201.0±29.81d	2025.0±69.51d	2425.8±25.97b	2309.8±70.77c	2460.5±55.99
10	3579.5±102.96a	3105.7±91.31b	2741.4±30.31d	2528.3±77.37d	2904.5±70.31c	2827.8±49.34c	2990.9±60.27
12	4029.0±155.84a	3525.7±86.97b	3206.8±30.48d	2975.0±69.47d	3317.1±92.99c	3227.8±52.48d	3425.8±65.83

a, b, c, d, e: Means within the same row with different letters statistically differ (P< 0.01).  
 $\bar{x} \pm s_{\bar{x}}$  : Mean ± Standard error of mean.  
n : Number of animals.

In conclusion, feeding goose based on pasture should be recommended for breeders to minimise feeding cost when marketing time is ignored,. If earlier marketing time is desired, additional feeding scheme involving energy and protein

supplementation, as might be clearly seen in the animals of the farm I, can be given in addition to pasture, particularly within the first six weeks of feeding during which the live weight gain is faster.

**Table 3:** Daily live weight gain of the goslings raised in different farms in Kars during the first 12 weeks of life,  $\bar{x} \pm s_{\bar{x}}$ .

**Table 3:** Kars'ta farklı işletmelerde yetiştirilen palazların 12 haftalık dönemdeki günlük canlı ağırlık artışları,  $\bar{x} \pm s_{\bar{x}}$ .

Weeks	Farm I	Farm II	Farm III	Farm IV	Farm V	Farm VI	Overall
0-2	11.48 ± 0.44b	10.65 ± 0.64b	13.19 ± 0.79a	6.24 ± 0.25d	9.01 ± 0.18c	8.63 ± 0.38c	9.87 ± 0.38
3-4	47.01 ± 1.86a	51.95 ± 1.96a	28.66 ± 1.80b	28.76 ± 0.49b	29.90 ± 2.28b	34.92 ± 3.83b	36.87 ± 1.62
5-6	90.34 ± 2.15a	57.43 ± 3.96d	58.57 ± 0.62d	61.70 ± 0.76d	79.69 ± 0.98b	65.77 ± 4.47c	68.92 ± 2.18
7-8	60.71 ± 3.73a	53.04 ± 3.14b	50.07 ± 0.07b	40.96 ± 4.79c	47.69 ± 1.07c	48.99 ± 0.47c	50.24 ± 1.44
9-10	39.18 ± 2.92	41.74 ± 2.99	38.60 ± 0.28	35.95 ± 0.86	34.19 ± 3.60	37.00 ± 1.77	37.78 ± 1.04
11-12	32.11 ± 4.57	30.00 ± 0.62	33.24 ± 0.31	31.91 ± 0.76	29.47 ± 2.62	28.57 ± 0.75	30.88 ± 1.09

a, b, c, d: Means within the same row with different letters statistically differ (P< 0.01).  
 $\bar{x} \pm s_{\bar{x}}$  : Mean ± Standard error of mean.  
n : Number of animals.

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