



GENERAL SITUATION, PROBLEMS AND SUGGESTED SOLUTIONS FOR GOOSE BREEDING IN KÜTAHYA PROVINCE

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Abstract: This study was carried out in order to reveal the current situation of goose breeding in extensive and semi-intensive conditions in Kütahya province and to determine the important problems encountered in breeding. The material of the study consisted of the survey data obtained from 125 goose producers in the villages of Merkez, Altıntaş, Aslanapa, Çavdarhisar and Tavşanlı districts of Kütahya province where goose breeding is intense. According to the research findings, it was determined that the average period of goose breeding of farmers in the province of Kütahya was 1-10 years. It was determined that the number of breeding male geese per farm was 1-5 and the number of breeding female geese was 3-20 (M/F:1/3-5/20). It was determined that 56.8% of the goose shelters were made of briquette or brick material. 88.8% of the breeders stated that goselings were released to the pasture when they were 1-2 weeks old. Although the rate of not taking any precautions against diseases was 84.0%, the rate of those who stated that they did not experience any loss was 75.2%. As a result, it was determined that the structure and problems of goose breeding in Kütahya were similar to the country in general and the production was mostly done to meet the meat needs of the family. It can be stated that the main problems of the producers are feed costs, inadequacies in care and feeding, breedings with low-yielding domestic breeds, difficulties in the supply of breeding animals, and problems in marketing.

Keywords: Kütahya province, Goose breeding, Problems, Solution proposals

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1. Introduction

Goose breeding is generally located in areas with cold climatic conditions. Unlike other poultry, feed materials with high cellulose content are maintained as an important alternative livestock activity, as they have the ability to digest grasses. Goose breeding is applied in East and Southeast Asian countries and Eastern European countries in the world (Boz et al., 2014). The share of goose breeding in total poultry production is very low all over the world. The low egg production of the geese and the long slaughtering period have a significant effect on this situation. In addition, hot and dry climatic conditions make cultivation impossible (Şengül and Yeter, 2020). Despite the mentioned negativity, goose breeding has been increasing its importance among alternative livestock activities that attract attention all over the world in recent years. Goose breeding is mostly done for meat in line with the demands of consumers, liver, and feathers are in demand in European countries. In Türkiye, goose breeding is common in rural areas at the level of small family businesses and consists of 10-15 geese herds. Generally, goose breeding is carried out in order to meet the animal protein needs of the family, and the leftover production is sold in local markets and contributes to the family economy. In Türkiye, especially in Kars and Ardahan in Northeast Anatolia; goose

breeding is more common in Muş, Van, Ağrı in Eastern Anatolia, in Yozgat and surrounding provinces in Central Anatolia, in Samsun and Çorum in the Black Sea, and in Kütahya, Afyonkarahisar, and Uşak in the Inner Aegean compared to other provinces. The mentioned provinces are very suitable for goose breeding in terms of climatic conditions and draw attention as an important livestock activity in rural areas. In the Aegean Region, as in other provinces, the traditional extensive production system has been adopted. Geese are grazed in the pasture for up to 1-1.5 months before slaughter, and they are fed with grains such as corn, wheat, and barley as well as bread and food scraps as supplementary feeding. It has been observed that the use of factory feed is at very low levels (Akın and Çelen, 2020). When the goose is mentioned, Kars and its region usually come to mind in Türkiye. In the Kars region, geese are either cooked in the tandoor or dried and made ready for consumption in case of need in the future. In other regions, the goose has a special place and importance. It has been observed that the socio-cultural structure of the region is effective in the consumption of goose meat and consumption takes place according to various cooking techniques. The goose tiridi, known as goose hanging, has an important place in Samsun and received a geographical indication in 2011 as "Samsun Kaz Tiridi" (Canbolat and Çakıroğlu, 2015). It



has been stated that goose meat is used in Kütahya style roast beef, priest stew, casserole, dry meatballs, and “kaz tirdi” in the Aegean Region, and goose meat is used in local dishes called “paçık” and veiled in Afyonkarahisar (Ceylan and Öz, 2018; Anonymous, 2019a; Anonymous, 2019b; Kızıldemir, 2019; Akın and Çelen, 2020). Boz (2017) stated that goose meat is used extensively in the preparation of “ara-aşı (arabaşı)” in the Yozgat region, and it is preferred in making “bulgur pilaf, gılınış,” roast and goose meatballs. As in all livestock activities in Türkiye, feed costs are the biggest problem in sustainable livestock breeding. In addition, as a result of the loss of qualifications of many agricultural lands, livestock activities become increasingly difficult and producers have to withdraw from the sector. According to TUIK 2022 data, there has been a decrease in all livestock activities and product amounts in Türkiye compared to the previous year. According to 2021, it was indicated that laying hen production decreased from 120 million to 110 million, broiler production decreased from 270 million to 251 million, turkey production decreased from 4.7 million to 3.6 million, goose production decreased from 1.4 million to 1.3 million, and duck presence decreased from 500 thousand to 400 thousand (TUIK, 2023a; TUIK, 2023b). In the last 10 years Kütahya and its districts, the Aegean Region, and the total geese presence in Türkiye are shown in Tables 1, 2, and 3 (TUIK, 2023a). The geese presence in the region continued to increase periodically every year, from 68,000 in the first 5 years.

While the goose population of the region increased by 40% to 96,000 in 2017, it increased from 102,000 to 104,000 by 2020 in the second 5-year period, and then decreased to 85,000 at the end of 2022, with a decrease of 18% compared to 2021. Afyonkarahisar, Kütahya, and Uşak have an important place in goose breeding in the Aegean region. In the first 5-year period covering the years 2013-2017, Afyonkarahisar ranked first in the region with around 30,000 geese, and the share of geese in the region (SGR) was around 40%. As of 2017, Kütahya ranked first with a goose production exceeding 44,000 (SGR 45%). On the other hand, Uşak doubled the number of geese (SGR 4%) from 3.000 as of 2017 and exceeded 6.000. In the second 5-year period covering the years 2018-2022, Kütahya decreased from 42,000 geese to 33,000 as of 2022, while Afyonkarahisar decreased from 32,000 to 21,000. In this period, Uşak increased from 9,000 units to 23,000 units as of 2020 (SGR 22%), then decreased to 18,000 units (SGR 18%) and then to 12,000 units by 2022 (SGR 14%). In Kütahya, goose breeding is concentrated in Altıntaş, Aslanapa, Merkez, Çavdarhisar, and Tavşanlı districts. In the last 10 years, covering the years 2013-2022, 5 districts met 93-95% of the total goose production. This study has tried to present information about the existence and share of geese in the Aegean Province of Türkiye, the demographic characteristics of breeders, goose breeding activities, problems and solutions to the problems.

Table 1. Türkiye geese production amounts for the last 10 years (TUIK, 2023a)

Region	Years									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
İstanbul TR1	3013	3025	2571	2428	2072	2177	3455	8294	3390	6552
West Marmara Aegean TR3	32596	36130	37164	37997	39883	41478	41621	41207	42791	40558
East Marmara West Anatolia TR5	68666	72463	73410	76791	96340	102739	104784	104239	101654	84886
Mediterranean TR6	30960	29966	30791	31227	36289	41837	48652	59079	63973	53367
Middle Anatolia TR7	22189	25210	25934	28292	33336	35023	37879	44737	45050	38992
West Black Sea TR8	17102	15776	17858	18937	29328	37041	45800	47211	48903	40510
East Black Sea TR9	52026	50332	52845	59704	67849	74354	82343	98065	130936	121132
Northeast Anatolia TRA	51584	59210	66749	71027	85407	143037	116671	123381	115582	102275
Middle East Anatolia TRB	891	1325	962	1281	1636	2385	6869	11189	10556	10253
Southeast Anatolia TRC	29781	43214	36664	42667	38884	403425	471099	474022	668351	690692
Total	8	2	8	8	9					
	52026	50332	52845	59704	67849	74354	82343	98065	130936	121132
	67819	63506	57431	58467	74119	74664	73518	162800	105566	103843
	75528	91199	85069	93335	97838	108019	115704	137396	147756	138550

Table 2. Aegean Region geese production amounts for the last 10 years (TUIK, 2023a)

Aegean Region	Years									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Afyonkarahisa	3094	3213	3213	3308	29568	32534	34835	27743	30460	21407
Aydın	2374	2674	2717	2836	3214	4330	3125	3135	3037	3032
Denizli	1837	2822	2531	3455	4683	4723	5421	5201	5676	5537
İzmir	1979	2641	2953	3522	4030	4554	4515	4862	4412	4041
Kütahya	2394	2467	2473	2508	44427	42211	42321	33742	34394	33539
Manisa	1327	1455	1594	1421	1732	2011	2109	3261	2703	2680
Muğla	2835	3055	3217	3169	2656	3526	3518	3099	2307	2338
Uşak	3430	3011	3720	4215	6020	8850	8940	23196	18665	12312
Total	6866	7246	7341	7679	96340	102739	104784	104239	101654	84886

Table 3. Goose production amounts of Kütahya province and its districts for the last 10 years (TUIK, 2023a)*

Kütahya Districts	Years									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Merkez	1505	1500	1500	1700	2000	2000	2050	1840	1760	1843
Altıntaş	5240	5460	6000	6350	25010	25062	25650	24550	24555	25000
Aslanapa	15000	15000	14750	14500	14830	12357	11792	4100	4500	3500
Çavdarhisar	350	340	380	370	380	670	720	920	985	990
Tavşanlı	390	575	610	591	750	884	850	809	848	832
Simav	540	849	475	480	475	226	250	330	280	205
Dumlupınar	400	400	430	475	455	450	405	122	115	120
Gediz	210	215	220	230	220	200	199	200	620	362
Hisarcık	165	147	145	150	60	60	60	57	60	55
Domaniç	80	80	75	80	75	60	80	200	50	60
Emet	25	80	116	126	115	183	190	453	454	412
Pazarlar	35	15	13	10	15	20	15	45	46	40
Şaphane	0*	14	24	35	42	39	60	116	121	120
Total	23940	24675	24738	25087	44427	42211	42321	33742	34394	33539

*The number of geese in the relevant year for the Şaphane District was stated as "0" by TUIK.

2. Materials and Methods

The study was created from the survey data made with the goose producers in the villages where goose breeding is carried out in Altıntaş, Aslanapa, Merkez, Çavdarhisar and Tavşanlı districts of Kütahya, according to 2022 TUIK data. The questionnaire forms used in the study were prepared by making use of the previously arranged questionnaires on zootechnics and agricultural management. While determining the sample size of the study, a grouped one-stage random probability sampling method based on population ratios was used (Alkan and Eren, 2019; Şengül and Yeter, 2020). In determining the sample size, the following formula (equation 1), which was used in limited societies as reported by Karasar (1994), was used.

$$n = \frac{(z^2 * N * p * q)}{(N * d^2 + z^2 * p * q)} \quad (1)$$

here; n: Sample volume, z: "Z" table value corresponding to 95% significance level, N: Number of main masses, p: The probability of occurrence of the investigated event in

the main mass is taken as 50%, q: The probability that the investigated event will not occur (1-p), d: Accepted margin of error (In this study, margin of error was taken as 5%).

According to this, it was determined that a survey should be conducted with 125 enterprises with equality and one-on-one interviews were made by going to the enterprises. 70 surveys were conducted in Altıntaş, 25 in Aslanapa, 20 in Merkez district, and 5 each in Çavdarhisar and Tavşanlı. In the study, the average number, age, of the geese, feeding of the geese, egg production, egg yield, goose breeding, infrastructure opportunities, shelters, slaughter time and slaughter age, marketing methods of goose products, besides, the advantages and disadvantages of goose breeding were investigated. The data of the study were evaluated in the SPSS 16.0 package program and expressed as descriptive statistics and percentage values.

3. Results and Discussion

The socio-demographic characteristics of the breeders who participated in the survey in the study area are

shown in Table 4, the reasons for breeding goose, the breeding times, the presence of geese and their desire to increase are shown in Table 5.

Table 4. The socio-demographic characteristics of the goose breeders

Age	Family (n)	R.F. (%)	Education	Family (n)	R.F. (%)	Number of individuals	Family (n)	R.F. (%)
18-39	26	20.8	Illiterate	6	48	1-3	41	32.8
40-59	72	57.6	Primary	62	49.6	4-6	68	54.4
60-80	23	18.4	Secondary	29	23.2	≥7	16	12.8
>80	4	3.2	High	17	13.6	-	-	-
-	-	-	University	11	8.8	-	-	-
Total	125			125				

n= number of families surveyed, R.F.= relative frequency

Table 5. Distribution of goose producers according to their breeders activities

Breeding Reason	Family (n)	Share in investigated family (%)
Addition to Livelihood	33	26.4
Meat Need-Consumption Habit	77	61.6
Hobby	9	7.2
No other income	6	4.8
Breeding Times (year)		
0-5	22	17.6
6-10	58	46.4
11-20	33	26.4
21-30	8	6.4
>30	4	3.2
Number of geese (number)		
1-10	19	15.2
11-20	73	58.4
21-50	22	17.6
51-100	8	6.4
>100	3	2.4
Desire to increase the presence of goose (number)		
No	14	11.2
Yes (11-20)	35	28
Yes (21-50)	57	45.6
Yes (51-100)	12	9.6
Yes (>100)	7	5.6
Person Responsible for Care and Feeding		
Myself	82	65.6
Wife/husband	14	11.2
Mother/Father	11	8.8
Kids and the whole family	16	12.8
Goose herder	2	1.6
Poultry Presence Other than Goose		
None	4	3.2
Chicken	92	73.6
Turkey	12	9.6
Duck	9	7.2
Quail, partridge, and other animals	8	6.4

While the age of 20.8% of the goose breeders in Kütahya was 18-39, 57.6% of them were 40-59 years old. This situation is promising for the future when goose breeding is carried out by the young population in Kütahya. According to Boz et al. (2014), 58% of breeders are 40-59 years old and 23% are 20-39 years old. Demir et al. (2013) mean age is 41.9. Alkan and Eren (2019) state that 49.67% of them are 40-59 years old, 30.46% are 60-80 years old. Şengül and Yeter (2020) state that 42.8% of breeders are younger than 40 years old, 26.7% are 50 years old and above. While the rate of households with 1-6 people was determined as 87.2%, it was seen that the education level of 49.6% was primary school, that of 23.2% was secondary school and that of 22.4% was high school and university. In previous studies, the number of households and education level were as follows: In Ağrı 56.29% 4-6 people, 48.34% primary school, in Yozgat 86% 1-6 people, 75.5% primary school-secondary school, in Muş % of breeders It was stated that 89.5% of them were at primary-secondary school, and 75% of them in Ardahan were at primary school level (Boz et al., 2014; Demir et al., 2013; Alkan and Eren, 2019; Şengül and Yeter, 2020).

While 61.6% of the breeders stated that they carried out goose breeding to meet the meat needs of the family, 31.2% stated that they contributed to their livelihood and did not have any other income. While 64% of goose breeders in the province stated that they had been playing an active role in goose production for 1-10 years, it can be stated that goose breeding is a relatively new alternative livestock activity in Kütahya compared to other provinces. In a study conducted by Şengül and Yeter (2020), the average rearing period in Muş was 17 years and 38.2% of the respondents stated that this period was 20 years or more. %64 of goose breeders stated that they were engaged in goose breeding in order to satisfy the meat need of the family and %11 of them indicated that they did goose breeding to generate income. While this period was reported as 18.6 years in Ardahan, 79.3% of them stated that goose breeding was an important source of income, 48% of the breeders in Yozgat had been breeding goose for less than 10 years and 85.5%. It was reported that they did breeding as a consumption habit, 63.58% of them had been breeding geese for 1-10 years and 64.9% of them were producing as a consumption habit (Demir et al., 2013; Boz et al., 2014; Alkan and Eren, 2020). It was observed that 65.6% of the breeders were themselves interested in the care and management of geese in Kütahya, they raised an average of 11-20 geese in a year, 73.6% of them raised hens other than geese and 88.8% of breeders wanted to increase the number of geese.

Alkan and Eren (2019) stated that 71.52% of the breeders raised non-goose chickens and 85.43% of them raised geese in addition to other livestock activities. While 73.51% of them wanted to increase the presence of geese and generally in the care and feeding of geese, they stated that women and children took an active role.

While 64% of the breeders kept an average of 1-5/3-20 male/female (M/F) breeder geese in their hands, 22.4% of them did not have breeding geese. 50.4% of them got their goslings by breeding/hatching. It was determined that nearly 90.4% of the breeders raised domestic breed geese and 62% of them preferred the variegated and white varieties. While the rate of breeders who did not make supplemental feeding was 11.2%, 36.8% of those who did supplemental feed used corn, 24% wheat, 18.4% barley, and others, respectively, using bread and food scraps. In general, 88.8% of the gosling in the province were taken to pasture within the first two weeks. While 15.2% of those did not use any equipment, 84.8% stated that they used at least one equipment. Alkan and Eren (2020) in their study in Ağrı, found that breeders kept 4-6 breeding goose, obtained goslings and breeders from hatching, almost all of them preferred the domestic goose breed and the variegated variety was more popular. It was stated that two-three weeks-old goslings were then released in pasture. In a study conducted in Ardahan, it was stated that geese were generally fed on pasture, 88.8% of them used barley for supplemental feeding, while wheat, barley and corn were preferred as supplementary feeding in Yozgat, and bread and leftovers were also evaluated (Demir et al., 2013; Boz et al., 2014). While it was seen that 1-15 eggs were taken from a goose on average in a year in Kütahya, the rate of those who stated that they received 26+ eggs was 8%. The breeders who stated that they received a high number of eggs were observed to have used high yielding breeds like Chinese, Linda and Mast. In Kütahya, the number of brood/chick, breeding geese, breeding supply and selection, keeping time in breeding and breeding egg price are shown in Table 6.

While an average of 21-50 eggs were incubated in the province, the number of hatched chicks was found to be 11-30 and the hatchability for Kütahya province was found to be 55-60%. While the ratio of those who provided breeding geese from their own resources was 58.8%, the ratio of those who provided them from the neighbors and local animal market was 38.2%. 67% of them stated that they considered body size and egg production in the selection of breeding geese. While the rate of those who kept breeding geese for 1-6 years was 89.7%, it was determined that the rate of those who kept them for 7-8+ years was 10.3%. While 64% of the producers stated that the prices of eggs were between 20-40 TL, the ratio of those who indicated they did not buy or sell eggs was 22.4%. Boz et al. (2014) stated that the average egg production was 11, the number of chicks obtained from hatching was 8, the hatchability was 73%, the average retention period of the breeders was 2 years, and the breeder male/female ratio was 1/3. In a study conducted in Kırşehir, the average number of eggs per farm was 53.13, the number of chicks was 45.11, the brood male/female ratio was 1.14/4.83, and the breeding period was 2-12 years.

Table 6. Number of hatching eggs and chicks, number of breeding geese, breeding geese supply and selection, period of keeping in breeding and breeding egg price

Hatching egg (E) / Chick (C)	Family (n)	Share in investigated family (%)
1-20 E / 0-10 C	25	20.0
21-30 E / 11-20 C	24	19.2
31-50 E / 21-30 C	52	41.6
51-100 E / 31-70 C	16	12.8
>100 E / >70 C	8	6.4
Number of breeding geese (M/F)		
Not has breeder geese	28	22.4
1-3 M / 3-10 F	49	39.2
4-5 M / 11-20 F	31	24.8
6-10 M / 21-50 F	14	11.2
>10 M / >50 F	3	2.4
Breeding geese supply		
From own resources	57	58.8
Neighbors	32	33.0
Animal markets	5	5.2
Other provinces	3	3.1
Breeding selection		
Randomly	17	17.5
Size/Body	23	23.7
Egg yield	42	43.3
Feather color	6	6.2
Race	9	9.3
Period of keeping in breeding (year)		
1-2	18	18.6
3-4	38	39.2
5-6	31	32
≥7-8	10	10.3
Breeding egg price (TL)		
No buying or selling	28	22.4
20-30	35	28.0
31-40	45	36.0
>40	17	13.6

It was announced that the rate of those who prioritized egg production was 35% and the rate of those who prioritized egg production was 30% (Taşkın et al., 2017). Slaughter time, slaughter age, live and carcass weight, plucking method and feather usage situation, place of sale, shape and price of goose are shown in Table 7. 40.8% of the breeders stated that they slaughtered geese in December-January, at the age of 10-12 months (48%), with a body weight of 4-7 kg (58.4%) and that they obtained an average of 3-5 kg of carcasses (52%, 8). While 62.4% preferred the wet method for feather plucking, the rate of those who stated that they discarded the hair without making any use of it was 70.4%. In the study conducted in Yozgat, it was stated that geese were slaughtered in October, November and December, while some breeders carried out slaughter in January-February. In this study, it was stated that the slaughter

age was 8 months, the carcass weight was 3.7 kg on average, the feathers were removed by the wet method (96%), the feathers were used in making quilt pillows by breeders only of 2.5%. 77% of the breeders consumed the geese fresh without waiting (Boz et al., 2014).

In order for the goose feathers, which are extremely valuable and have high economic value, to be evaluated, it is urgently necessary to bring feathers to the economy by establishing various organizations affiliated to the Municipality, Ministry of Agriculture and Forestry and feather collecting units. 85.6% of the goose breeders sell the geese that they produce as live or carcasses. The rate of those who sells them to neighbors and to local markets in the village is 86.4%, and the rate of those who state that they earn 300-450TL from an average live goose is 72.4%.

Table 7. Slaughter time, slaughter age, live and carcass weight, feather plucking method and feather usage situation, place of sale, type and price of goose

Slaughter time	Family (n)		Share in investigated family (%)		
October-November	34		27.2		
December- January	51		40.8		
February-March	26		20.8		
Other months	14		11.2		
Slaughter age (month)					
6-9	32		25.6		
10-12	28		22.4		
13-15	35		28.0		
16-18	25		20.0		
≥19	5		4.0		
Live weight / carcass weight (kg)					
Do not know	Do not know	32	34	25.6	27.2
2-3	2-2,5	5	3	4.0	2.4
4-5	3-4	25	25	20.0	20.0
6-7	4,5-5	48	41	38.4	32.8
≥7	≥5	15	22	12.0	17.6
Feather plucking method					
Dry plucking	18		14.4		
Wet plucking	78		62.4		
Dry or wet plucking	29		23.2		
Feather usage situation					
Throwing	88		70.4		
Pillow/quilt making	24		19.2		
Selling to trader	13		10.4		
Place of sale					
No sale	9		7.2		
Neighbor / friends in the village	63		50.4		
Local animal markets	45		36.0		
Web / social media	8		6.4		
Sale type					
No sale	9		7.2		
Live	80		64.0		
Carcass	27		21.6		
Customer Request (Live/carcass/piece)	9		7.2		
Sale price (TL)					
200-300	21		18.1		
301-400	58		50.0		
401-450	26		22.4		
451-500	7		6.0		
>500	4		3.4		

While 44.8% of the producers stated that they would continue to see goose breeding as a profitable business, 24% stated that they would continue out of habit even though they could not see it as a profitable business. 36% of the respondents stated that they preferred to consume goose meat by frying, 18.4% boiling, 9.6% using it in local dishes. Şengül and Yeter (2020) stated that in Muş,

55.2% of live geese were generally sold in the city center and 44.8% in villages, while Taşkın et al., (2017) stated that the highest sales by breeders were in local markets (% 40), it was stated that sales were then made to the merchant (25%) and the immediate environment (15%). In response to the question "Do the geese have a special shelter, is disinfection applied?", it was found that 66.4%

of the breeders answered Yes, 84% of them struggled with their own means in adverse conditions such as illness, and only 16% received support from veterinarians and Agricultural Organizations. In general, it was observed that the losses occurred in the first week after hatching (13.6%). Şengül and Yeter (2020) stated that goose shelters in Muş were 50 m² in size on average, and that the shelters were made of materials like briquettes, wood, etc. While 67% of the breeders reported that they did not take any precautions against diseases, they stated that very few of the geese died. Boz et al. (2014) reported that breeders kept the geese in the same shelter with other animals, 61.5% did not apply any disinfection, and 98.5% stated that animals never got sick. 46.4% of breeders reported the advantages of goose breeding because geese were compatible with pasture and more resistant to diseases than other poultry, while 31.2% reported the advantages of goose breeding as it met the meat needs of the family and created additional income. In response to the question "What do you think are the biggest problems and difficulties you face in breeding?", 46.4% drew attention to high feed costs, 19.2% to low egg production, 8.8% to the difficulties experienced in the supply of breeding animals. Similarly, in response to the questions "What do you think is necessary for the development of goose breeding in our province, region and country?, what are the deficiencies? , what are your demands against the problems you experience? ", 44% of the breeders drew attention to the problems of advertisement, promotion and marketing of the products obtained from geese. While the rate of those who requested to breed with high-yielding breeds was 27.2%, 21.6% of the breeders stated that they needed a slaughterhouse, feather plucking machines and cold storage. Taşkın et al. (2017) reported that 50% of breeders stated that geese were easy to sell and resistant to diseases as an advantage. 40% of breeders stated that they cared about goose breeding in terms of meeting meat consumption and that the geese were compatible with the pasture as an advantage. 50% of the breeders considered high feed prices and low egg production of geese as problems among the difficulties and difficulties they faced. Researchers reported that 20% of the producers declared that they gave harm to the farmland of the geese. As a result of this study, it was seen that goose breeders expect support especially in terms of high feed costs and breeding animal supply.

4. Conclusion

Kütahya province is the 1st province in terms of the presence of geese in the Aegean region, but the number of geese, which was 42,000 in 2019, decreased to 33,000 at the end of 2022. This study has also shown that high feed costs are the most important problem for the sustainability of animal husbandry in Türkiye. In addition, "Goose Products, Collection and Sales Units, etc" should be established within the Municipality and Agricultural Organizations for the supply of breeding

animals and the sale of goose products. These units can be provided to support the breeders in the marketing of the products. Considering the goose production potential of Kütahya, the scope of the goose incentives stated by the Ministry of Agriculture and Forestry in "Supporting Economic Investments Based on Agriculture within the Scope of Rural Development Supports 2022-2023 Application Period, Communiqué No: 2022/24" is quite limited. In the relevant communiqué, it is stated that "applications for new facilities in 81 provinces, completion of partially made investments, capacity increase and technology renewal and/or modernization" will be taken into consideration only for turkey and goose breeding. In the continuation of the Communiqué, there is the statement "No grant support is given for breeding eggs and/or egg production in goose breeding" (Anonymous, 2023). However, our breeders reported that they had the most problems in the supply of breeding eggs and breeding animals. Expanding the scope of the goose incentive will provide an opportunity for preventing the losses in our goose stock and for increasing our goose presence again in the future.

Author Contributions

The percentage of the author contributions is present below. The author reviewed and approved final version of the manuscript.

	Y.A.
C	100
D	100
S	100
DCP	100
DAI	100
L	100
W	100
CR	100
SR	100
PM	100
FA	100

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

Conflict of Interest

The author declared that there is no conflict of interest.

Ethical Consideration

This study was conducted within the scope of the decision of Uşak University Scientific Research and Publication Ethics Committee (protocol code: 2023/03-11 and date: 27 April 2023).

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