



Comparison of Village Poultry Activities in Afyonkarahisar and Kütahya Provinces

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ABSTRACT

This study was conducted to determine the current status of village poultry breeding activities in Afyonkarahisar and Kütahya provinces and the important problems encountered in breeding. The study material consisted of 300 survey data from breeders in Afyonkarahisar and Kütahya. According to the research findings, 79.4% and 92% of the breeders in Afyonkarahisar and Kütahya provinces, respectively, were under 60 years of age. 64.7% of the breeders in Afyonkarahisar and 78.7% in Kütahya stated that they preferred domestic breeds, and almost all of them stated that they did not use additional lighting, heating, and ventilation. The main problems in both provinces are disease, feed prices, lack of shelter, and marketing. Providing support to the main problems of breeders through various support and incentive packages can contribute to the sustainability and development of village poultry breeding in the Afyonkarahisar and Kütahya provinces.

Keywords: Afyonkarahisar, Kütahya, Village poultry, Breeders problems, Solution suggestions

INTRODUCTION

Türkiye's poultry breeding has significantly advanced in recent years. Cage systems that allow for a higher density of animals per unit area have become prevalent. 90% of intensive layer poultry breeding is done in cage poultry breeding. With this system, egg production reaches 300-310 eggs per hen, while the feed conversion rate is 2.1-2.3 kg ([Appleby et al., 1992](#); [Simons, 1997](#); [Sheldon, 2000](#); [Sekeroğlu and Akşimşek, 2009](#); [Müller, 2018](#); [Neves et al., 2021](#); [Karkach, 2024](#)). Village poultry breeding is one of the most important livestock activities to meet the animal protein need in rural areas. Since the extensive breeding system is adopted,



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egg, and meat yield and hatchability are low and mortality rates are quite high. In addition, inadequate health and protection measures and therefore exposure of animals to diseases are the main problems of the system ([Alders and Spradbrow, 2001](#); [Alders and Pym, 2009](#); [Sekeroğlu and Sarıca, 2010](#)). A significant portion of agricultural enterprises in Turkey continue their activities as subsistence family enterprises, but due to failures in economic organization and lack of capital accumulation, enterprises cannot reach commercial size ([Keskin et al., 2017](#)). The low level of labor requirement and feeding costs can be considered as its main advantages. Since it does not require special equipment for housing, it has become one of the oldest rearing systems in poultry breeding. Traditional methods have been adopted in village poultry breeding in Turkey. Generally, without any additional feeding, the animal is grazed in the wandering areas to meet its own nutritional needs and is fed with small animals such as insects, worms, etc., and food and bread leftovers. In addition to these, wheat, barley, corn, etc., feeding is done with grain feed and factory feed. Village poultry breeding is divided into three groups as "Traditional Village Poultry Breeding, Advanced Village Poultry Breeding, and Semi-Intensive Village Poultry Breeding" according to breeding methods and animal capacity ([Riise et al., 2004](#)). In Türkiye, the average number of animals in traditional village poultry breeding varies between 1-10 animals, in developed village poultry breeding it is 10-50 animals, and in intensive village poultry breeding it varies between 50-200 animals ([Sekeroğlu and Sarıca, 2010](#)).

In traditional village poultry breeding, women are generally responsible for the care of the animals, and the hen meat and eggs produced are consumed within the family. In advanced village poultry breeding, all family members take part in the care of the animals, and it is carried out by certain families in rural areas. This system aims to provide additional income from excess domestic consumption. In semi-intensive village poultry breeding, the large number of animals necessitates additional labor and is carried out as a commercial activity. It is not very common in Türkiye and is performed by some families in rural areas ([Riise et al., 2004](#); [Güngördü, 2009](#); [Sekeroğlu and Sarıca, 2010](#)).

Village poultry breeding; is also known by different names such as family poultry breeding, garden poultry breeding, and extensive poultry breeding ([İnci et al., 2015](#)). Many studies have been carried out in different regions and provinces to determine the structure, characteristics and problems of village poultry breeding in Turkey ([Yurt, 2002](#); [Güngördü, 2009](#); [Sekeroğlu and Akşimşek, 2009](#); [Eleroğlu et al., 2014](#); [İnci et al., 2015](#); [İnci et al., 2018](#); [İnci et al., 2019](#); [İnci et al., 2020](#)). According to TUIK's 2023 data, the poultry numbers of the regions in Türkiye are shown in Table 1, and the provincial level animal presence of the Aegean Region is shown in Table 2 ([TUIK, 2023](#)).

Traditional village poultry	Advanced village poultry	Semi-intensive village poultry
-Domestic races	-Domestic race and culture race	-Hybrids
-High mortality	-Medium	-Low
-No additional feeding	-Free-roaming + additional feed	-Supplementary feeding as needed
-No vaccination	-Vaccination against Newcastle	-A few vaccinations against illnesses
-No use treatment for diseases	-Rarely treatment	-Complete treatment
-No cage for housing	-Simple structure cage	-With litter floor or cage system
-Egg yield 30-50 pieces egg/hen	-50-150 pieces egg/hen	-250-300 pieces egg/hen
-Weight gain 5-10 g day ⁻¹	-10-20 g day ⁻¹	-50-55 g day ⁻¹

Table 1. Numbers of poultry by region in 2022 (TUIK, 2023).

Region	Poultry Species				Duck and Guinea fowl	Total
	Broiler	Laying Hen	Turkey	Goose		
İstanbul TR1	738.000	793.596	8.986	6.552	5.825	1.552.959
West Marmara TR2	40.777.460	6.250.702	132.409	40.558	62.440	47.263.569
Aegean TR3	63.122.111	37.250.831	1.645.896	84.886	29.891	102.133.615
East Marmara TR4	78.437.668	12.809.256	916.463	53.367	43.758	92.260.512
West Anatolia TR5	11.202.319	15.463.687	54.828	38.992	46.920	26.806.746
Mediterranean TR6	29.426.956	6.330.307	62.686	40.510	52.433	35.912.892
Middle Anatolia TR7	1.486.850	6.655.441	78.512	121.132	29.749	8.371.674
West Black Sea TR8	11.892.379	8.917.462	124.508	102.275	47.684	21.084.308
East Black Sea TR9	129.450	544.350	2.516	10.253	2.162	688.731
Northeast Anatolia TRA	852.764	1.481.206	117.562	690.692	34.301	3.176.525
Middle East Anatolia TRB	12.319.076	3.411.991	126.791	92.447	29.697	15.980.002
Southeast Anatolia TRC	904.766	9.897.498	398.579	103.843	47.597	11.352.283
Total	251.289.799	109.806.327	3.669.726	1.385.507	432.457	366.583.816

Table 2. Poultry numbers at provincial level in the Aegean Region for 2022 (TUIK, 2023).

Provinces	Poultry Species					Total
	Broiler	Laying Hen	Turkey	Goose	Duck & Guinea fowl	
Afyonkarahisar	389.500	14.915.331	41.014	21.407	6.995	15.374.247
Aydın	2.112.260	779.476	24.785	3.032	2.472	2.922.025
Denizli	4.670.186	1.560.157	64.503	5.537	3.039	6.303.422
İzmir	13.210.816	6.644.436	525.798	4.041	3.055	20.388.146
Kütahya	402.000	1.328.194	80.360	33.539	5.292	1.849.385
Manisa	30.361.070	11.278.055	876.216	2.680	1.624	42.519.645
Muğla	0*	516.650	17.126	2.338	4.226	540.340
Uşak	11.976.279	228.532	16.094	12.312	3.188	12.236.405
Total	63.122.111	37.250.831	1.645.89	84.886	29.891	102.133.615

*It was announced as "0" by TUIK.

While Marmara accounts for 48% of broiler production and the Aegean Region accounts for 25%, the Aegean Region has a share of 34% and the Marmara Region has a share of 18% in egg poultry production. The Aegean Region also accounts for approximately 45% of Turkey production and 6% of goose production. The poultry presence at the district level of Afyonkarahisar and Kütahya provinces for the last 5 years is shown in Table 3 (TUIK, 2023). Merkez, Başmakçı, Bolvadin and Emirdağ in Afyonkarahisar, and Tavşanlı in Kütahya are the leading districts in egg poultry breeding with one million or more animals.

Table 3. Poultry numbers of Afyonkarahisar and Kütahya provinces at the district level for the the period 2018-2022 (*TUIK, 2023*).

Poultry Species (Afyonkarahisar Province)									Dist	Poultry Species (Kütahya Province)							
Districts	Years	Broiler	L. hen	Turkey	Goose	Duck & Guinea.	Total	+/- %		Years	Broiler	L hen	Turkey	Goose	D & G. f.	Total	+/- %
Bayat	2018	0	3935	290	440	335	5000	-	Altıntaş	2018	75000	20000	3574	25062	3341	126977	-
	2019	0	4010	325	420	250	5005	*		2019	75000	20000	3426	25650	3347	254400	100,35
	2020	0	3940	275	445	340	5000	*		2020	150000	19220	3500	24550	2900	454570	78,68
	2021	0	3995	356	483	325	5159	3,18		2021	150500	19275	3550	24555	2915	655365	44,17
	2022	0	4050	425	495	360	5330	3,31		2022	150000	19900	3400	25000	3000	856665	30,72
Başmakçı	2018	0	4210258	12400	756	85	4223499	-	Aslanapa	2018	0	5449	6151	12357	1336	25293	-
	2019	0	3800480	13500	750	83	3814813	-9,68		2019	0	5653	6252	11792	1126	50116	98,14
	2020	0	3671049	8705	505	110	3680369	-3,52		2020	0	27500	2300	4100	1100	85116	69,84
	2021	0	3023920	8250	480	98	3032748	-17,60		2021	0	30000	2500	4500	700	122816	44,29
	2022	0	2751809	14095	110	53	2766067	-8,79		2022	0	10000	750	3500	500	137566	12,01
Bolvadin	2018	24000	2261256	1015	2445	980	2289696	-	Domaniç	2018	29500	7000	260	60	40	36860	-
	2019	25000	1717200	985	2100	1055	1746340	-23,73		2019	0	7100	14000	80	45	58085	57,58
	2020	25000	1469870	1153	1865	1035	1498923	-14,17		2020	0	6600	8650	200	50	73585	26,69
	2021	73000	2674576	998	1902	992	2751468	83,56		2021	0	7000	13600	50	30	94265	28,10
	2022	0	1305935	775	1845	1125	1309680	-52,40		2022	0	7000	14120	60	40	115485	22,51
Dazkırı	2018	0	85830	300	205	160	86495	-	Dumlupınar	2018	0	3250	445	450	140	4285	-
	2019	0	73455	321	182	154	74112	-14,32		2019	0	3242	400	405	140	8472	97,71
	2020	0	85222	252	181	130	85785	15,75		2020	0	335	72	122	0	9001	6,24
	2021	0	77151	226	165	118	77660	-9,47		2021	0	330	70	115	0	9516	5,72
	2022	0	1318	67	100	50	1535	-98,02		2022	0	335	75	120	0	10046	5,57
Dinar	2018	0	203650	520	1410	510	206090	-	Emet	2018	0	2625	528	183	71	3407	-
	2019	0	673650	510	1110	410	675680	+		2019	0	2807	531	190	65	7000	105,46
	2020	0	563646	514	1116	414	565690	-16,28		2020	0	7115	821	453	180	15569	122,41
	2021	0	563655	490	955	395	565495	*		2021	0	7116	822	454	181	24142	55,06
	2022	0	562650	495	990	390	564525	*		2022	0	7525	821	412	124	33024	36,79

Emirdağ	2018	0	3600	899	361	245	5105	-	Gediz	2018	50700	27000	750	200	190	78840	-
	2019	0	3800	925	375	365	5465	7,05		2019	39500	27500	751	199	192	146982	86,43
	2020	0	1020960	850	355	250	1022415	++		2020	28000	28155	805	200	210	204352	39,03
	2021	0	1020860	825	315	230	1022230	*		2021	40500	41500	1780	620	470	289222	41,53
	2022	0	1020760	500	250	200	1021710	*		2022	80500	10313	625	362	270	381292	31,83
Evciler ve Kızılören	2018	0	3020	490	585	235	4330	-	Hisarcık	2018	0	4000	485	60	156	4701	-
	2019	0	2910	455	555	238	4158	-3,97		2019	0	1000	400	60	100	6261	33,18
	2020	0	12415	150	410	185	13160	++		2020	0	4828	194	57	70	11410	82,82
	2021	0	10410	114	335	146	11005	-16,37		2021	0	2500	200	60	80	14250	24,89
	2022	0	9244	86	264	127	9721	-11,67		2022	0	2300	180	55	90	16875	18,42
Hocalar	2018	0	7000	300	150	50	7500	-	Merkez	2018	166000	13700	41900	2000	855	224455	-
	2019	0	7100	315	158	55	7628	1,70		2019	171500	11100	55500	2050	715	465320	107,31
	2020	0	7600	150	50	20	7820	2,52		2020	177000	31989	58233	1840	840	735222	58,00
	2021	0	8625	470	260	165	9520	21,74		2021	170300	29945	56547	1760	765	994539	35,27
	2022	0	8600	465	250	160	9475	*		2022	171500	31624	58778	1843	846	125913	26,60
Merkez	2018	46000	10187720	6400	8000	2880	10251000	-	Pazarlar	2018	0	1650	40	20	25	1735	-
	2019	0	7556536	21933	11549	1243	7591261	-25,95		2019	0	1700	50	15	20	3520	102,88
	2020	81000	7325600	16300	6700	500	7430100	-2,12		2020	0	360	65	45	8	3998	13,58
	2021	108000	7210200	5400	8500	950	7333050	-1,30		2021	0	365	66	46	7	4482	12,10
	2022	0	7070745	150	1500	100	7072495	-3,55		2022	0	370	60	40	5	4957	10,60
Sandıklı	2018	48500	1034790	1984	1850	590	1087714	-	Simav	2018	0	19500	315	226	440	20481	-
	2019	49600	1048653	2250	1725	660	1102888	1,40		2019	0	20250	380	250	415	41776	103,97
	2020	61000	970650	712	665	225	1033252	-6,31		2020	0	21000	450	330	340	63896	52,95
	2021	63000	974730	715	670	230	1039345	*		2021	0	21600	310	280	300	86386	35,20
	2022	60000	892500	20655	638	203	973996	-6,29		2022	0	16500	170	205	185	103446	19,75
Sinanpaşa	2018	122800	335000	4000	4000	2100	467900	-	Tavşanlı	2018	0	100000	1213	884	236	100233	-
	2019	122500	334000	3950	3956	2250	466656	*		2019	0	100010	985	850	190	200445	99,98
	2020	97000	401100	4200	4100	2000	508400	8,95		2020	0	948382	747	809	90	295448	47,40
	2021	207300	469200	4250	4200	2100	687050	35,14		2021	0	108465	713	848	91	404078	36,76

Sultandağı	2022	101500	508600	680	4395	1890	617065	-10,18	Çavdarhisar	2022	0	121467	791	832	99	525718	30,10
	2018	9041	2100	310	315	105	97871	-		2018	0	2502	450	670	90	3712	-
	2019	60340	1986	12810	350	103	75589	-22,77		2019	0	1520	420	720	80	6452	73,81
	2020	62000	2026	496	841	118	65481	-13,37		2020	0	1650	460	920	80	9562	48,20
	2021	101000	2347	562	916	133	104958	60,29		2021	0	1620	450	985	75	12692	32,73
Çay	2022	0	2116	521	1035	117	3789	-**	Şaphane	2022	0	1650	470	990	100	15902	25,29
	2018	0	4100	500	700	500	5800	-		2018	0	7665	140	39	29	7873	-
	2019	0	4150	542	725	550	5967	2,88		2019	0	7810	138	60	25	15906	102,03
	2020	0	27283	2013	2005	635	31936	+		2020	0	6900	140	116	35	23097	45,21
	2021	0	11750	1991	1979	623	16343	-48,82		2021	0	5985	123	121	30	29356	27,10
Çobanlar	2022	0	1804	0	300	0	2104	-**		2022	0	6000	120	120	33	35629	21,37
	2018	15000	2500	800	1200	400	19900	-									
	2019	15000	2400	600	950	350	19300	-3,02									
	2020	16000	6500	950	1100	1500	26050	34,97									
	2021	30000	8600	1000	1050	1400	42050	61,42									
İhsaniye	2022	28000	6500	950	1000	1300	37750	-10,23									
	2018	146000	763375	800	6805	475	917455	-									
	2019	102000	740000	820	6850	500	850170	-7,33									
	2020	195000	709000	800	6000	520	911320	7,19									
	2021	195500	760000	790	7000	500	963790	5,76									
İscehisar	2022	200000	764600	750	7500	550	973400	1,00									
	2018	0	2100	1750	2800	1120	7770	-									
	2019	0	2125	1725	2600	1085	7535	-3,02									
	2020	0	2300	160	900	900	4260	-43,46									
	2021	0	2350	150	850	800	4150	-2,58									
Şuhut	2022	0	1250	100	350	260	1960	-52,77									
	2018	0	2765	510	512	198	3985	-									
	2019	0	2567	240	480	175	3462	-13,12									
	2020	0	2978	302	505	215	4000	15,54									
	2021	0	2950	305	400	120	3775	-5,63									
	2022	0	2850	300	385	110	3645	-3,44									

MATERIALS and METHODS

Ethical Committee of this study was conducted within the scope of the decision of Uşak University Scientific Research and Publication Ethics Committee (protocol code: 2023/04-23 and date: 07 June 2023).

Material

This study was carried out in the villages of Merkez, Sinanpaşa, Bolvadin, Sandıklı, İhsaniye, and İscehisar in Afyonkarahisar province and in Merkez, Dumlupınar, Simav, Altıntaş, Gediz and Aslanapa districts of Kütahya. In Afyonkarahisar, where 150 farmers were reached, including 10 farmers in the Central district and 3 villages each in Sinanpaşa, Bolvadin, Sandıklı, İhsaniye and İscehisar. In Kütahya, according to the same principle, 150 farmers were contacted by reaching 10 villages in the Central district and 3 each in Dumlupınar, Simav, Altıntaş, Gediz and Aslanapa.

Method

A total of 300 breeders in both provinces were interviewed face to face and the survey questions which were answered after the necessary information and approval had been provided. One of the breeders whose answers were sought to questions about the determination of socio-demographic and socio-economic characteristics, reasons for village poultry breeding, livestock activities (Selection of race; domestic race, culture race, mixed flocks) characteristics, diseases seen in hens, treatment application status, precautions, and mortality.

Breeders have stated that local breeds consist of hybrid chickens created by crossing local breeds and cultured breeds that they have been raised by for years. To determine the diseases, questions were asked based on the survey form used by [İnci et al., \(2015\)](#). In the light of the data obtained, it was aimed to compare the village poultry by breeding activities of Afyonkarahisar and Kütahya provinces, to determine the general situation, identify the problems faced by the breeders and offer solutions.

Statistical analysis

The survey forms used in the study were prepared by using previously prepared survey forms on zootechnics and agricultural management. While determining the sample size of the study, a single-stage random probability sampling method grouped based on population proportions was used ([İnci et al., 2015](#)). In determining the sample size, the following formula reported by [Karasar \(1994\)](#) used in limited societies, was used.

Formula

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

n: Sample volume

z: “z” chart value corresponding to 95% significance level

N: Main mass number

p: The probability of the examined event occurring within the population is taken as 50%.

q: The probability that the event under consideration will not occur (1-p).

d: Accepted margin of error (In this study, the margin of error is taken as 5%).

The study aims to present village poultry breeding activities carried out in Afyonkarahisar and Kütahya, the demographic structure and educational status of the breeders, problems related to the sector and solutions to the problems encountered. The data of the study were evaluated in the SPSS 16.0 package program and expressed as descriptive statistics and percentage values.

RESULTS and DISCUSSION

The socio-demographic characteristics of the breeders are shown in Table 4. While it was being determined that 38.7%, 21.3% of the breeders participating in the survey in Afyonkarahisar and Kütahya were men, 61.3%, 78.7% were women, and 90.7% and 86,0% were married, respectively. In both provinces, the percentage of those stating their profession as farmers is 70.7% and 89.3%. It was reported that 75.7% of Bingöl, 84.9% in Muş, 84% in Diyarbakır, 24% in Tekirdağ and 57.6% in Uşak were male ([Demirulus et al., 2013](#); [İnci et al., 2015](#); [İnci et al., 2020](#)). In the study conducted in Muş, it was stated that 87.5% of the breeders were married, 49.3% were self-employed, and 59.5% in Bingöl were farmers.

When the age distribution of breeders is examined, the rate of those under the age of 60 is 79.4% in Afyonkarahisar and 92.0% in Kütahya. The results obtained from the age distribution in both provinces are promising in terms of the sustainability of village poultry breeding. While the detected values are higher than the studies conducted in Uşak, Diyarbakır, Bingöl, and Muş ([İnci et al., 2015](#); [İnci et al., 2019](#); [İnci et al., 2020](#); [Akin, 2024](#)). In Afyonkarahisar and Kütahya, it was determined that 72.0% and 76.0% of the breeders were primary school graduates, and 65.3% and 77.4% of the households consisted of 1-6 people. While the rate of those who reported being primary school graduates was 67.2% in Uşak and 73.2% in Batman, studies conducted in Muş and Bingöl stated that most of the breeders were illiterate ([Güngördü, 2009](#); [Bural, 2015](#); [İnci et al., 2020](#); [Akin, 2024](#)).

Table 4. Socio-demographic characteristics of breeders.

Afyonkarahisar								
Age	n	N.F. (%)	Education	n	N.F. (%)	Number of	n	N.F.
18-39	37	24.7	Illiterate	8	5.3	1-3	41	27.3
40-59	82	54.7	Primary	108	72.0	4-6	57	38.0
60-80	27	18.0	Secondary	7	4.7	≥7	52	34.7
>80	4	2.7	High	18	12.0	-	-	-
-	-	-	University	10	6.0	-	-	-
Gender			Marital			Job		
Man	58	38.7	Married	136	90.7	Farmer	106	70.7
Woman	92	61.3	Single	14	9.3	Retired	23	15.3
-	-	-	-	-	-	Self-	21	14.0
Total	150	100	-	150	100	-	150	100
Kütahya								
18-39	19	12.7	Illiterate	3	2.0	1-3	28	18.7
40-59	119	79.3	Primary	114	76.0	4-6	88	58.7
60-80	12	8.0	Secondary	12	8.0	≥7	34	22.6
>80	0	0	High	17	11.3	-	-	-
-	-	-	University	4	2.7	-	-	-
Gender			Marital			Job		
Man	32	21.3	Married	129	86.0	Farmer	134	89.3
Woman	118	78.7	Single	21	14.0	Retired	12	8.0
-	-	40-59	-	-	-	Self-	4	2.7
Total	150	100	-	150	100	-	150	100

n: Number of families surveyed, N.F: Relative frequency

Table 5 shows the business characteristics of the breeders participating in the survey. The majority of breeders in both provinces prefer domestic breeds (%64.7 %78.7). The rates of those who obtain their animals through natural incubation are %38.0 and %66.0. The obtained values are in line with the studies conducted in Artvin and Batman ([Güngördü, 2009](#); [Bayraktar, 2012](#)). 96.3% of the breeders in Tokat, 74.9% in Bingöl and 68% in Batman stated that they obtained their livestock through natural incubation. ([Akşimşek, 2008](#); [İnci et al., 2015](#)).

Men generally take part in shelter construction (%72.7 %65.3) and women in maintenance (%78.7, %88.0). It has been determined that animals are generally kept together and soil floor is preferred for their wandering areas.

The study results were found to be compatible with the study conducted in Muş and Uşak, but partially different from the study conducted in Batman ([Güngördü, 2009](#); [İnci et al., 2020](#); [Akın, 2024](#)). While less than half of the breeders in both provinces prefer plate-type feeders and drinkers, the percentages of those who state that they do not use feeders and drinkers are %38.7, %58.0 and %23.3 %64.7 respectively. The nesting-box usage rate was determined as %78.0, %81.0. The majority of breeders declared that they do not use additional lighting (%88.0, %94.0), heating (%94.0, %98.0), and ventilation (%96.7, %98.0). Breeders who said they applied disinfection to the hen were determined %61.3, %41.3. The results are in agreement with some studies and partially differ from others ([Güngördü, 2009](#); [İnci et al., 2015](#); [İnci et al., 2020](#); [Akın, 2024](#)).

Table 5. General characteristics of village poultry enterprises.

Afyonkarahisar									Kütahya								
Race	n	N.F. (%)	Animal supply	n	N.F.	Shelter	n	N.F.	Race	n	N.F.	Animal supply	n	N.F.	Shelter	n	N.F.
Domestic	97	64.7	Market+neighb	54	36.0	Mother	22	14.7	Domestic	118	78.7	Market+neighb	35	23.3	Mother	31	20.7
Culture	15	10.0	Natural	57	38.0	Father	109	72.7	Culture	7	4.7	Natural	99	66.0	Father	98	65.3
Mixed flock	38	25.3	Market+hatchi	39	26.0	All family	19	12.6	Mixed	25	16.6	Market+hatchi	16	10.7	All family	21	14.0
Roaming area			Shelter type			Disinfection			Roaming area			Shelter type			Disinfection		
None	17	11.3	Seperate cage	18	12.0	Not	58	38.7	None	32	21.3	Seperate cage	11	7.3	Not	88	58.7
Soil	122	81.4	Single cage	132	88.0	Lime 1 a	47	31.3	Soil	104	69.4	Single cage	139	92.7	Lime 1 a	32	21.3
Concrete	11	7.3	-			Lime 2 a	17	11.3	Concrete	14	9.3	-			Lime 2 a	22	14.7
-			-			Other	28	18.7	-			-			Other	8	5.3
Care			Manger type			Drinker types			Care			Manger type			Drinker types		
Mother	118	78.7	None	58	38.7	None	35	23.3	Mother	132	88.0	None	87	58.0	None	97	64.7
Father	17	11.3	Plate type	74	49.3	Plate type	92	61.4	Father	5	3.3	Plate type	53	35.3	Plate type	41	27.3
Kids	15	10.0	Nipple type	18	12.0	Nipple type	23	15.3	Kids	13	8.7	Nipple type	10	6.7	Nipple type	12	8.0
Additional lighting			Additional heating			Additional ventilation			Additional lighting			Additional heating			Additional ventilation		
None	132	88.0	None	141	94.0	None	145	96.7	None	141	94.0	None	147	98.0	None	147	98.0
Available	18	12.0	Available	9	6.0	Available	5	3.3	Available	9	6.0	Available	3	2.0	Available	3	2.0
Total			-			-			Total			-			-		

n: Number of families surveyed, N.F %: Relative frequency

Table 6. Nutrition of hens, diseases observed, precautions taken and mortality rate.

Afyonkarahisar									Kütahya								
Feeds	n	N.F. (%)	Feeding time	n	N.F.	Diseases	n	N.F.	Feeds	n	N.F.	Feeding time	n	N.F.	Diseases	n	N.F.
Wheat	52	34.6	Morning	43	28.7	Diarrhea	89	67.9	Wheat	41	27.3	Morning	17	11.3	Diarrhea	68	55,2
Maize	16	10.7	Night	25	16.7	Newcastle	16	12.2	Maize	11	7.3	Night	23	15.4	Newcastle	28	22,8
Barley	10	6.7	Morning-night	72	48.0	Cholera	13	10.0	Barley	4	2.7	Morning-night	105	70.0	Cholera	12	9,8
Mixed	63	42.0	Three meals	10	6.7	Colibacilli	9	6.8	Mixed	81	54.0	Three meals	5	3.3	Colibacilli	9	7,3
Industrial	9	6.0	-			Hen pox	4	3.1	Industrial	13	8.7	-			Hen pox	6	4,9
Precautions			Period of diseases			Death			Precautions			Period of diseases			Death		
None	125	83.3	Winter	98	65.3	Less than half	124	82.7	None	117	78.0	Winter	111	74.0	Less than half	113	75,3
Antibiotic	15	10	Spring	13	8.7	Half	17	11.3	Antibiotic	19	12.7	Spring	6	4.0	Half	31	20,7
Drug-vaccine	10	6.7	Summer	11	7.3	Whole flock	9	6.0	Drug	14	9.3	Summer	14	9.3	Whole flock	6	4,0
-			Autumn	28	18.7	-			-			Autumn	19	12.7	-		

Table 6 shows the feed used by breeders in feeding, feeding time, diseases seen in hens, precautions, and mortality rates. Mixed feeding type consisting mostly of grain feeds and bread-food residues has been adopted (%42.0 %54.0). In previous studies, the rate of those using mixed feeding was %60.8 in Uşak, 73.4% in Muş, 36% in Batman, and 34.3% in Tokat, while in the study conducted in Sivas, 89.9% of the breeders stated that they used wheat the most in feeding ([Güngördü, 2009](#); [Şekeroğlu and Akşimşek, 2009](#); [Eleroğlu et al., 2014](#); [İnci et al., 2020](#); [Akın, 2024](#)). The percentages of those who stated that they feed animals in the morning and evening are 48.0%, %70.0. In Muş and Bingöl, almost all of the breeders stated that they do the feeding process twice a day, in the morning and evening, and the study findings differed partially from these two studies ([İnci et al., 2015](#); [İnci et al., 2020](#)).

While the disease incidence rates in animals are (%87.3) and (%82.0), these diseases include (%67.9) and (%55.2) diarrhea, and (%12.2), and (%22.8) Newcastle disease is in the first place. The rates of those who reported that they could not take any precautions against diseases were %83.3 and %78.0 and it was stated that diseases increased mostly in the winter-autumn periods. %82.7 and %75.3 of breeders stated that less than half of the herd was lost due to diseases. [İnci et al., \(2020\)](#) stated in their study in Muş that 81.7% of breeders had diseases in their animals. 27.5% of the diseases seen are diarrhea and 22% are viral diseases. It was stated that 49.5% of the breeders lost more than half of their animals in winter and 29.4% in autumn. In the study conducted in Bingöl, while the rate of those reporting that all the animals died, were 53.2%, 8.3% stated that less than half of them died, and the study results were found to be different from the two studies ([İnci et al., 2015](#)). In studies conducted in Tokat, [Akşimşek \(2008\)](#) stated that 86.3% of breeders applied a treatment method against diseases, while [Şekeroğlu and Akşimşek \(2009\)](#) reported that not all breeders made any vaccinations to protect hens. [Güngördü \(2009\)](#) stated in his study in Batman that 62.9% of the growers and [İnci et al., \(2015\)](#) stated that 75% in Bingöl could not take any precautions against diseases. It was observed that the study results were between the values found in these two studies.

The problems experienced in village poultry breeding and the opinions of breeders about village poultry breeding are shown in Table 7. Breeders stated that the meat and eggs they obtained were not sufficient for themselves and that they provided the remaining parts of their needs from markets (%61.3, %52.0). While %88.0 and %94.0 stated that they did not receive any training throughout the breeding, the percentage of those who stated that the training provided would not be sufficient is %65.3 and %71.8. While the top two main problems were diseases with (%44.0 %29.3) and feed prices with (%30.7, %58.7) other problems were reported as inadequacy of shelters and marketing. The study findings appear to be compatible with the study conducted by [İnci et al., \(2020\)](#) in Muş, and [Akın, \(2024\)](#) in Uşak.

Table 7. *Opinions of breeders about village poultry.*

Afyonkarahisar								
Egg-meat adequacy	n	N.F. (%)	Education support status	n	N.F. (%)	Basic issues	n	N.F. (%)
Sufficient	58	38.7	No	132	88.0	Disease	66	44.0
Market	92	61.3	Agriculture Dep.	14	9.3	Feed prices	46	30.7
-			University	4	2.7	Shelter	18	12.0
-			-			Marketing	20	13.3
Kütahya								
Egg-meat adequacy	n	N.F. (%)	Education support status	n	N.F. (%)	Basic issues	n	N.F. (%)
Sufficient	72	48.0	No	141	94.0	Disease	44	29.3
Market	78	52.0	Agriculture Dep.	7	4.7	Feed prices	88	58.7
-			University	2	1.3	Shelter	2	1.3
-			-			Marketing	16	10.7

n: Number of families surveyed, *N.F*: Relative frequency

CONCLUSION

Afyonkarahisar and Kütahya are among the leading provinces of the Aegean Region in terms of poultry population and are at the top in laying hens breeding. According to data of [TUIK \(2023\)](#), with the production of laying hens approaching 17 million, it covers 43.7% of the region and approximately 14.8% of the total production. Kütahya and Afyonkarahisar account for $\frac{3}{4}$ of the region in goose production. In both provinces, it has been observed that village poultry breeding is an alternative livestock activity traditionally carried out by farmers in addition to commercial livestock activities. Although the breeders stated that they do village poultry breeding to meet their egg needs, they also reported that the demand for village hen eggs is high and they earn additional income, especially today, when the concept of organic eggs has become widespread. The complaints of the breeders about diseases, feed prices, lack of shelter, marketing of the products and not being able to sell them for their value are remarkable. They reported that they experienced problems regarding the animals harming the environment during the breeding process.

In the light of the information obtained from the study; suggestions have been tried to be stated below in order to solve the problems for a sustainable village poultry breeding in Afyonkarahisar and Kütahya.

Situation/Problem	Suggestions
- Village poultry breeding is done by women in Afyonkarahisar and Kütahya, as is the case throughout Türkiye.	<ul style="list-style-type: none"> ✓ Measures should be taken to prevent women from withdrawing from production. ✓ Educational support programs should be organized by organizing various seminars and training courses on disease, care and nutrition, especially by "Agricultural and Veterinary Faculties of Universities, Provincial and District Directorates of Agriculture".
- Poultry products have sales problems or cannot be sold at their value	<ul style="list-style-type: none"> ✓ Support should be given to breeders to deliver it to the primary consumer without any loss of value. ✓ A cooperation protocol should be drawn up between Municipalities and Provincial/District Directorates of Agriculture and sales points should be offered to breeders.
- Fighting diseases and animal losses	<ul style="list-style-type: none"> ✓ By ensuring adequate employment of veterinarians and health personnel within the Provincial/District Directorates of Agriculture, breeders can be prevented from experiencing animal losses. By providing vaccination and treatment support, infectious diseases can be prevented before they turn into an epidemic.
- Problems remain at the individual level and lack of joint action	<ul style="list-style-type: none"> ✓ Breeders should be encouraged to organize themselves in cooperatives (local, regional and national) and act together to quickly solve common problems.
- Lack of support and incentive packages	<ul style="list-style-type: none"> ✓ Incentive packages should be prepared for the sustainability of village poultry breeding in the annual budgets of the state, and applications to be made through Provincial Directorates of Agriculture and village headmen should be announced to farmers.
- Village poultry breeding remains in the traditional model	<ul style="list-style-type: none"> ✓ Support packages for the transition from the traditional production model of village poultry to advanced village poultry and then to intensive village poultry breeding should be among the policies of the Ministry of Agriculture.

There are a limited number of research and project proposals about the structure, problems and sustainability of village poultry breeding in Turkey. The development of village poultry breeding can enable the family economy and welfare of the rural population to increase.

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DECLARATION OF COMPETING INTEREST

The author declares that they have no conflict of interest.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Yuksel AKIN: Declares the contributions to the manuscript such as the following sections: Investigation, methodology, conceptualization, formal analysis, data curation, validation, writing-original draft, review, and editing, visualization.

ETHICS COMMITTEE DECISION

Ethical Committee of this study was conducted within the scope of the decision of Uşak University Scientific Research and Publication Ethics Committee (protocol code: 2023/04-23 and date: 07 June 2023).

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