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Overview of Cattle and Small Ruminants Breeding in Bayburt Province

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ABSTRACT

Crop and animal production constitute a large part of the people's livelihoods in Bayburt province. In addition, the province has become one of the important animal husbandry centers of the region due to the fact that it is a transit point between the Eastern Anatolia region and the Black Sea region. But the number of small farms in Bayburt province is still very large, and the number of farms that are members of grower organizations is quite small. In addition, the migration of the young population from villages leads to an increase in the average age of the population engaged in animal husbandry and a decrease in the number of animals that can be raised depending on the labor force. In this review, the general status of cattle and small ruminants livestock in Bayburt province was given and the level of livestock in Bayburt province was revealed with current data.

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Introduction

Animal husbandry, which occupies an important position in Turkey's agriculture and economy, provides many benefits to farms along with production activities (Vural and Fidan, 2007). The economy of Bayburt, a non-industrial province of the Eastern Black Sea Region, is focused on plant and animal production, and cattle, sheep and goat breeding are at the forefront of agricultural activities (Çimen and Çimen, 2020) (Anonymous, 2021a).

Bayburt province is very suitable for animal husbandry due to the presence of rich pastures, the excess of planted feed plants and irrigation-based agriculture, which is effective in reducing animal production costs. The fact that the majority of the total number of animals in the province is composed of animals belonging to cultural breeds and crosses of these breeds makes breeding animal breeding attractive. The richness of pasture areas constitutes a suitable structure for sheep and goat breeding (Anonymous, 2020a).

Demographics of Bayburt Province

Bayburt province is a Black Sea region province with an altitude of 1550, located between the provinces of Erzurum, Gümüşhane, Trabzon, Rize and Erzincan, next to the Çoruh river(Anonymous, 2021b). Bayburt has a climate located at the transition point of the Eastern Black Sea and Eastern Anatolia climates, where terrestrial climate characteristics are intense (Anonymous, 2021c). Bayburt has an area of 3652 km^2, total of 2 districts, and 170 villages (Anonymous, 2021d). Bayburt province is one of the least populated provinces of Turkey and the population shows a fluctuating trend (Bayramoğlu, 2020).

According to Table 1, the year with the most total population is 2016 (90154 people), and the year with the least population is 2010 (74412 people). When the population distributions are examined by year, the population living in villages shows a decrease in 2020 compared to 2007, while the city population shows an increase. In Table 1, the number of people per km^2 in terms of population density varies between 19.90 people and 24.11 people per. As of December 31, 2020, Bayburt province ranked last with 81,910 people according to the population ranking of the provinces (TÜİK, 2021a).

Looking at Figure 1, the city population varies by years. Although the population of the villages increased in 2014, 2016 and 2018, it is seen to be in decline on a year-by-year basis. While the city's population increased by 2016 year, it fell in 2017 and 2018 years, increased in 2019 year, and continued to decline again in 2020 year (TÜİK, 2021a).

Table 1. Population numbers and population densities of Bayburt province by years (TÜİK, 2021a).

Year	Population			Population Density
	City	Village	Total	
2007	37473	39136	76609	20.49
2008	36912	38763	75675	20.24
2009	36941	37769	74710	19.98
2010	37537	36875	74412	19.90
2011	40354	36370	76724	20.52
2012	40564	35233	75797	20.27
2013	40836	34784	75620	20.22
2014	45488	35119	80607	21.56
2015	46276	32274	78550	21.01
2016	55670	34484	90154	24.11
2017	49603	30814	80417	21.51
2018	45467	36807	82274	22.00
2019	52517	32326	84843	22.69
2020	50423	3148	81910	21.91

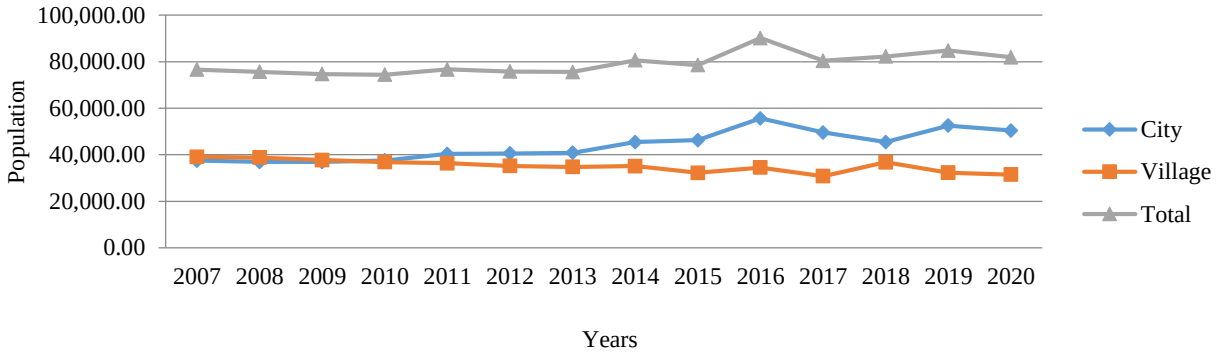

Figure1. Population distribution of Bayburt province by years (TÜİK, 2021a).

Table 2. Population numbers over 65 years of age in Bayburt province (TÜİK, 2021a).

Years	Total Population	Population Over 65		The Proportion of Population Aged 65 and Older	
		City	Village	City	Village
2007	76609	2721	4372	7.26	11.17
2008	75675	2311	4549	6.26	11.74
2009	74710	2239	4651	6.06	12.31
2010	74412	2366	5013	6.30	13.59
2011	76724	2367	5054	5.87	13.89
2012	75797	2449	5040	6.04	14.30
2013	75620	2511	5140	6.15	14.77
2014	80607	2894	6016	6.36	17.13
2015	78550	2929	5525	6.33	17.12
2016	90154	3414	5677	6.13	16.46
2017	80417	3051	5362	6.15	17.40
2018	82274	3000	6283	6.60	17.07
2019	84843	3306	6073	6.29	18.79
2020	81910	3486	6190	6.91	19.66

People aged 65 and over are considered elderly worldwide (Anonymous, 2020b). Communities aged 65 and over are considered to have a young population of less than 4%, communities between 4-7% are considered to have an adult population and 10% or more are considered to have an older population (TÜMERDEM, 2006).

In Table 2, the total population of Bayburt province by years, population numbers over 65 years and population rates over 65 years are given. According to Table 2, in the last 13 years, the number of elderly people in villages has increased and in the city has decreased. According to 2020 data, the proportion of the elderly population living in the city increased to 6.91%, while the proportion of old age in the villages increased to 19.66 % (TÜİK, 2021a).

The reason for the decrease in the number of immigration in Bayburt, whose immigration rate increased in the middle of the 20th century due to socio-economic reasons, is considered to be the Bayburt University located in the province (Bayramoğlu, 2020).

According to Table 3, looking at the migration status of Bayburt province, it is seen that the most migration was taken in the period 2016-2017 and the least migration was taken in the period 2007-2008 (Table 3).

According to employment indicators in Bayburt, the ratio of agricultural workers to total employment is 44.30% (Table 4) and is very high compared to the ratio of Turkey (23.60%). The ratio of employees in industry to total employment (11.20%) remained below the ratio of Turkey (26.40%) (KUDAKA, 2017).

Status of Cattle and Small Animals in Bayburt

Data from TÜİK and Bayburt Provincial Directorate of Agriculture and Forestry for the number of cattle and small ruminant in Bayburt province are presented in Table 5. In Table 5, it is observed that after 2013, the number of domestic cattle began to decline greatly, the number of cultural cattle was not affected much compared to the years, and the number of crossbreed cattle increased significantly compared to the years. The number of crossbreed cattle, which was 48,402 in 2004, increased to 76,244 in 2020 (TÜİK, 2021b). In Bayburt, where animal husbandry is at the forefront, due to the high pasture and meadow areas, animal breeders have attached more importance to crossbreed cattle breeds than culture breeds (KUDAKA, 2017).

As seen in Table 5, the number of water buffaloes in Bayburt province reached the highest number of the last 17 years with 1,107 in 2016. However, as of 2017, the decrease in the number of water buffalo started again and it decreased to 796 in 2020 (TÜİK, 2021b).

Number of sheep and goats, which was 84,465 in 2004, decreased to 39,951 by 2019. However, in 2020, with the government support on sheep breeding, the number increased again to 50,688 (Table 5). Pasture presence of 209814 hectares constitute 57.5% of the total land holdings in Bayburt and this rate is muchhigher than the average in Turkey (Anonymous, 2021e).

Table 3. Migration status of Bayburt province (TÜİK, 2021a).

Period	Migration of The Received	Given Migration	Difference	Migration Rate (%)
1995-2000	6027	11387	- 5360	-59.5
2007-2008	2996	4949	- 1953	-25.5
2008-2009	3101	4420	- 1319	-17.5
2009-2010	3984	4780	- 796	-10.6
2010-2011	3997	4570	- 573	-7.4
2011-2012	3664	4085	- 421	-5.5
2012-2013	4787	4677	110	1.5
2013-2014	8912	5583	3329	42.2
2014-2015	7150	9281	- 2131	-26.8
2016-2017	16981	6653	10328	121.5
2017-2018	9450	7772	1678	20.6
2018-2019	9131	7882	1249	14.8

Table 4. Bayburt employment rates (KUDAKA, 2017).

	Bayburt (%)	Turkey (%)
Labor Force Participation Rate	51.03	50.80
Employment Rate	48.10	45.90
Unemployment Rate	6.20	9.70
Ratio of Agricultural Workers to Total Employment	44.30	23.60
Ratio of Employees in Industry to Total Employment	11.20	26.40
Ratio of Employees in Services to Total Employment	44.50	50.00

Table 5. Bayburt province cattle and small ruminats animal presence (TÜİK, 2021b) (Anonymous, 2021e)

Year	Cattle					Small Ruminants		
	Cattle Genotypes			Water	Total	Sheep	Goat	Total
	Culture	Crossbreed	Native	Buffaloes				
2004	10350	48402	4670	681	64103	81803	2662	84465
2005	10350	48302	5010	685	64347	81803	3052	84855
2006	11150	50302	4140	680	66272	81985	3320	85305
2007	11245	51636	3715	286	66882	57940	2608	60548
2008	9161	51168	3818	304	64451	56490	1780	58270
2009	10077	46127	2270	344	58818	26513	2573	29086
2010	11523	44191	3839	457	60010	23137	2432	25569
2011	11.525	46.340	6.494	475	64.834	30.083	4.005	34.088
2012	16.957	64.679	4.225	577	86.438	49.843	7.747	57.590
2013	11892	58964	5385	563	76804	61365	7800	69165
2014	9908	51818	4733	586	67045	45305	7458	52763
2015	10684	71836	1877	1062	85459	47904	7362	55266
2016	13691	71142	1092	1107	87032	42681	5519	48200
2017	11588	65857	463	1023	78931	38435	6882	45317
2018	10619	85982	579	880	98060	41338	7449	48787
2019	8132	90652	426	816	100026	35194	4757	39951
2020	9900	76244	242	796	87182	44786	5902	50688

Table 6. Breeds of artificial insemination bulls in Bayburt and number of artificial insemination (Anonymous, 2021f).

Breeds of artificial insemination Bulls	Number of Artificial Insemination by Years				
	2016	2017	2018	2019	2020
Simmental	7020	5877	6123	6195	6951
Aberdeen Angus	-	1	8	1	278
Charolais	240	247	92	117	824
Belgian Blue	1	-	21	4	8
Limousin	2	-	-	1	4
Holstein-Friesian cattle	162	129	132	149	98
Brown Swiss	4913	3157	3253	3131	2421

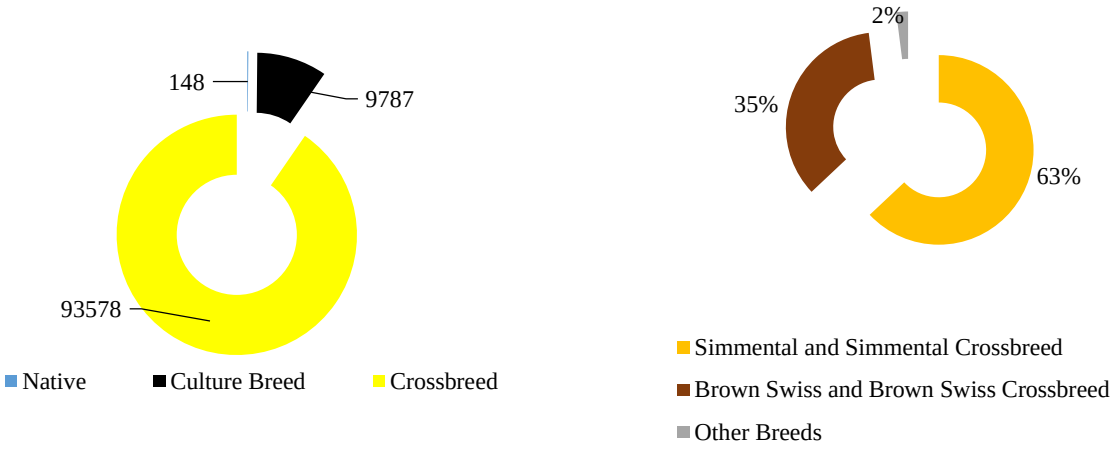

Figure 2. Distribution of cattle by breed in Bayburt province (HAYBİS, 2021a).

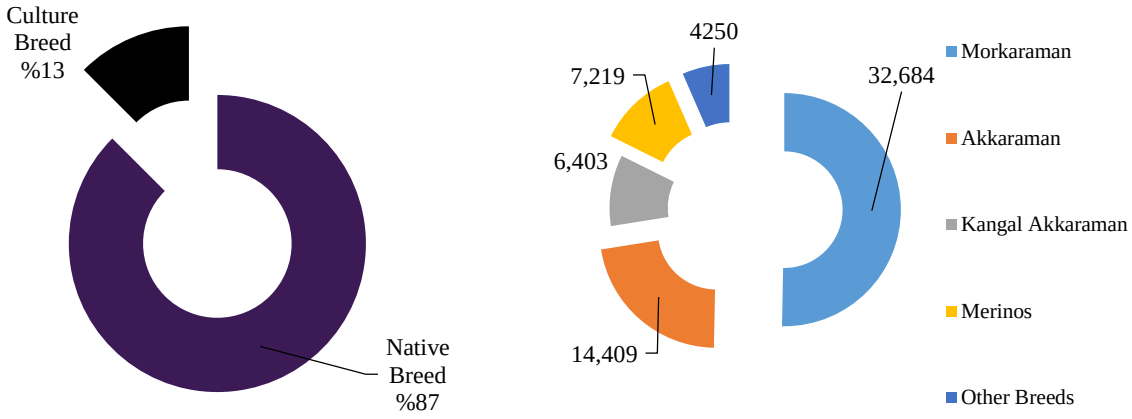

Figure 3. Distribution of sheep by breed in Bayburt province (HAYBİS, 2021c).

The breeds of artificial insemination bulls and the number of artificial insemination in Bayburt are shown in Table 6. According to Table 6, it is seen that the breeders who have made artificial insemination for female cattle in the last five years in Bayburt province prefer meat productive cattle breeds rather than milk productive cattle breeds. It is also stated that the number of artificial insemination of the Simmental breed makes a big difference compared to other artificial insemination bull breeds in the province (Anonymous, 2021g).

Considering the existence of cattle in Bayburt according to their breed, 90.40% are crossbreeds, 9.46% are cultural breeds and 0.14% are native breeds. At the same time, 63% of the current cattle assets are Simmental and Simmental cross breeds, 35% are Brown Swiss and Brown Swiss cross breeds, while a portion of 2% in the province consists of other breeds (Figure 2). According to TÜRKVET animal registration system, 901 of the 196350 Water buffaloes in Turkey are located in Bayburt province (HAYBİS, 2021b).

In terms of the presence of sheep, the majority of the animal presence in the province is made up of native breeds. The first place among the native breeds was the Morkaraman breed, followed by the Akkaraman breed (Figure 3).

The presence of sheep in Bayburt province accounted for 89% of the total presence of sheep, and the presence of goats remained at 11%. When the presence of goats is examined on the basis of breeds, it is seen that the number of hair goat and hair goat crossbreeds are higher throughout the province (Figure 4).

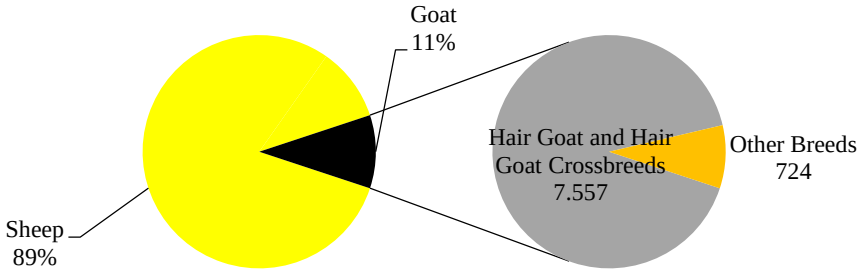

Figure 4. Distribution of goat and goat breeds in Bayburt province (HAYBİS, 2021a)

Table 7. Cattle and small ruminants slaughter animal numbers and meat production amounts by years (HAYBİS, 2021b)

Year	Slaughter Animal Numbers and Meat Production Amounts							
	Cattle		Water Buffalo		Sheep		Goat	
	Head	Weight (kg)	Head	Weight (kg)	Head	Weight (kg)	Head	Weight (kg)
2016	171	44790	3	510	0	0	0	0
2017	1124	333921	20	4130	39	945	5	116
2018	914	259035	8	2060	8	213	1	30
2019	796	234207	16	3390	99	1970	0	0
2020	743	189669	10	2311	38	852	0	0

Table 8. The number of cattle and small ruminants slaughtered during the feast of the sacrifice and sent to sacrifice (HAYBİS, 2021b).

Year	Number of Cattle		Number of Small Ruminants	
	Slaughter	Sent	Slaughter	Sent
2018	2.922	3.380	788	577
2019	3.217	3.433	815	508
2020	5.251	2.432	3.702	464

Meat and Milk Production Status of Cattle and Small Ruminants in Bayburt

When the number of animals slaughtered and the amount of meat production in Bayburt province are examined, it is seen in Table 7 that the amount of cattle in the province is higher. While 171 cattle slaughter and 44790 kg meat were produced in 2016, 1124 cattle slaughter and 333921 kg meat production in 2017, 914 cattle slaughter and 259035 kg meat production in 2018, 796 cattle and 234207 kg meat production in 2019 and 2020, 743 cattle slaughter and 189669 kg meat production were carried out. Considering the amount of Water buffalo slaughtered and the amount of meat obtained, it is seen that more than 20 water buffalo have not been slaughtered in the province in recent years. Sheep slaughter reached the highest number in the last five years in 2019, and 1970 kg of meat was produced with 99 sheep slaughter. Considering the amount of goats slaughtered, it is seen that 6 goats were slaughtered in the last five years and 146 kg of meat was obtained (Table 7).

According to Table 8, when the numbers of Cattle and small ruminantsslaughtered during the feast of the last three years in Bayburt and shipped for sacrifice are examined, it is seen that the number of cattle animals is higher than the number of small ruminants animals in terms of slaughter and delivery. When the data for the year 2020 are examined, the increase in the number of sheep and goats slaughtered during the feast of the sacrifice draws attention (Table 8).

When the milk production amounts are examined according to Table 9, the milk production amount of cattle increased from 69702 tons in 2004 to 114206 tons in 2019. Milk production of cattle reached the highest level in 2012, reaching 132,484 tons. Considering the production amount of buffalo milk, it reached the highest level with 738 tons in 2015, while the production of buffalo milk, which was 417 tons in 2004, decreased to 415 tons in 2019. While the amount of milk obtained from sheep was 1405 tons in 2004, it decreased to 903 tons in 2019. Goat milk production increased from 122 tons in 2004 to 260 tons in 2019. However, when compared to 2018 data, there was a big decrease in goat milk production in 2019(TÜİK, 2021b).

Cattle and Small Ruminants Livestock Enterprises

The total number of cattle breeding enterprises in Bayburt province is 5790. When Figure 5 is examined according to the number of livestock in the enterprises, it is seen that small enterprises with 1 to 20 cattle animals constitute 4116 of the total cattle breeding holdings. Although the number of these enterprises constitutes 71.1% of the total number of enterprises in the province, the total cattle assets of enterprises with 1-20 animals constitute 34.6% of the province-wide animal assets. The number of enterprises with 21-100 cattle is 1603, and the total number of animals belonging to these enterprises is 61614. The number of enterprises over 100 heads is 51 and 1 of these enterprises is over 500 heads (HAYBİS, 2021b).

Looking at Figure 6, small ruminants breeding is carried out in a total of 716 enterprises throughout the province. While 65.5% of these enterprises consist of small ruminants between 1-100 heads, the number of enterprises with 101-500 small ruminants constitutes 31.7%, and enterprises over 500 heads constitute 2.8%. When the number of small ruminants animals in the province is evaluated according to the number of sheep and goats in the enterprises, the total number of animals in the enterprises with 1-100 animals in the province is 24.35%, the number of animals in the enterprises with 101-500 animals is 50.67% and the number of animals constitutes 24.98% of the enterprises with ovine animals over 500 heads (HAYBİS, 2021b).

Animal Husbandry in Bayburt Economy

In the course of time, the foundation of Bayburt's economy remained the same. Agriculture and livestock have always had a revitalizing effect on the economy in Bayburt, where trade and industry are lagging behind. The biggest livelihood of the province is animal husbandry. Livestock breeding for pasture has gained importance due to the abundance of pasture areas in its land, which is very suitable for animal husbandry (Anonymous, 2021h). However, a satisfactory profit cannot be obtained due to the low operating capacities and insufficient efficiency (Anonymous, 2021i).

Cattle and Small Ruminants Supports in Bayburt

For the continuity of the existence of enterprises in the field of agriculture, the excess share to be earned in this field has become important. The most important factor in increasing the share to be earned is the organized farmers and peasants in the countryside. Producer associations have a beneficial effect on agricultural development in our country, as in the world, as they can respond to different needs of producers (KARATURHAN, ŞEVİK & YILDIZ, 2014). Breeders associations related to cattle and small ruminant breeding in Bayburt are Bayburt Sheep-Goat Breeders Association and Bayburt Cattle Breeders Association (Anonymous, 2021e).

951 of the 5790 cattle enterprises registered throughout the province are members of the Bayburt Cattle Breeders Association (Anonymous, 2021f). Likewise, 243 of 716 sheep and goat enterprises in the province applied to receive sheep-goat support as a member of the Bayburt Sheep-Goat Breeders Association (Anonymous, 2021j).

When the livestock supports are analyzed in Table 10 by years, it is seen that the calf supports paid as 106.000 TL in 2010 increased to 12.066.000 in 2019 and is the biggest animal husbandry support in the province (Anonymous, 2021k).

Table 9. Cattle and small ruminants milk production amounts by years (TÜİK, 2021b)

Years	Milk Production Amounts (Tons)			
	Cattle	Water Buffalo	Sheep	Goat
2004	69702	417	1405	122
2005	69702	417	1417	123
2006	73695	417	1422	146
2007	65578	172	1060	120
2008	65606	185	1038	126
2009	82437	189	728	104
2010	96266	325	865	121
2011	92782	303	1015	219
2012	132484	332	1778	477
2013	88937	279	1997	511
2014	82559	262	1551	465
2015	105715	738	1842	349
2016	101631	674	1558	256
2017	70239	492	1247	224
2018	109878	423	1200	438
2019	114206	412	903	260

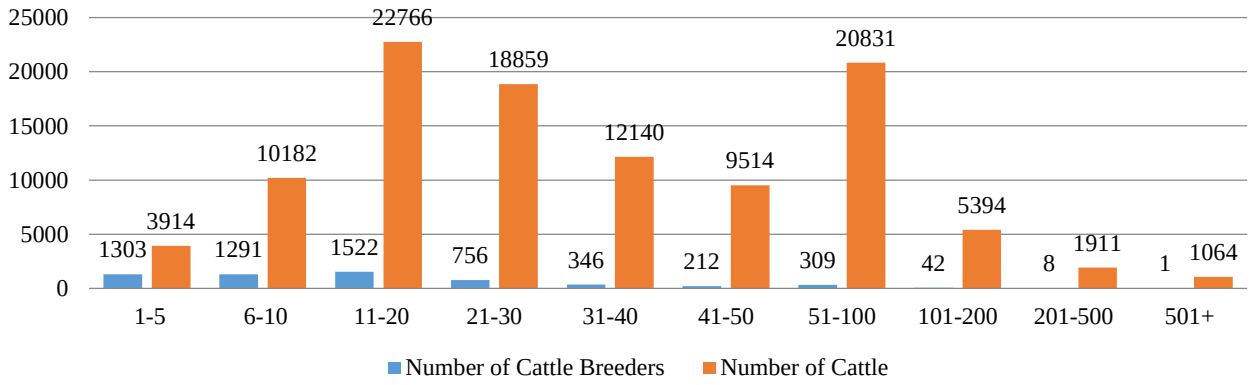

Figure 5. Number of cattle breeders and number of cattle in Bayburt province (HAYBİS, 2021b).

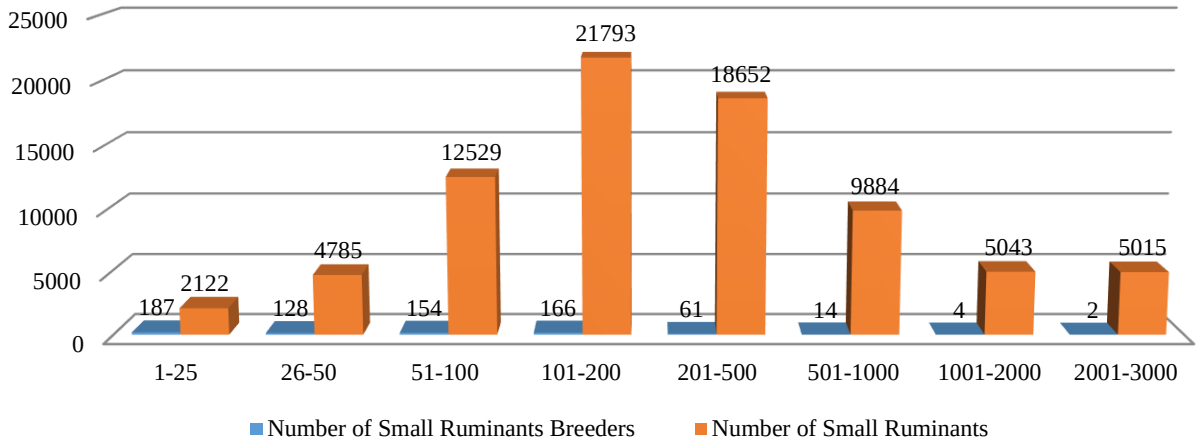

Figure 6. Number of small ruminants breeders and number of small ruminants in Bayburt province (HAYBİS, 2021b)

Table 10. Livestock supports (Anonymous, 2021e)

Support Type	Supporting Amounts (1000 TL)						
	2010	2013	2015	2016	2017	2018	2019
Calf	106	238	643	6886	11725	13497	12066
Rootstock Sheep-Goat	140	429	633	587	486	493	460
Water Buffalo	57	88	112	0	63	69	87
Water Buffalo Calf	0	0	23	63	50	55	36
Raw Milk	104	412	323	130	54	78	104
Fattening Male Cattle	0	372	89	0,2	0	0	3
Organic Livestock	0	0	24	2	30	23	13
Herd Manager (Shepherd)	0	0	5	15	25	20	15
Rootstock Cattle	802	1776	3764	0	0	0	0
Breeding Heifer	0	0	0	0	0	0	0
Compensated Animal Diseases	0	0	321	90	214	1347	1614
Young Farmer	0	0	0	2310	3060	3150	8520

Livestock supports provided by the Ministry of Agriculture and Forestry in Bayburt; calf, water buffalo calf, female water buffalo, rootstock sheep-goat, herd raising and renewal, herd manager (shepherd) employment, breeding heifer, fattening male cattle / water buffalo, waste, raw milk, compensated animal diseases, organic livestock support. Supports for rootstock cattle were terminated by 2016, and supports for young farmers by 2020. In addition, 13403497 TL was invested in 55 projects related to animal husbandry within the scope of GAP, DOKAP, DAP and KOP projects throughout the province between 2015 and 2019 (Anonymous, 2021e).

Result

In Bayburt, whose general means of subsistence is agriculture and animal husbandry, the excess of pasture areas, the existence of culture and culture crossbreed cattle with high yield rate, the presence of small ruminants adapted to the region's climate and the fact that the province is a transit point between Eastern Anatolia and the Black Sea region makes the region attractive in terms of animal husbandry.

Employment rate of those working in agriculture is almost 4 times higher than the employment rate of those working in industry. The economically falling behind agriculture and animal husbandry of the industry and the importance given to livestock by the people of the region were effective in the increase in this ratio.

Despite this, there is not much demand for breeders association by the breeders dealing with cattle and small ruminants livestock. 16.42% of the breeders dealing with cattle breeding throughout the province are members of the Bayburt cattle breeders association. Although the interest of small cattle enterprises in breeder associations are more than cattle breeding, the rate of small cattle enterprises that are members of the breeders association remained at 33.94%.

In the number of animals, from 2004 to 2019, there was an increase in the number of cattle animals and a decrease in the number of sheep and goats. However, due to the projects and supports regarding sheep farming in 2020, the number of sheep and goats started to increase.

One of the problems of cattle and small ruminants breeding in Bayburt is the increase in the workforce with the decrease of the young population in the villages. The population over 65, which was 11.17% in villages in 2007, increased to 19.66% in 2020. While the urban population has increased in recent years, the decreases in the village population continue.

Although animal husbandry support continues to increase over the years, it is seen that these supports alone are not effective in the development of animal husbandry in the region.

As a result, in Bayburt, which has a very favorable potential for cattle and small ruminants breeding, the reasons such as the excess of small businesses and their acting independently from each other, the decrease of the young population in the villages every day prevent this potential from fully realizing.

In Bayburt, where livestock breeding has an important place economically, it can be predicted that the current situation will increase in a short time and the economy will turn towards it more with measures such as the more active use of breeders associations and the preference of animals in animal breeding according to the conditions of the region.

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