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Examination of dairy cattle enterprises in Yozgat province in terms of structural characteristics and breeding conditions

Orhan ERMETIN[1]

[1]Department of Animal Science, Faculty of Agriculture, University of Yozgat Bozok, Yozgat, Turkey

Abstract

This study was carried out by evaluating the information gathered through a survey on the enterprise, shelter structure workers, feeding, milking, breeding practices, demographic and economic patterns in 110 dairy farms from 14 districts in order to determine the structural characteristics of dairy farms in Yozgat province. Examination, observation and measurements were made in each of the enterprises. Thus, the general status of dairy cattle in Yozgat province was evaluated in the light of the data collected through the survey, problems and deficiencies were identified and recommendations were made for their elimination. This study will be a source of information on the structural characteristics of dairy cattle enterprises at the provincial level, planning at the business level, and husbandry in Yozgat province. In the study, most of the breeders were middle aged and older, 44.5% of them were graduated from primary school, 92.7% of households were with 1-4 people and 88.2% of them were contribution to livelihood. 77.3% of enterprise owners continued for more than 20 years and 89.1% of them had social security. 71.8% of the enterprises kept records of livestock, 57.3% of records kept by handwritten manual. In these enterprises, way of construction of the barns and auxiliary facilities was own experience (83.6%), 73.6% of the enterprises had no employees, 82.7% of the employees were foreign labor. 72.7% of milking in the enterprises were the owner of the enterprise and family members. 70% of the enterprises studied were engaged in plant and animal production together. The highest ratio is those with 101-500 da of land (54.5%), the share of 0-50 da of land within irrigated land was 69.1%. Also, Simmental (59.07%) was commonly preferred in these enterprises. 80.9% of the shelters had tied stall, most of the shelters (92.7%) belong to the breeder, 97.3% of the ground material of the enterprises had concrete, 89.1% of the enterprises had a ventilation shaft, 35.5% of the wall structures were briquettes and 68.2% of the roof material was tile, 82.7% of windows was with 1-10 windows. 85.5% of the enterprises had not manure pit, 90.9% of the manure were own land, 84.5% of manure cleaning was done by hand and the distance of the manure pit to the milking unit was more than 11 meters. 80% of use base material was non-available and 84.5% of the enterprises do not have a birth section.

Key words: Dairy cattle production, structural characteristics, dairy cattle shelters, shelter planning, Yozgat

Introduction

Dairy cattle production, which is one of the branches of animal production, is important in terms of providing the milk need of people, one of the basic nutritional needs. It is difficult to talk about a healthy and balanced diet in a society that does not consume milk. In terms of providing the milk needs of societies and contributing to agricultural production, the dairy cattle production industry has been one of the important production branches in Turkey as well as in the world. Dairy cattle production has also an important in terms of decreasing the migration from rural areas to urban areas and in terms of balanced development between regions (Yıldırım and Şahin, 2003, Tandoğan, 2006).

Yozgat province, with 245 825 head of cattle, constitutes 1.34% of cattle in Turkey (Anonymous, 2020). Turkey, in terms of cattle, is at the fourth place after EU member states France, Germany, and the UK. However, Turkey would be quite behind in a ranking to be made in terms of productivity. Nearly 41% of the country's population lives in rural areas and a large part of this ratio makes a living from cattle breeding.

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*Corresponding author e-mail: orhan.ermetin@bozok.edu.tr

Dairy cattle production also has an important share in animal production. The average number of animals per farm in Turkey is 3.9. The most important issue of Turkey's livestock enterprises, and also the dairy cattle production within this definition, is that they are family businesses being not economically large enough. This situation makes the application of technology impossible (Soyak, 2006).

One of the most important problems of the livestock enterprises in Turkey is the construction of shelters. Farm owners do not pay attention to shelters as they do in purchasing animals, feeding, and fighting against diseases. Primitive and wrong practices in building shelter constitute the basis of the most important problems encountered in animal production. As a matter of fact, it is very difficult or impossible to correct faulty shelters afterwards (Arıcı et al., 2001). Shelters constitute a significant part of the working capital in livestock enterprises. Mistakes in the planning and construction of shelters will be difficult to compensate for later, and will adversely affect the use of labor and animal welfare. For this reason, constructing buildings with adequate technical features by using local materials reduces the initial investment cost (Uğurlu, 1993). Shelters should be able to provide the optimum environmental conditions (temperature and humidity of ambient air, chemical composition, the insulation value of building elements, artificial and natural lighting, ventilation, etc.) that animals need, grow and that affect their productivity.

A significant portion of the population that lives in rural areas in Turkey makes a living by livestock activities. Dairy cattle production is carried out both in large-scale commercial enterprises and in family businesses with a few dairy cows, especially in areas close to provinces with a large population. Since it is a livestock activity that requires an intensive labor force, large enterprises contribute significantly to employment in provinces where they are located. Family businesses, on the other hand, contribute to the local development of a significant number of agricultural population in each region, as there are more enterprises as such. In order to increase the contribution of dairy cattle production to the economy locally, regionally, and nationally, current problems must be eliminated (Boz, 2013).

Animal products must be preserved in environments suitable for animal welfare in order to ensure the production with the desired quality for human nutrition and to obtain high productivity from animals. In order to achieve this, it is necessary to examine the current conditions of the animals on-site, to determine the setbacks, to examine the structural and climatic characteristics of the barns, and to create conditions suitable for animal behavior and welfare. As a result, by keeping animal welfare at the highest level, productivity can be increased (Uzal, 2011).

Shelters constitute an important part of the working capital in livestock enterprises. Mistakes in the planning of the shelters negatively affect the suitability of the building for the purpose and prevent the rational use of the labor force. (Uğurlu and Kara, 1993). While designing animal shelters, they should be sized to provide sufficient space and interior detail for the movement, social interaction, feeding and drinking behaviors of animals. Care and hygienic conditions should be kept within economic and optimal limits (Mutaf et al., 2001). In intensive cattle breeding, cattle spend a large part of their lives in the barn and it is reported that within a one-day period (about 15 hours of light), 46% they sleep, 27% they feed, 23% they ruminate, 3% they interact with each other, and 1% they drink water (Haley et al., 2001). In order to achieve the expected benefit from animal shelters, the shelters must be constructed in accordance with the requirements of the technique (Mutaf and Sönmez, 1984).

It is aimed to reveal the structural characteristics of the dairy cattle enterprises in Yozgat province, the sociological status of the enterprise owners and their families, the level of care-feeding conditions, and the stage at which they are when it comes to the safe production of milk. Within this framework, we studied the shelter structures, suitability for animal breeding, breeding practices, demographic and economic distribution of the dairy cattle enterprises. Thus, we evaluated the general situation of dairy cattle production in Yozgat province in light of the data collected through a survey. Problems and deficiencies were determined, and recommendations were made to remedy them.

Materials and Methods

In this study, 110 dairy cattle enterprises registered with the Yozgat Province Cattle Breeders Association operating in Yozgat were selected as the material. The field studies of the project were carried out in the center and 14 districts of Yozgat. In addition to conducting a survey to determine the characteristics of the enterprises where the study will be conducted, measurement and observation were carried out to determine the characteristics of the structures in this enterprise. Table 1 shows the distribution of dairy cattle enterprises operating in Yozgat province according to their capacities.

Stratified random sampling method was used to determine samples from the population. The main frame was divided into 3 layers by using the frequency table to determine the sample enterprises. In the first layer, there are enterprises with a total number of animals between 10-20 and less, in the second layer there are enterprises with a total number of animals between 21 and 50, and in the third layer there are enterprises whose total number of animals are 51 or more animals. There are a total of 28770 animals owned by the enterprises in the study area.

The number of samples studied according to the stratified random sampling method was calculated using the following formula (Yamane, 1967).

$$n = \frac{(\Sigma\, Nh.\, Sh)^2}{N^2.\, D^2 \;+\; \Sigma\, (Nh.\, Sh^2)} \qquad D^2 = d^2 / z^2$$

In the formula;

n: Number of samples,

N: Number of enterprises in the population,

Nh: Number of enterprises in the h-th layer,

Sh: Variance of h-th layer,

d: Allowable margin of error from the population mean,

z: It refers to the z value in the standard normal distribution table according to the error rate.

To determine the sample volume, it was studied within 99% confidence limits with 5% margin of error. The following formula was used to distribute the determined sample volume to the layers (Yamane, 1967).

$$n = \frac{N_h\, S_h * n}{\Sigma\, N_h\, S_h}$$

Table 1. Number of sample enterprises according to enterprise size groups

Enterpirises Size Groups (head)	The Number of Enterprises in the Main Frame	The Number of Enterprises in the Sample
10-20	348	17
21-50	376	53
≥ 51	92	40
Total	816	110

There are 1063 dairy cattle enterprises, which are members of the Cattle Breeders Association, with different capacities in the province (Anonymous, 2017). Enterprises with a capacity of 1-9 were not taken into consideration in the study due to the fact that were evaluated as small family enterprises. Therefore, on-site examinations and surveys were conducted in 110 enterprises representing a total of 816 dairy cattle enterprises. The data obtained in the field were evaluated using the SPSS (16.0 Version) statistics program.

Results and Discussion

Demographic structure of breeders

Table 2 shows the distribution of the enterprise owners according to the demographic characteristics in the study conducted in Yozgat province. In the study, it was determined that the ages of the producers range between 20 and 69, and the average age was 45. It was observed that all of the dairy cattle breeders sampled were male. The rate of breeders between the ages of 41-50 is 40.9%, and the rate of over 51 years old is 28.2%. The rate in the 20-30 age range was 5.5% and most of the breeders were middle aged and older. Most of the breeders surveyed were graduated from primary school (44.5%), high school and secondary school 25.5% and 24.5% respectively, while the rate of university graduates was 5.5%. The breeders who graduated from university were also breeders with 51 or more animals. When we examine the number of households, it was found that most of them (92.7%) were in nuclear families with 1-4 people, and only 2 (1.8%) of the enterprises studied live in large families of 8-10 people. 88.2% of them have answered the reason for cattle breeding as "a livelihood." When it comes to the year of commencing cattle breeding, 77.3% of them took over because it was their father's profession and continued for more than 20 years. Breeders who started animal husbandry in the last 10 years have established livestock facilities by taking advantage of government incentives. 89.1% of the enterprise owners surveyed had social security and they are mostly from TARIM BAĞKUR. Alkan and Güney (2019) found that 61.12% of the enterprise owners were between the ages of 30-50, 29.79% of the enterprise owners were 51 and over, and 9.09% of the enterprise owners were under 30. Akkuş (2009) determined that dairy cattle enterprises in Konya had an average of 75 da of land and the average age of the enterprise owners was 44.95. Demir (2011) and Demir and Ayvazoğlu (2012) determined the average age of enterprise owners as 49.2 and 43.87, respectively. Çağı and Odabaşıoğlu (2009) stated that 91.3% of the breeders were avarage of 40 years old, Demirtaş (2006) stated that 74.19% of the enterprise owners were middle aged, and Şahin and Yılmaz (2008) stated that 90% were older than 30 years. Şahin et al. (2001) reported that 57.6% of enterprise owners graduated from primary school, Soyak et al. (2007) reported that 59% of breeders graduated from primary school, Şeker et al. (2012) reported that 48.8% of the breeders were a primary school graduate or dropped out. Söğüt (2009) stated that there were 3-6 people in 87.3% of the enterprises, Şahin et al. (2001) stated that the average number of individuals in the enterprises was 6.1, and Şahin and Yılmaz (2008) stated that the average household size was 6.74 people.

71.8% of the enterprises subject to study kept records of livestock, the majority of those who keep records (57.3%) stated that the necessary information kept by handwritten manual records and their records were not regular. The number of enterprises using a herd management program was 16, and this rate constituted 14.5% of the total number. 28.2% of the enterprises surveyed stated that they never kept any records. The way of establishing an enterprise was generally by using their own experiences, and by using equity in the guidance of the tradition they inherited from their ancestors (83.6%). The number of breeders who established an enterprise with governmental incentives from public institutions was 13, and the collection rate was 11.8%. 73.6% of the enterprises surveyed benefitted from the unpaid family labor force, 26.4% had a caregiver/shepherd. The vast majority (82.7%) of the employees were foreign labor. The vast majority (72.7%) of people milking in the enterprises was the owner of the enterprise and family members (spouse-children), it was observed that caregivers were 27.3% together with their family members. Öztürk (2009), in his study in Mardin, determined that the vast majority of breeders followed growth of their animals through subjective observation (87.30%), the rate of those who followed up by measure or weighing was 3.18%, and 9.52% were not recorded. Hozman (2014) stated that 54% of the breeders kept records in the enterprise, 24% did not keep records in the enterprise, and 22% partially kept records. Özduran (2011) stated that 83.3% of the workforce in the enterprises was met by family members in the farms that were members of the union and 98.35% in the farms that were not members of the union, many breeders continue farming as the father's profession and these rates are 63.9% for the members, and 82.7% for non-members. Topçu (2008) stated that increasing the quantity of labor force and allocating enterprises away from the city center reduced the success of the business; also stated that milk productivity, number of cattle, barn quality, amount of concentrated feed in the ration and selection of dairy cattle from crossbreed animals increased the success of the enterprise.

Table 2. Demographic characteristics of enterprise owners and general characteristics of the enterprises

Age of the breeders	N	%
20-30	6	5.5
31-40	28	25.5
41-50	45	40.9
≥ 51	31	28.2
Number of households	**N**	**%**
1-4 people	102	92.7
5-7 people	6	5.5
8-1- people	2	1.8
Reason for cattle breeding occupation	**N**	**%**
Contribution to livelihood	97	88.2
There is no other job to do for a living	5	4.5
High income source	8	7.3
Children's contribution to production	**N**	**%**
Available	47	42.7
Non-available	63	57.3
Education	**N**	**%**
Primary School	49	44.5
Secondary school	27	24.5
Highschool	28	25.5
University	6	5.5
Number of years passed for cattle breeding	**N**	**%**
1-5 years	4	3.6
6-10 years	13	11.8
11-20 years	8	7.3
≥ 21- Father's occupation	85	77.3
Social security	**N**	**%**
Available	98	89.1
Non-available	12	10.9

Do they keep livestock records?	N	%
Yes	79	71.8
No	31	28.2
Method used in order to keep records	**N**	**%**
No records	31	28.2
By hand	63	57.3
Herd management program	16	14.5
Way of construction of the barns and auxiliary facilities	**N**	**%**
Own experience	92	83.6
Taking neighboring enterprises as an example	5	4.5
With the funds given by public institutions	13	11.8
Number of employees	**N**	**%**
No employees	81	73.6
There is a caregiver	29	26.4
Milking person	**N**	**%**
Himself/herself	39	35.5
Caregiver	22	20
Family members	41	37.2
Caregiver with family members	8	7.3
Qualifications of the caregivers	**N**	**%**
Vet. Health technician / Agricultural technician	4	7.7
Primary school graduate	5	9.6
Foreign labor force (Afghan)	43	82.7

Structural characteristics of enterprises

When Table 3 is examined, it is seen that 70% of the enterprises studied are engaged in plant and animal production together, and 30% are engaged only in cattle breeding. In the distribution of the land assets of the enterprises, the highest ratio is those with 101-500 decares of land (54.5%). The rate of the breeders with a land of more than 500 decares is 17.3%. However, the irrigable land rate in the province is quite low, and the share of 0-50 decares of land within irrigated land is 69.1%. In 23.6% of the enterprises examined, forages are not produced and they meet their forage need by purchasing from outside. Cattle breeds were observed at the rate of Simmental (59.07%), Brown Swiss (18.47%), Holstein (14.90%), Crossbreed (5.16%) and Native breeds (2.40%), respectively, in the enterprises examined. 12.02% of the animals were milch during the study. Hozman (2014) stated that enterprises planted the following: 62.4% alfalfa, 3.7% vetch+barley, 6.7% vetch+sainfoin, 31.6% oat, 5.2% vetch+oats, 38.3% sainfoin, 10.5% meadow, 3% sugar beet and 16.5% corn. Ersoy (1994) reported that the areas where forage crops were produced were at average of 18 decares, they used hay and meadow grass as roughage sources and 8.6% of them used silage. Köse (2006), in his study in the province of Uşak, stated that an average of 66.5 decares of land per enterprise produced clover, hay, and sainfoin as roughage included in the 14% of forage plant fields.

Table 3. Enterprise and cattle breeding production methods

Production Method	**N**	**%**	**Cattle Breeds for Breeding**	**N**	**%**
Animal products	33	30	Holstein	964	14.9
Plant/Animal together	77	70	Brown Swiss	1195	18.47
Land Asset of the Enterprises	**N**	**%**	Simmental	3822	59.07
0-50	13	11.8	Native	155	2.4
51-100	18	16.4	Crossbreed	334	5.16
101-500	60	54.5	TOTAL	6470	100
≥ 501	19	17.3	**Current Status of Cattle**	**N**	**Avr.**
Irrigated Land	**N**	**%**	Milking	1923	12.02
0-50	76	69.1	Dry	1268	7.93
51-100	12	10.9	Pregnant	1015	6.34
101-500	22	20	Heifer	837	5.23
Forage Plant Production	**N**	**%**	Calf	1427	8.92
Available	84	76.4	TOTAL	6470	40.44
Non-available	26	23.6			

Table 4 shows the shelter structures of the enterprises studied. When the table is examined, it is seen that 80.9% of the shelters have tied stall, 14.5% have free stall, and 4.5% have free systems. It is determined that free stall farms are over 50 animal capacity farms that used governmental incentives. When we examine at the construction dates of the shelters, it is seen that 37.3% are between the ages of 11-20 years and only 20% are between the ages of 0-5. Most of the shelters (92.7%) belong to the breeder, only 2.7% is rent. 53.6% of the enterprises are built in the east-west direction, 46.4% in the north-south direction. The ground material of the enterprises are 97.3% concrete and 2.7% soil. While 89.1% of the enterprises examined have a ventilation shaft, 10.9% do not have a ventilation shaft. In 14.5% of enterprises with ventilation shafts, there are shafts from end to end, there are 1-3 shafts in 33.6% of them. The vast majority (35.5%) of the enterprise wall structures are briquettes, followed by brick and stone walls. Wall thicknesses of 11-20 cm are 46.4%, while those of 21-40 cm are 36.4%. As the roof material, 68.2% is tile, followed by sheet metal roofs, and 1.82% are house barns. The number of windows in the enterprises examined is 42.7% with 5-10 windows, while those with 1-4 windows are 40%. While the ratio of windows with a height of 1.6-2 m from the ground is 52.7%, the rate of those with a height of 1-1.5 m is 26.4%. The direction of the window hinges is on the downside with a rate of 78.2%. Öztürk (2009), in his study in the province of Mardin, found that 55.17% of the existing shelters had ventilation shafts, 44.83% did not have ventilation shafts, 92.30% had free stall, 4.61% had tied stall and 3.09% was with no stall. The researcher found that 62.5% used concrete as ground material, 31.25% used soil and 6.25% used pavers, 21.87% used stone as wall material, and 40.62% used briquette. Tilki et al. (2013) found that there were no ventilation shafts in the barns of 26 (6.31%) enterprises in the province of Kars, and only 1 ventilation shaft in 15 (3.64%) enterprises. Researchers stated the rate of enterprises that chose to do closed tied stall breeding as 79.13%. Alkan and Güney (2019) stated that 82.98% of the shelters in Ordu had tied stalls, 10.44% had free tied stall and 6.39% were free barn type, 55.32% are constructed in the east-west direction and 43.52% in the south-north direction, and as ground material 8.90% soil, 60.93% concrete, 28.43% wood, 1.16% concrete + wood was used. Özyürek et al. (2014) determined in their study in Erzincan province that 97.7% of the shelters had tied stalls and 41.7% of the barn walls were stone. Güğercin et al. (2017) found that 98% of the cattle enterprises in Adana had closed and tied stall type barns. Alkan and Ünlü (2019) found that 71.17% of the shelters in enterprises of Giresun province used concrete as ground material, 14.42% used soil and 11.99% used wood, 33.54% used brick as wall material, 29.44% used stone, 17.60% used briquette, 0.61% used wood and 0.30% used sheet metal. Köseman et al. (2015) stated that 32.5% of cattle production enterprises had a milking unit, Demir and Sancar (2012) stated 76.1%, and Soyak et al. (2007) stated 4%. Alkan and Güney (2019) reported that while 95.55% of the shelters in the enterprises in Ordu province had windows, 4.26% did not. Bardakçıoğlu et al. (2004) in the dairy cattle production enterprises in Aydın province, the ratio of using sheet metal, eternite and tile as roof materials was 56.5%, 25.3%, and 13.1%, respectively, concrete floors were preferred at a rate of 71.7%, in terms of entrance direction, it was determined that 67.7% of them faced south, 54.5% did not have a birth section and 93.9% calf sections were arranged inside the barn. Researchers reported that barn height varied between 200 and 800 cm, and the bottom edge of the window was between 110 cm and 300 cm from the ground. In their study, Karabacak and Topak (2007) reported that in the district of Ereğli, the height of the windows from the barn ground is between 90-140 cm in 70% of the shelters, and 141-190 cm in 30% of the shelters. Uğurlu (1993) in their study conducted in Konya province, found that in livestock enterprises 79.48% of the shelter windows were between 0.80-1.00 m in width, 66.66% were between 0.61-0.80 m in height, 43.59% of the window ground heights were 1.20-1.50 m, while 33.33% of them reported between 1.51-1.80 m.

Table 4. Some of the structural characteristics of shelters

Shelter Type	**N**	**%**	**Wall Material**	**N**	**%**
Tied stall	89	80.9	Stone	21	19.1
Free System	5	4.5	Briquette	39	35.5
Free Stall	16	14.5	Brick	32	29.1
Construction Year	**N**	**%**	Adobe	5	4.5
0-5	22	20	Other	13	11.8
6-10	15	13	**Wall Thickness (cm)**	**N**	**%**
11-20	41	37.3	0-10	1	9
21-40	29	26.4	11-20	51	46.4
≥ 41	3	2.7	21-40	40	36.4
Ownership	**N**	**%**	≥ 41	18	16.4
Rent	3	2.7	**Number of windows**	**N**	**%**
Owner	102	92.7	1-4	44	40
Shared	5	4.5	5-10	47	42.7
Shelter Direction	**N**	**%**	11-30	7	6.4
East-West	59	53.6	31-80	5	4.5
North-South	51	46.4	From end to end	7	6.4
Ground Material	**N**	**%**	**Window Height (m)**	**N**	**%**
Concrete	107	97.3	1-1.5	29	26.4
Soil	3	2.7	1.6-2	58	52.7
Roof Material	**N**	**%**	2.1-3	21	19.1
Steel	2	1.8	≥ 3.1	2	1.8
Concrete Basement	2	1.8	**Opening Direction of Windows**	**N**	**%**
Tile	75	68.2	Below	86	78.2
Eternite	1	9	Side	24	21.8
Panel	8	7.3	**Ventilation Shaft**	**N**	**%**
Sheet metal	22	20	1-3	37	33.6
Roof Height (m)	**N**	**%**	4-6	40	36.5
0-3	29	26.4	7-10	5	4.5
4-6	64	58.2	From end to end	16	14.5
7-10	17	15.5	Non-available	12	10.9

85.5% of the enterprises subject to study do not have a manure pit, and 90.9% of the manure obtained are used by the breeder in their own lands (Table 5). The distance of the manure pit to the milking unit is generally more than 11 meters. In manure cleaning, 84.5% is done by hand, 9% by tractor shovel and 14.5% by manure scraper. In the enterprises, there are 101-300 m^2 sized warehouses (36.4%) for roughage warehouse. Tents are used as roughage storage in 84.5% of the enterprises. While 80% of the examined enterprises do not use base material, 4.5% of them use soil ground and 15.5% of them use rubber space. 84.5% of the enterprises do not have a birth section, infirmary and calf hut. Enterprises that have a birth section, infirmary, calf cabin and that use rubber space are enterprises established with government incentives from public institutions. There are milking units in 18 enterprises and the milking unit capacity of 8 enterprises is capable of milking 16 animals at the same time. Among the milk cooling tanks in 18 enterprises, the number of enterprises with a capacity of 2 tons is 7, which is the highest.

Among the researchers who conducted similar studies, Köseman et al. (2015), in their study in Malatya province, found that the rate of hand milking breeders was 11.7%, the rate of the breeders who milked via machine was 88.3%, and the rate of those who had a separate milking section and a cooling tank was 27.3%. The researchers determined that 85.7% of the enterprises did not have calf huts. Alkan and Güney (2019) stated that while 35.59% of the enterprises had a calf section or hut, 64.41% of them did not. Arslanoğlu (2019) reported in his study in Elazığ province that 31.6% of dairy cattle production enterprises had forage storage, while 68.4% did not, and that the rate of breeders who had milk cooling tanks was 13.2%. Önal and Özder (2008) stated that the rate of those who had a separate milking unit in Edirne was 8.8% and the rate of enterprises with milk cooler tanks was 3.5%, while Kızıldağ Arslan (2012) stated that there was no enterprise with a separate milking unit in Van province.
Karaman (2005) determined the rate of enterprises with forage storage as 94% in Tokat, Hozman (2014) as 79.7% in Sivas,

and Soydam (2018) as 53% in Kütahya. Köse (2006) found that 84% of the enterprises cleaned the manure by hand, 12% with a tractor, and 4% with an electric scraper in their study in Uşak. Arıcı and Yaslıoğlu (2005) stated that in 51.5% of the barns in Bursa province, manure cleaning was done by hand.

Table 5. Barn features and sections of the enterprises

Manure Pit	**N**	**%**	**Birth Section**	**N**	**%**
Yes	16	14.5	Available	17	15.5
No	94	85.5	Non-available	93	84.5
Manure Use	**N**	**%**	**Sick Animals Section**	**N**	**%**
Own land	100	90.9	Available	17	15.5
Sell Others	7	6.4	Non-available	93	84.5
Other	3	2.7	**Calf Hut**	**N**	**%**
Manure Cleaning	**N**	**%**	Available	17	15.5
Manure Scraper	16	14.5	Non-available	93	84.5
Tractor Shovel	1	9	**Milking Unit Capacity**	**N**	**%**
By hand	93	84.5	12	4	3.6
Roughage Storage Size (m^2)	**N**	**%**	16	8	7.3
≤ 50	16	14.5	18	2	1.8
51-100	34	30.9	20	3	2.7
101-300	40	36.4	24	1	0.9
301-500	9	8.2	Non-available	92	83.6
≥ 501	11	10	**Distance of Manure Pit to Milking Unit (m)**	**N**	**%**
Feed System	**N**	**%**	5-10 M	2	12.5
Feeding Rack + Feeding Rack Path	18	16.4	11-50 M	7	43.8
Classic Feeding Rack + Feeding Rack Path	28	25.5	≥51	7	43.8
Classic Feeding Rack Only	64	58.2	**Milk Cooler Tank Capacity (ton)**	**N**	**%**
Tent Storage	**N**	**%**	1 Ton	5	4.5
Available	93	84.5	1.5	1	9
Non-available	17	15.5	2	7	6.4
Base Material	**N**	**%**	3	1	0.9
Non-available	88	80	5	2	1.8
Rubber	17	15.5	6	2	1.8
Soil Ground	5	4.5	Non-available	92	83.6

Conclusion and Recommendations

Although the Yozgat province is suitable for livestock in terms of transportation, health and agricultural lands, dairy cattle production activities cannot reach the desired level due to reasons such as the lack of training of the enterprise owners and their employees on husbandry, insufficient shelter conditions and roughage production.

As a result of the survey, when the results obtained are evaluated in terms of the general characteristics of the dairy cattle production enterprises in Yozgat, it is seen that a significant part of the enterprises in terms of educational status are primary school graduates. It is seen that most of the breeders learned dairy cattle production as father's profession. 28.2% of the breeders stated that they did not keep the records of their animals. A profitable livestock business is only possible by keeping records properly and achieving the goal of herd management.

Breeders and shepherds with knowledge as well as experience are needed to achieve this goal. It has been determined that the majority of enterprises in the province are composed of small-scale family businesses. In light of the findings obtained in the study, although it was revealed that the Simmental breed was more in number than other breeds in Yozgat, it was concluded that the productivity potential of the animals could not be evaluated sufficiently.

Most of the dairy cattle shelters have connected stops, concrete floors, lack of adequate lighting and ventilation, and it has been observed that there are deficiencies in animal welfare, productivity increase and hygiene. In order to eliminate the problems caused by the old buildings of shelters, it should be ensured to encourage the use of governmental incentives, to

increase farmer training activities, village meetings, farmer visits, technical trips and fairs, brochures or education on agriculture and animal husbandry. State-sponsored projects should be planned and implemented to encourage people living in rural areas, especially young people, to cattle breeding.

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Conflict of Interest
The author declares that they have no conflict of interest.

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