Sheep farming business in Uşak city of Turkey: Economic structure, problems and solutions

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ABSTRACT

The current study was conducted to reveal the current states, structural features and primary problems of the sheep raising businesses in the city of Uşak. The study group of the current study is comprised of 429 sheep raising businesses selected through stratified sampling (provinces) and a questionnaire consisted of 112 items was administered to these businesses. Through the items in the questionnaire, data were collected about the general features of the businesses and their owners, the state of grazing lands, mating of sheep, birth, milking, clipping, health protection, marketing of animals and the states of tools and equipments in the businesses.

The findings of the study have revealed that 82.2% of the owners of the sheep raising businesses are elementary school graduates, their average time of being involved in the activity of sheep raising is 9.8 years, 90% of their shepherds are from the family members, 23.5% of them practice additional feeding before mating and the most preferred method for mating is free insemination with 89%.

Of the owners of the businesses, 81.1% learned sheep raising from their elders; for 54% of them sheep raising is the sole source of income and 25.6% of them are engaged in sheep raising to support their families. The main problems of the sheep raisers were found to be the high cost of feed, the low prices paid for their products, inadequate and poor quality grazing lands and animal diseases. In order to make sheep raising more attractive, the prices of the products should be increased, grazing lands should be improved, the genetic structure of the herd should be enhanced, the amount of land area where feed crops are cultivated should be extended and suitable credit conditions should be provided. On the other hand, they need to be informed about sheep mating, lamb growing, stock, milking hygiene, general sheep feeding practices and marketing.

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1. Introduction

Animal breeding has been an important part of human life throughout history and has provided great benefits. The aim of animal breeding is to conduct profitable breeding by raising high-yielding and healthy animals. The elements that determine the profitability of animal breeding are breed of the animals raised, breeding techniques and market conditions (Akçapınar and Özbeяз, 1999).

According to data from 2017, the number of cattle in Turkey is 16 million 105 thousand, the number of sheep is 33 million 677 thousand and the number of goats is 10 million 636 thousand. The total milk production amounted to 20 million 699 thousand tons, of which 1.344 million tons were produced from sheep. The production of red meat was 1,126,403 tons, of which 100,058 tons were met by sheep (TÜİK, 2017); in the city of Uşak, there are 376,104 sheep and 4260 sheep raising businesses.

In sheep breeding, the main objective is undoubtedly economic production and/or breeding. In order to achieve this goal, environmental factors (maintenance, nutrition, shelter, health protection, etc.) that will have an impact on yields must be improved or the genetic makeup of animals must be improved or both of them should be addressed together. The desired production goal is often not achieved by improving either environmental conditions or the genetic makeup alone. For this reason, firstly, breeds suitable for the existing region and the conditions of the business should be selected, while at the same time appropriate environmental...
conditions must be provided for these breeds (Ünalan, 2012). Besides strategic importance, agriculture is one of the most important sectors in our country for many reasons, such as the high number of people living in rural areas, traditional conception of production, employment opportunities and contribution to economy.

The purpose of the current study is to determine the main structural features and problems of the sheep raising businesses operating in the city of Uşak and to make some suggestions for solutions to these problems. The findings of the current study are believed to shed light for future research and to make contributions to increasing quality and efficiency in production.

2. Materials and method

2.1. Material

The material of the study is the data obtained in the year 2015 through a questionnaire administered face-to-face at sheep raising businesses in the central province of Uşak and provinces of Eşme, Sivaslı, Karahallı, Ulubey and Banaz. Through the questionnaire, data were collected about the demographic features of the businesses, structural features of sheep pens, feeding and watering materials, the state of grazing lands, the times of sheep going to grazing land and coming back, the shepherd, provision of breeding animals and the ages of animals used for breeding, mating of sheep, birth, milking, weaning of lambs, feeding of sheep, clipping and animal health.

2.2. Method

In 2015, the total number of sheep raising businesses registered in Uşak Food Agriculture and Livestock Provincial Directorate was 4260. There were 900 businesses in the center, 2000 in Eşme, 400 in Banaz, 450 in Ulubey, 350 in Sivaslı and 160 in Karahallı. For the administration of the questionnaire within the context of the current study, sheep raising businesses that could represent the city of Uşak were determined by random sampling. Thus a total of 429 sheep raising businesses; 92 from the central province of Uşak, 204 from Eşme, 44 from Ulubey, 40 from Banaz, 35 from Sivaslı, 14 from Karahallı, made up the sampling of the study.

In the determination of the sampling, the Simple Random Sampling Method was used. The number of the businesses to which the questionnaire would be administered was determined to be 429 with 10% sampling error and within the limit of 95% confidence interval (Çiçek and Erkan, 1996).

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n = \frac{N \cdot t^2 \cdot p \cdot q}{d^2 \cdot (N - 1) + t^2 \cdot p \cdot q}
\]

- n: sampling size
- N: Population size (4260)
- t: t ruler value in the 95% confidence interval (1.96)
- p: 0.5 (50% frequency of encountering)
- q: 0.5 (%50 frequency of not encountering)
- d: Sampling error (0.10)
- In the analysis of the data collected from the questionnaire, SPSS program package was used (Yazıcıoğlu and Erdoğan, 2004).

3. Results and discussion

In the current study, data were collected about the general features of the sheep raising businesses operating in the city of Uşak which are herd management (mating of sheep, milking and clipping, supply of breeding animals), the state of sheep pens and grazing lands, incomes (milk, cheese, sale of breeding animals and butchery animals) and health protection.

3.1. Information about the sheep raising businesses in the city of Uşak

The sheep raising businesses’ average time of being involved in the activity of sheep raising is 9.8 years. When the reasons for them to be involved in sheep raising are examined, it is seen that for 54% of them it is the sole source of income, 25.6% of them have to support their families and 12.4% love doing it. Of the participating businesses, 81.1% learned sheep raising from their ancestors. Of the participating sheep raising businesses, 77.4% are members of the Association of Breeding Sheep and Goat Raisers while 5.6% are not. Of the participating businesses, 17% did not respond to this question.

The data obtained from the administration of the questionnaire have showed that 90% of the shepherds are from among the family members and 6.5% of them are hired; yet, 2.6% of the businesses did not respond to this question. Of the shepherds, 89.5% are males and 4% are females; yet, 6.5% of the businesses did not respond to this question. When the shepherds’ level of education is examined, it is seen that 3% of them are illiterate, 2.8% are just literate, 27.9% are elementary school graduates, 1.7% are middle school graduates and 1.2% are high school graduates and 54.4 of the businesses did not respond to this question.

Of the participating businesses, 35.4% provide their breeding animals from both their herds and other herds, 25.6% provide them only from their own herds, 34.5% provide from other herds and 0.5% from other cities.

In a study conducted on sheep raisers in the city of Canakkale, it was reported that 65% of them are elementary school graduates, 10% are middle school graduates and 25% are high school graduates (Koyuncu et al., 2006). On the other hand, (Bilginturan and Aythean, 2009) conducted a study in the city of Burdur and reported that 90.2% of the sheep breeders are elementary school graduates, 7.7% are high school graduates, 0.5% hold an associate’s degree and 1.5% are illiterate. The levels of the education of the sheep breeders in the city of Uşak are similar to the ones reported in the Literature. There is almost no university graduate among the sheep breeders in the city.

In a study conducted in the Western Anatolian and Thrace Regions (Kaymakçı et al., 1995), it was found that great majority of the shepherds are from family members, concurring with the finding of the current study. In the city of Karaman, the rate of the sheep raising businesses having a shepherd was found to be 62% and the rate of those not having was found to be 38% (Sahinli, 2014).

In the study conducted in the city of Karaman, the most important reason for the sheep breeders to get engaged in this job is its being a father’s job with 64%, followed by the desire to gain extra income with 20% (Sahinli, 2014). In another study (Bilginturan and Aythean, 2009), it was found that 64.4% started sheep breeding as they did not have any other income.

3.2. Waterer and manger

Of the participating sheep raising businesses, 46.3% use metal watersers and 42% use plastic watersers. Of the businesses, 49% use wooden mangers and 43.6% use metal mangers. They are followed by plastic and cement mangers (12% and 10%, respectively). As the source of water, 69% of the sheep raising businesses use fountains, 21% use lakes and 4.2% use well water. Information about the sheep pens of the sheep raising businesses is given in Table 1 and features of the sheep pens of the businesses are given in Table 2.
In the study conducted in the city of Kahramanmaras, it was reported that in 81% of the sheep breeding enterprises, the closed type shelter and in 9% of them, open type shelter was used and the materials used in building the walls of the sheep pens were found to be as follows; in 40% of them brick is used; in 43% of them stone is used; in 10% of them brick is used; in 7% of them wood is used (Paksoy et al., 2006). In another study, the average width of the sheep pens was found to be 9.71 m, the average length was found to be 18.15 m and the average height was found to be 2.75 m (Bilginturan and Ayhan 2009). These findings are different from the findings of the current study in terms of the sizes of the sheep pens and the materials used in the construction of them.

3.3. Herd management

Mating of Sheep: In the city of Uşak, mating of sheep is performed by using both the free insemination and controlled mating. The businesses prefer the free insemination method with 89.0% and controlled mating with 6.1% and class style with 0.7%. While 80.4% of the businesses keep rams within the herd throughout the year and 15.4% of them keep rams in the herd only in the sheep mating period.

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3.4. Birth

Depending on the time of mating of sheep, births to lambs are given in December (74.6%), January (9.1%), February (4.7%) and other months (5.6%). In 84.9% of the sheep raising businesses, care of umbilical cord is not performed. While 31% of the businesses wean their lambs when they are three months old, 24.5% of them let lambs suck their mothers for five months. Of the businesses, 76% do not perform milking until lambs are weaned. Majority of the sheep raising businesses in the city of Uşak (62.2%) stated that they start extra feeding in the first month of the birth.

3.5. Milking

While 42.7% of the businesses start milking in May, 36.4% start in April and 7.9% start in March. While majority of the businesses (52%) end milking in August, 17.7% end it in July and 15.4% in September. While high majority of the businesses (81.6%) perform single milking a day, 9.6% of the businesses perform two milkings a day and 8.9% of the businesses did not respond to this question. The time of milking is morning in 22.1% of the businesses, afternoon-evening in 51.3% of the businesses and morning-evening in 13.8% of the businesses; yet, 10.5% of the participants did not respond to this question. While milking is usually performed by family members (83.7%), in some businesses shepherds
(5.8%) perform milking and in 1.6% of the businesses this is done by milkers. In 5.6% of the businesses, milking is performed by females and males together, in 77.4% of them only by females and in 4.7% by males. In 67.1% of the businesses udder cleaning is not done, in 20.7% it is done and 12.2% of them did not respond to this question.

3.6. Clipping

Sheep are clipped once a year. Clipping of sheep is performed in the city of Uşak in different months (May, June, August and September). Yet, May and June are preferred more. Clipping is usually performed by the owner of the herd (80.2%). While clipping is mostly performed with a machine with 66%, a clipper is used in 29.6%.

3.7. Feeding and provision of feed

When the information about extra feeding before the mating of sheep is examined, it is seen that while 36.1% of the businesses carry out extra feeding before the mating of sheep, 59% of them don’t and 4.9% of the businesses did not respond to this question. The businesses carrying out extra feeding do this with rams and sheep (20%), with only rams (16.1%) and with only sheep (12%). The most prominent sources of feed of the sheep raising businesses are: factory feed, particle feed, chaff, straw, silage. In extra feeding, the most commonly used source of it is factory feed (30.8) followed by particle feed (15.2%). In the winter feeding of sheep, mostly barley is used (73.9%). Some businesses use wheat, factory feed, beet pulp, cotton pulp, silage, tare, alfalfa, oat, hay and straw together with barley. In pregnant sheep, while the rate of businesses performing extra feeding is 54.3%, 39.6% do not perform extra feeding. The rate of extra feeding is 12% at the beginning of pregnancy, 9.6% at the middle of pregnancy and 36.4% at the end of pregnancy; yet, 42% of the businesses did not respond to this question.

In the current study, it was found that the rate of the businesses performing extra feeding to animals before the mating of sheep is 23.5%. This finding does not concur with the finding indicating that in 74.7% of the sheep raising businesses extra feeding is performed (Bilginturan and Ayan, 2009). Moreover, they are different from the findings reported by Dellal et al. (2002), Tölü et al. (2007) and Koyuncu et al. (2006).

3.8. Business incomes

In Table 3, information about the milk sale and breeding animal sale of the businesses is given. In the sheep raising businesses, 55.2% of the milk is used in cheese production. The rest is used to make yogurt and to meet the needs of their own families (milk, yogurt and cheese). Of the lambs obtained in the sheep raising businesses, 58.3% are sold to tradesmen after they have been weaned, 15.6% are fed up in the business, 15.6% are spared as breeding animals and 10.5% are either sold to tradesmen, or sold as breeding animals or fed up in the business.

3.9. Health protection program

It was stated that vaccination programs applied by sheep raising businesses in Uşak province include Enterotoxemia, Brucella, Smallpox, Foot-and-Mouth, Plague, and Bluetongue vaccines. Of the sheep raising businesses, 90% have a health protection schedule. The control of vaccine programs is done by veterinary surgeons (84.1%), by veterinary health officials (3.0%) and by the business owners themselves (9.1%) and 3.7% of the businesses did not respond to this question.

The sheep raising businesses stated that they conduct disinfection in sheep pens. The rate of the businesses conducting cleaning and disinfection in spring, summer, autumn and winter is 63.2, 7.5, 15.9 and 50.5, respectively and 72.7% of the disinfection is done by lime, 13.3% by chemical medicine and 2.3% by burning. While the rate of those which have bath pits for sheep in the sheep pen is 8.4%, the rate of those which do not have bath pits is 91.6%. The rate of those bathing their sheep at least once a year is 18.6% and the rate of those bathing their sheep more than once is 5.4%; yet, 74.6% of the businesses did not respond to this question. The rate of those conducting struggle with outer parasite at least once is 29.4%, the rate of those conducting it twice is 64.8% and the rate of those doing it more than three times is 5.8%.

It was found that 59.8% of the sheep raising businesses get information from veterinary surgeons when they want to use any medicine. 38.1% from the City and Provincial Directorates of Agriculture and 1.0% from other business owners in the village (Bilginturan and Ayan, 2009). The rate of the sheep raising businesses which apply all of the protective vaccines was found to be 64.9%. On the other hand, 99% of the sheep raising businesses in the city of Burdur apply protective vaccines. Of these businesses, 6.7% apply only the Enterotoxemia vaccine, 9.6% apply only the Foot-and-Mouth vaccine, 6.1% apply only the Smallpox vaccine and 2.6% apply only the Brucella vaccine (Bilginturan and Ayan, 2009). The businesses apply their vaccines according to schedule with 84% while 16% of them apply them randomly or when a disease emerges. In 94.3% of the businesses, veterinary surgeons give the vaccines while 5.7% themselves give the vaccines. Similarities were found between findings of the current study and the findings reported in the literature. Similarities were also found in terms of the source of information and the schedule of vaccines. As breeders generally think that health protection program generally bring extra costs, they can ignore such protection programs. As a result of this, increases occur in lamb deaths, deterioration in growth and decline in yields by adults, leading to important losses.

3.10. Problems of sheep raisers and their suggestions

The distribution of the problems that seem to be important for sheep raising is as follows; high cost of feed + inadequate and poor quality grazing lands (80.2%); inadequate and poor quality grazing lands (6.4%); high cost of feed + inadequate and poor quality grazing lands + animal diseases (3.5%); high cost of feed + inadequate and poor quality grazing lands + low sale prices (3.3%) and high cost of feed (3.2%) and animal diseases and other reasons (3.4%).

The sheep raising businesses made the following suggestions to make sheep raising more profitable; marketing price + improving grazing lands (30.0%); improving the genetic make-up of the herd + marketing price + improving grazing lands + expanding land areas for the cultivation of feed crops (16.2%); improving the gen-
erolic make-up of the herd + marketing + improving grazing lands (11.3%), marketing price + improving grazing lands + expanding land areas for the cultivation of feed crops (9.6%); only marketing (8.2%), only improving grazing lands (4.4%), improving the genetic make-up of the herd + marketing price + cheap credit + improving grazing lands + expanding land areas for the cultivation of feed crops (7.1%); marketing price + cheap credit + improving grazing lands (5.2%), expanding land areas for the cultivation of feed crops (5.7%) and feed + supply of breeding animals, improving and cheap credit (2.3%).

In 3% of all the cultivated lands, feed crops are grown while in countries having a developed animal breeding sector, nearly 25% of the cultivated lands are allocated to cultivation of feed crops and even in some countries, this rate can reach 50% (Ermetin, 2011). On the other hand, the main problems of the sheep raising businesses were found to be as follows; marketing problem (39.1%), high feed prices (23.1%), inadequate grazing lands (21.8%), credit problem (9.2%), and education and health problems (6.8%) (Bilginturan and Ayanh, 2009). Of these businesses, 51.4% want a solution to the marketing problem, 15.1% to the grazing land problem, 14.7% to the credit problem, 10% to the health problem, 7.7% to the problem of breeding animals. These problems and solutions suggested for them are similar to those of the current study.

4. Conclusion

In the city of Uşak, the Pırlak breed is widely known (90.7%). Though all of the business owners are literate, there is almost no university graduate business owner. Sheep breeding primarily relies on grazing lands. The mating of sheep is generally performed through free insemination. The sheep pens, waterers and mangers possessed by the businesses are generally made up of regional and cheap materials; the sizes such as length, width and height are sufficient and the sheep pens are usually built in the village under, next to the house. The income sources of the businesses are milk, yoghurt, sale of breeding and butchery animals. Yet, there are serious problems regarding packaging and marketing of products.

It can be argued that there is a certain level of consciousness of the animal health and anticipated importance is attached to vaccination. The most important problems of sheep breeding are high feed prices, low product prices, inadequate and poor quality of grazing lands, and animal diseases. In order to make sheep raising more attractive, the prices of the products should be increased, grazing lands should be improved, the genetic structure of the herd should be improved, the amount of land area where feed crops are cultivated should be expanded and suitable credit conditions should be provided. On the other hand, they need to be informed about sheep mating, lamb growing, stock, milking hygiene, general sheep feeding practices and marketing. Moreover, new breeds with better birth and milk efficiency can be introduced to the breeders apart from the Pırlak breed, works should be conducted on how to enhance birth efficiency, on out-of-season lambing and on intensive lamb breeding.

The herd health management and preventive medicine programs are designed to minimize anticipated problems and to enhance herd yield and may change from business to business. Therefore, they should be designed to increase birth efficiency, decrease the rate of death, accelerate the growth, improve carcass quality, improve care and feeding practices to increase the amount and quality of milk, enhance animal raising techniques, improve vaccination program and parasite control and manure management. For the successful application of health protection programs and accomplishment of the anticipated outcomes, there is a need for conscious and educated breeders.

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