

SHEEP WELFARE ANALYSIS IN PRIVATE FARMS FROM TIMIS COUNTY

D. Gavojdian¹, N. Pacala², Maria Sauer¹, I. Padeanu², S.O. Voia²

¹Sheep and Goats Research and Development Station– Caransebes

²Faculty of Animal Science and Biotechnologies, USAMVB Timisoara

e-mail: gavojdian_dinu@animalsci-tm.ro

Abstract

The purpose of this study was to determine the level of welfare provided to sheep reared and exploited in commercial farms of various sizes in the western part of Romania. The research was conducted in 25 private farms from Timis County, farms of various sizes (ranging between 93 and 1680 heads of mature rams and breeding ewes). Welfare assessment and rearing condition were analyzed and evaluated using interviews on farms based on a questionnaire elaborated by the authors of the current study. The results revealed that, depending on the farm, the sheep are kept during cold season indoors between 14.2 and 70.5 days with an average period of 36.4 days indoors. Only 52 % of farmers interviewed feed differentiated the ewes with multiple births, and 32 % of them apply stimulating feeding in lambs. Major losses through mortality in lambs until the age of 8 months are caused by lung diseases (40 %), excessive consumption of corn in the autumn (11 %), predators attack (stray dogs, wolves, foxes – 13 %), mortality caused by digestive tract affections or lameness (21 %) and finally, drowning in irrigation canals (6 %). Top 5 reasons for reforming the sheep are: age of the sheep (38%), infertility (23%), low productivity (15%), mastitis (15%) and lameness (9%).

Key words: animal welfare, sheep rearing, commercial farms

INTRODUCTION

Animal welfare is the combination of subjective and objective (qualitative and quantitative) aspects of the conditions of life for animals, including health and disease, behaviour, husbandry and management (Fitzpatrick et al., 2010). Animal welfare is attracting increasing interest worldwide, but particularly from those in developed countries, who now have the knowledge and resources to be able to improve the welfare of farm animals. At a local level in some countries, animal products produced to high welfare standards command a premium price in relation to conventionally reared food animals. Thus some actions to improve animal welfare, for example requirements demanded by retailers, may be related to maintaining market share and meeting consumer requirements, rather than ethical interests in animal welfare *per se* (Dwyer, 2008). The most important issues raised by animal welfare assessment systems can be elucidated through codes of livestock edited

by Rodrigues et al. (2008), which include the following traits: 1) Psychological freedom of the animals (not suffering from the conditions of housing), 2) behavioral freedom (the animal being able to express all forms of natural behavior), 3) physiological freedom (not to suffer lack of food or water), 4) freedom of the environment (securing safe and suitable accommodation), 5) absence of pain (to avoid undue suffering and injury), 6) absence of diseases (providing a good general state of health of livestock, as much as possible to avoid injury and disease on farms). Higher welfare standards for sheep can be sustained if: a) consumers are willing to pay the additional production costs that arise and/or b) governments subsidize producers and production systems with high welfare levels, with the additional production costs (Cziszter et al., 2010). The purpose of this study was to determine the level of welfare provided to sheep reared and exploited in commercial farms of various sizes in the western part of Romania.

MATERIAL AND METHODS

The research was conducted in 25 private farms in Timis county, farms of different sizes (ranging between 93 and 1680 heads). The farms studied were divided according to the number of animals held in three categories: I - small subsistence or semi-subsistence farms, with herds of less than 400 heads sheep; II - medium-sized farms, with herds ranging between 401-999 heads; III - large farms with more than 1000 heads adult animals. Welfare evaluation of the rearing conditions was assessed on each farm based on a questionnaire and an interview conducted in each farm. The questionnaire included 114 questions, of which 92 questions were related to the following chapters: the selection of herd, nutrition and forage base, veterinary sanitation, practices related to summer and winter rearing conditions. Interviews were conducted in November and December 2010.

RESULTS AND DISCUSSION

Table 1 shows data regarding some aspects of rearing conditions during grazing season of sheep. Thus, we can see that the average surface owned by sheep farms is 114 hectares (owned or leased), of which 41.6 hectares are represented by arable land and 72.4 hectares of pastures. Therefore, one hectare of arable land corresponds with 16.9 sheep hold, and on pastures are kept on average 9.7 sheep per hectare. In terms of average number of sheep per hectare of pasture, a different situation is observed in big farms (over 1000 heads) compared to the small and medium sized ones, respectively, 7.3 heads/ha compared with 7.3 gain / ha. This situation is most likely explained by the fact that small and medium sized farms are selling lambs around Easter (April), and large farms (over 1000 heads), and selling lambs at the age of 7 – 8 months, and weights around 35 kg (October-November). Thus, farms that sell lambs at the end of autumn, they need larger areas of pasture, and the study was conducted in November and December, when the farms were populated only with adult sheep (ewes, gimmers, shearlings and rams).

It can be easily noticed that only 16% of the breeders own cultivated pastures, and none of the medium sized farms practice cultivation or overseeding of the pastures. Also, only 48% of farms hold permanent water sources, from which the sheep to have permanent access during the summer season. Also, only 48% of the sheep breeders ensure access of the sheep to shade during extremely hot days (natural or artificial shade). Average daily distance covered by the flocks included in the study is 3.1 km, distance ranging between 2.7 and 3.5 km, depending on the size of farms.

Table 2 summarizes data on maintenance and feeding sheep during winter. Thus, one can note that the average number of days of maintenance in stabulation is 36.4 days, with a range between 70.5 and 14, depending on the size of the flock owned. Farms with large herds of sheep, practice stabulation only a short period of time, depending on winter severity and type of parturition. Thus, in less cold winters, sheep are lambing even in the free air, and after are placed in the sheds for only a short period of time (2-3 days), the period is extended if lambing is multiple (5-7 days). Stimulating feeding of lambs is practiced only by 32% of the breeders, and differential feeding of sheep with multiple lambing's is practiced by only 52% of farmers. It is worth mentioning that none of the breeders practice ultrasound verification to determine pregnancy rates, and consequently no separation of the barren sheep from those with simple gestations or those with multiple gestations has place.

In Table 3 are presented data on veterinary health care and curative and prophylactic treatments applied to the flocks belonging to the studied farms. Thus, the veterinarian only visited five of the 25 farms studied during the entire year, small farms have not reported any visit during the last 12 months interval. Over 90% of farmers use antibiotics in treatments that apply either to adult sheep or to lambs and youth categories. As for deworming livestock, only 68% of breeders practice bathing for external parasites and only 84% of farmers practice internal deworming. In terms of prevention

through vaccination in sheep, only 32% of breeders vaccinated their livestock against mastitis. And only 24% of sheep are vaccinated against infectious abortions.

In Table 4 are presented data on youth selection, for the replacing of culled old animals or in order to increase the flock. Breeders focus, as is natural, primarily on the youth development or the body weight (92%). Animal's pedigree is less important to breeders, only 56% of them take into account when selecting the gimmers or rams parents. Body's harmony and length of the lambs nipples represents interest for 48% and 56% of breeders. Nipple length counts especially for sheep breeders who exploit ewes for milk production, long nipples easing the milking process. Long nipples are unwanted among mutton producers, because ewes with very long nipples need additional help during first day after lambing, in order that the lamb needs to suckle, and hence additional manpower. Some breeders are convinced that the sheep tail length is correlated positively with high milk production, therefore, especially sheep breeders that breed Turcana, accord intense selection for the length of the tail in the flocks. The presence and shape of horns in the selection decision of the ewes lambs is extremely common, and especially in the case of selection of the rams, 84% of farms surveyed take into account this character in the selection of breeding flock. This is explained by its position in the group hierarchy, animal with horns manage to dominate the animals without horns, and as consequently have access to feed consumption more, thus have a higher body weight, produce more milk and wean more lambs. But this makes it hard during milking time, animal contention for various treatments and increased risk of injury in the flock. The degree of coating with wool of animals is a matter of which 76% of breeders take into account when selecting their animals.

In Table 5 are presented data that track conditions and criteria that lead to the culling of adult ewes. Thus, 38% of ewes are being reformed because of age, in general, sheep are culled of from the flock at the age of 7-8

years. Infertility is the second most important criterion, resulting in 23% of annual ewes reform. Mammary gland diseases and low productivity of ewes from the breeding flock makes out of 15% for each of the two types of disorders. Lameness affections represents 9% of cases for witch the ewes are reformed. Usually, severe lameness makes the animal's weak, thus lower production and fertility of the ewes is self-explanatory.

In Tables 6 and 7 are presented data on health disorders of youth categories and adult sheep, and data on mortality rates in flocks studied. Thus, the lambs of 1-8 months of age, the most important losses are due to lung diseases, an average of 40%, with limits ranging between 37 and 45%, depending on the size of farms. Lameness and digestive disorders causes usually 21% of the actual mortality rates, followed by predators attack - 13% of mortality outputs.

The mortality rates in the category of lambs 0-30 days is on average of 2.8%, and 30 days-8 months category is 1.7%. These indicators vary widely depending on farm size and rearing technology applied. Thus, large farms register losses through mortality greater (2.7%), compared to small and medium-sized farms (1.3%, 1.1%, respectively). This can be explained by the fact that in small and medium-sized farms, persons looking after the lambs are usually farmers family members, while in large farms, responsible for lamb rearing are different people with limited experience and knowledge of animal husbandry, often poorly paid and co-interested. Same time, the big difference can be explained by season and delivery of lambs, which takes place in small farms at Easter time or in late summer (July-August). While larger farms that exploit the young sheep grazing pastures and other temporary fields, commercializing lambs in late fall (October-November). The percentage of loss throughout mortality in adults sheep categories is approximately 2.1% and the lambing dystocia is registered on average in 2.4% from the ewes giving birth, depending on the size of the farms, ranging between 3.8% and 1.2%.

Table 1. Data on the conditions of maintenance of sheep during grazing season

Item	n	Surface administrated (ha)		Heads per hectare		Cultivated pasture	Permenent water sorce	Shade access	Distance covered km/day
		Arable	Pasture	Arable	Pasture				
Total respondents	25	41.60	72.44	16.94	9.73	16.0%	48.0%	48.0%	3.11
Small farms <400	8	13.25	16.25	19.84	14.52	12.5%	25.0%	37.5%	2.7
Medium sized farms <1000	10	23.00	47.60	28.60	13.82	-	50.0%	50.0%	3.0
Big farms >1000	7	73.6	172.14	17.11	7.31	42.8%	57.1%	57.1%	3.5

Table 2. Data regarding maintenance and feeding techniques of sheep during winter

Item	n	Days of stabulation	Stock feeding	Lambs stimulative feeding	Diferenciated feeding of ewes	Concentrates/day (g)	Hay/day (kg)
Total respondents	25	36.4	83.1	32%	52%	447.8	1.4
Small farms <400	8	70.5	98.7	25%	12.5%	485.7	1.3
Medium sized farms <1000	10	29.4	79.0	40%	70%	450.0	1.6
Big farms >1000	7	14.2	72.5	28.5%	71.4%	400.0	1.2

Table 3. Data on veterinary health care, curative and prophylactic treatments applied to flocks

Item	n	Veterinary visits/year	Use antibiotics	Internal disinfection	External treatments for disinfestations	Vaccination against mastitis	Vaccination against infectious abortions
Total respondents	25	5	92%	84 %	68%	32%	24%
Small farms <400	8	-	75%	62.5%	50%	-	-
Medium sized farms <1000	10	3	100 %	90%	70%	50%	30%
Big farms >1000	7	2	100 %	100%	85.7%	42.8%	42.8%

Table 4. Data regarding the characters and traits use in sheep selection by farmers

Item	n	Body weight	Pedigree	Conformation	Nipple lenght	Tail lenght	Presence and shape of horns	Wool quality
Total respondents	25	92%	56%	48%	56%	64%	84%	76%
Small farms <400	8	87%	25%	62 %	50%	37%	75%	50%
Medium sized farms <1000	10	90%	80%	20%	70%	80%	90%	80%
Big farms >1000	7	100%	57%	71%	42%	71%	85%	100%

Table 5. Data on the criteria that lead to the culling of adult ewes

Item	n	Age	Low productivity	Mamary affections	Infertility	Lameness
Total respondents	25	38%	15%	15%	23%	9%
Small farms <400	8	31%	17%	12%	27%	13%
Medium sized farms <1000	10	36%	24%	21%	11 %	8%
Big farms >1000	7	48%	4%	12%	31%	5%

Table 6. Data on major illnesses and accidents that lead to lamb mortality

Item	n	Lung diseases	Excessive corn consumption	Predators attack	Drowning	Lameness and digestive diseases	Others
Total respondents	25	40%	11%	13%	6%	21%	9%
Small farms <400	8	37%	8%	19%	5%	23%	8%
Medium sized farms <1000	10	39%	11%	8%	8%	21%	13%
Big farms >1000	7	45%	14%	11%	6%	18%	6%

Table 7. Data on mortality rates and losses in sheep flocks

Item	n	% lamb mortality 0-30 days	% lamb mortality 30 days-commercialization	% dystocia	% adult sheep mortality
Total respondents	25	2.8%	1.7%	2.4%	2.1%
Small farms <400	8	2.6 %	1.3 %	3.8%	2.3%
Medium sized farms <1000	10	2.1 %	1.1 %	2.3 %	1.9%
Big farms >1000	7	3.9 %	2.7 %	1.2 %	2.2%

CONCLUSIONS

In terms of average number of sheep per hectare of pasture, a different situation is observed in big farms (over 1000 heads) compared to the small and medium sized ones, respectively, 7.3 heads/ha compared with 7.3 gain / ha. This situation is most likely explained by the fact that small and medium sized farms are selling lambs around Easter (April), and large farms (over 1000 heads), and selling lambs at the age of 7 – 8 months, and weights around 35 kg (October-November).

Average number of days of maintenance in stabulation is 36.4 days, with a range between 70.5 and 14, depending on the size of the flock. Farms with large herds of sheep, practice stabulation only a short period of time, depending on winter severity and type of parturition. Thus, in less cold winters, sheep are lambing even in the free air, and after are placed in the sheds for only a short period of time (2-3 days), the period is extended if lambing is multiple (5-7 days).

The presence and shape of horns in the selection decision of the ewes lambs is extremely common, and especially in the case of selection of the rams, 84% of farms surveyed take into account this character in the selection of breeding flock. This is explained by its position in the group hierarchy, animal with horns manage to dominate the animals without horns, and as consequently have access to feed consumption more, thus have a higher body weight, produce more milk and wean more lambs.

On average 38% of ewes are being reformed because of age, in general, sheep are culled off from the flock at the age of 7-8

years. Infertility is the second most important criterion, resulting in 23% of annual ewes reform. Mammary gland diseases and low productivity of ewes from the breeding flock makes out of 15% for each of the two types of disorders. Lameness affections represents 9% of cases for which the ewes are reformed.

The mortality rates in the category of lambs 0-30 days is on average of 2.8%, and 30 days-8 months category is 1.7%. These indicators vary widely depending on farm size and rearing technology applied. Thus, large farms register losses through mortality greater (2.7%), compared to small and medium-sized farms (1.3%, 1.1%, respectively).

ACKNOWLEDGEMENTS

This work was published during the project "POSTDOCTORAL SCHOOL OF AGRICULTURE AND VETERINARY MEDICINE", POSDRU/89/1.5/S/62371, co-financed by the European Social Fund through the Sectorial Operational Programme for the Human Resources Development 2007-2013.

REFERENCES

- [1] Csiszter L.T., Szucs E., Sossidou E.N.: Bazele relației dintre bunăstarea animală și calitatea produsului, Ed. Agroprint, Timisoara, 2010;
- [2] Dwyer C.: The Welfare of Sheep, Ed. Springer, Edinburgh, United Kingdom, 2008;
- [3] Fitzpatrick J., Scott M., Nolan A.: Assessment of pain and welfare in sheep, Small Ruminant Research, 2010, 62: pp 55-61;
- [4] Rodrigues, G.S., Buschnielli, C.C., Muniz L.R.: Ostrich farming and environmental management tools: an review, Australian Journal of Experimental Agriculture, 2008, 48: pp 1308-1313.