J A S 10 (2) 46-51
Journal of Animal Science
International Standard of Serial Number 2502-1869

Study on Sheep Animal Welfare in Traditional Farmer, Located in Agro Edutourism Mulyaharja Bogor Regency

Wining Astini[1*], Henny Endah Anggraeni[1], Tetty Barunawati Siagian[1], Erni Sulistiawati[1], Heryudianto Vibowo[1], Surya Wijaya Kusuma[1], Dwi Budiono[1], Miranti Fardesiana Putri[1], Siti Zahidah[1], Muhammad Haikal[1], Agus Faisal[2]
[1)]*Paramedic Veterinary Study Program, College of Vocational Studies, IPB University, Indonesia*
[2)]*Animal Husbandry Department of Bogor City, Indonesia*
**Corresponding author: winingastini@apps.ipb.ac.id*

Article Info

Article history:
Received 14 Februari 2025
Received in revised form 07 Maret 2025
Accepted 28 Maret 2025

DOI:
https://doi.org/10.32938/ja.v10i2. 8441

Keywords:
Mulyaharja,
Sheep,
Welfare,
Traditional,
Farmer

Abstrak

Indonesian farmers do not understand about the meaning of animal welfare. It makes to be difficult to implement the animal welfare. It also impacts to the production and reproduction of the animal. On the other side, the sheep livestock in Mulyaharja are maintained traditionally. This study aims to evaluate the implementation of animal welfare principle in traditional sheep farming in Mulyaharja subdistrict. This study used purposively sampling. The data analysis method is descriptive by processing data from interviews. The Animal Needs Index were used in this study. This study highlights significant shortcomings in sheep welfare under traditional farming practices in Mulyaharja Subdistrict with average ANI index 16.49. Targeted interventions in comfort of the lie down, number days of outside/year, pasture months/year, comfort of flooring, cleanliness sheep and pen, slipperiness, ease of passage, quality of light, quality of air and air flow, ind exposure in the lying area, condition of integument and animal health.

1. INTRODUCTION

Mulyaharja subdistrict is in Bogor city and has extraordinary natural potential. This is proven by the inauguration of Mulyaharja subdistrict as an Organic Agro Edutourism since 2021. Not only is it famous as an Organic Agro Edutourism, Mulyaharja subdistrict is also known as the Mulyaharja thematic subdistrict. One of the priorities of this Eduwisata program is ecological balance in the environment (Hutabarat, 2024). The ecological balance is accordance with sustainable development goals (SDG's), especially to balance between agricultural and livestock environment. In agricultural sector, good and healthy environment must be provided to animal or livestock. Healthy animal can be supported by animal welfare implementation (Duarsa *et al.*, 2020). In fact, Indonesian farmer do not understand about the meaning of animal welfare. It makes to be difficult to implement the animal welfare. It also impacts to the production and reproduction of the animal (Nuruddin *et al.*, 2020). On the other side, the sheep livestock in Mulyaharja are maintained traditionally by farmer.

The goal of animal welfare is to improve quality the life of animal or livestock. The concept of animal welfare has five freedom to make animal or livestock have normal and worthy life. The five freedom are: freedom from hungry and thirsty, freedom from heat and general discomfort physical, freedom from wounds, diseases and illnesses, freely express normal behavior and natural and free from fear and suffering (Duarsa *et al.*, 2020). But, to improve quality the life and animal welfare score have many challenges. One of the factor which can influence was the limitation of economy, especially in traditional farmer. In other side, lack of farmer knowledge about animal welfare can cause obstruction the implementation of animal welfare (Hartady *et al.*, 2018).

Farmers have the important role to implement animal welfare in the field. If the animal welfare is not implemented well by farmers, It causes negatively effect to the growth, production, and immune response of the animal (Sejian *et al.*, 2021). Therefore, the knowledge of the farmer is very needed to increase quality life of the livestock. This study aims to evaluate the implementation of animal welfare principle in traditional sheep farming in Mulyaharja subdistrict.

2. MATERIALS AND METHODS

This study was done on August 2024 in Mulyaharja, Bogor city. This study used purposively sampling with minimum criteria consisting of two sheep in one pen. The number participants consisted of 7 farmers and 34 sheep. Farmer number 1 had five sheep, farmer number 2 had five sheep, farmer 3 had three sheep, farmer 4 had five sheep, farmer 5 had five sheep, farmer 6 had six sheep, and farmer 7 had five sheep. The data analysis method was descriptive by processing data from interviews. The examination and evaluation were used the Animal Needs Index (ANI) 35-1/2000 (Bartussek *et al.*, 2000). Average score and total score were used to analyse the data. If the ANI score >26.5. So, it was welfare. On the contrary, if ANI score ≤ 26.5. It was not welfare.
The collection data used the form which obtained animal welfare were:

a. Categori I : locomotion, such as wide of pen, comfort of lie down, pen structure, management of replacement, number days of outside/year and pasture months/year. Wide of pen had score 0, if it was around < 0.5 m^2/sheep and score 3, if it was around < 1.5 m^2/sheep. For herd structure, 0 was used if it was very narrow. Score 1 was used if the partitions was wide enough and made comfort. Management of replacement had score 0 if the replacement of the sheep in the pen was difficult. Score 1 was used to the replacement if it was easy. Score 0 was used if the lie down was not comfort (very narrow, difficult to move when lie down). Score 3 was used if the lie down was comfort (wide and not difficult to move). Farmer in Mulyaharja subdistrict used traditional method which did not take the sheep outside and pasture. The sheep was in the pen all the day. So, the number days of outside/year and pasture months/year, we could not do the assessment.

b. Category II: social interaction, such as wide of pen, family herd, lamb management, number days of outside/year and pasture months/year. Wide of pen had score 0, if the pen was very narrow to make social interaction (< 0.5 m^2/sheep). Score 3 was very easy to make interaction (1.5 m^2/sheep). If it was no interaction between family herd, the score was -0.5. It was given score 2, if it was good interaction between family herd. The lamb management range was 0.5-1. The number days of outside/year and pasture months/year, we could not do the assessment.

c. Category III: flooring, such as comfort, cleanliness, slipperiness, ease of passage, number days of outside/year and pasture months/year. -0.5 score was given if there was bad condition (comfort, cleanliness, slipperiness, ease of passage). If there was good condition, score 2.5 (very comfort), score 1 (very cleanliness), score 1 (not slipperiness), score 1 (very easy of passage) could be given. The number days of outside/year and pasture months/year, we could not do the assessment.

d. Category IV: light and air, such as quality of light, quality of air and air flow, wind exposure in the lying area, noise, number days of outside/year and pasture months/year. Quality of ligh had -0.5-2 score range. Quality of air and air flow had -0.5-1.5 score range. Wind exposure in the lying area and noise had -0.5-1 range score range. The number days of outside/year and pasture months/year, we could not do the assessment.

e. Category V: human treatment to animal such as cleanliness of the pen, conditions of equipments, condition of integument, condition of hooves, cleanliness of the sheep, injuries caused by equipment, and animal health. Cleanliness of the pen, conditions of equipments and condition of integument had -0.5-1 score range. Condition of hooves, injuries caused by equipment, and animal health had -0.5-1.5 score range. Cleanliness of the sheep had -0.5-0.5 score range.

3. RESULTS AND DISCUSSION

3.1 Category I: Locomotion

Result of the locomotion assessment of the sheep in Mulyaharja subdistrict, to be seen in Table 1. The result of the wide of this study was 0.9 – 1.8 m^2/sheep with average number was 1.28. The conclusion of this result that the wide pen of traditional farmer is sufficient to the sheep. Optimal of the main pen is 1 m^2/sheep, for ewe is 1.5 m^2 and for lamb is 0.75 m^2. In other side, the optimal pen for ram is 3 m^2 (Fahmi *et al.*, 2015).

The pen structure in the field were generally to have long shape. Farmer made partitions between one sheep to another. The assessment of the herd structure can be seen in Table 1. In this study, the the average score was 0.85. It had mean that the size and partition were save and were comfortable.

The result show that the management of replacement was slightly easy to the sheep with average number 0.57. Generally, lie down place of the sheep in pen was made from wood and bamboo. The average score result of this study was 1.28. It had mean that lie down place of the sheep in pen was slightly comfort to the sheep.

Table 1. Assessment of sheep animal welfare in Mulyaharja in the locomotion category based on the Animal Needs Index protocol.

No.	Parameter	Farmer								Min-Max Score
		1	2	3	4	5	6	7	Average Score	
a	Wide of Pen	2	1	3	1	1	0	1	1.28	0-3
b	Pen Structure (Partition)	1	0	1	1	1	1	1	0.85	0-1
c	Management of Replacement	1	1	1	0	0	0	1	0.57	0-1
d	Comfort of The Lie Down	2	1	2	1	1	1	1	1.28	0-3
e	Number Days of Outside/Year	-	-	-	-	-	-	-	-	0-3
f	Pasture Months/Year	-	-	-	-	-	-	-	-	0-1.5
	Total Score	6	3	7	3	3	2	4	-	0-12.5

Picture 1. Locomotion condition in the pen.

3.2 Category II: Social Interaction

Result of the social interaction assessment of the sheep in Mulyaharja subdistrict, to be seen in Table 2. The result of the wide of this study was same with Table 1 which was 0.9 – 1.8 m^2/sheep with average number was 1.28. The conclusion of this result that the wide pen of traditional farmer is sufficient to the sheep and do not prevent to socialize. Likewise to family herd, average score was 1.8. Lamb management score was 0.9. It was indicate that it had been good social interaction between lamb, ewe, and ram. The size of the pen must be suitable with the number of sheep (Fahmi *et al.*, 2015). The pen can be divided in to some of section with the different function as need. The natural behavior of sheep have social interaction, eat and drink freely (Santos, 2018).

Table 2. Assessment of sheep animal welfare in Mulyaharja in the social interaction category based on the Animal Needs Index protocol.

No.	Parameter	Farmer							Average Score	Min-Max Score
		1	2	3	4	5	6	7		
a	Wide of Pen	2	1	3	1	1	0	1	1.28	0-3
b	Family Herd	2	2	1	2	2	2	2	1.8	-0.5-2
c	Lamb Management	1	1	0.5	1	1	1	1	0.9	-0.5-1
d	Number Days of Outside/Year	-	-	-	-	-	-	-	-	0-2.5
e	Pasture Months/Year	-	-	-	-	-	-	-	-	0-1.5
	Total Score	5	4	4.5	4	4	3	4	-	-1-10

3.3 Category III: Flooring

Result of the flooring assessment in Mulyaharja subdistrict, to be seen in Table 3. Generally, all pens in Mulyaharja were terraced which the floor were made from wood and bamboo that had slits. The function of the slits were a place to feces and urine to fall to the bottom through the slits. This function of the floor were lie down place for the sheep. As a result, the remains of feces and urine were drop behind on the floor and it could make the floor to be dirty. According to this, the average score to comfort had only 1. It had mean that sheep were not comfort. Other side, the cleanliness score had only 0.29, It had mean that pens were dirty. Average slipperiness score had 0.5, it had mean that the floor of pen slipperiness caused the remains of urine. The healthy pen is provided a place to store the remains of urine or feces under the pen. It have the advantages to the remains of urine or feces not to contaminate the floor (Indarjulianto *et al.*, 2021). Structure of the pens were terraced and were not declivous where made the passage was difficult. The ease of passage average score had 0. It had mean that it was not ease. It can be danger to the hoove of sheep and can effect to the animal welfare (Zurahmah & Masriani, 2024).

Table 3. Assessment of sheep animal welfare in Mulyaharja in flooring category based on on the Animal Needs Index protocol.

No.	Parameter	Farmer							Average Score	Min-Max Score
		1	2	3	4	5	6	7		
a	Comfort	1	1	1	1	1	1	1	1	-0.5-2.5
b	Cleanliness	0	0.5	0	0	1	0	0.5	0.29	-0.5-1
c	Slipperiness (Pen)	0.5	0	0.5	0.5	0.5	1	0.5	0.5	-0.5-1
d	Ease of Passage	0	0	0	0	0	0	0	0	-0.5-1
e	Number Days of Outside/Year	-	-	-	-	-	-	-	-	-0.5-1,5
f	Pasture Months/Year	-	-	-	-	-	-	-	-	0.5-1
	Total Score	1.5	1.5	1.5	1.5	2.5	2	2	-	-2.5-8

3.4 Category IV: Light and Air

The results of the light and air assessment in the Mulyaharja subdistrict can be seen in Table 4. Many cases of sheep theft in Mulyaharja led farmers to close almost all pens with wood or plastic. See Picture 2. As a result, the light quality was low because the pens were almost completely closed, making it difficult for light to enter. The assessment score was 0.3. Not only was the light quality affected, but also the air quality, as airflow was limited, though it could still enter through gaps between the wood or bamboo. The average score was 0.5. Wind exposure in the lying area was almost the same as the airflow, with an average score of 0.53. The conditions in Mulyaharja were relatively quiet, which provided a comfortable environment for the sheep. According to Fahmi *et al.* (2015), pens should receive sunlight in the morning and have good ventilation. The roof of the pen should be made from durable materials. The temperature and humidity in the pen environment are key factors that can cause fear and stress in sheep (Hendra *et al.*, 2024). Light and air are crucial for improving the health and welfare of livestock (Sulistiawati & Wulandari, 2022).

Table 4. Assessment of sheep animal welfare in Mulyaharja in the management category based on the Animal Needs Index protocol.

No.	Parameter	Farmer							Average Score	Min-Max Score
		1	2	3	4	5	6	7		
a	Quality of Light	0.5	0	0.8	0	0	0.5	0.5	0.3	-0.5-2
b	Quality of Air and Air Flow	1	0.5	1	0	0.5	0	0.5	0.5	-0.5-1.5
c	Wind Exposure in The Lying Area	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.53	-0.5-1
d	Noise	1	1	1	1	1	1	1	1	-0.5-1
e	Number Days of Outside/Year	-	-	-	-	-	-	-	-	0.5-2
f	Pasture months/year	-	-	-	-	-	-	-	-	0.5-2
	Total Score	3	2	3.3	1.5	2	2.2	2.5	-	-2-9.5

Picture 2. Light and air condition in the pen.

3.5 Category V: The Human Treatment to the Animal

Result of the human treatment to animal assessment in Mulyaharja subdistrict, to be seen in Table 5. According to the field, cleanliness of traditional farmer pen in Mulyaharja needed to improve. Although, generally the cleanliness of the pen were relatively save. The score for cleanliness of the pen was 0.4. Conditions of equipments score were 1. It had mean that the equipments were complete. But, according to ANI, condition of integument was 0. We found that there were ectoparasite after microscopic examination. The condition of hoove was good with average score was 0.8. Cleanliness of sheep in Mulyaharja needed to improve. We can see in Picture 3, One sheep looked to be dirty and the others were clean. Farmer said that bathing frequency was once times a week. Although, according ANI it was still save with average number was 0.14. Injuries caused by equipment score was 1. It showed that It did not any the accident caused by equipment. In Mulyaharja, bloating case often happened and the farmer still used traditional way to treat the sheep by giving oil. So, animal health score was relatively save with 0.8 score. But, it was needed to improve. The sheep will be a good health, if they are free from physical pain and injuries due to injury, and illness (Hendra *et al.*, 2024).

Table 5. Assessment of sheep animal welfare in Mulyaharja in the human treatment to animal category based on the Animal Needs Index protocol.

No.	Parameter	Farmer							Average Score	Min-Max Score
		1	2	3	4	5	6	7		
a	Cleanliness of The Pen	0	0	0.5	0.5	0.5	0.5	0.5	0.4	-0.5-1

b	Conditions of Equipments	1	1	1	1	1	1	1	1	-0.5-1
c	Condition of Integument	0	0	0	0	0	0	0	0	-0,5-1
d	Condition of Hooves	1	1	0.5	1	1	0.5	1	0.8	-0.5-1.5
e	Cleanliness of The Sheep	0	0	0	0.5	0	0.5	0	0.14	-0.5-0.5
f	Injuries Caused by Equipment	1	1	1	1	1	1	1	1	-0.5-1.5
g	Animal Health	1	1	1	0.5	1	0.5	1	0.8	-0.5-1.5
	Total Score	4	4	4	4.5	4.5	4	4.5	-	-3.5-8

Picture 3. Cleanliness of the sheep.

3.6 The Assessment Result of Sheep Animal Welfare In Mulyaharja

Assessment ANI score result in Mulyaharja subdistrict, to be seen in Table 6. We can see that the average ANI score is 16.49. It concludes that sheep livestock in Mulyaharja subdistrict is not welfare.

Tabel 6. Assessment ANI Score of Sheep In Mulyaharja

Category	Farmer							Average Score
	1	2	3	4	5	6	7	
I	5	4	4.5	4	4	3	4	4.07
II	5	4	4.5	4	4	3	4	4.07
III	1.5	1.5	1.5	1.5	2.5	2	2	1.78
IV	3	2	3.3	1.5	2	2.2	2.5	2.36
V	4	4	4	4.5	4,5	4	4.5	4.21
Total Score	18.5	15.5	15.5	15.5	17	14.2	17	16.49

4. CONCLUSIONS

This study highlights significant shortcomings in sheep welfare under traditional farming practices in Mulyaharja subdistrict with average ANI index 16.49. Targeted interventions in comfort of the lie down, number days of outside/year, pasture months/year, comfort of flooring, cleanliness sheep and pen, slipperiness, ease of passage, quality of light, quality of air and air flow, ind exposure in the lying area, condition of integument and animal health.

5. ACKNOWLEDGMENT

The authors thank those who participated in this research, College of Vocational Studies, IPB University, Animal Husbandry Department of Bogor City, and KTD (Kelompok Tani Dewasa) Mulyaharja subdistrict that has provided financial assistance and facilities to the authors.

REFERENCES

Bartussek, H., Leeb, C., & Held, S. 2000. Animal Needs Index for Cattle (Ani 35 L/2000-cattle). Federal Research Institute for Agriculture in Alpine Regions BAL Gumpenstein. Austria.

Duarsa, M. A. P., Trisnadewi, A. A. A. S., & Saka, W. 2020. Strategi Implementasi Animal Welfare. *Jurnal Ilmiah Peternakan Terpadu*. 9(2): 109-113.

Fahmi, T., Tedi, S., & Sujitno, E. 2015. Petunjuk Teknis Manajemen Pemeliharaan Ternak Domba. Balai Pengkajian Teknologi Pertanian Jawa Barat. Jawa Barat.

Hartady, T., Faza, N. A., & Praditha, A. N. 2018. Animal Welfare In Indonesian Traditional Dairy Goat farm, Field Study In Cilengkrang, Cimalaka District, Sumedang Regency. *Jurnal Pengabdian Kepada Masyarakat*. 2(6).

Hendra, G. W., Liany, K. A., & Syafiyullah, R. 2024. Analisis Kesejahteraan Hewan Pada Peternakan Domba

di Dompet Dhuafa Farm, Serang, Banten. *Musamus Journal of Livestock Science*. 7(1): 1–7.

Hutabarat, J. 2024. Wisata Edukasi di Kota Bogor. *Buletin: Teknologi & Informasi Pertanian*. 3(1): 30-34.

Indarjulianto, S., Sugiyanto, C., Soetiarso, L., Tontowi, A. E., Pertiwiningrum, A., Prabowo, T. A., & Wuri, M. A. 2021. Pendampingan Pembuatan Kandang Domba Sehat di Desa Sriharjo Imogiri Kabupaten Bantul. *IGKOJEI: Jurnal Pengabdian Masyarakat*. 2(3): 123-129.

Nuruddin, Prasetyo, H., & Utami, K. B. 2020. Analisis Penerapan Asas Kesejahteraan Hewan Pada Pemeliharaan Itik Mojosari Secara Semi-Intensif. *Jurnal Agriekstensia*. 19(1): 46-53.

Santos, A. C. G. D. 2018. Kajian Kesejahteraan Ternak Domba Lokal Pada Sistem Penggembalaan dan Jenis Konsentrat Berbeda. Institut Pertanian Bogor.

Sejian, V., Silpa, M. V., Nair, M. R. R., Devaraj, C., Krishnan, G., Bagath, M., Chauhan, S. S., Suganthi, R. U., Fonseca, V. F. C., König, S., Gaughan, J. B., Dunshea, F. R., & Bhatta, R. 2021. Heat Stress and Goat Welfare: Adaptation and Production Considerations. *Animals*. 11(4): 1-24.

Sulistiawati, E., & Wulandari, S. A. 2022. Kajian Azas Kesejahteraan Hewan Pada Sapi di Desa Jetis Kabupaten Nganjuk. *Jurnal Peternakan Indonesia (Indonesian Journal of Animal Science)*. 24(1): 95.

Zurahmah, N. & Masriani. 2024. Kajian Kesejahteraan Hewan dan Hubungannya dengan Karakteristik Peternak Tradisional Pada Peternakan Kambing di Manokwari. *Jurnal Peternakan Terapan (PETERPAN)*. 6(2): 79-91.