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**Review Article****HYGIENE LOGISTICS PRACTICES IN OSMAN GOAT FARM AT KANGKAR TEBRAU**

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**Abstract**

Hygiene in food preparation for Muslim consumer is the same as Halal requirements. The contradicting term of halal is haram or non-halal. Halal is associated with the concept of hygiene because of what is permitted in Islam is related with human health ([www.hdcglobal.com](http://www.hdcglobal.com)). As an example, a dead but non-slaughtered animal is normally associated with a disease. Most diseases originated or carried in the animal's blood. Therefore, slaughtering is mandatory to ensure the blood is completely out from the animal's body, thus minimizing the chance of microbial infection. Lack of awareness the hygiene logistics practices in animal farms results in unhealthy and dangerous consumption of meat and animals to be eaten. Thus, this research is trying to study the hygiene logistics practice in Osman Goat Farm at Kangkar Tebrau as one of the largest farm managed by Muslim in Johor. This study uses qualitative method by interviewing the authorized person to ensure that hygiene logistics practiced has been done. Semi structured interview and participation observation has been used as the study instrument to gain data. Case study has been used as the method of analysis by triangulation data between the interview and observations. Interview was conducted with the authorized person such as Mr. Osman who is the director and Mr. Supri who is his supervisor. The study found that Osman Goat Farm has implemented most of the requirement of halal logistics. Hygiene logistics aspects in this study consists of storage, processing, packaging, handling, and transportation. Osman Goat Farm had implied all the hygiene logistics practices measured. Surrounding factors such as the farm location, which is near to schools and residents area allows Osman Goat farm to implements hygiene logistics practices very well. This study recommends an innovation in storage system especially the food container and drink for the goat. The innovation also includes new waste management design system as issued in chapter 4. These solutions can be the benchmark or design of hygiene logistics practices of goat farming industries in Malaysia.

**Key words:** Hygiene, Logistics, Goat Farm.

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**INTRODUCTION**

Hygiene logistics practices in goat's farm is an important farming management that consist of storage, processing, packaging, handling, and transporting (Abd Rahman, A. M. 2014 and Siti, R. A. A. H. and Firuza, B. M. 2015). All of these elements of logistics are important to sustain the goat health. Financial and knowledge support from banks and government agencies are important in the way of helping farmers. Market demand on goat's meat is increasing every year. Meanwhile Malaysia is not from list from mutton supplier such as China, India, Pakistan, Australia, and New Zealand (Abd Rahman, A. M. 2014 and Siti, R. A. A. H.).

Goats have multiple abilities as they supply mutton and milk. Goat's skin and thorn are useful for home furniture, and art. There are 570 species of goats that are able to live in various climates around the world. Demand on goats and cows meat and milk in Malaysia are increasing from the survey in 2000 until 2010 (Zakaria, M. B. et al. 2017). It is the duty of our leader to provide people create enough food resources from our nation itself rather than to depend on the import activity (p. 45). Dependence on import activity can cause more outflow of the Ringgit Malaysia currency. As a fact, competitiveness in Malaysian agro-culture is decreasing against with the Blue Print Balance of Trade Plan (BOT) 2010 (Buang, A. and Suryandari, R. Y. 2011, p. 57). Buang, A. and Suryandari, R. Y. (2011) found that unsatisfactory work culture as the main point of why the information and sources were not reached to the farmers to increase the potential in this industry. Beside that, the increase of cost operation results in the farmer's to

not be able to send the harvest to the FAMA represent the integrity of government agency itself (p. 59).

Hygiene logistics practices in farms also involve halal procurement. 'Halal' is the element that does not contain any part of animal products that are non halal to Muslim or animal products which are not slaughtered according to *Shariah* law; does not contain any ingredients that are *najs* according to *Shariah* law; is safe and not harmful; is not prepared, processed or manufactured using equipment that is contaminated with things that are *najs* according to *Shariah* law; the food or its ingredients do not contain any human parts or its derivatives that are not permitted by *Shariah* law; and during its preparation, processing, packaging, storage or transportation, the food is physically separated from any other food that does not meet the requirements stated in all items above or any other things that have been decreed as *najs* (filth or unclean) by *Shariah* law (Siti Zamanira, M. Z. et al. 2014).

'Hygiene' can be stated as *Thaharah* in Arabic term which also means 'clean'. 'Hygiene' must also be implemented in 'Halal' in the farming field contains hygiene elements which also must implemented in animal's feeds. The feed must be in clean, good, permitted, and legally nutritious food in order to produce good halal meat (Mohd Yusoff, F. A. et al. 2015). It is necessary to ensure that food given to the animals are halal. Animals' food should not contain any animal hormones, such as pork enzymes and steroids. Feeding materials also must not contain any genetically modified organism from non-halal animals (Mohd Yusoff, F. A. et al. 2015).

**HYGIENE STORAGE IN GOAT SHELTER, FOOD CONTAINER, AND ABATTOIR**

Shelter is a vital element for goats and cows in the farming field. Hygiene shelter's also gives the benefits of increasing the comfort level of these animals. Studies show that it has a positive impact on the health of the animals. The floor in the goat shelter is made by wood and must be in 1.2 cm to 1.8 cm distance to allow goat droppings to pass under the shelter and for the goat to be able to step on safely (Universiti Putra Malaysia, 2012). The height between the ground to the shelter floor must be at least 1.5 meter and the height between the ground to the roof top of the shelter must be 5 meter by square or rectangle shape with the walking path in 1.0 meter to 1.5 meter surrounding it (Rasyidi, M. Z. 2017). The shelters location must be dry and hygienic to prevent from bacteria and virus. Proper hygienic condition helps to avoid bacterial, viral, and parasitic infection and related illness in the animals. Considering the kind of weather conditions and harsh climate, it is all the more important the animals must be in hygienic conditions as much as possible (Abdullah, J. J. *et al.*).

Temperature in the goat shelter must be sustained as close to the normal goat's body temperature which is 38.5 celcius (Abd Rahman, A. M. 2014). Intensive farming requires food to be sliced and distributed in the shelter. The shelter need to be guaranteed for hygienic and dry to avoid goats from having sickness and poisoned through the food (Abd Rahman, A. M. 2014). It will take extra effort for workers to bring food into the shelter compare to extensive or semi extensive farming approaches. Semi-intensive farming approach allows goats to stretch under the sunshine and eat herb and quality grass. Selected adult male goats need to be separated with another male during mating process to avoid aggression with another male domination. The goat's calf need to be just with it mother within three days or 18 hours to get the colostrum inside the mother's milk. If the mother dies, the baby must get the milk from another mother. If the mother doesn't want to breastfeed the baby, farmers must express the breast to provide the baby goat with milk. Sick goats must also be separated from healthy goat to prevent the livestock from any spread of infection (Universiti Putra Malaysia, 2012).

Selecting the breed of goat is also important based on individual objective, whether they want to increase the production of goat's mutton or the goat's milk. It is also important to select the suitable, high illness resistance, easy climate, and healthy goat's breed to be located in the shelter to avoid any loss faced by entrepreneur (Universiti Putra Malaysia, 2012). Food and drink container can be place near the shelter's square to avoid any contamination from the goats waste. If the food and drink container need to be placed inside the shelter, it must be located higher than the floor to prevent contamination. The open width of food container must be at least 30 cm with the depth around 20 cm to 30 cm to make it easier to reach their food (Rasyidi, M. Z. 2017).

The distance between the shelter with resident and school area should be around 20 meters (Rasyidi, M. Z. 2012, p. 15). The location of grazer must be closer to the shelter so that the goats can be easily watched (Universiti Putra Malaysia, 2017). If there were two shelters, the distance between both should be at least as the distance from length of one shelter. Shelter cannot be affected by chemical spray or goat's urine, should be easy to clean, and not wet or slippery. The width of the shelter for the goats is approximated 0.7 meter to 1.4 meter per goat. The normal width for the grazer is 8 goats per 1 acre. The wall of the shelter can be made up by hard wood with the range around 1.5 cm to 2.0 cm to avoid goat from catching fever. The wooden wall must be hard enough to adapt with the goat's behavior, to gore, bite, and fricative it body to the wall. The rooftop of the shelter can be made up by asbestos and aluminum for cooler air and ventilation. The height of the shelter's pole should be 5.5 – 6 feet from the ground. Size of the pole is 4" x 4" x 14" 9 feet height from the floor to the ceiling wood. Any entry to the farm or shelter by the customer or unidentified person must be watched for security purpose. Every entrance site of the shelter must be prepared with the

food bath which contains antibacterial or *germicidal* liquid for the livestock.

Hygiene processing in farm field should include slaughtering process that complies with Sharia law. The slaughtering must be a Muslim. A sharp knife used to slaughter the animal and *tasmiiyyah* (In the name of Allah) is recited. The sharp knife that is used for slaughtering ensures the animal's blood is properly drained. In addition, the cleanliness and physical environment of the abattoirs are also considered for halal certification (Mohd Yusoff, F. A. *et al.* 2015).

**1) Recording, Tagging, and Labeling**

Livestock must be tagged or graded based on their age, weight, health, immunity, and their skeleton to value their price during selling and purchasing (Abd Rahman, A. M. 2014). Goat's health must be recorded with serial number for analysis from day by day. It is important to suit the livestock with the correct antibiotic and correct doses. Good records can determine the efficiency and the profit of this goat farm industry. It also encourages entrepreneur to apply the best practice of hygiene logistics in this field. From the record, entrepreneur needs to fill up the dispose form if their goats die, while sick goat must to be treated to the veterinary (Universiti Putra Malaysia, 2012). Record should also be done for the birth of new goat, food, and additional food given as a diagnosis to the goat (p. 36). Vaccination can be done by schedule and the needle can be thrown into the 'Clinical Waste Bin'. Shelter also needs to be cleaned and sanitized according to prevent from any infection and disease. Workers need to properly in their special suited in handling their job.

**2) Storage of Food and Medicine**

Food storage is important to ensure that processed food is safe in one place. There are the varieties of foods for goats depending on their nutrition supplied. Food is from grass, type of leaves, soy, to pallet, all food need to be processed and stored it properly (Universiti Putra Malaysia, 2012). Food container must be light, easy, and durable for goats to eat (Universiti Putra Malaysia, 2012). Plastic container is easier to clean up. Wood container must be 0.3 meter in width below and 0.45 above. Nipple drinker is good for goat to drink clean water and it also safes the water usage. Separated square must be prepared for male, female, and goat's calf to avoid any aggression. Storage of the medicine and antibiotic inside or nearest to the shelter is needed to cure and care for the goats whenever needed (p. 18).

**3) Processing, Packaging, and Waste Management**

Processing in the goat farm field is also about slaughtering and skinning process. Usually this process involves in abattoir house which includes the waste management process. The goat's waste are disposed through drainage or digging at least 1.5 meter hole (Universiti Putra Malaysia, 2012). For the refrigerating and chilling process, the meat is frozen to 0 degree celcius and will expired after 10 days depends on the earliest skinning situation and refrigerating temperature. Frozen meat can be stored up to 6 to 12 months in the -10 degree celcius. The goat's meat can be sold in kilogram, can be wrapped and distributed or displayed in the shops.

**4) Transporting**

Quality Information System or QIS in logistics practice would ensure sending the right quality data to the right person at the right time (Khabbazi, M. R. *et al.* 2014). In the farming industry, livestock needs to be transfer in a comfort way able using a suitable temperature (Universiti Putra Malaysia, 2012). Container needs to be sanitized before loading the livestock to ensure the container is free from bacteria and viruses. Livestock must be 'relaxed' for three days before any farming activity. The same type of food as in the shelter should be given to ensure the livestock are familiar with the new place condition. Livestocks must be quarantine for one month and it activities must be recorded. Important factor must be emphasized during slaughtering process such as adequate clean water system, complete waste disposal system which is

not polluting the environment, complete and sharp slaughtering and skinning tools which is save at secured point, hygienic place from insects and rats, refrigerator, chiller, or freezer, and complete hygienic system.

## METHODOLOGY

### 1) Gaining Data

This study uses field research in a qualitative study by doing semi structured interview and participant observation in the Osman Goat Farm as stated by Merriam, S. B. (2002). The director and senior worker were interviewed to gain the data simultaneously until the data reach the saturation point which is when there are no more new information obtained from the informants as stated by Dawson, C. (2002) and Seidman, I. (2006). Checklist interview and observation has been built from the literature review theories. Checklist is fixed with study objective which is to design the better hygiene logistics practice in Osman Goat Farm at Kangkar Tebrau. Osman Goat Farm has been chosen as study location because this is the biggest goat supplier which has AP permit to import goat in the southern region of Malaysia.

### 2) Analyzing Data

Within this Case Study the analyzing method by triangulate between interview and observation has been used (Miles, M. B. and Huberman, A. M. 1994). Interview and graphic analysis has been used in this study. This is important to see the relation between themes given as displayed in the theory. The Atlas Ti 7 software has been used in term of recording and save findings in the fieldwork to suit the themes from the theory. Thematic analysis suited the finding with themes prepared to sustain the validity as purposed by Darlington, Y.

and Scott, D. (2002). Researcher forms a team and spread the team in many fields to achieve the validity process based on Creswell, J. W. (t.th.) theory. Findings repeated by the researcher's team results in increase the validity for this qualitative study. Interview by recorder has been coded and images from observation had been captured during the fieldwork event. Both sources had been displayed as the triangulation finding of this study.

## FINDING

### 1) Storage

#### a) Goat Shelter

The goat shelter was built openly according to the suitability such as aeration and irrigation. In each shelter, workers provide water pipes to fill water for goat to drink and for shelter cleaning. The goats will be grouped based on their ages, in the same shelter. This is to prevent the goat from fighting with each other to compete for food. Goats has been divided into two groups which is dairy goat and lamb. Each goat will be tagged with different serial number for easier inspection and purchasing process as stated by Abd Rahman, A.M. (2014). The goat shelter has to be cleaned twice a day in the morning and evening. Besides that, the goat shelter must also be sprayed with EM chemical to avoid bacteria colonization to abolish the accumulation as stated Abdullah, J.J. et al. The workers should also spray Lindores at the shelters once a month to prevent germs. The height and width of the goat shelter are specifically following requirements as stated by Rasyidi, M. Z. (2017). The weight of the goat must be calculated to classify them to the categories in the shelter. Images 4.1 below shows the condition.



Images 4.1: Square in Goat Shelter

#### b) Goat's Feed

There must be a store for food processing. All foods will be stored there and after being processed and mixed. Workers will then put the food in the shelter. The workers will mix eight type of food such soy deposit, Napier grass, molasses, and bran in the form of pellet, calcium and the corn husk. They will do the separation between food for dairy goat and the

lamb. They will mix the foods and then store them inside and later into the shelter. A large basin of drinking water is provided in each shelter. The water will be changed every day especially when there was a crow's waste to prevent disease. This is the better application according to Universiti Putra Malaysia (2012) Rasyidi, M. Z. (2017). Images 4.2 show the condition.



Images 4.2: Food and Water for Goat

#### c) Goat's Milk

There will be a special container used to store the fresh milk. After the squeezing process, the milk temperature will be reduced by putting ice cube beside the container. After one or two hours, workers will start packaging and freezing the milk into the refrigerators and available freezers. The processes of cooling or freezing milk is done to avoid milk from being damage. It is also for storage purpose as the latency period between production and purchasing from customers will take

some time. Great logistics are applied here as stated by Khabbazi, M. R. et al. (2014).

#### d) Medicine

All the medicine are kept in dry storage which is away from sunlight. A single injection needle used just for one medicine to avoid the effect of contamination which can damage the medicine and affect the goat. This practice complies to obey

the rules stated by Universiti Putra Malaysia (2012). Images

4.3 shows the condition.



Images 4.3: Medicine Storage

**e) Meat**

Meat storage will depend on the time when the customer want to pick it up. Osman goat farm will store the meat inside the chiller. The chiller will provide cool air and the meat will not frozen and still not remain fresh. However, if the customer prefers to pick up the meat in one or two weeks, the workers

will store the meat in the freezer for long term storage. Osman goat farm also provides the inventory or schedule for meat purchasing to prevent meat storage to be overdue and exceeds the space limit. This practice required as farming manual by Universiti Putra Malaysia (2012). Images 4.4 shows the condition.



Images 4.4: Freezer, Chiller, and Refrigerator

**2) Processing**

**a) Abattoir House**

For the abattoir, Osman Goat Farm provided a special path joining from goat farm into the abattoir. This process makes the transferring of goat job easier and hygienic by preventing the goat from stepping on the ground before it is being slaughtered. Slaughtering process is done on a special steel table which has the blood sink linked with pipe the drainage pipe. However there are 5 filters provided to filter the blood before reaches the river. The worker will wash the place with a

special soap to remove all blood accent and the knives used for the slaughter will be soaked in the warm water. Goats that have been slaughtered will hung up to certain place to cud the process of sheathing. There is the drainage system below the hanging goat to make sure the blood fall into it. Goats has been tagged or reared by number to make it easily known for customer and for easily identification by staffs. Osman Goat Farm fulfills in the abattoire to get the *Halal* certification and assurance by the Health Department as stated by Mohd Yusoff, F. A. et al. (2015). Images 4.5 below show the condition.



Images 4.5: Abattoir Management

**b) Waste Management in Goat's Shelter**

Goat shelter will be drained and all the waste will be filtered before it reaches the river. The workers provides two filters: one filter before the drainage and another one in the middle of the drainage as stated by Universiti Putra Malaysia (2012). Goat's waste will be dried and turned into fertilizer. However the flat floor under the shelter requires the waste to be spray by water jet thus consuming a large amount of water. Image below shows the real condition. Goat's nail, skin, and thorn will be cut alive to prevent it from infection. Images 4.6 shows the condition.



Image 4.6: Shelter Waste Management

**c) Waste Management in Abattoir House**

This situation will depend on the customer. If the customer wants the goat's skin or gut of the goat, Osman's worker will clean it for them. If there is no request from the customers, Osman's worker will bury the waste. They collect the abattoir waste using a special trolley before burying it as stated by the standard of procedure from Universiti Putra Malaysia (2012). Image 4.7 below shows the trolley which bring the goat's waste.



Image 4.7: Trolley to Bring Goat Waste

**3) Packaging**

**a) Meat Packaging**

Osman's Goat Farm's workers will pack 1kg of meat in a polystyrene and wrap it. Large meat for barbeque will packed using a bigger bag. There were several types of wrappers provided in Osman Goat Farm. They also have a large plastic for wrapping the barbeque. They also have a 1kg meat that are pre packed to be sold. This is good for the last element in logistics which is the packaging and labeling for market supply chain (Abd Rahman, A. M. 2014 and Siti, R. A. A. H. and Furuza, B. M. 2015).

**4) Handling**

**a) Abattoir House**

The goats waste in the abattoire will be put into the trolley provided. Then, the workers will transfer it into a plastic bag for disposal or burial purpose. This is the easier way to throw the livestock waste from the abattoir as stated by manual from Universiti Putra Malaysia (2012).

**b) Goat Feed**

Osman's Goat Farm workers use wheelbarrows to carry the food to shelters and to lift the food up to the shelter. They use their energy besides some tools. Their reasoning for that it is

more effective and easier because the range from shelter to shelter is close. This is because they practice semi-intensive farming style which leaves the goats in the shelter as farming standard as outline by Universiti Putra Malaysia (2012) and

Rasyidi, M. Z. (2017). There are differences between the mixtures of food for lamb goat and dairy milk goat. Images 4.8 below show the goat food.



Images 4.8: Goat Food

**5) Transportation**

**a) Meat Transportation**

Transportation of the meat will be delivered if it reached at large quantity for the near places. The company uses the outside forwarding service for delivery of these meat for *Aqiqah* programs to reach customer from Pahang, Malacca, and Negeri Sembilan. This is because the cost constraint for the company to rent lorries or to buy. Customer will usually self-collect the meat, when there is a large order of livestock, in which the company will use their lorry. Therefore, the transport theory from Universiti Putra Malaysia (2012), Abdullah, J.J., and Rasyidi, M. Z. (2017) said that renting or purchasing lorries for deliveries with impose cost constrains the company.

**b) Livestock Transportation**

Livestock will always transported by the company's lorry. The livestock are usually delivered from the new shelter in Ayer Hitam to the old shelter at Kangkar Tebrau. There is a loading bay linked with the shelter which is sided by rubber pads to load or unload the goat out and into the shelter. Open bonded 3 tones truck has been used as a logistics process to provide the goats with natural air, food, and ventilation. However this is the moderate transportation logistics practice compare with the theory of Adullah, J.J. et al. and Rasyidi, M.Z. (2017). Images 4.9 below show the condition.





Images 4.9: Loading Bay of Goat Shelter

**6) Safety**

**a) Fence and Security**

Osman's Goat Farm company has a pair of well-trained dogs and a worker that has been trained of taking care of both dogs. Both dogs have been trained since it was a puppy and will always follow orders. The dog will be released around 1am to 6 am to keep an eye on the shelters and the surroundings.

**7) Inspection**

**a) Health and Hygiene Farm Inspection**

This farm is always being inspected by veterinary, Ministry of Health, animal vet, Majlis Agama Islam Johor (MAIJ) and many more agencies. So they have heard many constructive comments to improve their hygiene logistics practice in the field of farming area.

**FACTOR OF HYGIENE LOGISTICS PRACTICE**

**1) Surrounding**

As a manager of the goat farm, Mr Osman need to keep his farm always keep in clean and hygiene. If he doesn't do that, residents and school management officers surrounding his farm have a right to complain to Ministry of Health for him to close his farm. This is why hygiene logistics practice must be implemented by maximum quality in term of avoiding the uncomfortable condition from the neighborhood. This step is followed what has been said by Abdullah, J.J. *et al.*

**2) Healthy Goat for Business Future**

It is important to keep goats healthy for customer's satisfaction. So it is crucial to avoid goats from any diseases or infections that can harm the business future. The only way to keep goats healthy and always in good condition to sell is by applying the hygiene logistic practice in the farm. It has become well known as stated by Abdullah, J. J., Universiti Putra Malaysia (2012), Abd Rahman, A.M. (2014), Firuza, B.M. (2015), and Rashidi, M.Z (2017).

**SUGGESTION NEW TECHNOLOGY IN LOGISTICS PRACTICE**

**1) Technology**

There is lack of advance technology in hygiene logistics practice by Osman Goat Farm. This is because the low budget to buy new machines or implement new technologies. Mr. Osman purchased goats from Australia and sell in this country because he has obtained the AP (Approved Permit) to do so. However, when exchange currency rate of Ringgit Malaysia value is decreasing compared to dollar, it is tough to survive in his business. This also influenced his decision to refuse to use any technology that will increase the cost of farm production. Mr. Supri as his senior worker also refused to use any technology application because the workers will lost their job as the machine and technology will replace human power. However, there are new technologies and solutions to store the waste and food in the shelter. For the waste matter, the floor beneath the shelter can be designed into a mountain shape to keep the waste rolling and fall into the nearest drainage. It will be hygienic and safe because the goat's waste will automatically fall into the drainage. It also will reduce the cost to wash the floor under the shelter by water jet because the goat's waste will not stick to the floor. Image 4.10 below shows the mountain ground below the goat shelter.

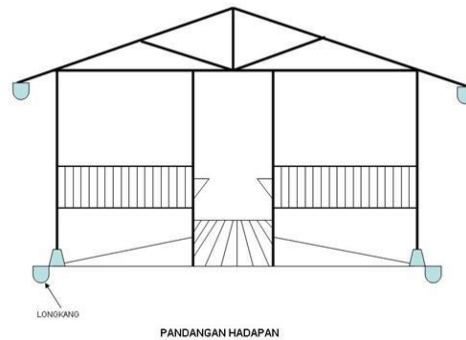
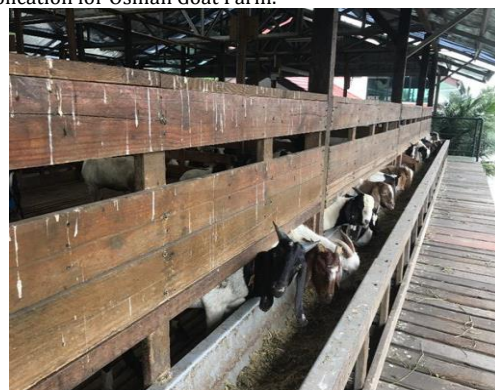


Image 4.10: Mountain Ground Design

**2) Food Container**

Every shelter should have a safe food container to protect the goat's food, pallet or drinks from bacteria. The food container is already open and located besides the shelter. Problem happens when the crows surrounding the shelter contaminate the pallets with their droppings. This contaminated pallets will then be consumed by the goats. The infected goats will then need to be treated with antibiotic. As a solution, food container with covers on the top can be provided to prevent the food from contamination. On the left image 4.11 shows the Osman Goat Farm's food container and on the right image of 4.11 is an example of the food container with the cover. Image 4.11 below shows the drink of goat in the bottle which is safe the drinks from any contamination with bacteria. This is good application for Osman Goat Farm.





**Images 4.11: Food Container Without Rooftop (Left) With Cover (Right)**



**Image 4.12: Drink Container Recommended**

#### CONCLUSION

As a conclusion, hygiene logistics in farm field is crucial to guarantee the health of goats as the farming industry intends to increase the market demand. This is to ensure that the industry can compete with the industry abroad and increase the nation export rather than the number of import rates. The issue of hygiene and halal are often interrelated especially in food and meat production. Not only in manufacturing but also in logistics and transportation issues. Thereby, empowerment of logistics in halal product especially in Islamic country is a tremendous way to enrich the services and products from an Islamic country especially in farming and livestock industry.

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