ZIBELINE INTERNATIONAL™ PUBLISHING

Malaysian Journal of Sustainable Agriculture (MJSA)

DOI: http://doi.org/10.26480/mjsa.02.2024.101.106

ISSN: 2521-2931 (Print)
ISSN: 2521-293X (Online)
CODEN: MJSAEJ

RESEARCH ARTICLE

THE DEVELOPMENT STATE OF RUMINANT PRODUCTION IN MALAYSIA

Siti Aisyah, J.*, Azmi, A., and Azima, A.M.

Centre for Development, Social and Environment,Faculty of Social Science and Humanities, Universiti Kebangsaan Malaysia,43600 Bangi, Selangor, Malaysia.
Corresponding Author Email: aisyahjeinie@gmail.com

ARTICLE DETAILS

Article History:

Received 20 March 2024
Revised 10 April 2024
Accepted 21 May 2024
Available online 23 May 2024

ABSTRACT

Ruminant production is a source for food production and has a role in Islamic observances. To develop ruminant production, it is a necessity to know the current status of domestic ruminant production. Thematic analysis was done on Livestock Statistics of Malaysia's ruminant production and literatures of the status of ruminant production to understand the development state of Malaysia's ruminant production. The result showed that there is a significant need for growth to achieve 50% self-sufficiency to reduce dependence towards importation while the per capita consumption is far from nutritional recommendation. The physical challenges include linear production, aging producer population and traditional farming. Moreover, there is an underlying epistemological clash hindering interest towards ruminant production. As such, there is a need for a development policy to improve interest towards ruminant production.

KEYWORDS

Development, Ruminant Production, Food Security, Malaysia.

1. INTRODUCTION

Food is a necessity for the preservation of life, which is one of the five pillars in Maqasid Syariah. One source of food is meat from ruminant production, namely cattle, buffalo, goat and sheep. For meat to be consumable according to Islam, the meat must be halal. To be halal, strict rules and regulations had been imposed during the production of livestock animals: halal animal slaughtering (zabiha). Halal requirements encompass various aspects of production from farm to table as ruminant production does not only supply meat as daily meat source for sustenance, but other parts, which is the byproduct supplying other usages both edible and inedible.

A researcher urged to ponder on the meaning of consumption as he discussed economy and development (Ramadan, 2009). According to him, the meaning of consumption lies in the interconnection between awareness of goals, ethics, respect for human dignity, nature, animals and an understanding of the global economy. One's consumption is a reflection of their chosen way of life. The nexus to the uncovering of these findings are the choices made for their consumptions. Each choice was made based on their knowledge and belief. For example, a Muslim who practices Islam would choose halal products over haram products, beef rather than pork. For ruminant production in Malaysia, the choice of producers to produce intensively or traditionally come into play. While the choice of consumers is between the more affordable imported meat and the pricier but fresher locally raised meat. These choices would divulge their reasoning. This is due to consumption is a human activity that uncovers the person's philosophy regarding their relationship to being and having, while exposing their priorities and awareness (Ramadan 2009).

The reasoning brings forth their philosophy. This philosophy constructs meaning or in other words, the value system. The question of what is the meaning of Malaysia's ruminant production becomes the baseline to develop the production. As the meaning signifies the value of the production system. To solve this query, the first step is to understand the demand of ruminant production in Malaysia.

The demand for ruminant production in Malaysia has three parts. First demand, ruminant products are mainly utilised as part of daily food consumption. The main ruminant products for the food industry are meat and milk. "Eat (for yourselves) and pasture your cattle: verily, in this are Signs for men endued with understanding" (Al-Quran Taha, 20:54). For daily food consumption, consumers purchase either fresh or frozen meat (Abdul Hadi et al., 2013). Due to the Muslim majority of Malaysia, the meat consumed are necessary to be halal slaughtered. Other parts such as offal, skin, trimmings, condemned parts, intestinal contents and manure are left as by-products (Merck Veterinary Manual 2022; Alao et al, 2017).

The second demand has a part in Islamic observations namely the annual Qurban and the sporadic Aqiqah. Qurban is the sacrifice of certain livestock starting from after the Eid al-Adha prayer on 10th to 14th Zulhijjah (Sahih Bukhari Number 453). While Aqiqah refers to the sacrifice of certain livestock for the birth of a Muslim child (Sahih Bukhari Number 380). For Qurban and Aqiqah, live animals are obtained and then slaughtered on site. The whole body of the animal is involved in the religious observation (JAKIM 2013). It is a significant need for production of live ruminants to flourish in Malaysia, a country that has 63% Muslims (Department of Statistics Malaysia 2022). And the official religion being Islam (Malaysia 2009). Thus, Islamic observances holds a significant demand.

The third demand, the by-products are acquired by various industries. The food industry processes the edible by-products. The inedible by-products are processed into consumables by fabric, pharmaceutical, furnishings, feed or fertiliser and biogas industries. (Alao et al., 2017; FAO 1991). If the by-products are deemed directly unusable by these industries, they would be disposed of in various ways such as burial, incineration, rendering or composting. Rendering and composting are processes that would breakdown or degrade these wastes into usable products while killing most if not all disease-causing organisms (Merck Veterinary Manual 2022). Figure 1 below surmises the utilisation of ruminant products. All in all, every aspect of the animals can be utilised.

Quick Response Code	Access this article online	
	Website: www.mjsa.com.my	**DOI:** 10.26480/mjsa.02.2024.101.106

Cite The Article: Siti Aisyah, J., Azmi, A., and Azima, A.M. (2024). The Development State of Ruminant Production in Malaysia. *Journal of Sustainable Agricultures, 8(2): 101-106.*

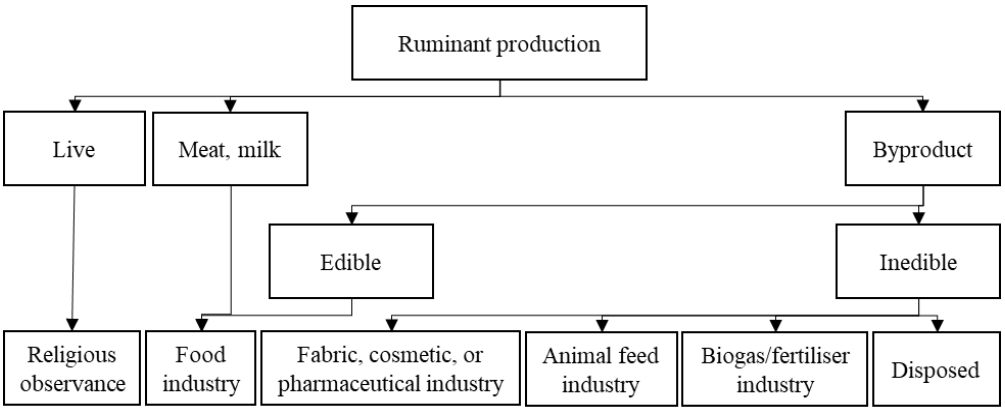

Figure 1: Utilisation of ruminant products.

From these demands, it is understood that the value of ruminant production although mainly contributes as a source of food, but it is not limited to food industry. On the note that ruminant production is developed mainly for food production, the concern of food production is food security. The definition of food security centred food consumption on active and healthy life, whereby the food is affordable, accessible and could satisfy various dietary requirements (FAO's,1996).

Food security is directly correlated with quality of life. World Health Organisation (WHO) has an assessment that measures quality of life (WHOQOL) which has broad ranging concept inclusive of physical health, psychological state, independence, social relationships, personal beliefs and relationships to the environment (WHO 2012). These notions hold close to the five pillars of Maqasid Shariah: preservation of belief, life, intellect, dignity and property (Ahcene 2013).

This means the development of Malaysia's ruminant production is tied to more than being a food source for consumption. It is intertwined in the life of a Muslim. The failure to secure ruminant production results in the failure to secure needs for daily life, health, and belief. Therefore, ruminant production should be continuously developed. To develop ruminant production, the situation of ruminant production in Malaysia must be understood. As such, this paper was written to further understand the development of Malaysia's ruminant production.

2. Materials and Methods

This article was developed through qualitative study using thematic analysis whereby the theme to be analysed was the development of ruminant production in Malaysia. A deductive technique of the self-sufficiency rate and consumption from year 2004 to 2020 were done to understand the overall development pattern throughout the years. These two keys, self-sufficiency rate and consumption, were chosen because of the development objective in Malaysia's development planning had used self-sufficiency rate which is based on consumption as part of its values. The statistics were collected from the Livestock Statistics of ruminant production in Malaysia through the Department of Veterinary Services website (Department of Veterinary Services, 2014; 2017; 2020). Then, selected data such as population number and slaughtered animals were used to derive the status of ruminant production. These values were enhanced by literatures regarding the developments of ruminant production. A further discussion was done to uncover the underlying issue that permeated the development of ruminant production in Malaysia.

Data from year 2021 and forwards were not used due to changes of calculation method reported in the statistics to prevent ununiformed data.

3. Results and Discussion

3.1 Ruminant consumption and production

To develop an industry, the status of the production must be examined while the challenges must be rectified. In tandem to food production, Food and Agriculture Organisation (FAO) advocates the concept of food security during the World Food Summit 1996 (FAO, 1996). Food security is different from self-sufficiency. A self-sufficient food production does not automatically mean that the production has reached food security. Self-sufficiency is tied by demand without regarding the nutritional needs, a requirement for food security. By definition, if a food demand does not meet the recommended nutritional value, despite having a 100% self-sufficiency, it is not considered 100% food secure. However, achieving self-sufficiency would mean getting closer towards food security.

In the case of ruminant production in Malaysia, the issue is lamentable due to the low self-sufficiency level for a comparatively low population demand. Figure 2 showcased the past seventeen years of Malaysia's self-sufficiency rate and per capita consumption during which Malaysia's population has grown from approximately 25 million to 32 million. Figure 2 tabulates the statistics derived from Department of Veterinary Services from 2014; 2017; 2020) for the self-sufficiency rate and per capita consumption of ruminant commodities (Department of Veterinary Services, 2014; 2017; 2020).

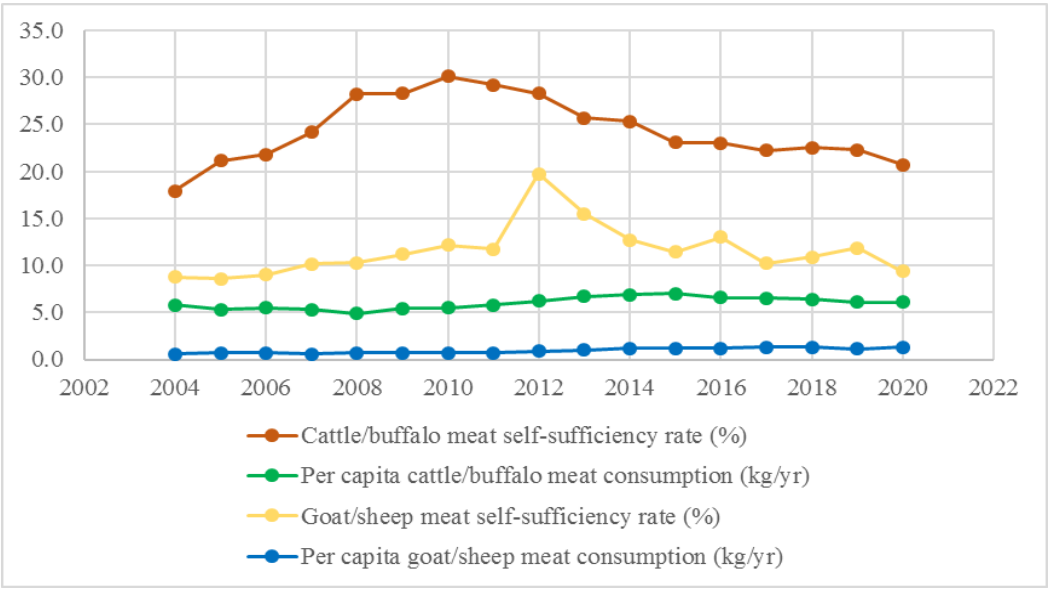

Figure 2: Self-sufficiency rate and per capita consumption of meat from ruminant production

Figure 2 showed that Malaysia's per capita consumption has a steady trajectory during the seventeen years. This means that, despite the population increment over the years, consumption demand had remained relatively the same. However, due to the population growth, there is an increasing value of the actual total consumption. The self-sufficiency rate has not shown significant growth with a tendency towards negative trajectory.

In 11th Malaysia Plan for 2015-2020, one of the objectives of ruminant production is to reach 50% self-sufficiency despite the decline from peak self-sufficiency in 2010 (Malaysia 2015). The statistics of 2020 shows that this objective was not met. Furthermore, with the trajectory of the 17 years statistics, setting the objective at 50% self-sufficiency rate is unlikely to be achieved in the near future. It is an unachievable goal to which the result in 2020 had proven correct. Instead of the wanted growth, there is a reduction in self-sufficiency rate for ruminant production. This continuous negative trajectory of self-sufficiency brings about a concern for food security.

To understand the extent of the concern of ruminant production self-sufficiency rate towards food security, per capita consumption needed to be studied. Although, Malaysia's cattle meat per capita consumption of 6.1 kg/yr in 2020 is higher than the 4.5 kg/yr of developing countries, but compared to the average developed countries, 14.6 kg/yr, the numbers are more than two folds away (OECD/FAO 2022). The higher average of developed countries could infer an increased preference towards meat in dietary consumption for higher per capita income. Therefore, as Malaysia is moving towards higher income and becoming a developed country, the change of dietary should be anticipated.

This inference is in line with, FAO that noted Malaysia has a rising demand for bovine meat from high-income consumers and hospitality industry, at the same time there is also an increase in importation of ovine meat (FAO, 2022). Khazanah Research Institute noted that despite being the lowest producer of bovine meat in Southeast Asia, Malaysia is amongst the highest consumer in the region (Khazanah Research Institute, 2019). Therefore, demand and consumption of cattle, buffalo, sheep and goat are not expected to reduce in the near future.

The self-sufficiency rates displayed domestic production inability to meet domestic demand with a substantial dependence on importation. This dependence had not lessened over the years. Despite the self-sufficiency had been remaining at a relatively similar value but translating this percentage in accordance with the population growth, it means there is an increment in gross numbers. Which is in accordance to the increase of importation cost accrued. Consequently, adding the trajectory of demand as Malaysia moves towards a high-income developed country, there will be an even more staggering dependence towards importation.

A high dependence towards importation risks food security. Studies on countries facing sanctions led them to food insecurity (van Bergeijk, 2021). For ruminants, in the case of animal disease outbreaks, it would restrict animal movements and affect international market involvement (Knight-Jones and Rushton 2013). Issues be it due to medical, political, or economic turbulence prevent international mobility causing the possible collapse of industries relying heavily on importation like Malaysia towards ruminant products. With Malaysia's nearly 80% importation rate, any failure to obtain international ruminant resource would halt domestic supply for halal meat and disrupt daily consumption and Islamic observances. As a result, the price for domestic livestock would skyrocket as the supply is unable to meet the demand.

3.2 Production values

In this section, emphasis is given to cattle/buffalo production. The targeted self-sufficiency of 2020 at 50% is of 30% difference from the current value at 20.7% self-sufficiency rate. In 2020, the reported population for ruminants meant for meat production in Malaysia were 763,674 animals for cattle and buffalo, where 127,977 individuals were slaughtered with 29,786 imported individuals. Compared to 2013, the population of buffalo and cattle then was at 860,907 animals, which had decreased 97,233 animals. Within 7 years, a population loss occurred instead of population growth despite the intention of developing ruminant production to increase self-sufficiency rate.

Based on the statistics, a population of 763,674 supported 20.7% of self-sufficiency (Department of Veterinary Services 2020). Using these values as the assumption, to increase to 50% self-sufficiency which is 309,123 cattle to be slaughtered, that would mean, a minimum population of 1,844,623 cattle/buffalo is required. That is an almost three-fold increment from the current population. A three fold population increase to raise 30% self-sufficiency rate.

Next, is to calculate whether the three fold increment could be sustained. The calculation utilises calving rate at 70% (Mohamed et al. 2013). From the population of 1,844,623 cattle/buffalo, 50% self-sufficiency requires the slaughtering of 309,123 animals, therefore leaving a residual population of 1,535,500 cattle/buffalo. Assuming the female population of 50% of the residual cattle/buffalo population post slaughter, 767,750 cattle/buffalo, the calves amount to 537,425. Adding the residual population to the expected calves, the new population is 2,072,925 cattle/buffalo. The population is more than the three fold initial population, ergo the new population is expected to be sustainable for yearly slaughter at 50% self-sufficiency rate. This means, a three-fold increment of the population is adequate for next year's production and consumption if the female population is at least 50% with 70% calving rate. Moreover, in the assumption that 1:25 bull to cow ratio recommended by a group of researchers in 2021 is realised, which is, the male population at 4% and 96% female, calving rate minimum at 70%, an even greater population growth of local cattle/buffalo could be anticipated (Chenoweth in Timlin et al., 2021).

However, there seemed to be discrepancies in the values calculated when using per capita consumption of 6.1 kg and total population consumption 199,478 metric tonne (Department of Veterinary Services, 2020). From the total population consumption, 20.7% self-sufficiency rate equals to 41,292 metric tonne domestic production. Therefore, to reach 50% self-sufficiency rate, 99,739 metric tonne domestic cattle/buffalo meat needs to be produced domestically.

To address the slaughter weight to edible meat the constitution of the animals must be known. Approximately 67% of the cattle population in Malaysia belongs to the Kedah-Kelantan breed (Ariff et al. 2015). The population for large ruminant meat productions according to Malaysian Livestock Breeding Policy are Sawah and Murrah for Buffalo, Kedah-Kelantan and crossbreeds for cattle (Department of Veterinary Services, 2013). For the production calculations, the values are based on Kedah-Kelantan, which is the majority of the population. Rounding out the average of hot dressing to 56% and average slaughter size of males and females to 268 kg (Dahlan et al. 1992; Islam et al 2021). Thus, the average weight of meat for consumption per animal is 150 kg bovine meat. A production of 99,739 metric tonne means, 664,927 animals is required for a 50% self-sufficiency.

When 664,927 animals are slaughtered from a population of 1,844,623 cattle/buffalo, the residual population is 1,179,696 cattle/buffalo. Assuming half of the residual population is female, 589,848 cattle/buffalo, and calving rate of 70%, the amount of calves born is 412,894. Therefore, the new population is 1,592,590 cattle/buffalo, which is less than the initial population. However, if the population of females is 96% (maintaining the recommended 1:25 male to female ratio), the female population is 1,132,508 cattle/buffalo. Therefore, 792,756 calves would be born, creating a new population of 1,972,451 cattle/buffalo. Only when ruminant production is kept at 1:25 male to female ratio, then, the new population is larger than the initial population to sustain slaughter at 50% self sufficiency.

From these calculations, to reach 50% self-sufficiency with 99,739 metric tonne bovine meat production, it is recommended that the population should be approximately 1,844,623 animals while maintaining a male to female ratio of 1:25. Reducing the male to female ratio would significantly change the calf population intended for population replacement.

For goat and sheep, the population was at 449,029 animals where 28,963 individuals were slaughtered with 27,361 imported individuals. With goat/sheep population at 449,029 animals supporting 9.4% self-sufficiency, consuming 41,693 metric tonne of ovine meat for the whole population (Department of Veterinary Services, 2020). Thus, only 3,919 metric tonne were produced domestically. To achieve 50% self-sufficiency, 20,847 metric tonne ovine meat must be produced domestically. For small ruminants, the common breeds are Boer and Katjang for goat and Barbados Blackbelly, Damara, Malin, Dorper and their crosses for sheep. The average is calculated between Boar and Katjang at 48% carcass dressing and average slaughter size at 23.5kg (Department of Veterinary Services, 2013). The average weight of meat for consumption

per animal is 11.28kg of ovine meat. As such, minimum total population of 2,388,452 goat/sheep is required for 50% self-sufficiency. This accounts to more than five-fold increment. Table 1 highlights the production numbers for cattle/buffalo and sheep/goat.

Table 1: Ruminant production of year 2020

Animals	Cattle/Buffalo	Goat/Sheep
Per capita consumption (kg/yr)	6.1	1.3
Total population consumption (metric tonne)	199,478	41,693
Self-sufficiency rate (%)	20.7	9.4
Domestic production based on self-sufficiency rate (metric tonne)	41,292	3,919
*Targeted 50% self-sufficiency production (metric tonne)	99,739	20,847
*Targeted population	1,844,623	2,388,452

*Hypothetical calculations

To be able to reach the targeted 50% self-sufficiency set in The Eleventh Malaysia Plan, Malaysia's ruminant production needs to substantially grow (Malaysia, 2015). This growth in the number of animal population must be supported with the growth of farmer's population, farm size and feed production. To do so, animal husbandry and veterinary professionals must be adequate to ensure animal herd health is optimised or risk outbreaks of diseases that might harm food security and public health. In addition, facilities and logistics to cater to the needs and processing of ruminant production should also be developed to be able to process the substantial amount of animals. An increment in self-sufficiency requires the growth of the whole production cycle or the targets would not be achievable.

3.3 Food security of ruminant meat

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996). This definition provided a space for dietary needs and choices. As an established nutrient source, the nutritional requirements of ruminant products should also be rectified along with availability, stability and accessibility. For this paper, meat is the targeted product of discussion.

Ruminant production produces red meat. Recommended consumption of red meat is no more than 700g of raw red meat which is equivalent to 455g of cooked red meat per week (Australia Cancer Council (n.d)) or 525g to 750g raw red meat equivalent to 350g to 500g of cooked red meat per week for optimum nutrition and minimum adverse effects (World Cancer Research Fund International n.d). These values in per capita consumption for raw red meat is 33.6 kg/year and 25.2 kg/year to 36 kg/year respectively.

Comparing the least consumption value of recommended red meat, 25.2 kg/year to Malaysia's per capita consumption of 6.1kg bovine meat and 1.3kg ovine meat for year 2020, the value is far off. Nutritionally, Malaysia's red meat consumption is significantly below recommendation. MARDI agreed that one of Malaysia's challenges on food security is nourishment (MARDI, 2021). This substantial difference from recommended value means there is a significant potential growth for demand. Rounding off to 25 kg/year for a per capita consumption and 2020 population of Malaysia at 32.4 million (DOSM, 2023), this would translate to 810,000 metric tonne meat consumption. 810,000 metric tonne meat is estimated to be around 5,400,000 individuals of the Kedah-Kelantan cattle. This staggering number is only based on the current population demand. Population growth will increase the demand further, which is a validated challenge towards food security in Malaysia (MARDI, 2021).

Another challenge MARDI listed that pertained to ruminant production industry is the labour intensiveness required for the production in tandem with the aging farmer's population (MARDI, 2021). It became expectable that they are not keen on adoption of technology and mechanisation (MARDI, 2021). An aging farmer's population meant a shrinking industry. Furthermore, the key players of Malaysia's ruminant production were contributed mostly by small holders and traditional farmers (Ariff et al., 2015). Technology and mechanisation not only demand flexibility to adapt but also monetary cushioning to maintain them.

Rural based development are targeted towards the poor meant that ruminant production are not built by farmers with large capitals. Instead, it is a mechanism of pro-poor policy and rural development (Malaysia 2016). As such, external investments are required to pump in money for them to adopt technological advancements. However, MARDI stated that there is a lack of private investment to invigorate ruminant production (MARDI, 2021). It appears to be there is a lacking interest in ruminant production by new industry players. From farmers who are doing the hands-on work or investors to boost resources and developments for them. For this phenomenon to take place there ought to be an underlying reasoning. A causative reason that erodes the interest towards ruminant production.

Specific to the physical side of ruminant production in Malaysia, a group of researchers explained that the issues that plague ruminant production were largely due to high cost, poor feed quality and breed issues (Ariff et al., 2015). The prevalence of smallholders and traditional farmers caused the inability to expand their productions. This was further exacerbated by the lack of efficient industry structure and disorganised marketing. Whereby, the structure had not change for decades.

The conventional ruminant production in Malaysia is a linear production line that could be improved by turning it into a cyclical system (Malaysia Productivity Corporation, 2020). The cyclical system refers to an interlinking components of industries that could benefit from each other. This becomes cyclical in nature, contributing their products and by-products to other productions. A cyclical system optimise the overall biomass in the production while reducing wastages and discharges into the environment. Malaysia Productivity Corporation highlight that this cyclical system is not limited to one production line (Malaysia Productivity Corporation, 2020). It converges various established productions for an integrated input and output measures. Implementing this to ruminant production would mean the cooperation of numerous players such as ruminant producers, feed producers, veterinarians and machinery technicians. Facilities like abattoirs, logistics and marketing developments should also be readily available.

Other than that, another group of researchers outlined a few suggestion for improvements (i) Breeding and improvement (ii) Nutrition and feeding practices (iii) Prevention and control of diseases (iv) Promotion and incentives (Jamaludin et al., 2014). Zainalabidin et al. (2013) addressed the government to change the policy towards importing female breeding stock to improve domestic production while reducing fresh beef importation to encourage domestic producers. This is in accordance to the findings by Ismail et al. (2014) that found that "an increasing number of female cattle (buffalo) produced from the beef/dairy industry appears to be a highly valuable opportunity to increase local beef. This suggests that there is a substantial opportunity for dairy farmers, calf rearers, and beef finishers and processors to coordinate a supply of calves and finished cattle for the beef industry. Calf retention (both bulls and heifers) and the greater efficiency of these cattle classes (relative to steers) are the key drivers of this increase." A cycle within the different ruminant producers itself. This finding reinforce the need of a cyclical system that have a strong involvement between players in the production.

3.4 Underlying issue

From these challenges and suggestions, a topic that lacked discussion is the chasm created by the declining interests towards ruminant production. In the writer's understanding, this disinterest had a connection with epistemological clashing. Considering Malaysia utilises modernism and capitalism as the core of development (de Micheaux 2017; Nazir 2021). The ruminant production which had traditional and religious values becomes a point of struggle.

Modernism emphasis capitalism, technological advancements and industrialisation in the pursuit of development while at the same time traditionalism must be left behind. However, the situation of ruminant production in Malaysia is still permeated by traditional production, which lack the utilisation of technologies. This push towards modernisation while the premise of ruminant production is stuck in traditionalism creates a repellent effect towards the development of ruminant production.

Moreover, ruminant production is not an exponentially lucrative endeavour. For ruminant production to be lucrative it would increase the price of the products namely the main product meat. A rise in meat price detriments its affordability, which in turn reduces food security. The study

by a group of researchers showed that increment in price reduced the purchasing ability of Malaysians (Hamir et al., 2022). As such, to ensure affordability of meat, farmers could not sell their animals at a high price. Combined with the labour intensity, this scenario is not in line with modernism that pursues industrialisation, high income, and high efficiency production with maximised mechanisation. Furthermore, as ruminant production is targeted for rural development, those seeking better facilities and opportunities offered by urban area would not be interested. Thus, this bias of modernism had caused the young generation to be less keen towards agricultural production and the rural region.

Declining interest by the government towards agricultural education could also be seen when Universiti Pertanian Malaysia, the university built for agriculture, was renamed to Universiti Putra Malaysia, removing the word Pertanian which means Agriculture in 1997. The change was done to redirect education from agriculture to science despite having other universities including Universiti Sains Malaysia which was established for scientific courses (New Straits Times, 1997). This displayed the degradation of interest towards agriculture while enhancing the hold of science even on educational sector.

If the trend of disinterest were allowed to fester, the aging population in the industry would not acquire new young members. In the long run, this industry could cease to exist, causing 100% dependence towards importation. This scenario beckons intervention from top down to sow interest and rebuild enthusiasm towards ruminant production so as to fulfil the needs for ruminant products while adhering to maqasid syariah. An interest towards ruminant production could be build by creating a stable community consisting all the chains in the production cycle, a cyclical system. A community that could provide shared resources like machineries while being backed by the necessary sectors with centralised managements.

4. Conclusion

Malaysia has a long way to achieve food security as per the intention of FAO in 1996 covering affordability, accessibility and nutritional requirements (FAO, 1996). The self-sufficiency rate showing a negative trajectory going under 20% for cattle/buffalo and under 10% for sheep/goat. A reducing domestic self-sufficiency rate reduces Malaysia's independency. Moreover, the production is based on 6.1kg bovine meat and 1.3kg ovine meat per capita consumption is far from being nutritionally sufficient.

By looking into 17 years of statistics of the ruminant production in Malaysia, it showed that there were no significant growth of the production. The industry could not keep up with growing population even if the demand was considered low in comparison to recommended nutritional intake. These situations show a continuous process of moving further away from food security as the population grows.

To achieve the targeted 50% self-sufficiency rate, large ruminant production needs a threefold growth while the small ruminant production has to grow fivefold. Consequently, a growth in the producers must be supported by the growth of all the involved sectors. For example, in the situation that the animal population meets the target, without enough veterinarians, herd health could not be maintained. Without enough abattoirs, animals could not be slaughtered for meat consumptions. Without enough feed producers, more feed importation would be needed to meet the domestic demands, increasing cost and as a result, higher product price. It is a vicious cycle.

Hence, the current linear production was suggested to be reformed into a circular production chain. At the same time, the circular chain should strive to maximise the value of by-products for the improvement of efficiency as a whole. This will enhance producers income without increasing the market price of meat and milk.

However, there was an underlying issue besides the physical struggles. In the context of Malaysia's development for ruminant production, there was disinterest towards becoming farmers due to the nature of the work, anticipation of high income while expecting an affordable meat pricing created by modernism. Intervention from the government to invigorate interest and change into circular ruminant production is much needed. Otherwise, the objective of 50% self-sufficiency, food security and adherence to the preservation of Islamic observances would be made more difficult.

References

Al-Quran

Abdul Hadi, A.H.I., Shamsudin, M.N., Radam, A., and Selamat, J. 2013. Consumer Preference for Food Attributes in Malaysia: Case Studies on Broiler and Beef. Journal of International Food and Agribusiness Marketing, 25 (sup1), Pp. 137–153. Doi: 10.1080/08974438.2013.805453

Alao, B., Falowo, A., Chulayo, A. and Muchenje, V. 2017. The Potential of Animal By-Products in Food Systems: Production, Prospects and Challenges. Sustainability 9 (7), Pp. 1089. Doi: 10.3390/su9071089

Ariff, O.M., Sharifah, N.Y., and Hafidz, A.W. 2015. Status of beef industry of Malaysia. Mal. Journal of Animal Science, 18 (2), Pp. 1-21.

Australia Cancer Council. N.d. Information sheet, Meat and cancer. https://www.cancer.org.au/about-us/policy-and-advocacy/prevention-policy/national-cancer-prevention-policy/obesity/related-resources/meat-and-cancer

Braun, V., and Clarke, V. 2018. Using thematic analysis in counselling and psychotherapy research: A critical reflection. Counselling and Psychotherapy Research, 18 (2), Pp. 1-4.

Dahlan, I., Haron, A. R., and Sukri, M.H.I. 1992. Effect of agricultural by-product diets on carcass characterisrtics of four types of cattle in the feedlot. Asian-Australian Journal of Animal Sciences, 5 (3), Pp, 455-459. https://doi.org/10.5713/ajas.1992.45

de Micheaux, E.F. 2017. The Development of Malaysian Capitalism: From British Rule to the Present Day. Petaling Jaya: Strategic Information and Research Development Centre.

Department of Statistics Malaysia. 2022. Key Findings Population and Housing Census of Malaysia 2020: Administrative District. https://www.dosm.gov.my/portal-main/release-content/key-findings-population-and-housing-census-of-malaysia-2020-administrative-district

Department of Veterinary Services. 2014. Malaysia, Perangkaan Ternakan 2012-2013. https://www.dvs.gov.my/index.php/pages/view/1496

Department of Veterinary Services. 2015. EPP. https://www.dvs.gov.my/index.php/pages/view/617

Department of Veterinary Services. 2017. Malaysia, Perangkaan Ternakan 2015-2016. https://www.dvs.gov.my/index.php/pages/view/1743

Department of Veterinary Services. 2020. Malaysia, Perangkaan Ternakan 2020-2021. https://www.dvs.gov.my/index.php/pages/view/3949

DOSM, 2023. Demograsi Population. https://newss.statistics.gov.my/newss-portalx/ep/epFreeDownloadContentSearch.seam?cid=98471

FAO, 1991. Guidelines for Slaughtering, Meat Cutting and Further Processing. https://www.fao.org/3/t0279e/T0279E02.htm

FAO, 1996. Report of the World Food Summit. Rome. https://www.fao.org/3/w3548e/w3548e00.htm#adopt05

FAO, 2022. Meat Market Review: Emerging trends and outlook 2022. Rome

Hamir, M.I., Harun, A., Farradia, Y. and Othman, B.A.M. 2022. Understanding Malaysian Preference for Local Beef. Jurnal Logistik Indonesia 6 (2) Pp. 107-115.

Islam M.S., Yimer N.D., Haron, A.W., Abdullah, F.F.J.B. and Han, M.H.W.H. 2021. Growth and reproductive performance of the indigenous Kedah-Kelantan (KK) Cattle: A review. Pertanika Journal of Tropical Agricultural Science, 44 (1), Pp. 25–48. Doi: 10.47836/pjtas.44.1.02

Ismail, A.L., Zainalabidin, M., Abdullahi, F.A. and Mad Nasir, S. 2014. Estimation of beef supply and demand in Peninsular Malaysia: An application of cointegrationand error correction model techniques. Journal of International Food & Agribusiness Marketing 25 (1), Pp. 167-185.

JAKIM. (2013). Garis Panduan Perlaksanaan Ibadah Qurban. Malaysia. https://www.islam.gov.my/images/garispanduan/garis_panduan_pelaksanaan_ibadah_qurban.pdf

Jamaludin, M., Hassan, M., Amin, M., and Zulhisyam, A. 2014. The Future of the Malaysian Beef Industry. Journal of Tropical Resources and Sustainable Science (JTRSS), 2 (1), Pp. 23–29.

Khazanah Research Institute. 2019. A Brief on 'Beef'. https://www.krinstitute.org/assets/contentMS/img/template/editor/Views_A%20Brief%20on%20Beef.pdf

Knight-Jones T.J. and Rushton J. 2013. The economic impacts of foot and mouth disease - what are they, how big are they and where do they occur? Preventive Veterinary Medicine, 112 (3-4), Pp. 161-73. doi: 10.1016/j.prevetmed.2013.07.013.

Malaysia Productivity Corporation. 2020. Potential Application of Circular Economy (CE) Concept in Livestock Production. https://www.dvs.gov.my/dvs/resources/user_1/2022/BPSPV/SPPU/Potential_Application_of_Circular_Economy_(CE)_Concept_in_Livestock_Production_2020_MPC_DVS.pdf

Malaysia,1966. Rancangan Malaysia Pertama.

Malaysia, 2009. Perlembagaan Persekutuan

Malaysia, 2021. Rancangan Malaysia Keduabelas.

MARDI.,2021. Proceeding Webinar Sekuriti Makanan Negara 2021. 27th May 2021.

Merck Veterinary Manual. 2022. Disposal of Carcasses and Disinfection of Premises. https://www.msdvetmanual.com/clinical-pathology-and-procedures/disposal-of-carcasses-and-disinfection-of-premises/disposal-of-carcasses-and-disinfection-of-premises

Mohamed, Z., Hosseini, A. and Kamarulzaman, N. H. 2013. Analysis of Malaysian beef industry in peninsular Malaysia under different importation policies scenarios and rate management systems. Pertanika Journal of Social Science and Humanities, 21, Pp. 1–16.

Nazir, R. 2021. What's in a Name.

New Straits Times. 1997. Tengku Sariffuddin New name to reflect change in emphasis from agriculture to science, UPM now Universiti Putra Malaysia. (4 April 1997).

OECD. 2021. Making Better Policies for Food Systems, OECD Publishing, Paris, https://doi.org/10.1787/ddfba4de-en. https://doi.org/10.1787/ddfba4de-en

OECD/FAO. 2022. OECD-FAO Agricultural Outlook, OECD Agriculture statistics, database, http://dx.doi.org/10.1787/agr-outl-data-en.

Ramadan, T. 2009. Radical Reform. Oxford University Press, Oxford.

Sahih Bukhari. N.d. Number 380, 66 (7). https://www.iium.edu.my/deed/hadith/bukhari/066_sbt.html

Sahih Bukhari. N.d. Number 453, 68 (7). https://www.iium.edu.my/deed/hadith/bukhari/068_sbt.html

Timlin, C.L., Dias, N.W., Hungerford, L., Redifer, T., Currin, J.F. and Mercadante V.R.G. 2021. A Retrospective Analysis of Bull:Cow Ratio Effects on Pregnancy Rates of Beef Cows Previously Enrolled inFixed-time Artificial Insemination Protocols. Translational Animal Science, 5 (3), Pp. 1–9.

van Bergeijk, P.A.G 2021. Research Handbook on Economic Sanctions. UK, Edward Elgar Publishing Limited.

WHO, (2012). The World Health Organization Quality of Life (WHOQOL).

World Cancer Research Fund International. N.d. Limit red and processed meat. https://www.wcrf.org/diet-activity-and-cancer/cancer-prevention-recommendations/limit-red-and-processed-meat/#:~:text=Dietary%20goal,%2C%20if%20any%2C%20processed%20meat.

Zainalabidin, M., Anahita, H. and Nitty N.K. 2013. Analysis of Malaysian Beef Industry in Peninsular Malaysia under Different Importation Policies Scenarios and Rate Management Systems. Pertanika Journal of Social Sciences and Humanitie,s 21 (S), Pp. 1 – 16.