PRELIMINARY STUDY ON NUTRIENT CONTENT OF LOCAL GRASS IN INTEGRATED FARMING IN JOHOR

Norlindawati, A. P.*, Haryani, H, Sabariah, B., M. Noor, I, Samijah, A., and M. Supie, J.

Malaysia Veterinary Institute, KM13 Jalan Batu Pahat, Beg Berkunci 520,
86009 Kluang, Johor, Malaysia.
*Email: norlindawati.dvs@1govuc.gov.my

Integrating livestock in rubber or oil palm plantations has optimized the productivity of each land unit used in Malaysia. Malaysia has vast fields such as oil palm plantations, rubber and coconut. Under the trees and inter-row spaces promote the growth of at least 60 species of grass which is commonly considered as weeds (Ayob and Kabul, 2009). These are potential feeds that can be a good source of food or fiber in ruminant nutrition. However, less study were conducted to determine the nutritional value of local grasses that grew between the rows beneath palm trees. The objective of this study is to document the nutrient content of some of the local grasses found in the integrated farm.

The study was conducted at cattle-oil palm integrated farming in Paloh, Johor. This farm was started from year 2006 with 150 hectare can accommodate five herds, one herd with approximately sixty to seventy cattle. Cattle breeds are Brahman and Kedah Kelantan, which are obtained from DVS. Farm management is conducted by five groups. One group with three to four owners manages one herd of cattle. Cattle placed in an oil palm plantation for three days and transferred to the other oil palm plantations to ensure cattle are not over grazing. Source of drinking water is from the river which is maintained by the Department of Irrigation and Drainage. To meet mineral requirements of livestock also supplied with mineral salts.

Four grass samples and one water sample were collected from this farm. Samples were analyzed by Feed Analysis Laboratory, IVM. Six parameters were studied for grass samples which are dry matter, crude ash, crude protein, ether extracts, crude fiber and nitrogen free extract. CP content (*N x 6.25*) was determined by the Kjeldahl method. CF was measured using Fibertec methods (FOSS). EE was measured using Soxtec methods (FOSS). Other parameters were determined according to Association of Official Analytical Chemists, AOAC (2000). TDN was calculated using Manke equation (1979). Water samples were tested with pH meter to get a pH reading.

The results (Table 1) showed that TDN value for mix grass (containing three types of grasses, buffalo grass, asystasia grass and carpet grass) is 64.8%; TDN value for carpet and buffalo grass approximately 63% and asystasia grass has 45.4% TDN value. Metabolism Energy value for both carpet grass and buffalo grass is approximately 9MJ/Kg and asystasia 6.5MJ/Kg. However, mix grass has 9.78MJ/Kg ME value. Asystasia grass contains 30.7% CP, while two other grasses contain approximately 13%. A mix grass contains 17.6 % CP. These values are higher than a mature cow's CP requirement which is 7% (Hersom M. 2017). The herd is drinking river water with pH 7.07; according to Curran G. (2014) drinking water should be in the range 6.5 to 8.5. If the pH is highly acidic which is less than 5.5 can cause acidosis and reduced feed intake may occur. However, if highly alkaline water which is over 9 may cause digestive upsets and diarrhea, lower feed conversion efficiency and reduce intake of water and feed.

Table 1: Nutritional content of grasses found and eaten by the cattle in Paloh integrated farm.

Parameter (%)	Grass samples			
	Paspalum conjugatum/ **Buffalo grass**	*Asystasia gangetica/* **Asystasia grass**	*Axonopus compressus/* **Carpet grass**	**Mix grasses**
Dry matter (DM)	29.7	11.2	31.6	20.3
Crude Protein (CP)	13.4	30.7	13.0	17.6
Ether Extracts (EE)	1.2	3.3	2.0	2.2
Crude Fiber (CF)	25.9	19.8	27.4	25.9
Total Ash	8.8	17.6	7.5	8.6
Nitrogen Free Extract (NFE)	50.8	28.7	50.1	45.6
Total Digestible Nutrient (TDN)	62.7	45.4	63.2	64.8
Metabolism Energy (ME) (MJ/Kg)	9.42	6.59	9.52	9.78

Undergrowth grazing is the only source of feed for cattle in this integrated farm; no concentrate feed or other grasses are planted to give to livestock. The purchase of livestock feeds requires a high cost, in this way the owner can save on farm production costs. Results on nutritional content also show that these three local grasses can fulfill the livestock nutritional requirement if availability is abundance. Further studies should be conducted to obtain the amount of grass produced by the farm to ensure sufficient or not to be eaten by livestock. Analysis of nutrient content on other grasses found in the integration farm should also be carried out.

A.O.A.C. 2000. Official Methods of Analysis. 17th edition. Association of Official Analytical Chemists. Washington D. C.

Ayob, M. A. and Kabul, M.A. Cattle Integration in Oil Palm Plantation through Systematic Management. The 1st International Seminar on Animal Industry 2009: 66-73. [Online, accessed July 30, 2017] URL: https://core.ac.uk/download/pdf/32363773.pdf

Curran, G. 2014. Water for livestock: interpreting water quality tests. Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1: 1-4. [Online, accessed July 9, 2017] URL: http://www.environment.gov.au/system/files/resources/53cda9ea-7ec2-49d4-af29-d1dde09e96ef/files/nwqms-guidelines-4-vol1.pdf

Hersom, M. 2017. Basic Nutrient Requirements of Beef Cows. Department of Animal Sciences; UF/ Institute of Food and Agricultural Sciences Extension, Gainesville, FL. [Online, accessed July 9, 2017] URL: http://edis.ifas.ufl.edu.