Effect of Processing of Oil Palm Frond on Palatability in Bali Cows

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Introduction Palm oil frond (POF) is one of the by-products from palm oil plantations and is indicative of the disturbance to the environment in Indonesia and Malaysia as development of the palm oil industry in this area nowadays. Indonesia Statistical Biro (2006) reported that the production of POF was around 10,869,365 t from around 3,682,900 ha of palm oil plantation in Indonesia**.** Alimon and Hair Bejo (1995) reported that the chemical composition of POF is 47, 385, 787 556 g kg^{-1} and 5.65 MJ kg^{-1} for crude protein (CP), crude fibre (CF), neutral detergent fibre (NDF), acid detergent fibre (ADF) and metabolisable energy respectively. On the other hand, this product might be used as an alternative ruminant feed. Based on preliminary study, palm oil usually has 48 fronds and each frond has 250 to 350 leaves. Parts of POF that can be utilized as a feed are peeled frond, around 30 % of the fresh frond. PF could be fed to the animal in term of fresh chopped frond, frond meal and frond pellet. There is however no information dealing with POF especially its palatability and therefore a study was undertaken to assess the value of this by-product in diets of ruminants. The aims of this study were to evaluate the chemical composition and the palatability of POF, and proportion of POF eaten by animal.

Materials and Methods Four two-year old Bali cows weighing around 112-122 kg were used in this study. Cows were placed in 2 x 2 m individual pens prepared with four feed containers. Fresh POF was obtained from a palm oil plantation in Jambi province in May 2007. The palatability test followed the method created by Kryazakis (1993) with slightly modified by (Afdal *et al*, 2005) in which all cows were fed four treatments namely field grass (control), freshly chopped POF (FCPOF), POF meal (POFM) and POF pellet (POFP). FCPOF was prepared by freshly peeling and chopping of POF, POFM was prepared by oven drying of FCPOF at 60 ^{0}C for 24 h and milling to be powder and POFP was prepared by mixing of rice brand and POFM with ratio of 1 : 1 and pelleted in 0.5 cm diameter. The chemical composition of each treatment can be seen in Table 1.

Table 2. Chemical composition of each POF treatment

	Treatment			
	Field Grass	Chopped POF	POF Powder	Pelleted POF
DM	282.1	210.1	839.2	727.5
OM	947.4	958.9	958.9	948.3
CP	85.6	51.4	51.4	94.1
NDF	574.2	573.9	573.9	494.5
ADF	290.0	384.9	384.9	269.3

After an adaptation period of four weeks, each cow was introduced to a single feed treatment for a week and continued with other feed treatments (this is unclear). At the data collection period cows had free access to all treatments and water during 24 h and were fed twice a day at 0700 and 1700h. The values measured included the amount of DM consumed for each treatment. DM consumed was calculated based on the total amount of feed given minus the total amount of feed refusal for each container. The design of the study was Randomized Block Design (4x4) with four treatments and four cow blocks of replication. Statistical analysis using anova and Duncan test (Steel and Torry, 1991)

Results

Table 2. Feed consumption of each POF treatment

Feed Consumption					
			gDM/head/d		
	DM	OM	CP	NDF	ADF
Field Grass	1,772.48	1,679.17	461.24	1,017.70	513.96
Chopped POF	61.65	59.12	19.47	35.38	23.73
POF Powder	32.37	30.93	6.87	18.51	12.42
Pelleted POF	1,402.08	1,329.58	392.04	683.33	377.60

There was significantly ($P<0.05$) different consumption among the treatments. The consumption of field grass and pelleted POF were higher than chopped POF and POF powder. This might be due to field grass is a conventional feed, usually eaten by animal and pelleted POF had rice brand added that provides typical taste, form, texture and aroma that is liked by animal. Skerman (1977) reported that texture, taste and nutrient content affected the appetite.

Low consumption of chopped POF and POF powder might be due to the cow be not familiar with the feed thus needing time to adapt to the feed. In this study we adjusted the feed by adding a few salts in order to stimulate cow to eat the feed. For POF powder, low consumption may have resulted from the feed being dusty. Parakkasi (1985) reported that dusty feed decreased the feed consumption of animal. We try to add water to reduce dustiness to stimulate the appetite. Pelleted POF was the most chosen feed among the four treatments with 42.9 % eaten by the animals (see Table 3).

Table 3. Dry matter consumption and dry matter proportion consumed for each treatment

Treatment	DM consumption (gDM/h/d)	DM proportion consumed (%)
Field Grass	1,772.48	54.22
Chopped POF	61.65	1.88
POF Powder	32.27	1.00
Pelleted POF	1,402.48	42.90

Total	3,268.48	100.00

Conclussion

It can be concluded that the total POF, around 30 % of total fresh POF could be utilized as feed. POF could be chopped, milled and pelleted since pelleted POF was the most liked by the animals with the proportion of 42.9 % being eaten.

Refference

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