

# Nutritive value of grower pig ration using local feeds in West Manokwari District, Manokwari

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## Nutritive value of grower pig ration using local feeds in West Manokwari District, Manokwari

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### Abstract

A study was carried out to observe the nutritive value of grower pig ration using local feeds applied by farmers in West Manokwari district, Manokwari, Indonesia. Thirty-five pig farmers from 3 different places at West Manokwari district were used as respondents. Descriptive method with technical survey was used to know the followings: 1. Information on flock size of grower pigs owned by farmer, 2. Identification of local feeds used to formulate a ration, 3. Information on the quantity of each local feed used in the ration, and 4. Information on the frequency of grower pig feeding in a day. In addition, the chemical analysis of each local feed was applied. Data obtained was used to calculate the nutritive value (protein and energy contents) of the rations. Supporting data obtained were education background, age, and job preference of the farmer. Results showed that 80% of the grower pig rations using local feeds applied by the farmers in West Manokwari district had achieved the standard of protein requirement, but had not achieved the standard of energy requirement suggested by NRC. The majority of the farmers (49%) only had a high school education background. Approximately 86% of the farmer was in productive age, and about 63% said that pig farming was their primary job. In conclusion, local feeds were potential to be used as basic ingredient for the grower pig ration in West Manokwari district, however due to less knowledge of the farmer about feed formulation therefore the nutritive value (energy content) of the rations still below the nutritive standard suggested by the NRC.

*Keywords: grower pig ration, local farmer, nutritive value*

### Introduction

In Manokwari, West Papua, Indonesia, pigs are kind of animal that favorable by indigenous or local people to be raised. Pigs in Papuan tribes are usually kept for the purpose of consumption, generating income, ceremony, or social events (Iyai et al., 2013). Pigs are used for bride prices; pigs are also used as payments to resolve social disputes. The killing of pigs is also tied to important events such as cremation, marriage and initiation rites. Pigs population in Manokwari was 2614 pigs (BPS Papua Barat, 2013), with distribution at West Manokwari 792 pigs, South Manokwari 407 pigs, East Manokwari 1030 pigs, and North Manokwari 385 pigs.

Ration in pig farming holds an important factor since about 60-85% of total production cost is feed. To raise pigs, farmers in Manokwari depend mostly on the use of local feed resources since a commercial feed was very expensive. The farmers mixed their pig ration without

calculating the nutrient content of the ration. According to NRC (1998), feed intake for grower pig was 1.855kg DM/day or 8.09kg (as fed)/day, whereas the protein and metabolizable energy requirements were 18% and 3256kcal/kg, respectively. The study was carried out to evaluate the nutritive value of grower pig ration using local feed resources. Pig farmers located at West Manokwari district was chosen as respondents for this study.

## Materials and Methods

Thirty-five pig farmers from 3 different places at West Manokwari district (Padarni, Sanggeng, and Wosi villages) were used as respondents in this study. The method used in the study was descriptive method with survey and interview techniques. Data collected from respondents were: 1) flock size of grower pigs, 2) identification of local feeds used in a ration, 3) the quantity of local feeds used in the ration, and 4) frequency of feeding per day. In addition, proximate analysis (AOAC, 2002) of each local feeds was applied. Data collected were used to calculate total protein and energy content of the rations. As supporting data were education background, age, and job preference of the farmer.

To calculate total Protein or Metabolizable Energy (ME) in the ration the formula used was;

$$\text{Total Protein or ME ration} = a_i P_i + a_j P_j + \dots + a_n P_n,$$

where;

i, j, ...n= type of local feed used

a = total of each local feed used

P = Protein or ME content of feed used

To calculate total Protein or ME needed based on total animal the formula used was;

$$\text{Total Protein or ME needed} = a \times i \times j,$$

where;

a = total animal (pigs)

i = feed intake of grower pig/day, which was 1.855kg DM (NRC, 1998)

j = Protein or ME requirement for grower pig. CP 18%, ME 3265 kcal/kg DM (NRC, 1998)

## Analysed Data

All data were tabulated and then compared to nutrient requirement for grower pig based on NRC (1998).

## Results and Discussion

Flock size of grower pigs owned by farmers was ranged between 3 to 11 pigs. The majority of the farmers (63%) had 3 to 4 grower pigs, while those who had 8 to 11 grower pigs only 9% (3 respondents). Feed given per pig per day was less than 4.5kg. This feed offered by the farmers was far below the standard intake for a grower pig by NRC (1998) which was 8.09kg/pig/day. The low intake will definitely affect growth rate. The pig farmers were paid strictly on a live-weight basis; it was their loss when their pigs did not achieve maximum growth. There were ten kinds of local feeds used as feed ingredient in the pig grower ration (Table 1). The local feed mostly used in the ration was vegetable leftovers (66%), followed by taro peelings (60%), cassava peelings (49%),

tofu waste and restaurant waste (37%, respectively), fish waste (26%), kitchen scraps (11%), sweet potato peelings (9%), mung bean peelings and stem plantain (3%, respectively). The protein content (CP) of local feeds was ranged between 2.4 to 31.21 % DM, whereas the energy contents (GE) was ranged between 2649 to 4951 kkal/kg DM (Table 1). The proximate analysis showed that some of local feeds were potential to be used as basic ingredients for ration formulation either as protein or energy sources. Roots and tubers (Machin 1992 in González et al., 2003), kitchen scraps (swill) (Iyai et al., 2013) are kind of feeds that could potentially substitute the conventional animal feeds. Based on the calculation of nutritive contents (protein and energy), it was found that 28 out of 35 respondents (about 80%) had their protein content in their ration above the standard requirement stated by NRC, but all the energy content still below the NRC's standard. The education background of the farmer in the West Manokwari district mostly high school (49%). It was likely that the farmers had less knowledge on feed formulation.

Table 1. The identification, percentage and nutritive contents of local feeds used by pig farmers in West Manokwari district.

No	Type of local feed	% Feed used by farmers	Nutritive contents							
			Dry Matter basis				As fed basis			
			DM <sup>1)</sup> (%)	CP <sup>1)</sup> (%)	GE <sup>1)</sup> (kkal)	ME <sup>2)</sup> (kkal)	DM <sup>1)</sup> (%)	CP <sup>1)</sup> (%)	GE <sup>1)</sup> (kkal)	ME <sup>2)</sup> (kkal)
1.	Fish waste	26	92.60	31.21	3433	2709	29.41	9.91	1090	860
2.	Tofu waste	37	91.77	23.85	4951	3906	14.13	3.67	763	602
3.	Mung bean peelings	3	87.80	15.10	4022	3174	16.80	2.89	769	607
4.	Taro peelings	60	88.85	4.26	3649	2879	26.72	1.28	1098	866
5.	Vegetable leftovers	66	93.94	15.80	3684	2907	9.84	1.65	385	304
6.	Stem plantain	3	91.81	2.91	3805	3002	24.88	0.79	1032	814
7.	Restaurant waste	37	91.32	13.72	4202	3315	35.85	5.43	1649	1301
8.	Kitchen scraps	11	91.32	14.20	2665	2103	35.85	5.2	1648	1300
9.	Sweet potato peelings	9	91.76	4.64	2649	2879	23.10	1.26	1091	861
10.	Cassava peelings	49	91.76	2.40	4204	3317	23.60	1.21	864	682

<sup>1)</sup>DM: Dry Matter, CP: Crude Protein, GE: Gross Energy, ME: Metabolizable Energy.

<sup>2)</sup>ME= 78.9%GE (Sihombing, 1997).

In conclusion, the nutritive value of the grower pig rations in West Manokwari district still below the nutritive standard suggested by the NRC and training pig farmers on feed formulation will be the strategy that can be applied to overcome the problem. With proper knowledge on feed formulation, formulating pig rations using local feeds would help to increase pig production in West Manokwari district and to give top profit return to the farmer.

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