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## Availability of horticultural byproducts and nutritional status of growing pigs of Assam

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**Abstract**

The present study was conducted to investigate the availability of horticultural byproducts, feeding practices and nutritional status in growing pigs of four selected districts of Assam. Availability of byproducts of three fruits i.e, pine apple, orange, banana and three vegetables i.e, cabbage, pumpkin and carrot was calculated out from the total production considering the yield per kg of the main product. The observations were recorded from 15 farmers from each of 4 villages. Feed samples were collected, pooled and chemically analyzed for proximate principles as per AOAC (1995). The average CP content of the mixed feed was in the range of 11.75-14.66 percent. The calculated ME value of the feed was 2.60 to 2.75 Mcal/kg DM. The percent deficit/surplus of nutrients was calculated out. CP deficit was in the range of 25.82 to 32.81 percent and the energy deficit was 20.42 to 28.98 percent. The DM deficit was relatively smaller which ranged from 17.11 to 18.44 percent.

**Keywords:** By-product, protein, metabolizable energy, availability

**Introduction**

It is established that nutrition plays a vital role in the productivity of animal. In general, nutrition remains the most critical constraint to increase animal productivity with the perpetual gap between demand and supply of digestible crude protein and total digestible nutrients (ILRI, 1995) [2]. In most cases, poor health condition and low productivity of is due to various nutritional factors. It is also observed that in spite of feeding liberally, the productivity is not achieved up to the satisfaction level. One of the reasons for this fact is the gap between availability of nutrients in the feedstuff and the requirements of nutrients by the animals. It is therefore necessary to bridge the gap so as to get maximum return in terms of growth and production.

Pig rearing is a common practice among the farmers. They feed their pigs with local vegetation along with kitchen wastes available in their house. They use to rear the pigs till the animals attain the body weight around 80 kg. As they don't purchase the feed from the market the time factor for achieving the maximum growth is kept aside. As the farmers are not aware of the scientific feeding practices, the present study was undertaken to assess the nutritional value of their feeding ingredients, actual intake of dry matter by the animals, deficit or surpluses of nutrients if any so as to motivate the farmers towards the scientific feeding. As the pigs are fed with kitchen waste and some other fruits and vegetable by-products, the availability of these products were also assessed.

**Materials and Methods**

The present study was conducted in four districts of Assam, two from hill region i.e East Karbi Anglong and Dima Hasao and two from plain districts i.e Sonitpur and Nagaon considering the increase number of pig farmers. Availability of byproducts of three fruits i.e, pine apple, orange, banana and three vegetables i.e, cabbage, pumpkin and carrot was calculated out from the total production considering the yield per kg of the main product. Information was collected from 15 farmers from each district. Hence, a total of 60 farmers/households were selected. Relevant information was collected from farmers during the study. Body weight, age and feed intake were recorded for individual animal. Feed samples were collected, pooled and chemically analysed for proximate principles as per AOAC (1995) [1].

Daily intake of dry matter (DM), crude protein (CP) and metabolizable energy (ME) was calculated from the analyzed results. Nutritional gap in terms of the above was calculated from the difference between the availability and requirements.

### Results and Discussion

It was observed that farmers fed their pigs with locally available feed materials. They usually fed kitchen waste, hotel waste, distillery waste and occasionally provide one or two concentrate ingredients that they have in their house. They usually take care of their milch animal and provide concentrate ingredients.

From the survey it was found that the available concentrate ingredients were maize, wheat bran, rice polish, MOC, TOC

etc. Some tuber crops like colocasia, tapioca, and sweet potato available. Fermented rice waste i.e. "Jugli" is available in tribal area from the local wine factory which is commonly fed to pigs. The horticultural fruit crops available were pineapple, orange, banana, jackfruit and vegetable crops are cabbage, pumpkin, carrot, radish etc. The by-products of this horticultural crop were fed to pigs.

The availability of four major horticultural crops and their by products were calculated out for two hill districts i.e. East Karbi Anglong and Dima Hasao and two plain districts i.e. Sonitpur and Nagaon district of Assam and has been presented in Table 1. The feed samples were analysed and the composition has been presented in Table 2.

**Table 1:** Production of major horticultural crops and their byproducts\* in the selected hill and plain districts of Assam (in metric tonnes)

Sl. No.	Particulars	Production in hill district		Production in plain district	
		District I	District II	District I	District II
Fruits					
1	Pineapple	42263	73368	3848	12511
2	Orange	24089	64373	574	4596
3	Banana	33179	38652	69678	78917
4	Jack fruit	2870	7839	5642	8293
Vegetables					
5	Cabbage	6250	15045	22656	9245
6	Pumpkin	543	674	3842	3978
7	Carrot	341	560	3303	3752
8	Radish	2908	3254	7068	5031
Fruits and vegetable byproducts					
9	Pineapple waste	12679	22010	1155	3753
10	Orange peels	2408	6437	58	460
11	Banana peels	4977	5798	10451	11837
12	Jack fruit waste	1148	3136	2257	3317
13	Cabbage waste	625	1504	2265	924
14	Pumpkin waste	108	135	768	795
15	Carrot waste	51	84	495	562
16	Radish waste	436	488	1060	755

\*Calculated Figure

**Table 2:** Chemical analysis of feed, horticultural byproducts and experimental ration (% on DM basis)

Particulars	CP	CF	NFE	EE	Total ash
Maize	11.2	2.5	80.45	3.4	2.45
Wheat bran	12.4	11.26	60.8	4.5	4.5
Rice polish	13.23	3.85	40.16	19.14	9.14
GNC	46.0	6.5	33.5	6.5	7.5
Soyabean meal	41.6	6.0	28.8	17.4	6.1
<b>Horticultural byproducts</b>					
Pine apple waste	4.28	34.2	51.3	1.02	9.20
Banana peels	3.25	19.5	71.1	0.90	5.25
Orange peel	6.50	21.7	64.85	2.20	4.75
Pumpkin waste	12.23	16.24	61.86	1.47	8.20
Carrot waste	3.48	39.5	39.99	4.12	12.91
Cabbage waste	17.13	15.64	55.81	1.0	10.42

The nutritional status of growing pigs in two hill and two plain districts were studied and has been presented in Table 3. The nutritional requirement as referred by Verma (2003) [3] for pigs was calculated on the basis of body weight for optimum production. The gap of DM, CP and ME was derived from the present intake. It was observed that the pigs exhibited negative balance for DM, CP and ME. However, the DM deficit was relatively lesser than CP & ME deficit. The negative balance for both protein & energy was attributable to the poor nutritional value of the feed stuff. Farmers fed their pigs with the locally available feed materials and did not feed any balance concentrate feed resulting poor growth. Similar

findings were also reported for pigs (Saikia *et al*, 2018) [4]. The percent deficit of nutrients against the requirements has been calculated out. The CP deficit was in the range from 25.82 to 32.81% and the energy deficit was 20.42 to 28.98%. The DM deficit was relatively smaller which ranged from 17.11 to 18.44%.

From the above it was clear that feedstuff fed by the farmers did not contain appreciable amount of protein and energy. Hence, the feed consumed by the animals did not fulfill the requirements of protein and energy resulted in poor growth. Therefore, supplementation of compounded feed is required to get better results.

**Table 3:** Daily average intake, requirement and balance and percent deficit/surplus of DM, CP and ME of growing pigs of Assam

Particulars	Hill district		Plain district	
	District I (B.Wt. 30.5 kg)	District II (B.Wt. 36.2 kg)	District I (B.Wt. 27.5 kg)	District II (B.Wt. 35.4 kg)
<b>Dry Matter</b>				
Intake (kg)	1.39	1.63	1.20	1.57
Requirements(kg)	1.68	2.0	1.51	1.95
Balance (kg)	(-)0.29	(-)0.37	(-)0.31	(-)0.38
Percent Deficit	(-)17.26	(-)18.47	(-)20.53	(-)19.49
<b>Crude Protein</b>				
Intake (g)	223.8	256.8	186.5	235.5
Requirements(g)	301.7	358.0	272.0	350.5
Balance (g)	(-)77.9	(-)101.2	(-)85.5	(-)115.0
Percent Deficit	(-)25.88	(-)28.27	(-)31.43	(-)32.81
<b>Metabolisable Energy</b>				
Intake(Kcal/kgDM)	4757	5494	3905	4928
Requirements(Kcal/kg)	5978	7095	5390	6938
Balance (Kcal/kgDM)	(-)1221	(-)1605	(-)1485	(-)2010
Percent Deficit	(-)20.42	(-)22.62	(-)27.55	(-)28.97

### Conclusion

The study indicated that the feed stuff fed by the farmers did not contain appreciable amount of protein and energy. The DM requirement was also not fulfilled. Hence, supplementation of compounded feed is required to get better results, as pigs are considered as fast growing animals.

### References

1. AOAC. Official Methods of Analysis. Edn 15, Association of Official Analytical chemists. Washington, DC 1995.
2. Gardiner PR, Devendra C. ILRI. Global agenda for livestock research. Proceedings of consultation. International Livestock Research Institute, Nairobi, Kenya 1995.
3. Verma DN. A text book of Animal Nutrition, Chapter-Feeding of pigs. Kalyani Publishers, New Delhi 2003, 388.
4. Saikia BN, Bhuyan R, Deka R, Padmakumar V. Feeding practices for Growing Pigs in Nagaland. Indian J Anim. Nutr 2018;35(4):482-484.