FREE CHOICE FEEDING OF POULTRY: A METHOD OF FEEDING SUGGESTED FOR VILLAGE, BACKYARD AND SEMI-COMMERCIAL POULTRY PRODUCTION

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INTRODUCTION

In Papua New Guinea, poultry are perhaps, the most suited small animal species that can be cheaply looked after for home consumption or for cash. Feeding them using formulated feed (usually manufactured in Lae) can be very expensive. In a village or backyard where only a few birds are looked after, it would be a waste of money to buy a 50kg bag of manufactured feed and find that by the time the birds have eaten half of it, the other half has been already spoiled by mould.

These and other similar problems require special consideration, especially the problems associated with obtaining, preparing and presenting feedstuffs. But, despite improvements in these areas often birds fail to produce at their maximum rate. All-year-round high temperatures is one of the major factors that prevent the birds achieving their potential. As we now know, when the temperature exceeds the "comfort mark" which is between 20 to 25 °C for birds, the birds cut down their food intake markedly in order to avoid overheating. This obviously means reduced growth performance and egg production.

These problems however can be overcome. For instance, instead of using mill-made poultry feed, we can use foodstuffs that we can grow ourselves in feeding our birds. Using alternative feeding methods can also help birds to produce well in a high temperature environment.

This article discusses such a feeding method, "Choice feeding or Self selection feeding", which, if properly adopted could be of great benefit to village, backyard, semi-commercial or even in large scale poultry production.

WHAT IS FREE CHOICE FEEDING?

It is a feeding method where the bird is given an opportunity to select how much food it can eat to stay alive as well as being able to produce well. In this method of feeding, the food is split into two portions, one part an energy source and the other a protein source. For laying birds oyster shells or limestone should also be offered seperately.

The difference in giving food to the birds this way and when all the food is given in one complete ration, is how the food is presented to the birds. By presenting the food in two portions it allows the birds to eat according to their needs.

In high temperature environment, studies (eg. Mastika and Cumming, 1985) have shown that choice-fed birds converted food into body tissues more efficiently than birds fed a complete ration.

Further, the choice-fed birds tend to maintain a constant intake of body-building protein whilst decreasing energy intake when subjected to high temperatures. This is clearly an advantage for the birds because they are now able to adjust their energy intake with the rise or drop in temperature, and thus avoid being "cooked" when temperature increases. They can do this without sacrificing growth because protein intake is maintained.

The main energy foods, such as cassava roots, sweet potatotes and cereal grains, maize and sorghum especially, can be given to birds without grinding them. This reduces the cost of grinding and pelleting.

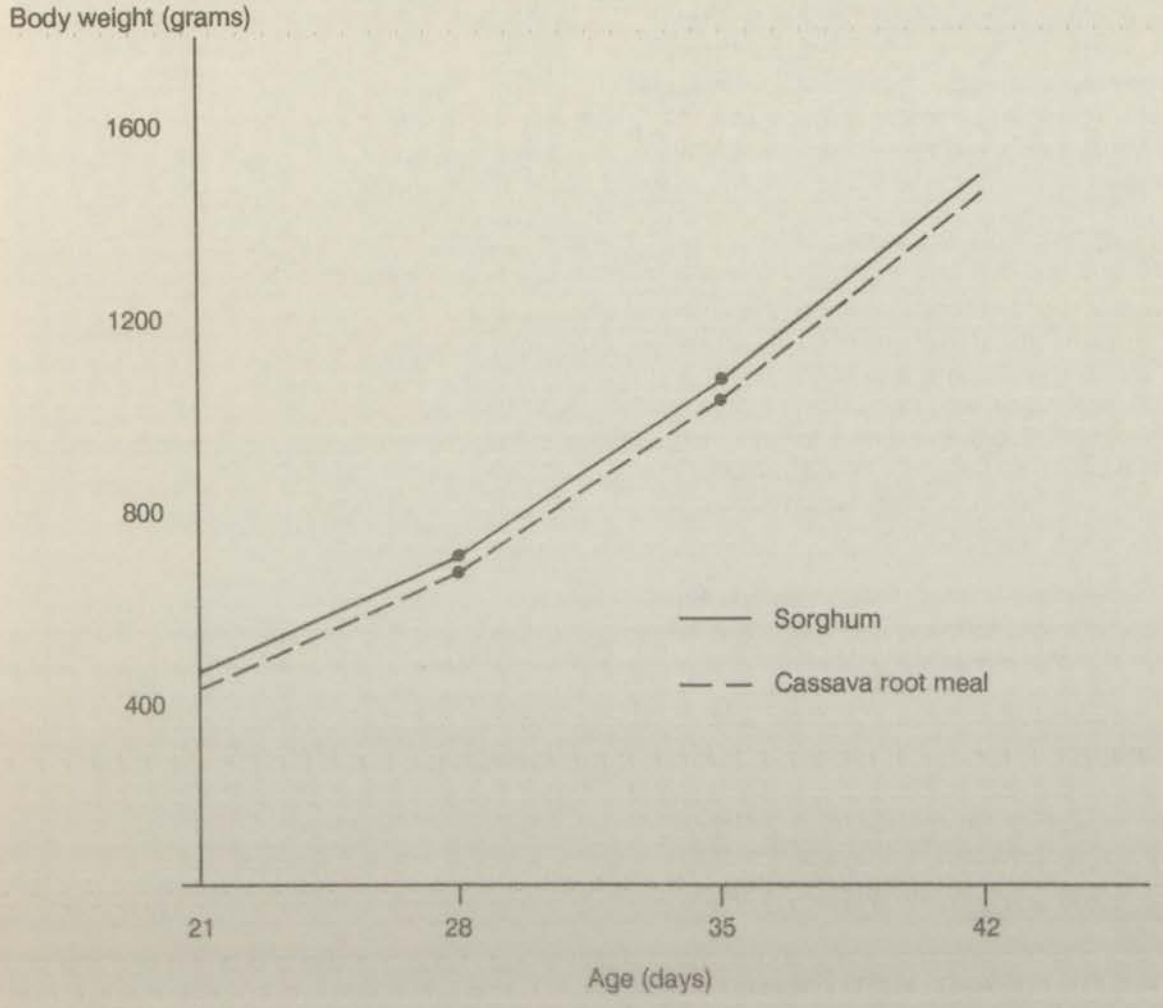
On the other hand soya bean meal, meat meal, wheat bran etc. (high protein foods), and essential supplements, vitamins, minerals, amino acids etc can be mixed together and offered as protein concentrate. Preferably, high protein foods should be derived from both animal and plant sources.

TYPE OF FOODSTUFFS THAT CAN BE USED

Traditionally, cereal grains were usually used as energy food for poultry. But, many studies have shown that root/tuber crops can be used as substitute for cereals without affecting production. Cassava root meal (CRM) for instance is now being used as food for poultry in some of the countries of the European Community, where previously they were using only grains.

Because of cassava's ability to grow on many types of soils and its high yield, CRM is cheap to produce and is good substitute for most grains (although it

Figure 1. Growth Performance of Broilers when choice fed cassava root meal and sorghum as the main energy food.



has to be treated with sulphur amino acid (methionine) if it is fed to poultry). Abdelsamie in "Harvest", Volume 7, Number 4, has pointed out cassava's high potential as a food for poultry. However, most root/tuber meals (eg. CRM and sweet potato meal) are know to make birds consume less food. Consequently they were not able to produce as well as those offered grains, especially using levels above 500 g/kg. This is because root meal s have low palatability. This is due mainly to the bad effect of their starch components (amylose and amylopectin) For cassava there is an additional problem of cyanogenic glycosides (linamarin and lotaustralin) toxicity. These can be reduced by boiling or heat-drying or by adding methionine. Methionine should therefore be added to cassava based diets to improve the protein quality and to reduce the toxic effect of the glycosides.

My work and that of Nano (1985) has shown that the birds can adjust eating any root/tuber meal if choice-fed. As for CRM, the birds tended to increase the amount consumed as they grow older.

Figure 1 shows that there isn't much difference in terms of growth when the broilers were choice fed CRM and sorghum. The good growth for broilers eating CRM as the main source of energy can be attributed to the manner in which they were able to select CRM and protein concentrate seperately. Apparently, these results are better than those reported by other researchers who gave 100% CRM with no grains but offered to broilers as a complete diet.

WHAT CAN BE DONE BY THE DIDIMEN AND DIDIMERIS

If a Didiman or Didimeri would like to use this method of feeding poultry, they get further information on feed preparation, especially for protein concentrate, from the Monogastric Research Centre, Labu. For general information, the protein concentrate should contain 30 to 40% crude protein and supplying between 9 to 10 Mega Joules in energy. Usually birds would eat about two-thirds (2/3) of

energy food and one-third (1/3) of protein concentrate. An example of a possible composition of a protein concentrate is presented in Table 2.

The producer should be advised to boil or dry in the sun any root/tuber. For younger birds break them into small pieces before giving to them. See Bakau, "Harvest", Volume 11, Number 2 if you need to refresh yourself on some aspects of looking after chickens.

IMPROVING THE VILLAGE FOWL

The village fowl's nutrition can also be greatly improved if they are given additional food to that they would get when searching around the house or village. Cassava or sweet potatoes can be given to them every day. There is no need to give them concentrate because they get enough protein, vitamins and minerals from bugs, earthworms and grass seeds during their hunt for food.

Finally, contact the staff of the Monogastric Research Centre if you find foodstuffs in your area that may have potential as food for poultry.

REFERENCES

MASTIKA, M. and R.B. CUMMING (1985). In Recent Advances in Animal Nutrition in Australia: Proceedings of a symposium. University of New England, Armidale, Australia; 228.

NANO, W.E. (1985). Dip. Sci. (Agric) Thesis. University of New England, Armidale, Australia.

FURTHER READING

ABDELSAMIE, R. (1981). Cassava as a livestock feed? Harvest, 7(4): 172-175.

BAKAU, B.J.K. (1985). Some suggestions for improving management on small semi-commercial broiler projects. Harvest, 11(2): 71-74.

FURTHER INFORMATION

Address any queries or request to:

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TABLE 1: COMPOSITION IN GRAMS PER KILOGRAM OF PROTEIN CONCENTRATE

Ingredients *		Grams
Meat and bone meal		195.00
Soya bean meal		565.00
Rice bran		206.7
Vitamin-Mineral premix **		12.4
Sodium chloride (Table salt)		2.4
Lysine		8.1
Methionine		10.4
Chemical Analysis (calculated)		
Crude protein	gkg^{-1}	378.7
Metabolisable energy	$MJkg^{-1}ME$	8.41
Methionine	gkg^{-1}	15.24
Cystine	gkg^{-1}	5.13
Lysine	gkg^{-1}	31.00
Calcium: avail. Phos. ratio		2.03:1

* Cassava root meal would provide 12.13 MJ $kg^{-1}ME$.

** This premix provides the following nutrients per kg of diet: Vitamin A, 10,000 IU; Vitamin D3, 600 IU; Vitamin= E, 6 IU; riboflavin, 3 mg; pantothenic acid, 13 mg; niacin, 22 mg; choline, 350 mg; Vitamin B12, 15 mg; folic acid 1 mg; Iron, 40 mg; Copper, 5 mg; Zinc, 50 mg; Cobalt, 0.4 mg; Calcium, 375 mg; butylated hydroxytoluene, 113 mg.

Note: 1 Mega Joule (MJ) is about 239 Kilo Calories;
gkg^{-1} = 1 gram for every kilogram or to convert to percentage divide by 10.

TABLE 2: FOOD EATEN (G/BIRD) AT 28, 35 AND 42 DAYS OF AGE

	28 Days			35 Days			42 Days		
Diets *	CRM	P/Conc.	Total Intake	CRM	P/Conc.	Total Intake	CRM	P/Conc.	Total Intake
1	270	410	680	770	730	1500	1230	1190	2420
2	220	360	580	650	710	1360	1180	1180	2360
3	210	340	550	650	680	1380	1120	1130	2250
4	210	350	560	730	660	1390	1170	1070	2240

* - Diets containing different levels of methionine (a part of protein)
CRM - Cassava Root Meal
P/Conc.- Protein Concentrate