

SUPPLEMENTARY FEEDING

Introduction

Village poultry keepings are a neglected entity and very little literature is available on this subject. Previous, and in fact also current, initiatives taken to improve the productivity of village chickens have been vaccination campaigns and cockerels exchanges programmes and to some extent to replicate the commercial system in small scale in the villages. The impact of these interventions has been minimal.

A strategy for improving the viability of village chickens must be based on utilisation of the comparative advantages in the village. In commercial chicken production the main operational cost is feed, often it constitutes 70% of the total operational cost. The main comparative advantage is the scavenging feed resource base (SFRB). At village level the SFRB is often sufficient to provide more than 60% of the feed needed; a substantial advantage.

Production system and operational strategies

Each production system has its own specific operational strategy. A very common mistake is to replicate a strategy from one system to another and often it is to use the strategy from commercial poultry systems to improve the production effectiveness in village poultry keepings.

Table 1. Interaction between production systems and strategies

System	Strategy
Traditional rural poultry	No input and low output
Improved traditional	Low input and slightly higher output
Semi-scavenging	Higher input and higher output
Commercial	High input and high output

Approximate composition of diets required by different type of chickens

The nutrition requirements depend on: 1) the breed, 2) the age of the birds and 3) the productivity. The figures in table 2 are all based on the optimal productivity. In this respect is it important to stress that the optimal productivity for the local breeds is not the highest egg yield but the highest number of chicken hatched and veaned based on eggs from the same hen.

Table 2. Nutrition requirement by different type of chickens

	ME, kcal/kg	CP, %
Rearing		
Commercial layers	2,850	16
Commercial broilers	3,200	23-20
Local breeds	2,800	16
Production		
Commercial layers	2,700	16
Commercial broiler Parents	2,700	15
Local breeds	2,300	10

Modified after J.A. Roberts 1999

For commercial layers and broilers are the diet (feed ration) the same as the nutrition requirements. This is not the case for local breeds (scavenging), they will cover their nutrition requirements partly from scavenged feed and partly from supplementary feed. The supplementary diet will depend on the quantity and on the quality of the scavenging feed consumed.

Scavenging Feed Resource Base (SFRB) vs. Supplementary feed

The SFRB is not a constant entity, it varies from place to place and over the season. In table 3 is shown an estimate of the SFRB in an area in Sri Lanka. By comparing the nutrition requirement shown in table 2 with the SFRB shown in table 3 the results appear that only adult local hens can cover their nutrition requirement, with respect to energy and protein, from the SFRB. All the other type of birds need supplementary feed to cover their requirements.

Table 3 SFRB vs. supplementary feed

	Energy	Protein	Ca/P
SFRB ¹	2,300 kcal/kg	10% Crude Protein	?
Birds			
Rearing			
Local breed	-	-	?
Improved breed	-	-	
Adult			
Local breed	+	+	?
Improved breed	-	-	

¹J.A. Roberts 1999

- = insufficient

+ = sufficient

Supplementary feed

The objective with supplementary feed is to fill the gap between the scavenging feed actually consumed and the nutrition requirement. This is not an easy task because the quantity and the quality of the scavenged feed are unknown.

The quantity of supplementary feed is, under good management conditions, not a serious constraint, because improved breeds as well as local breeds in the rearing period 'pay' for all the supplementary feed they consume assuming they also are scavenging. In the laying period improved breeds and especially hybrids don't consume more than they need for optimal

production while the local breeds only need supplementary feed in periods with shortages of scavenging feed.

The main constraint is to compose a supplementary diet in such a way that the scavenging feed consumed and the supplementary feed together constitute a balanced diet. Otherwise, the feed consumption will be too high, because the chickens will try to compensate the nutrient deficit by consuming more feed and consequently the diet will be unbalanced.

It is possible to get an indication of the quality of the SFRB in a specific area by observation of the chickens' performance, but it will never be possible to compose an optimal balanced supplementary diet.

A feeding system named 'free choice feeding' has been developed and tested for commercial poultry keeping. The system is based on that the hen is able to compose the optimal diet if they have access to the different feed nutrients. The system has been tested in a few experiments under village conditions, but more research is needed. Table 4 shows the result from an on station test with local chickens.

Table 4. Nutrient utilisation efficiency of Sri Lanka village chickens for growth in pens. Rearing in 17 weeks and egg production in 40 weeks.

	Feeding System	Weight Gain	Nutrient intake		Nutrient efficiency	
			kcal/bird	CP(g/bird)	kcal/g gain	CP(g/g gain)
Rearing:	Free choice	1648	21.729	1169	13.2	0.71
	Commercial	1498	24.074	1463	16.1	0.98
		Egg weight	Egg Production		Nutrition efficiency	
			HDP %	g/bird/day	kcal/g egg	CP(g/g egg)
Laying:	Free choice	48.2	27	13	16	0.78
	Commercial	46.5	33	15	19	1.26

Data from Chandrasiri et al.,1994; Wickramaratne et al., 1996. Quoted from: JA Roberts 1999

Feeding strategies for semi-scavenging smallholder concept

In table 5 is shown a feeding strategy for the production enterprises constituting the Malawi Smallholder Poultry Production Model. The strategies are tentative and will be refined during the pilot phase.

Table 5. Feeding strategies for semi-scavenging smallholder concept

Enterprise		Feeding strategy	Main Constraints	
Model Breeder -Confinement-		Balanced feed, ad lib., supplemented by household leftovers	<ul style="list-style-type: none"> • high feed cost • availability of balanced feed • quality of balanced feed • management skills 	
Chicken Rearer - Confinement-		Balanced feed, ad libitum	<ul style="list-style-type: none"> • high feed cost • availability of balanced feed • quality of balanced feed • management skills 	
K e y R e a r e r	L O C A L	Rearing	Free access to balanced feed (chicken starter) from 0 to 6 weeks and thereafter access to supplementary feed depending on the SFRB	<ul style="list-style-type: none"> • geographical and seasonal variation in the SFRB • population density of birds • management skills
		Adult	Supplementary feed (about 12% CP) in specific periods, e.g. during incubation and at the end of the brooding period. The strategy interacts with the SFRB.	<ul style="list-style-type: none"> • same as for rearing
	H Y V	8 to 26 week	Free access to supplementary feed, either chicken starter or free choice feeding (protein and energy components)	<ul style="list-style-type: none"> • availability of supplementary feed • quality of supplementary feed • the 8-weeks chickens have no scavenging experience • management skills
		From 26 weeks of age	Supplementary feed either as layer mash or as free choice feeding (protein, energy and oyster shells)	<ul style="list-style-type: none"> • availability of supplementary feed • quality of supplementary feed • management skills

HYV = High Yielding Variety or Improved Breeds