Housefly larvae as a feed supplement for rural poultry

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ABSTRACT

The effect of supplementing the diet of scavenging chickens with housefly larvae on productivity was studied. Birds on supplement received 30-50 g of live housefly larvae from the age of 2 weeks until they laid and hatched their first clutch of eggs. Monthly body weight, age at first lay, egg weight, number of eggs hatched, and weight of chicks hatched by the supplemented birds were compared with those of the control group of birds which did not receive any supplement. There were significant differences ($P < 0.05$) in clutch size, egg weight, number of eggs hatched, and chick weight between supplemented birds and the control. Mean clutch size, egg weight, number of eggs hatched, and chick weight were 11.5 ± 2.57, 43.5 ± 25.53, 9.8 ± 2.21, and 34.2 ± 0.78; and 9.5 ± 1.14, 33.6 ± 2.72, 7.1 ± 0.70, and 29.8 ± 1.89 for supplemented and control birds, respectively. The beneficial effects of supplementing the diets of local scavenging chickens with housefly larvae are discussed.

Research and development note. Received 25 Apr 2002; revised 25 Jun 02.

RÉSUMÉ

DANKWA, D., NELSON, F. S., ODDOYE, E. O. K. & DUNCAN, J. L.: *Laves de mouche comme régime supplementaire pour l'élévage de volaille rural.* Effet de supplémenter le régime de poulets qui fouillent dans les poubelles avec les laves de mouches sur la productivité était étudié. Les volailles mises sur les régimes supplémentaires recevaient 30-50 g de laves de mouches vives de l'âge de 2 semaines jusqu' à ce qu'elles pondent et éclosent leurs premières couvées d'œufs. Poids corporel mensuel, l'âge à la première ponte, poids d'œuf et nombre d'œuf éclose et poids de poussins éclose par les volailles supplémentées étaient comparés avec celles de groupe de volailles de contrôle qui n'a pas reçu aucun supplément. Il y avaient des différences considérables ($P< 0.05$) dans la grandeur de couvée, poids d'œuf, nombre d'œufs écloses et poids de poussin entre les volailles supplémentées et le contrôle. La grandeur moyenne de couvée, poids d'œuf, nombre d'œufs écloses et poids de poussins étaient 11.5 ± 2.57, 43.5 ± 25.53, 9.8 ± 2.21, 34.2 ± 0.78 et 9.5 ± 1.14, 33.6 ± 2.72, 7.1 ± 0.70 et 29.8 ± 1.89 respectivement pour les volailles supplémenté et le contrôle. Les effets salutaires de supplémenter le régime de poulets locaux qui fouillent les poubelles avec les laves de mouches sont discutés.

Introduction

Rural poultry or local indigenous chickens are extensively raised in the backyard of most Ghanaian rural households. The birds are given night shelter and little supplementary. In 1989 rural poultry accounted for about 80 per cent of the poultry population in Ghana (Aryee & Kutame, 1991). The situation has not changed much in recent years. The males (cocks) are normally raised for meat and breeding purposes, while the hens are raised for egg production and reproduction.

Rural poultry are raised with little or no inputs. Consequently, productivity is very low and irregular, with an average annual egg production of 52 eggs. The eggs weigh between 29 and 46 g (Dankwa & Nelson, 1995). Smith (1990) asserted that supplementing the diet of scavenging birds with 55 g of commercial feed each day and changing some of the management practices increased egg production from 45 to 125 eggs per year. Hardouin (1992) reported that ffee roaming poultry and pigs in developing countries are usually unable to find, in the field, all that is required to meet their needs. This author further stressed that protein supplementation in unbalanced diets often improved the performance of domestic birds.

Local chickens, despite their low productivity, continue to contribute immensely to meat and egg consumption in Ghana, especially in the rural areas. There is, therefore, the need to intensify research efforts to improve upon their performance. This study was therefore undertaken to evaluate the feed value of housefly larvae as a protein supplement to rural chickens.

Materials and methods

The chickens used in this study were hatched by local chickens kept at the Animal Research Institute, Achimota. At 2 weeks of age, 16 female chicks were selected at random. All chicks were tagged for identification. These chicks were then randomly divided into two groups of eight. One group of chicks was given a daily dietary supplement of freshly produced larvae (30 to 50 g per bird). The other group of chicks was given no supplement. All the birds were then allowed to roam freely and to scavenge for feed throughout the day but were housed at night. Fresh larvae were generated from a mixture of blood and gut contents of cattle collected from the Accra Slaughter House. Records of monthly body weight, age at sexual maturity (first egg lay), egg production per clutch, egg weight, number of eggs hatched, and the weight of chicks were kept. The experiment lasted for 14 months, at the end of which data for the two groups were compared using the student 't' test as outlined by Steel & Torrie (1980).

Results and discussion

Fig. 1 shows the trend in monthly body weight. Birds which received the housefly larvae supplement gained weight faster than the control group, and by the 5th month the difference between the two groups was quite large. The difference, however, began to narrow as the birds grew older. This may be because the supplemented birds attained mature body size and therefore growth slowed down. Many workers (Teotia & Miller, 1974; Gawaad & Brune, 1979; Rey, Vinaras & Ocio, 1979; Ernst *et al.*, 1984) have reported on the improved performance of chickens fed on housefly

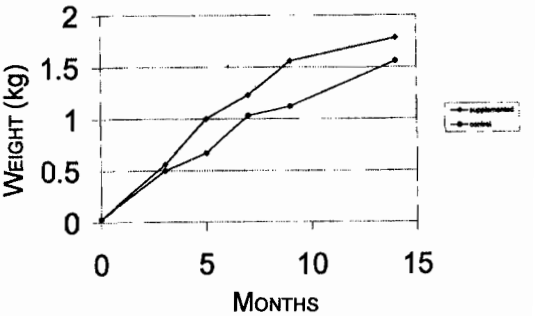

Fig. 1. Growth of chickens during the experimental period.

larvae supplement, either as the sole protein source or as a partial replacement for some of the conventional protein sources like fishmeal and soyabean meal.

Birds whose diets were supplemented with housefly larvae produced their first egg at an earlier age of 173.5 ± 49.10 days as compared to 177 ± 71.81 days for the control birds (Table 1). This difference was not statistically significant ($P > 0.05$). However, the large standard errors associated with each mean is indicative of the large variations in age at first egg lay among local chickens. This may be because no breeding (selection) has been done on them to produce birds with similar characteristics.

Clutch size, egg weight, number of eggs hatched, and chick weight were significantly ($P < 0.05$) better for supplemented birds than for control

TABLE 1

Mean (± SE) of Various Production Parameters of Scavenging Chickens

Parameter	*Supplemented*	*Not supplemented*
Age at first lay	173.5 ± 49.10	177.1 ± 71.81
Clutch size	11.5 ± 2.57[a]	9.5 ± 1.14[b]
No. of eggs hatched	9.8 ± 2.21[a]	7.1 ± 0.70[b]
Egg weight	43.5 ± 23.53[a]	33.6 ± 2.72[b]
Chick weight	34.2 ± 0.78[a]	29.8 ± 1.89[b]

SE - Standard error

a, b - Means in a row with different letters are significantly different ($P < 0.05$)

birds (Table 1). These findings agree with earlier reports (Molchanova *et al.*, 1983; Akpodiete, 1992) which showed increases in egg yield when housefly larvae meal replaced fishmeal in the diets of laying chickens. The nutrient analysis of housefly larvae in an earlier study (Dankwa & Nelson, 1995) showed an optimum complimentation of nutrients in housefly larvae meal as compared with fishmeal and soyabean meal. This might explain the trend in laying performance of the birds whose diets were supplemented with fresh larvae. Ernst *et al.* (1984) also reported an increase in egg yield by 3.6 per cent and hatchability of eggs by 12.0 per cent when laying hens were fed a mixture containing 18 per cent protein, with fly larvae meal as the main protein source.

No mortality was recorded during the experiment and this may be attributed to better adaptation of the indigenous chickens to the environment. This observation is supported by the findings of Akinokum (1990) who compared indigenous chickens with exotic strains and found them more hardy.

In conclusion, supplementation of the diet of scavenging birds with housefly larvae improved their performance. As housefly larvae can be produced cheaply from household waste, the extra output obtained by feeding housefly larvae to scavenging chickens may be worth the effort.

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