FURTHER EXPERIMENTS ON CHOICE FEEDING IN POULTRY

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SUMMARY

Two experiments were conducted to determine if choice feeding could be successfully applied to broilers housed on deep litter,. In the first trial males of two broiler breeds were offered complete diets or a protein concentrate plus either whole wheat, whole sorghum or whole wheat and sorghum. The coccidiostat was administered via the drinking water. Overall growth was very good, with the choice fed broilers performing as well as those on complete diets.

In the second experiment, sexed chickens of two breeds were offered conventional diets or protein concentrate plus whole wheat and sorghum. The coccidiostat was supplied in the diets. Overall growth was depressed in this experiment and the choice fed birds did not perform as well as those fed the complete diets.

In both trials the broilers offered whole wheat and whole sorghum showed a marked preference for sorghum over wheat.

INTRODUCTION

Mastika and Cumming (1981a; 1981b) showed that modern broilers, housed in experimental cages, could adequately select their diets when offered a protein concentrate and uncracked wheat or sorghum. These two trials, one in winter and one in summer, were designed to demonstrate if the birds would perform equally well when housed on litter.

MATERIALS AND METHODS

Housing and Management

The birds were housed in an experimental broiler shed, with 32 pens each measuring 300cm x 240cm in which 100 day-old chickens were placed. Heating was by means of electric hover brooders around which a metal guard was placed for the first five days. Feed was supplied in three tubular feeders and water in two plastic water fonts per pen for the first five days. Thereafter the birds received water from a hanging automatic bell drinker. The chickens were debeaked at the hatchery.

All feed placed was recorded, as were body weights at three and six weeks of age. The birds were vaccinated by the incontact route at day 1 with A_3 infectious bronchitis vaccine and by the same route with Vic S infectious bronchitis vaccine at 14 days of age. All dead birds were autopsied.

Breeds and Treatments

Experiment 1

1600 commercial male broilers were obtained from each of two commercial hatcheries, Tegels and Steggles.

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There were four treatments (four replicates of each) per breed.

1. Conventional commercial diet
2. Protein concentrate plus wheat
3. Protein concentrate plus sorghum
4. Protein concentrate plus wheat and sorghum in separate feeders,

Experiment 2

1600 sexed chickens were obtained from both Tegel and Hyline hatcheries.

There were four treatments (four replicates of each) per breed.

1. Conventional commercial diet - male chickens
2. Protein concentrate plus wheat and sorghum in separate feeders - male chickens
3. Conventional commercial diet - female chickens
4. Protein concentrate plus wheat and sorghum in separate feeders - female chickens.

Diets

The diets fed in Experiments 1 and 2 are presented in Table 1. The conventionally fed birds received a commercial type starter ration to 28 days of age, after which they received a commercial finisher ration. The choice fed birds received a protein concentrate in crumble form in one feeder and grain in the other two feeders. Crushed grain was fed for the first four days, after which the grain was supplied uncrushed.

TABLE 1 Composition of diets fed in Experiment 1

	Experiment 1	Experiment 2	Experiment 1 and 2	
	Protein Concentrate (%)	Protein Concentrate (%)	Complete Starter (%)	Complete Finisher (%)
Wheat	7.50	15.00	33.00	36.40
Sorghum	7.50	-	33.00	36.40
Meat meal	30.00	30.00	12.00	9.60
Soy bean meal	40.00	40.00	16.00	12.80
Sunflower meal	10.00	10.00	4.00	3.20
Tallow	2.50	2.50	1.00	0.80
Lysine	0.50	0.50	0.20	0.16
Methionine	0.35	0.35	0.14	0.12
Mins/Vits/Carrier	1.65	1.65	0.66	0.52
	100.00	100.00	100.00	100.00

In Experiment 1 the coccodiostat used was Amprolmix-plus, supplied at the curative level in the drinking water for 24 hours over seven days. In Experiment 2 Amprolmix-plus was included in the concentrate at three times the recommended level.

Carcass Composition

The fat content of the carcasses of the birds was determined at six weeks of age as previously described (Mastika, 1981).

RESULTS

The results of Experiments 1 and 2 are presented in Tables 2 and 3 respectively.

TABLE 2 Body weights, food conversion ratios and percentage carcass fat for Experiment 1

Breed		Body weight (6 weeks)	FCR	% fat
T*	Complete	1.87	2.08	39.2
T	Concentrate + wheat	1.79	2.11	39.2
T	Concentrate + sorghum	1.84	1.98	42.1
T	Concentrate + wheat and sorghum	1.79	2.11	39.9
S	Complete	1.69	2.04	34.1
S	Concentrate + wheat	1.63	2.09	33.1
S	Concentrate + sorghum	1.59	2.08	39.5
S	Concentrate + wheat and sorghum	1.63	2.10	35.3

*T = Tegel; S = Steggles

TABLE 3 Body weights, food conversion ratios and percentage carcass for for Experiment 2

Breed	Sex	Diet	Body weight (6 weeks)	FCR	% fat
T	M	Complete	1.69	2.12	33.8
T	M	Choice	1.57	2.02	37.9
T	F	Complete	1.47	2.11	38.4
T	F	Choice	1.40	2.20	38.1
H	M	Complete	1.64	2.03	34.2
H	M	Choice	1.51	2.04	37.1
H	F	Complete	1.39	2.00	36.3
H	F	Choice	1.29	2.14	40.5

T = Tegel H = Hyline: M = Male F = Female

DISCUSSION

Growth overall was better in Experiment 1 which was conducted in the cooler spring months. In this trial the choice fed birds performed essentially as well as those fed complete diets.

In Experiment 2, which was conducted in the summer, the growth rate was lower overall and the choice fed birds did not reach the same weights as those on the complete diets. F.C.R. was generally not as good either. A possible explanation of this poorer performance may be the fact that the whole grains used in Experiment 2 had a large amount of broken grains and dust in them.

An interesting observation in both trials was that, when offered both grains, the broiler chickens consistently consumed more sorghum. Similar observations have been made in laying bird trials. In a recently completed laying trial (Cumming, unpub) pullets were choice fed from seven to 84 weeks of age. They performed as well as birds fed a high quality complete laying diet. Pullets restricted fed on a time basis produced in the same manner as pullets restricted on a complete diet.

Overall these results suggest that choice feeding may have application in the poultry industry. More research is required to establish the principles on what governs the intake of chickens and hens to enable this system of feeding to be propertly applied and evaluated.

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