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Valorisation of available feedstuffs in village chickens feeding in rural areas of Burkina Faso

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Abstract

One of the major constraints in village chicken's production is to found appropriate feeding strategies. The current study started by gathering information on locally available feedstuffs, which are used for poultry feeding. Then, 8 types of diets are formulated and two of them (C1 and C2) were chosen to identify appropriate feeding strategies (T1, T2, T3) for cockerel growth; tacking into account the availability of scavenging feed (B1, B2, B3) representing by 3 households. Results shown that two starter diets, four growth diets and two laying diets can be formulated from available feedstuffs with a protein levels from 16 to 21% and energy values from 2700 to 2880 kcal. The mean daily weight gains of the cockerels were 3.78 g/d; 5.53 g/d and 5.94 g/d respectively at B1, B2 and B3 and according to the feeding strategies (T1, T2 and T3), daily weight gains of 4.54 g/d; 5.33 g/d and 5.37 g/d were obtained. With regard to the results of the trial, the study concluded that the strategy of feeding using supplemented poultry diets (T1 and T2) can find their place especially when large-scale production of village chickens is envisaged.

Keywords: Village chicken, feeding, scavenging, local feedstuffs, Burkina Faso

Introduction

Raising local poultry is an activity with proven economic profitability (Ouedraogo (2003); Ouédraogo (2009), Admasu et al., (2019), Mboumba *et al.,* (2020)). However, traditional poultry farming faces three major problems: health, food and habitat. Diseases and poor housing conditions lead to losses of poultry. Feeding failures limit the expansion of herd numbers. Indeed, when the number of poultry increases, the difficulty arises in meeting food needs through scavenging. The competition to found feedstuffs is becoming more and more intense, and feed intake is proving insufficient in terms of both quality and quantity. Dietary difficulties then constitute a factor favoring the appearance of diseases (Sangaré (2005)) and make it necessary to maintain a limited workforce who can easily be meeting.

In order to allow the full development of traditional poultry farming, initiatives have been taken by several stakeholders in the field. Thus, models of chicken housing have been popularize in the field of housing. In the area of health, village vaccinators have been trained and in the area of food, poultry feed exists. However, given the cost of this feed and the productivity of traditional poultry, the economic profitability of its use for the breeding of traditional poultry, in particular village

chickens, has not yet been able to be demonstrate as indicated by previous authors (Kondombo (2005)). In addition, it was undertake in the present study, investigation for valorization of locally available feedstuffs in village chicken feeding.

Materials and Methods

Formulation of typical diets for village chickens

The results of surveys carried out among producers have provided information on locally available raw materials which are used for poultry feed. The nutritional values of feedstuffs fwere determined from the literature. Based on these values, the chicken diets potentially usable in feeding village chickens were established. They contain cereals (food consumed by men) but highlight foods that are not in competition with human consumption (bran, local beer by-product). The rations were formulated for the different categories of chickens (chick, growing chicken, laying hen) on the basis of the protein requirements for these categories recommended by INRA (1989). The feedstuffs (Table 1) used for the formulation of the rations are classified into two categories: 1) Cereals (sorghum, millet, maize) and legumes (cowpeas) used in human consumption and 2) corn bran, and local beer by-product which are not used in human consumption and represent more than 60% of the ration. After the formulation of 8 rations for village chicken feeding, two of these were tested as supplement of Scavenging Feed Resource Base (SFRB).

Table 1: Bromatological values of feedstuffs available from rural poultry farmers

Feedstuffs	MS (%)	PB (%)	EE (%)	Cendre (%)	CB (%)	EM (kcal/kg)	Cà (%)	P (%)
Maize*	90,2	9,7	-	-	2,2	3440	0,3	0,6
Sorghum**	91,90	11,90	3,60	2,10	2,70	3212	0,03	0,38
Millet*	89,6	10,2	4,8	-	13	3410	0,3	3,0
Cowpea*	93,0	22,0	20	-	5,1	2840	1,7	3,5
Bran*	89	10,1	60,9		9	3115	0,03	-
Local beer-by-product***	94,7	23,4	5,6	7,1	8,5	1890	0,04	0,24

Sources: Feedstuffs used: Surveys; Chemical values: * Mpouok (1999); ** Kondombo (2000); *** Pousga et al., (2007)

Experimentation site

The test was conducted in a farming environment in 3 households in the rural commune of Pabré, one of which was located in the village of Pabré Center and the two others, in the village of Saint Joseph. The households were chosen based on their volunteerism.

Village chicken housings and experimental cockerels used

The housings used for the test (Figure 1) were those available to the volunteer households. Each housing has been subdivided into 3 plots of experimentation. One is a rectangular henhouse of 1.5 m high built of mud and covered with a straw hut. In this housing, each compartment, which was made of mud, had an area of 1.68 m^2. The second housing was a shed in straw huts and was also divided into three boxes of 2.25 m^2 each. The third henhouse was an old house made of metal sheets, the compartments in this housing were made with straw and each compartment has an area of 1.45 m^2.

Figure 1: Overview of the type of village chickens housing used for the experiment

The floor of the compartmentalized brick housing was made in clay and for the other housings, the floor had not been subjected to any work other than cleaning. The feeders and drinkers used are presented in Figure 2. The housings were disinfected with bleach before the introduction of the experimental cockerels. The breed of cockerels used is the locally Noa-kuiguiga (Kondombo et al., 2003) which is a medium size hen and is the most popular in Burkina Faso. The animal material used consisted of cockerels with an average weight of 649 g with an age estimated to 4 months tacking into account, the study results of Ouédraogo et al., (2015). They were bought from households in the rural commune of Pabré. A total of 45 cockerels were used for the test.

Bird feeder Drinker Experimental birds

Figure 2: Materials used for the experiment

Measuring equipment

For the measurements, a Soehnle brand load cell with a capacity of 5 kg and an accuracy of 1 g was used for the evaluation of weight growth, slaughter performance. Another Kinlee brand load cell with a capacity of 25 kg and an accuracy of 20 g and the Soehnle brand load cell were used for food measurements.

Experimental design

The cockerels were distributed by total randomization at the level of 3 blocks (B1, B2 and B3) which represent the households. Each block experimented the 3 feeding strategies (T1, T2 and T3) and each is received by a unit of 3 to 5 cockerels.

The feeding strategies (T1, T2, T3) using for the experiments are the following:

T1: Usual behavior of traditional chickens (the use of the Scavenging Feeding Resources Base SFRB) (C0));
T2: supplementation with a the first diet (C1) + SFRB;
T3: supplementation with a second diet (C2) + SFRB.
The composition and the nutritive values of two the types of diets (C1 and C2) are presented in Table 2.

Table 2: Composition (in %) of the supplemented diets and their nutritive values

Feedstuffs	**Type of feeding used as supplement**	
	C1	C2
Maize	6,00	4,00
Millet	9,70	9,40
Sorghum	8,20	5,80
Local beer-by-product	27,20	35,50
Cowpea	0,80	1,00
Bran	41,30	39,40
Peanut	4,00	1,90
Salt	0,30	0,20
Fishmeal	0,70	1,70
Yeast	0,80	-
Shells	1,00	-
Oil	-	1,10
Total	100	100
Nutriments		
Métabolisable energy (kcal/kg)	2831,71	2794,10
Protein (%)	16,02	16,54
Calcium (%)	1,20	1,28
Potassium (%)	0,67	0,78

Cockerels feeding

The supplementation test took place over 28 days. The amount of daily supplement distributed was 50 g of each diet per chicken. Adaptation period of the chickens to supplements and rearing conditions of one week was observed. During this period, the cockerels were vaccinated with ITA-NEW against Newcastle disease and were internally dewormed with Vermifuge Polyvalent Volailles (VPV). ITA-NEW vaccine is an inactivated

newcastle virus vaccine, made by the LAPROVET laboratory. Diets of supplement were distributed in the morning before the release of the cockerels for scavenging the rest of the day. The scavenging began in the morning at 6 a.m. and, ended in the evening at 6 p.m. Cockerels, supplemented with diets C1 and C2, received their diets from 6 a.m. Those receiving SFRB are released from the henhouses at 6 am for scavenging. From the scavenging, the cockerels eat foods of various kinds encountered (cereal grains and legumes, insects, kitchen waste). All the cockerel units returned to the henhouse from 6 p.m. The cockerels had free access to drinking water putted in drinkers. These drinkers were cleaned every morning before water are putted.

Collection and analyses of data

The data collected during the experiment were (1) the weekly quantities of food distributed per experimental unit, 2) the chicken feeds refusals by experimental unit, and (3) the weekly cockerel weights. At the end of the test, 27 cockerels selected at random, 3 cockerels per treatment, were slaughtered and their slaughter parameters (weight, carcass, heads, crop content, etc.) were measured. Furthermore, a comparative assessment of the ration costs was made in order to determine the feed efficiency of the C1 and C2 rations used as supplements. Thus, feed conversion ratios and feed cost per kg of weight obtained were calculated.

Statistical analysis

The data were first purified and then analyzed using SPSS 17 software. The comparison of the means was made by analysis of variance using the General Linear Model (GLM).

Results

Formulation of village chickens diets from the available feedstuffs

Table 3 gives the diets that can be offered village chickens feeding according to the availability of feedstuffs at the household level. These are two starter diets, four growth diet and two laying diets. These diets have protein levels from 16 to 21% and energy values from 2700 to 2880 kcal.

Table 3: Diets with available feedstuffs at rural household level for traditional chicken feeding

Feedstuffs (%)	Starter diet		Growth diets				Laying diets	
	R1	R2	R1	R2	R3	R4	R1	R2
Maize	7,50	6,00	9,00	7,00	4,00	6,00	9,20	6,50
Millet	2,00	2,00	9,00	7,00	9,40	9,70	7,00	6,50
Sorghum	8,20	3,50	9,00	8,50	5,80	8,20	7,80	13,50
Local beer by-product	31,00	32,00	33,00	32,00	35,5	27,20	29,00	33,00
Cowpea	-	-	2,50	2,00	1,00	0,80	0,80	1,00
Brain	30,00	32,50	29,00	31,50	39,41	41,30	35,50	28,50
Soybeans	-	-	-	9,00	-		-	-
Peanut	1,10	13,70	3,00	2,00	1,90	4,00	4,50	400
Salt	0,3	0,30	0,50	0,30	0,20	0,30	0,30	0,30
Fishmeal.	8,0	7,00	4,00	-	1,70	0,70	1,50	12,0
Yeast	-	-	1,00	-	-	0,80	0,50	-
Shells	-	-	-	0,70	-	1,00	39,0	40,0
Oil	2,0	3,00	-	-	1,10	-	-	150
Total	100	100	100	100	100	100	100	1000
Nutritional values and price/kg								
Metabolisable energy	2841,58	2882,27	2741,98	2775,62	2794,1	2831,71	2700,306	2709,27
Protein	21,15	21,62	18,11	18,06	16,54	16,02	16,36	16,35
Calcium	4,374	3,93	2,34	0,65	1,28	1,2	2,64	2,46
Potassium	1,78	1,65	1,19	0,56	0,78	0,67	0,82	0,74
Price/kg	**175,31**	**187,54**	**147,79**	**154,02**	**156,36**	**136,87**	**148,61**	**149,07**

Feed intake according to the availability of the Scavenging Feed Resources Base (SFRB)

Throughout the experiment, a steady upward trend in bird feed intake was observed in all blocks representing the households. The average feed intakes at the end of the experiment were 28.86 g; 33.72 g; 31.28 g respectively for B1, B2 and B3 (Table 4). Thus, the lowest chicken ingestion was observed in B1 while the highest ingestion was made in B2.

Table 4: Feed intake in g per cockerel and per block

Period	Block 1	Block 2	Block 3
Week 1	20,98	27,54	19,82
Week 2	25,81	30,98	32,45
Week 3	30,81	37,86	36,13
Week 4	37,96	38,54	38,18
Average	28,86	33,72	31,28

Feed intakes according to the feeding strategy

Village chickens feed intakes according to the type of feeding are presented in Table 5. The first week was marked by lower ingestion in the two treatments (23.32 g and 22.24 g respectively for T2 and T3). At the end of the experiment, the intake of the supplemented diet was 37.50 g and 38.96 g for T2 and T3. The average intakes of the supplemented diet were 31.41 g and 31.16 g respectively for the T2 and T3.

Table 5: Feed intake (in g) per cockerel per diet (T2, T3)

Duration	T 2	T 3
Week 1	23,32	22,24
Week 2	30,42	29,08
Week 3	35,44	34,42
Week 4	37,50	38,96
Average	31,41	31,16

Cockerel body weight change according to the Scavenging Feed Resources Base (SFRB)

Figure 3 illustrates the body weight change in chickens according to the SFRB from blocks B1, B2, and B3. Gradual growths were observed in all blocks. However, it was lower in all blocks during the first week and this trend persisted until the end of the second week in block B1. The mean weights of the cockerel at the end of the experiment were 604.28 ± 67.46; 731.53 ± 55.42 g and 817.61 ± 63.10 g respectively for blocks B1; B2 and B3.

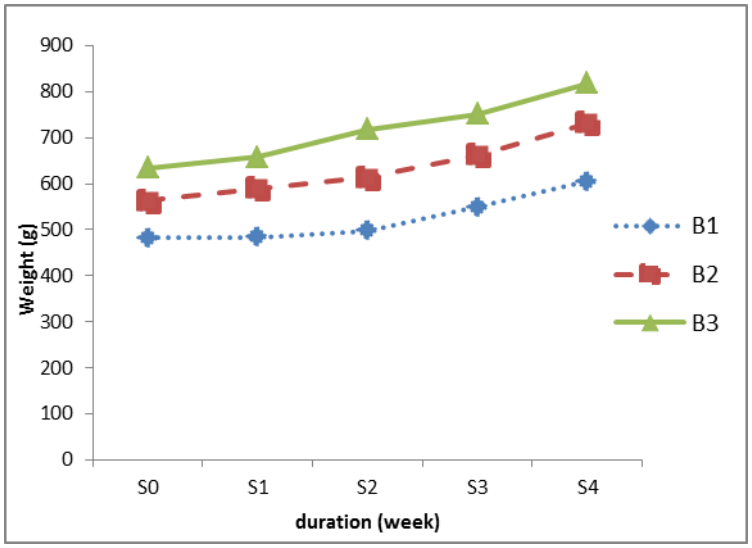

Figure 3: Weight evolution according to food availability

Cockerel body weight change according to the feeding strategy

Depending on the type of feeding (T1, T2, T3), statistical analysis showed a significant difference ($P < 0.05$) in weight gain in the first week between T1 and the other treatments (T2 and T3). Cockerel body growths were continuous for all treatments (Figure 4) from the second week at the last one. The average weights observed at the end of the trial were 719.86 g; 762.40 g and 671.17 g respectively for the T1 treatments; T2 and T3.

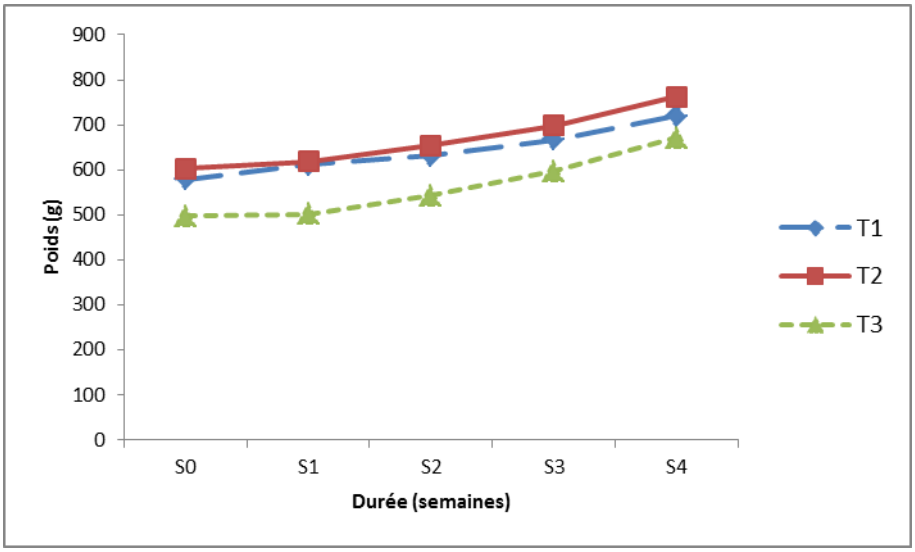

Figure 4: Weight change according to the type of feeding

Cockerel body weight gain according to the Scavenging Feed resources Base (SFRB)

The weight gains observed over the 4 weeks differed from household to household at the second week and statistical analysis showed that the weight gains obtained in B3 was significantly higher (P <0.05) than in B1 and B2 in the second week. B1 experienced low weight gain for the first two weeks. With the exception of B3 who experienced declining weight gain in week three, weight gains of B2 and B1 were gradual from week two until the end of the experiment. Overall weight gains were lower in the first week for B1, B2 and B3 and were respectively 1.67 g; 27.07 g and 24.06 g but these weight gains were improved over the time (Table 6). At the end of the experiment, B3 had the best weight gain (183.22 g) however; there were no significant difference in weight gains between the blocks at the end of the experiment. The Average Daily Weight Gains (ADWG) were 3.78 g / d; 5.53 g/ d and 5.94 g /d respectively at B1, B2 and B3 but the general trend suggests a definite improvement in weight gains if the experiment continued. The average feed consumption index has remained comparable. The best feed consumption index was observed in B3 (5.25) and those for B1 and B2 were 6.67 and 6.10 respectively.

Table 6: Cockerel body weight gain (in g) according the Scavenging Feed resources Base

Duration	Block 1	Block 2	Block 3
0-7 days	0,33[a]	27,07[a]	24,06[a]
0-14 days	6,83[b]	50,40[b]	82,67[a]
0-21 days	57,00[a]	98,73[a]	117,06[a]
0-28 days	112,50[a]	168,50[a]	183,22[a]

NB: on the same line, the values followed by the same letter are not significantly different (P> 0.05)

Cockerel body weight gain according to the feeding strategy

The first week was marked by a higher body weight gain at the compared to the T2 and T3 which saw low weight gains (P <0.05). However, the T2 and T3 treatments had steadily increasing weight gains throughout the trail phase, which was not the case for T1 whose weight gain is irregular, especially in the second week (Table 7). There was no significant difference between body weight gains (P> 0.05) between T1, T2 and T3 at the end of the trial. In reverse, T3 experienced the greatest weight gain (173.67 g at the end of the test). T1, T2 and T3 respectively obtained daily weight gains of 4.54 g / d; 5.33 g / d and 5.37 g / d. T3 with diet C2 had the best consumption index of 5.85 against 6.16 for the treatment T2 which received the supplement C1.

Table 7: Cockerel body weight gain (in g) according the type of feeding

Duration	T1	T2	T3
0-7 days	32,69	13,77	4,33
0-14 days	50,99	44,24	44,67
0-21 days	86,63	86,82	99,33
0-28 days	139,27	151,29	173,67

Influence of the interaction Scavenging Feed Resource Base (SFRB) and the feeding strategy cockerel body weight gain

Taken individually each block, the cockerels having received the supplementations of C1 and C2 in B2 and B 3 had a better weight growth (Table 8) than those fed only with SFRB (T1). For the block B1, T1 experienced a growth comparable to those of T2. B1's weight gains were inconsistent during the test. In this block, the T2 and T3 treatments suffered weight losses ranging from -9.5 to -7.5 g during the first week before experiencing continuous weight gain from the second week.

Table 8: Weight gain (in g) depending on the block and the feeding strategy

		Duration			
Blocks	Type of feeding	Week 1	Week 2	Week 3	Week 4
B1	T1	16,00	14,50	74,50	109,00
	T2	-9,50	-3,00	40,00	108,00
	T3	-7,50	9,00	56,50	120,50
B2	T1	44,40	49,80	85,40	144,80
	T2	23,80	63,40	101,80	169,20
	T3	13,00	87,00	109,00	191,50
B3	T1	37,67	88,67	100,00	164,00
	T2	27,00	72,33	118,67	176,67
	T3	7,00	87,00	132,50	209,00

Cockerel meat performances according the Scavenging Feed Resource Base (SFRB)

The results of the village chicken cockerel meat performances are recorded in Table 9. No significant difference was observed between blocks for carcass weights or carcass yields. However, a higher carcass yield was found in B3 and B1 (67.39%). The lowest yield was observed in B2 (57.33%). The head weight of B2, and B3 had a significantly difference with the one of B1 ($P < 0.05$).

Table 9: Cockerel meat performance per block

Parameters	B_1	B_2	B_3
Life body weight (g)	604,28	731,53	817,61
Carcass weght (g)	408,67	472,89	554,17
Carcass yield (%)	$67,39^{a}$	$57,33^{a}$	$67,39^{a}$
Head weight (g)	$29,17^{b}$	$33,44^{ab}$	$36,22^{a}$
Paw weight (g)	$30,44^{a}$	$35,67^{a}$	$37,72^{a}$
Gizzard weight (g)	$29,17^{c}$	$35,8^{b}$	$48,22^{a}$
Crop weight (g)	$10,44^{a}$	$10,33^{a}$	$10,22^{a}$

On the same line, the values followed by the same letter are not significantly different (P> 0.05)

Cockerel meat performances according to the feeding strategy

Statistical analysis of the cockerel meat performances (Table 10) did not reveal any significant difference (P> 0.05) between the types of feeding (T1, T2 and T3). However, T2 shown highest carcass yield (66.44%) and those of T1 and T3 were 62.00% and 63.67% respectively.

Table 10: Meat performance of cockerels according to the type of feeding

Parameters	T1	T2	T3
Live body weight (g)	719,86	762,40	771,17
Carcass weight (g)	488,1 7	514,56	433,00
Carcass yield (%)	62,00	66,44	63,67
Head weight (g)	33,22	34,78	30,83
Paw weight (g)	35,78	37,22	30,83
Gizzard weight (g)	42,78	36,33	34,17
Crop weight (g)	12,22	12,33	6,50

Economic evaluation of the feeding strategy

The estimate cost of manufacturing the cockerel diets (C1 and C2) suggests that diet C2 is the least expensive one as it cost 136.87 F CFA per kg against 156.36 F CFA per kg for the C1. The results reported in Table 11 show that the diet C2 has the lowest feed cost per weight gain ratio (5.02), when the ratio of the diet C1 was 5.82. A projection on a gain of 1 kg of weight requires an expenditure of 908.12 F CFA and 687.59 F CFA respectively for the diets C1 and C2. When considering the types of diet per block, the diet C2 has the better ratio. The cost price of the two types of feeding for the production of one kg of chicken is less than 1000 F CFA. When considering by block and by treatment, it appears that a large difference in diets costs, ranging from 576.89 F CFA to 1193.80 F CFA.

Table 11: Effect of the interaction feeding strategies and the availability of Scavenging Feed Resources Base (SFRB) on weight gain, feed load and feed conversion

	Block 1			Block 2			Block 3		
parameters	T1	T2	T3	T1	T2	T3	T1	T2	T3
Diets used (g)/ cockerel during the trial	-	824,6	803,88	-	943,48	944,44	-	870	880,88
Duration of feeding (days)	28	28	28	28	28	28	28	28	28
Body weight gain (g)	184	108	120,5	144,48	169,2	191,5	164	176,67	209
Diet cost (FCFA)	-	128,93	110,03	-	147,67	129,27	-	136,03	120,57
Diet feed conversion ration (g/g of body weight gain	-	7,64	6,67	-	5,58	4,93	-	4,94	3,83
Diet cost/kg of weight gain	-	1193,80	913,11	-	872,75	675,04	-	769,97	576,89

Discussion

The diets designed are mostly made up of local beer by-product and bran. Two major facts justify this choice; to promote local feedstuffs in order to stimulate their use in poultry feeding and; to minimize the feed cost. Indeed, local beer by-product is relatively low cost feedstuffs; however, it is a poor palatability feed (Kondombo, 2005) and its combination with other types of feed may encourage its use. The type of diet C1 and C2 used for the test had respectively, feed intake rates of 27.2% and 35.5%, comparable to those obtained by Kondombo et al., (2003).

The present study found no significant difference between the three blocks in weight gain (P> 0.05), but a trend shows B3 with higher weight gain. This could be due to how each household take care of his poultry flock. In addition, B3 is in a space where the concentration of households is lower, compared to B1 and B2, and the SFRB can be modified by a concentration of households depending on whether the concentration is weak or strong. This could confirm the assumptions made by FAO (2004) stating that the number of households is determining in the modification of the SFRB. Furthermore, the ADWGs of (3.78 g / d to 5.94) are lower than those obtained by Kondombo (2000) which were 5.5 g / d to 6.6 g / d. This could be due to the period of the year, the dry season marked by the scarcity or even absence of insects and earthworms to enrich scavenging diet. The average daily gains according to the feeding strategy were 4.54 g / d; 5, 37 g / d and 5.33 g / d respectively for T1; T2 and T3. It appears that T1 living

on the usual supplementation obtained the best weight gain in the first week (32 g against 13.77 and 4.33 g). This shows that the T1 cockerels very quickly adapted to their behavior (SFRB). The change in eating habits for the other treatments would explain the slowness in weight gain in the first week. However, at the end of the test, T3 supplemented with the supplement diet C2 obtained the greatest weight gain (173.67 g). However, there was not a significant difference between the treatments. This fact suggests the relative availability of SFRB (599.93 g dry matter) at this time of year (Nougtara, 2011). This assertion is in agreement with Kondombo (2005) who obtained better weight gain with chickens living in scavenging conditions compared to those supplemented with commercial feed. It could also be due to the quality of the rations.

The strategy of feeding T3 showed better weight gain among the treatments. Its better protein level (+ 3.25%) could explain such situation. This agrees with Kondombo (2000) who notes that protein is the main limiting factor for local birds. There was no significant difference ($P < 0.05$) between treatments. This may be due to the individual quality of the ingredients. It is known that local feedstuffs are poor in essential elements or contain limiting factors. This is the case with local bee-byproduct whose lack of certain amino acids (methionine, threonine cysteine) and minerals (calcium, sodium) as demonstrated by Pousga et al., (2007). This is also the case with sorghum, for which certain amino acids (lysine, threonine) are restrictive and whose tannin limits the nutritional values of this ingredient (Murty and Renard (2001)). It can be suggested that, supplements made from cereals especially are deficient in certain essential elements that should be provided to improve village chickens growth. The daily body weight gain, obtained by Pousga et al., (2006) in their supplement diet made with cereals and cowpeas without premixing submitted to crossbreed chickens, comparable to our results confirms this hypothesis.

Feed intake was increasing throughout the trial. This intake remained low both at the level of the blocks (28.86 g to 33.72 g) and within the treatments (31 g) if we accept the assertion of the PDAV (2009) according to which, the hen needs 50 g of feed per day. . However, it is higher than those observed by Kondombo (2005) in his village chicken cockerels supplementation test. In his strategy of feeding village chickens, this author obtained an intake of commercial feed of 16.8 to 20.0 g for supplemented chickens, against 23.5 to 42.2 g for chickens in confinement. Futhermore, Guedou et al., (2015) indicated feed intake of 45 to 46 g/d for local chicken in Benin.

The feed conversion ratio was 5.82 and 5.02 respectively for T2 and T3. They are comparable to those of Pousga et al., (2006) but lower than those of 6,7 indicated by Ait Kaki and Moula (2013). A projection on obtaining one kg of weight gain gives an economic expenditure of less than 1000 F CFA for the types of feeding tested (T2 and T3). This suggests that, despite the low weight gain at the end of the experiment, the proposed type of diets, with their relatively low cost and the improvement in the average daily weight gain, may be popularized to poultry famers.

Furthermore, the results of the study showed no significant difference ($P > 0.05$) for carcass yield neither between blocks nor between treatments, these values being between 63 and 67%. The results obtained are in agreement with (Pousga et al., (2006); Kondombo, (2005); Guédou et al., (2016)). These yields, even lower than those (71 to 73%) obtained by Akouanga et al. (2010) remain appreciable. The genetic difference could explain the difference between our results and those of these authors.

Conclusion

The current trial revealed comparable daily body weight gain between the different strategies of feeding. However, an increasing tendency of chickens supplemented with the type of diets proposed show better weight gain than using Scavenging Feed resources Base only. These diets are made mainly from feed resources don't used in human consumption. Daily body weight gain were not high (4.54 to 5.37 g/d on average) and this could be due to the low genetic potential of the village chickens, or the short duration of the trial. However, due to the relatively low cost of the feed, the economic evaluation shows that the two feeding strategies using supplementary diets can be popularized to poultry farmers.

The diets used as supplement can find their place especially when large-scale production of village chickens is envisaged which makes it possible to cope with the undernourishment resulting from the increase in the number of the chickens. In addition, the feedstuffs being local, the problems of accessibility to such feedstuffs are thus solved.

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