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Use of Seed Meal from the *ICP7035* Variety of *Cajanus cajan* in Broiler Rearing in the Republic of Congo

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Abstract | **Original Research Article**

The aim of this study is to evaluate the effects of gradual incorporation of *Cajanus cajan ICP7035* seed meal on broiler growth, carcass and internal organ development. The study was based on 48 two-week-old Cobb500 broiler chicks. The chicks were randomly divided into 04 homogeneous batches of 12 chicks each, and fed 04 diets of identical composition but differentiated by the substitution rate of soybean meal by *Cajanus cajan ICP7035* seed meal containing 0, 7, 14 and 21% of *Cajanus cajan ICP7035* sheath meal respectively. Each batch was divided into two sub-batches of 6 subjects each. The results obtained showed that subjects fed rations of 0, 7 and 14% *Cajanus cajan ICP7035* seeds performed satisfactorily compared with those fed 21%. On the other hand, it had no significant adverse effect on the weight of the liver, intestines, spleen and gizzard taken individually of subjects fed *Cajanus cajan ICP7035* seed meal compared with control subjects, nor on the weight of all these organs. Thus, the incorporation of *Cajanus* cajan *ICP7035* seed meal should be at rates of up to 14% to reduce soybean meal loads in broiler rations.
Keywords: *Cajanus cajan*, Broiler, Feed, Growth, Development.

INTRODUCTION

The accessibility and availability of balanced complete feeds are considered to be the greatest constraints to livestock development in many developing countries. Conventional protein sources such as soybean meal, peanut meal and fishmeal are scarce and expensive in developing countries. (Dahouda *et al.*, 2009; Hêdji *et al.*, 2014). However, the diversity of local plant resources available in developing countries makes many non-conventional food resources available that can be valorized in animal feed. Thus, mastery of these different local resources is a prerequisite for the success of livestock production in developing countries (Defang *et al.*, 2014). With this in mind, several studies including those by Ouattara *et al.*, (2014) on cowpea; Okandza *et al.*, (2017) on faba bean and Traore *et al.*, (2018) on *Cajanus cajan* have been carried out to evaluate the incorporation of seed legumes in poultry feed. Among these legumes, pigeon pea (*Cajanus cajan*) features prominently. According to Angandza *et al.*, (2022b), these seeds are rarely used in human diets, despite their high protein content (29.20 to 31.90%). Unlike other legumes, *Cajanus cajan* is a plant that is adaptable to all seasons.

Angandza *et al.*, (2022a) report that the *ICP7035* variety of *Cajanus cajan* adapts well to the pedoclimatic conditions of Loutété in the Republic of Congo.

In the Republic of Congo, it should be pointed out that less agricultural work has been devoted to the use of *Cajanus cajan* in poultry farming. This is why we felt it important to undertake the present study.

The aim of this study was to evaluate the effects of gradual incorporation of *Cajanus cajan ICP7035* seed meal on broiler growth, carcass and internal organ development.

MATERIALS AND METHODS

Location of study area

Experimentation took place at the controlled station of the Ecole Nationale Supérieure d'Agronomie et de Foresterie (ENSAF) of the Université Marien NGOUABI, located in arrondissement 1 Makélékélé, quartier Moukoudzigouaka in the Brazzaville department. It lies between latitude -4.283565 S and longitude 15.248079 E, and is 306 m above sea level.

Material

The equipment consisted of 48 Cobb 500 broiler chicks purchased from a chick importer in Brazzaville. The material came from the Société pour la Promotion et le Développement de l'Aviculture (SOPRODA) in France.

Collection and processing of seeds of the *ICP7035* variety of *Cajanus cajan*

Seeds of *Cajanus Cajan* variety *ICP7035* (Fig. 1) were collected from the experimental field of the Groupement pour l'Étude *et al.,* Conservation de la Biodiversité pour le Développement (GECOBIDE) at Loutété in the Bouenza department, south-west of the Republic of Cong.

After harvesting, the seeds were sorted to remove the bad ones. They were spread out on a tarpaulin and exposed to the sun for two days. At regular intervals, they were turned over. We then carried out the roasting process, which involved placing 5 kg of *Cajanus cajan* seeds in a pan over a fire. The seeds were stirred regularly for 30 minutes. After roasting, the seeds were cooled in the open air for an hour. The operation was repeated several times to obtain the quantity required for the experiment.

Sun-drying and roasting not only resulted in dry seeds, but also reduced or eliminated any anti-nutritional factors contained in *Cajanus cajan* seeds (Traore *et al*., 2018).

Seeds of the *ICP7035* variety were then processed into flour using an artisanal mill with a mesh diameter of around 4mm. The resulting seed flour was packaged and stored in 25kg bags until incorporation into the various experimental rations.

Figure 1: Post-harvest pods and seeds of the *ICP7035* variety of *Cajanus cajan.*

Other common raw materials (corn, soybean meal, wheat bran, limestone, etc.) were purchased at local markets.

Formulation and preparation of experimental rations

Based on the results of bromatological analysis of seeds of *Cajanus cajan* variety *ICP7035* reported by Angandza *et al.,* (2022b), we then referred to the bromatological values of other raw materials reported by Okandza *et al.,* (2017) and Ayssiwèdé *et al.,* (2012) to formulate our experimental rations. Thus four (4) growth-finishing type feed rations for broilers were formulated and manufactured. These rations have an identical composition, but are differentiated by the substitution rate of soybean meal by *Cajanus cajanICP7035* seed meal (Table I). These rations were prepared by manually mixing the various selected raw materials. One ration contained 0%(GCC0%) *Cajanus cajan ICP7035* seed meal (control feed), and three other rations contained feed treated with 7%(GCC7%) ,14%(GCC14%) and 21%(GCC21%) *Cajanus cajan ICP7035* seed meal.

Table I: Centesimal raw material composition of rations experimental

	Witnesses	*Seeds of Cajanus Cajan* (GCC)		
	T 0%	**T 7%**	**T 14%**	**T 21%**
Raw materials				
Corn	64,49	64,49	64,49	64,49
Wheat bran	6,35	6,35	6,35	6,35
CMV	2,08	2,08	2,08	2,08
Cajanus Cajan ICP7035 seed flour	0	7	14	21

Soybean meal	21,04	14,04	7,04	0,04
Fish meal	5	5	5	5
Limestone	1	1	1	1
Méthionine	0,02	0,02	0,02	0,02
Lysine	0,02	0,02	0,02	0,02
Total	100%	100%	100%	100%

Legend:
T 0%: 0% rate for *ICP7035*; **T 7%**: 7% rate for *ICP7035*; **T 14%**: 14% rate for *ICP7035*; **T 21%**: 21% rate for *ICP7035*.

Building and equipment preparation

Building preparation began with a sanitary vacuum, which involved emptying the building, cleaning it with soapy water and disinfecting it with bleach and ice pellets. The sanitary vacuum was carried out fifteen (15) days before the birds were installed. Breeding equipment (feeders, drinkers, etc.) was also washed and disinfected.

Arrival and batching of broiler chicks

When the broiler chicks (Cobb 500 strain) arrived, routine checks were carried out on them (condition of umbilicus and legs, liveliness).

Before the start of the experiment, the chicks were reared together in a brooder for two weeks.

The experimental set-up consisted of wire frames, which were used to create the different batches and sub-batches. On the eve of placement, the surface of each sub-lot was covered with a 10 cm thick layer of wood shavings. A foot bath was placed at the entrance to the experimental building. Feeding troughs, drinking troughs and other performance control equipment (scales, identification markers and data collection sheets) were placed in the various sublots. On the evening of the fourteenth day of rearing, 48 Cobb 500 broiler chicks were transferred to the experimental set-up. They were identified by a mark on the leg. After individual weighing, the 48 broiler chicks were then randomly divided into 4 batches of 12 chicks each of approximately equal weight, corresponding to the four feed treatments. Each batch was divided into two sub-batches of 6 chicks each.

Feeding program, watering and medical prophylaxis

For the first two weeks of age, broiler chicks were fed a commercial starter feed. From day ^{15} to day ^{48}, they were fed the experimental feed previously formulated and manufactured.

For the different batches thus constituted, the four formulated experimental rations were distributed to the chicks. Each ration was distributed to the corresponding batch according to the experimental batching system. Feed was delivered to circular feeders twice a day (morning and evening). Drinking water was distributed ad libitum in plastic siphon-type troughs with a capacity of ten liters. This drinking water was used to administer the medication to the birds. Feeders and troughs were cleaned every morning.

The chicks were vaccinated against Newcastle disease, Gumboro disease, Bronchitis infectiosum and other diseases.

Food consumption

Daily food consumption is obtained by weighing the quantities of food distributed and refused per day. These data were recorded on a feed data collection and monitoring sheet.

Live weight at typical age

At two (2) weeks of age (start of experimental phase), chicks were weighed individually. From then on, weights were taken weekly (fasting in the morning) using a GIMA electronic scale with a capacity of 5kg and an accuracy of ±1g. Weight data were collected on the weekly animal weighing sheet.

Carcass and organ yield and characteristics

Slaughter took place on the ^{49th} day of rearing. A total of 08 animals were randomly selected (2 per batch), weighed and slaughtered. They were then plucked in hot water and partially eviscerated (crop, intestine). Carcasses still containing organs such as lungs, heart, liver, spleen and gizzard were weighed. These organs were in turn detached and weighed individually per subject and per feeding treatment.

Any yellowing of the skin and abdominal fat of slaughtered chicken carcasses was assessed using a scoring technique based on the method of Kaijage *et al.*, (2003). This method assigns a score of 1 to 4 according to the intensity of the yellow coloration observed (score1 : (1: no yellow coloration, 2: slight to medium yellow coloration, 3: fairly to very yellow coloration and 4: intense to dark yellow coloration). These data were collected on the same form (appendix) as carcass and organ weights.

Data Analysis

The data collected was entered and processed using Excel version 2013©. Comparisons of means were then performed by analysis of variance (ANOVA) using Statistical Package for the Social Science (SPSS version 10.0.5.) software, then completed by Duncan's test when the ANOVA test showed a significant difference at the 5% risk of error ($P < 0.05$).

RESULTS

Effect on live weight

The evolution of chickens' live weight by feed treatment over the course of the experiment is illustrated in figure 2**.** Subjects fed rations containing seed meal of the *ICP7035* variety of *Cajanus cajan* had lower live weights than control subjects. From the 2nd to the 3rd week of age, no significant difference was noted in the live weights of chicks in the different feed treatments for *ICP7035*O%(460.58g), *ICP*7035 7%(430.41g), *ICP7035* 14%(420.5g) and *ICP7035* 21%(410.83g) respectively. However, from the4th week of age until the end of the experiment at the 7th week of age, a significant decrease in live weight was noted in the subjects of the different feed treatments compared with the control subjects. The incorporation of *Cajanus cajan* seed meal reduced live weight in *ICP7035*7% (1249.24g), *ICP7035* 14% (1018g) and *ICP7035* 21% (942.08g) respectively, compared with the control *ICP7035* 0% (1577.83g).

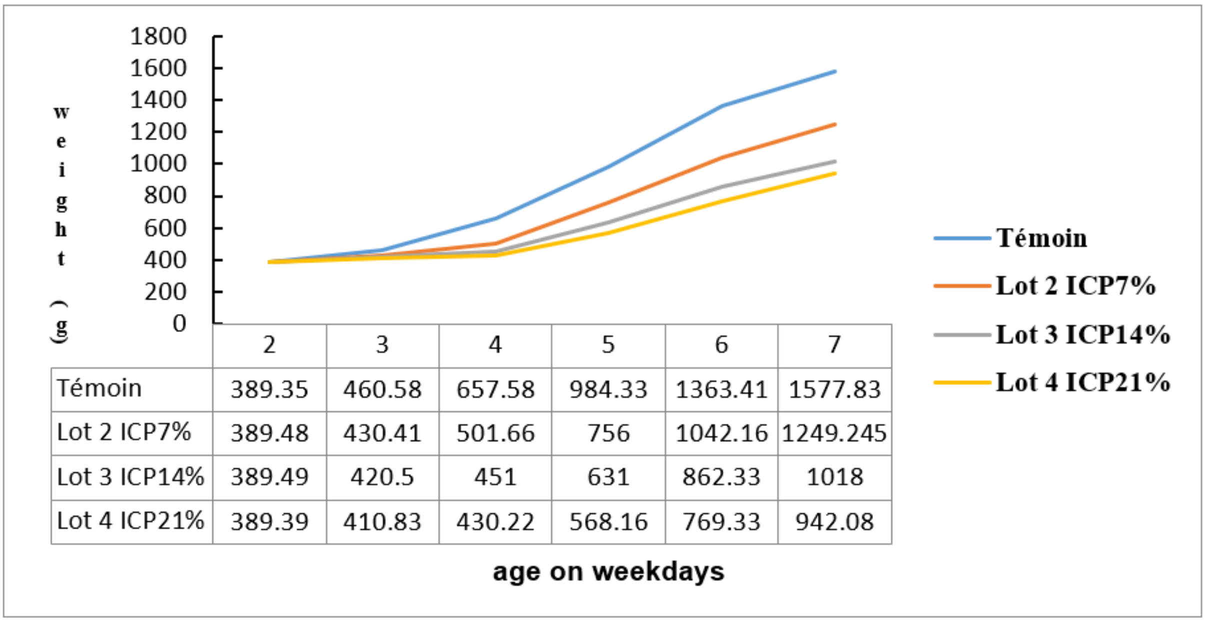

Figure 2: Change in live weight of chickens fed rations of *Cajanus cajan* variety *ICP7035*

Effect on Average Daily Gain

The average daily gains (ADGs) obtained by subjects in the different feeding treatments are shown in Table 2.

From the 2nd to the 3rd week of age, no significant difference was noted in the GMQs of subjects on the different feed treatments for *ICP7*O35 0%(11.11g/d), *ICP*7035 7%(7.34g/d), *ICP7035* 14%(5.43g/d) and *ICP7035* 21%(4.06g/d) respectively. However, from the4th week of age until the end of the experiment at 7 weeks of age, there was a significant decrease ($P< 0.05$) in the GMQ of subjects on the different feed treatments compared with control subjects.

In general, throughout the duration of the experiment (between the2nd and 7th weeks of age), subjects in the *ICP7035* 7%, *ICP7035* 14% and *ICP7035* 21% treatments showed significantly lower GMQs (respectively 29.38g/d; 18.95g/d; 16.69g/d) than those in the *ICP7035* 0% treatment (34.95g/d).

Table II: Effect of incorporating *Cajanus cajan ICP7035* seed meal into the ration on average daily gain (ADG)

Parameter	Age in weeks	Dietary treatments (*ICP7035*)				P value	Significance
		T 0%	**T 7%**	**T 14%**	**T 21%**		
ADG as a function of time **(g/d)**	W2_W3	11,11±0,00^c	7,34±2,12^b	5,43±1,41^a	4,06±1,41^a	0,00	S
	W3_W4	29,14±0,00^c	12,67±3,53^b	5,35±1,41^a	3,77±1,41^a	0,00	S
	W4_W5	47,67±0,00^d	45,67 ±1,41^c	26,71±1,41^b	20,20±0,70^a	0,00	S
	W5_W6	55,15±0,00^d	52,15± 2,82^c	34,04±1,41^b	29,73±1,41^a	0,00	S
	W6_W7	31,63±0,00^c	29,08± 0,70^b	25,67±1,41^a	23,23±1,41^a	0,02	S
	W2-W7	34,95±0,00^c	29,38±1,14^b	18,95±1,41^a	16,69±1,27^a	0,00	S

a, b, c, d : Means followed by different letters within the same line are significantly different at the 5% threshold.

Effect on feed intake

The incorporation of *Cajanus cajan ICP7035* seed flour into rations significantly ($P<0.05$) reduced feed intake in comparison with control subjects throughout the experiment (Table 3). From the2ndto the 7th week of age, the results show that the Quantity of Feed Ingested decreased significantly with the increasing level of incorporation of seed meal from the *ICP7035* variety of *Cajanus cajan* from one treatment to another. Birds in the *ICP7035* 7%, *ICP7035* 14% and *ICP7035* 21% treatments had significantly lower Feed Intakes (176.48g/d; 163.47g/d; 154.69g/d respectively) than those in the *ICP7035* 0% treatments (185.37g/d).

Table III: Effect of incorporating *Cajanus cajan ICP7035* seed meal into the ration on broiler feed intake.

Parameter	Age in weeks	Dietary treatments (*ICP7035*)				P-value	significance
		T 0%	**T 7%**	**T 14%**	**T 21%**		
Average feed intake (g/d)	W2_W3	84,95±0,00[d]	83,44±0,55[c]	82,58±0,38[b]	80,07±0,031[a]	0,00	S
	W3_W4	150,00±0,00[c]	127,78±1,68[b]	124,17±0,58[b]	121,33±0,90[a]	0,00	S
	W4_W5	200,00±0,00[d]	198,05±0,72[c]	190,11±0,37[b]	180,92±0,00[a]	0,00	S
	W5_W6	222,52±0,00[d]	212,09±0,00[c]	198,55±1,63[b]	192,79±0,82[a]	0,00	S
	W6_W7	273,20±0,00[d]	261,03±3,55[c]	221,92±9,66[b]	198,33±0,00[a]	0,00	S
	W2_W7	185,37±0,00[d]	176,48±1,08[c]	163,47±2,37[b]	154,69±0,34[a]	0,00	S

a, b, c, d : Means followed by different letters within the same line are significantly different at the 5% threshold.

Effect on feed conversion ratio

The results of the effect of the different feed treatments on the feed consumption index of broilers are shown in Table 4 below. The feed consumption indices obtained per treatment throughout the experiment are 0.88±0.00 ;1.32±0.00 ;1.74±0.00 ;2.25±0.00 respectively for subjects on *ICP7035* 0%, *ICP7035* 7%, *ICP7035* 14%, *ICP7035* 21% rations.

Table IV: Effect of incorporating *Cajanus cajan ICP7035* seed meal into the ration on feed conversion ratio (FC).

Parameter	Age In Weeks	Dietary treatments (*ICP 7035*)				P value	Significance
		T 0%	**T 7%**	**T 14%**	**T 21%**		
Average consumption index	W2_W3	1,19±0,00[d]	2,03±0,00[c]	2,66±0,00[b]	3,73±0,00[a]	0,00	S
	W3_W4	0,76±0,00[d]	1,79±0,00[c]	2,70±0,00[b]	4,12±0,00[a]	0,00	S
	W4_W5	0,60±0,00[a]	1,79 ±0,00[a]	2,70±0,00[ab]	4,12 ±0,00[a]	0,00	S
	W5_W6	0,58±0,00[a]	0,74±0,00[a]	0,85 ±0,00[a]	0,95 ±0,00[a]	0,00	S
	W6_W7	1,27±0,00[a]	1,26 ±0,00[b]	1,42 ±0,00[b]	1,14 ±0,00[d]	0,02	S
	W2_W7	0,88±0,00[d]	1,32±0,00[c]	1,74±0,00[b]	2,25±0,00[a]	0,00	S

a, b, c, d : Means followed by different letters within the same line are significantly different at the 5% thresho

Effect on yield, carcass and organ characteristics

The results of the effect of incorporating *Cajanus cajan ICP7035* seed meal on broiler yield, carcass and organ characteristics are shown in Table 5. Incorporation of *Cajanus cajan ICP7035* seed meal led to a significant decrease in eviscerated body weight (EBW), carcass yield (CY) and organ yield (OY) at 7 weeks of age in broilers compared with the control treatment. On the other hand, incorporation had no significant adverse effect on the weight of individual organs (liver, intestines, spleen, gizzard) of subjects fed *Cajanus cajan ICP7035* seed meal, compared with control subjects, or on the weight of all these organs. However, a significant increase in full body weight (FBW) and heart weight was observed in particular in subjects fed rations containing *ICP7035* seed meal compared with the control treatment. In addition, the incorporation of *Cajanus cajan ICP7035* seed meal did not induce any yellow discoloration of the skin and abdominal fat of the carcasses of the birds compared with control subjects.

Table V: Effect of incorporating *Cajanus Cajan ICP7035* seed meal into the ration on broiler carcass and organ characteristics

Parameter	Dietary treatments (*ICP 7035*)				Significance
	T 0%	**T 7%**	**T 14%**	**T 21%**	
LW (g)	1960,00 ±77,78 [b]	1363,00 ±186,67 [a]	1354,00 ± 224,86 [a]	1147,50 ± 456,08[a]	S
FBW (g)	1804,00 ±15,55[b]	1193,00 ± 00[a]	1248,50 ± 187,38[a]	1049,50 ± 437,69[a]	S
EBW (g)	1510,00 ± 33,94[b]	1092,37 ± 42,00[a]	1008,50 ± 173,24[a]	798,00 ± 308,29[a]	S
CY (%)	83,69 ± 1.15[c]	88,43 ± 3.51[c]	80,64 ± 1,77[b]	76,56 ± 2,55[a]	S
Liver weight (g)	51,00 ± 2,83[a]	42,00 ± 12,73[a]	39,00 ± 8,49[a]	45,50 ± 28,99[a]	NS
Heart weight (g)	11.50±0,71[b]	7,00 ± 1,41[a]	7,00 ± 1,41[a]	7,00 ± 1,41[a]	S
Spleen weight (g)	2,00 ± 1,41[a]	2,00 ± 1,41[a]	1,00 ± 0,00[a]	1,00 ± 0,00[a]	NS
Gizzard weight (g)	61,50 ±2,12[a]	53,00 ± 8,49[a]	49,50 ± 2,12[a]	48,50 ± 10,61[a]	NS
Weight of intestines (g)	115,00 ± 15,55[a]	123,00 ± 11,31[a]	111,50 ± 6,36[a]	109,50 ± 53,74[a]	NS
Weight of all these organs (g)	265,00 ± 8,48[a]	246,00 ± 38,18[a]	234,50 ± 13,43[a]	243,00 ± 125,86[a]	NS
OY	13,52 ± 0,10[a]	18,02 ± 0,33[b]	17,47 ± 1,91[b]	20,62 ± 2,77[c]	S

a, b, c : Means followed by different letters within the same line are significanthy different at 5% thresho.

DISCUSSION

Subjects fed rations containing *Cajanus cajan ICP7035* seed meal had lower live weights than control subjects.

The incorporation of *Cajanus cajan ICP7035* seed meal for subjects treated at different rates, gave live weights compared with the control *ICP7035* 0% (1577.83g) as follows: *ICP7035 7%*(1249.24g), *ICP7035* 14% (1018g) and *ICP7035* 21% (942.08g).

Subjects fed *ICP7035* 21% *Cajanus cajan* had lower live weights than the others. This difference in live weight can be explained by the high incorporation rate of *Cajanus cajan ICP7035* seed meal, which can lead to a high intake of anti-nutritional factors, including the tannins and phenolic compounds contained in *Cajanus cajan* seeds. These phenolic compounds unbalance nutrient absorption (Hamad, 2000). Our results are similar to those of Traore *et al.,* (2018) who, by incorporating *Cajanus cajan* seeds at rates of 10, 13 and 16% into the ration of local chicken in Côte d'Ivoire, obtained a decrease in live weights following an increasing level of incorporation. Similar observations have been made by many authors using legume seeds as a protein source. This is the case of Atakoun (2012) in his work on Cobb 500 broilers fed with Bissap (*Hibiscus sabdariffa*) seeds incorporated between 0 and 15% into the ration. Amaefule and Obioha (2005); Traore et *al*. (2018) state that increasing the incorporation rate of *Cajanus cajan* in feed rations results in a loss of weight gain that varies according to heat treatment. This difference in weight could be attributed to the action of heat treatment on anti-nutritional substances contained in *Cajanus cajan* seeds. Thus, animals fed the dried *Cajanus cajan* seeds achieved the lowest weight gain, while those fed the steamed and roasted *Cajanus cajan* seeds gained the most. In general, over the entire duration of the experiment (between the^{2nd} and ^{7th} week of age), subjects fed rations containing *Cajanus cajan ICP7035* seed meal showed significantly lower ADG than control subjects. The difference in growth rate between subjects fed rations containing *Cajanus cajan ICP7035* seed meal and control subjects in our trial could be linked to the levels of anti-nutritional factors contained in *Cajanus cajan ICP7035* seeds. Thus, some authors (Metayer *et al.,* 2003; Meïté *et al.*, 2008; Akanji, 2011) blame tannins, which combine with proteins and reduce not only retention of the nitrogen fraction of the ration, but also growth rate.

The Quantity of Feed Ingested was lower in the batches of subjects fed rations containing *Cajanus cajan ICP7035* seed meal than in control subjects. The decrease in feed intake was even more marked the higher the rate of incorporation of *Cajanus cajan ICP7035* seed meal from one treatment to the next. These effects could be explained by the rate of incorporation of *Cajanus cajan ICP7035* seed meal in the different rations used in the present study.

The presentation of *Cajanus cajan ICP7035* seed meal, including its color, is also a significant factor.The low Feed Intake of rations based on *Cajanus cajan ICP7035* seed flour would account for the observed reduction in growth. Similar decreases observed in *Cajanus cajan* seed meal-fed subjects were reported by Ani and Okeke (2003) in broiler chickens. Similarly, Atakoun (2012) obtained similar results using other seed legumes as a protein source in cobb 500 broilers by incorporating *Bissap* seed meal into rations at levels ranging from 0 to 15%.

As for the feed intake index, it was higher in proportion to the rate of incorporation of *Cajanus cajan ICP7035* seed meal compared with control subjects. This means that subjects fed Cajanus *cajan ICP7035* seed meal did not value their feed as much as control subjects. Indeed, Hendricks and Bailey (1989) assert that anti-nutritional factors lower the feed's transformation coefficient when their concentrations are high, which could be the case for subjects fed rations containing seed meal from the *ICP7035* variety of *Cajanus cajan*. This increase in feed conversion may also be due to the taste and odour of *ICP7035 Cajanus* seeds, which cause a deterioration in appetite for this ration. According to Okandza *et al.,* (2017), the increase in feed conversion may be due to pancreatic hypertrophy and reduced feed efficiency caused by antitryptic factors.

Incorporation of *Cajanus cajan ICP7035* seed meal led to a significant reduction in eviscerated body weight (EBW), carcass yield (CY) and organ yield (OY) at 7 weeks of age in broilers fed rations containing *Cajanus cajan ICP7035* seed meal, compared with the control treatment. However, the incorporation of *Cajanus cajan ICP7035* seed meal did not induce any yellow discoloration of the skin and abdominal fat of the carcasses of birds at ^{7} weeks of age compared with control subjects.

Carcass yields (76.56 - 88.43%) for subjects fed rations containing seed meal of *Cajanus cajan* variety *ICP7035* were lower than those obtained by Zanmenou (2013). This could be justified by the fact that the metabolizable energy content between these different rations is not identical. Indeed, seeds of the *ICP7035* variety of *Cajanus cajan* contain a metabolizable energy of 2743.00 kcal/kg. However, Zanmenou (2013), had used a ration containing a metabolizable energy of 3192.54 kcal/kg. The similarity between the liver, intestine, spleen and gizzard weights of subjects fed rations containing *Cajanus cajan ICP7035* seed meal and the control subjects in our study, explains why *Cajanus cajan ICP7035* seeds have no adverse effects.

CONCLUSION

In view of our results, which have just been presented and discussed, we can acknowledge that the present study contributes to solving the real problem of the high cost of conventional resources regularly imported into the Republic of Congo. *Cajanus cajan* is available in all seasons and is widely cultivated in our study area. It could therefore be a prime alternative for improving the competitiveness of poultry farming in the Republic of Congo, which is threatened by imports of frozen chickens.

The study assessed the incorporation thresholds of *Cajanus cajan ICP7035* seed meal in the feed rations of Cobb 500 broilers.

Broilers fed rations of 0, 7 and 14% *Cajanus cajan ICP7035* seed meal showed satisfactory growth performance compared with those fed 21%. On the other hand, there were no significant adverse effects on liver, intestine, spleen and gizzard weights taken individually in subjects fed *Cajanus cajan ICP7035* seed meal, compared with control subjects, nor on the weights of all these organs in broilers at 7 weeks of age.

In a context where semi-modern poultry farming is confronted with input supply difficulties, in particular conventional feed resources, the use of *Cajanus cajan* seeds at contents of up to 14% can be recommended. This should make it possible to reduce the soybean meal load in broiler rations and meet national food import obligations in the Republic of Congo.

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