STUDY OF SOCIO ECONOMIC CONSTRAINTS FOR POULTRY PRODUCTION AND TRADING (The case of duck and guinea-fowl)

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Abstract

The study we have made revolves around the socio-economic constraints during the production and the commercialization of ducks and guinea-fowls in the city of Kisangani. It has been found at a given period, a lack of infatuation on the part of breeders to raise these two kinds of birds. Many of them have been interested in chickens raising, instead. Their lack of attraction in raising ducks and guinea-fowls is due to economical ones. The former include the theft and the killing of the birds and the hostility of the surroundings. The latter is justified by the fact that these birds are generally sold at a loss in comparison with chickens. The failure to master modern techniques in order to conduct breeding in a judicious way is another cause of discouragement especially when there are many losses. This research study aims at the identification of constraints which hinder the production and commercialization of ducks and guinea-fowls eggs as well as their meat in Kisangani. It also aims at helping popularizers of breeding knowledge to orientate their policy of poultry-products in general and those of ducks and guinea-fowls breeding in particular. We have made our investigation in order to gather data from breeders, sellers and consumers of ducks and guinea-fowls living in the six communes of Kisangani riz Kabondo, Lubunga, Makiso, Mangobo and Tshopo. The analysis of data has allowed us to determine the correlation coefficient $(r)^2$ and the determination coefficient (r^2). The latter has helped us to judge the sense of the partners arbitration in fixing prices. The test of khi-two has helped us to see whether the breed of guinea-fowls and the breeder of ducks are bound to same constraints of social, economic and technical order. As far as the discussion of the findings are concerned we can say that in Kisangani poultry-farming is essentially made by men and children (95%). The intervention of women is occasional. The breeding activity takes place in all the six communes of Kisangani. But the production of eggs by a local duck is lover that of a Pekin duck and that of a Khaki Campbell. This is especially due to the lack of nutritions ingredients which should be added to the food intake. The weight is also lighter than that of a cross-breed duck (2.25Kg for the local drake and 1.860 kg for the local duck). As for the hatching rate, we have found that it is about 84.53%. This means that the local duck is also a good brooder. The hatching rate of a guinea-fowl is 71.15% when they have been hatched by a local hen. But the rate is 56.86% when the eggs have been hatched by the guinea-hen itsef. The mortality is 57.51% for the ducklings and 87.5% for young guinea-fowls. This is due to the bad way of breeding, the weakness of young fowls and their wandering without any protection as well as some poultry diseases. The food-intake is made from a mixture of ground rice, fish, bones, soya beans, axen blood, shell, caterpillars, green, oil-cake, etc. It has an impact on the production of eggs whether rich or poor. As far as the fowls diseases are concerned we have investigate into common diseases such as diarrheae, coccidiose, the plaque of the duck, etc. Because of the lack of appropriate veterinary drugs, most breeders use human drugs such as chroramphenicol, terramycine, ampicilline and bactrim without any success. At the market, the breeder of ducks sell them at a low price whereas the one of guinea-fowls sells his products at a fixed price. Consumerd choice for the duck is justified by the price which is low, the weight, and their alimentary habit. This speaking of constrains which impede the production we can mention the weak intensity of eggs laying and mostly a high mortality rate of ducklings and of young guinea-fowls. To these constraints we can add the theft and the killing of the birds and the outbreaks of some fowls deseases. As far the commercialization constraints are concerned we can mention the low price of folws which discourage breeders. In order to vulgarise poultry-farming and reach the objective it is advisable to find a solution to social, economic, and even technical constraints.

Key words: socio-economic, production, poultry, duck, guinea-fowl

INTRODUCTION

In Kisangani, poultry-farming is of a paramount importance in the agricultural economy of domestic arrangements. It participates in it at 19% in the income of housekeeping in the commune of Makiso. It has a quantitative and qualitative importance in the production of meat, eggs and by-products. Its social role is undemiable in

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most of the houses (saving, contribution of animal protein, ritual ceremonies).

Since a given period, it has been notice a revival of interest of the population of Kisangani in raising chickens yet this activity is capable of causing deaths if compared with the activity of raising ducks and guinea-fowls. The first, being even less demanding than the raising of chicken if we consider the feeding cost. [7]

Thus, what would be the reason for the lack of interest in raising these fowls? In other words, what could be the constraints or difficulties to remove in order to extend the raising of the duck and of the guinea-fowl? Could the breeding of these fowls be bound to the same socio-economic difficulties? Could we speak of the lack of marketing, or mastering of suitable techniques on the part of stock-breeders so that they should judiciously induce the raising of these fowls?

Considering what is said above, we can suppose that predatory (theft and killing, hostility of neighbours) and diseases (epidemics) could be social and technical constraints, whereas law prices for the stock-breeder, the cost of a high production, a reliable demand as welle as the appreciation of products by consumers could be economic constraints to be remove in order to extend poultry-farming activities.

The aim of the study is that of identifying these constraints which prevent the production and the putting up of eggs, duck and guinea-fowl meat in Kisangani in order to help popularizers to orientate their policy of popularizing poultry-farming products in general and of ducks and guinea-fowls in particular.

MATERIAL AND METHOD

The livestock of our study is constituted of 490 subjects representing our sample of which 26.53% are constituted by ducklings and 61.43% of ducks. This lets us soy that many stock breeders prefer keeping more ducklings than ducks in their stock-farming. Moreover for a good regeneration, they prefer to begin with the production of more ducklings. Besides, our livestock of guinea-fowls has 76 subjects of which 51.32% of guinea-cocks against 40.79%of guinea-hens and 7.98% of young guinea-fowls, which is almost in equilibrium because the guinea-fowl prefers to live in monogamic couple.

We have procuded making investigations, which have proved to be useful as Agel [1] recommends it for these kinds of data. They have been collected from produces sellers and consumers of ducks and guinea-fowls through all the communes of Kisangani. The study has dwelt on a period situated between 21 September 2010 to 28 September 2011.

Thanks to an inquiry form elaborated for this purpose, we have gathered pieces of information from stock-breeders on the socio-economic environment of exploitations: fowls feed, the price, the production (intensity of eggs laying (Ip)[8], the rate of hatching (Te) and the rate of deaths (Tm)[6].

The questionnaire dealing with the consumption is either given to the producers themselves, or the consumers of the products met in the central market of 15 March and we have also taken part to the haggling between different partners (buyers like sellers) over prices of the products on which we have been investigation. The investigation has been made on 43 centres of production of which 31 for duck raising and 12 for guinea-fowl breeding. They have been chosen after making a primary investigation in order to take soundings.

The analysis of our data has been made by the simple linear model which allowed us to determine the correlation coefficient (r)[3] as well as the determination coefficient (r^2). The latter has helped us to judge the arbitrament of partners in fixing prices the test of "Khi-two" has allowed us to find out whether the breeders of guinea-fowls and ducks are bound to the same constraints of social, economic et technical order.

RESULTS AND DISCUSSIONS

Presentation of the sample

Poultry-farming in the village is essentially made by women and children (79%) in Cameroon. She fowl is kept by 90% of their owners for commercial purpose, another part of the production is used for the consumption, ritual ceremonies and for helping people.

In Kisangani, in most of the house in which the inquiry has been held (95%), poultry-farming is made by men and children, women seldom intervene.

The data for this study, have been directly gathered from breeders. So, they are primary data as Kotler [4] calls them.

Table 1 Hereunder shows the number of breeders of our sample in different communes of Kisangani

Kinds	Communes						Total
	Kabondo	Kisangani	Lubunga	Makiso	Mangobo	Tshopo	
Ducks	11	2	3	3	8	4	31
Guinea-fowl	1	1	1	6	2	1	12

Source: The investigation made from 21 September 2010 to 28 September 2011

In general, all the communes of Kisangani present acceptable conditions for breeding fowl; there are more breeders in the communes of Kabondo and Mangobo rather than in others.

It has been found that raised fowls wander freely in people's compounds in order to look for household refuse. Whereas, the guinea-fowl is mostly raised in the commune of Makiso as shown in the table hereabove particularly in the places where there is grass.

The production of eggs

The production of eggs consist of the number eggs laid in an interval of a given time, in general this production depends upon the way in which the fowls are fed. If the formula of the intensity of laying were applied, the duck and the guinea-hen raised in Kisangani would produce more eggs without any problems.

Table 2 Laying intensity, monthly and quarterly production of eggs

Kinds	Breeders (Number)	Fowls (Number)	Eggs (Number/day)	Monthly Production (Number)	Quarterly Production (Number)
Duck	31	301	140	390	1170
Guinea-hen	12	31	21	170	510

Source: Investigation made from 21 September 2010 to 28 September 2011

From the result of our investigation hereabove, the intensity of eggs-laying varies from one place to another. It depends ingredients to bee added in the fowl food intake and the regular freeing of the birds so that they could go out to supply the deficiency of their food by eating insects, greenness, larva's, earth-worms in the grazing ground.

The duck raised in Kisangani has an average laying of 13 eggs per month whereas the guinea-hen lays an average of 14 eggs, which is for lower than the performance of the Pekin duck and the meat and the production of eggs [5]. Their quarterly production is about 1170 eggs, because the duck should hatch them and them take the ducklings round. But in Kisangani the guinea-hen is not used as a hatcher. It could produce an average of 170 eggs to approach its capabilities. These figures are to be taken with carefulness because the guinea-hen like the hen undergoes moultings at a given period, causing the fowl to stop laying for several days.

The drake raised in Kisangani weighs about 2.37 Kg whereas the duck has an average weight of 1.860 Kg. We can conclude that these fowls are not well fed and that they are not descended from improved or crossed breeds. [9] The weight of the guinea-fowl raised in Kisangani is like the Wright of savage species. This is due to the fact that the food is not nutritions enough.

The rate of hatching possibility

It indicates the percentage of the chicks hatched taking into consideration the number of eggs put in the incubator or taking into consideration the number of fertile eggs put in it the following table shows different rate of hatching possibility.

Table 3 The rate of hatching possibility watched for the production of ducklings, and of young guinea-fowls

Kinds of birds	Number of eggs			Number of birds hatched	Rate of hatching possibilities (%)
	Hatched out	Broken	Clear		
Duck IN	402 5	8	32 6	362 37	84,53 71,15
Guinea-fowl I.A	21		2	11	57,89

Source: Inquiry made from 21 September 2010 to 28 September 2011
Legend: IN: Natural brooding (local hens), I.A: Artificial brooding (incubator)

The rate of the hatching possibility got with the duck used as a brooder is 84.53%. This allows us to confirm that the duck raised in Kinsagani is also a good brooder as show by some investigation. The hatching possibility of the eggs of the guinea-fowl laid by the local hen is 71.15% whereas the rate of hatching of the same eggs put in an artificial incubation is 57.86%. There are many risks in using an artificial incubator (the surtching off of the electricity, insufficient humidity, the falling into oblivion in order to turn the eggs as well as other events which can occur).

The death rate

It shows the death of a given number of subjects of the same kind in a given place or region at a given time. The following table shows the death rate results:

Table 4 Death rates of ducklings and of young Guinea-fowls

Number of hatched birds	Ducklings	Young Guinea-fowls
	306	48
Number of deaths	176	42
Death rate (%)	57.51	87.5

Source: Investigation made from 21 September 2010 to 28 September 2011

The table here above shows that the death rate is respectively of 57.51% for ducklings and of 87.5% for young guinea-fowls. These results could be justified by the bad condition of raising these fowls, their weakness and mostly when their mothers take them round.

We cannot forget to mention some diseases frequently found in Kisangani such as the plaque of the duck which the ducklings 20 days after their coming to file and some times before these days. The first constraint which impedes the development of the duck and the guinea-fowl breeding is clearly shown here.

Food intake

Food intake is the total quantity of food given to an individual subject per day. It can be divided into several meals given at once, depending on its composition and the kind of animal to be fed.

As shown in table 5, maize, rice siftings, house wastes as well as greenry are generally used as principal ingredients in many poultry-farming's. It is to be noted that during the big part of the year, the poultry is free and looks for its food in the nature. In general, the food is served on the which the ground, but other farmers prepare feeding troughs in which they put mould food, watering takes place in the tides, ion puddles or in old utensils thrown on the concession ground.

Table 5 Principal ingredients currents used in different farms

Common used food	Number farms using the food	% of visited farms
1. Maize, rise	26	83,87
2. Fish flour, bone, soja beans, blood	3	9,67
3. Sell powder	13	41,93
4. Oil cake	3	9,67
5. Caterpillars	1	3,23
6. Housework wastes	26	83,87
7. Greenry	26	83,87
8. Table salt (crystal)	6	19,35

Source: Inquiry made from 21 September 2010 to 28 September 2011

Main power

In Kisangani, the aviculture main power is generally concerned with family members. The remuneration is usually paid in kind or indirectly with money. [2] The number of the main power varies from two to five people depending on the family size.

Generally speaking, the poultry is kept during the day in an enclosure made with local materials in order to prevent the birds from divagation, control the laying of eggs and as a safety place during the inclemency of weather of human beings in order to protect the birds from the beats of prey.

Birds health

As for the sanitary protection, the traditional animal husbandry pays a heavy tribute to diseases which sometimes devastate the drove of cattle in some farm estates. The main recorder diseases are diarrhweas, coccidiose parasitose, the duck plague and so on. Some drugs used to treat human beings, particularly antibiotics, (chloramphenicol, terramycine, ampicilline, bactrim) are regularly used without success say farmers themselves. Some other farmers use plants such as lemon trees, pepper to fight animal diseases.

Prices and weights of ducks, guinea-fowls as wells as of their eggs

The medium weight of a duck egg is about 59.3 gr and it is sold at 50,000 Fc (0.5$). This standard prices does not take into consideration size of the egg. The medium

weight of a drake is 2.18Kg and it costs 900,000Fc (9$) at the very most at the time of our investigation, which is favorable to the buyer and unfavorable to the seller (1$ = 100,000Fc).

We have not found any correlation between the selling price and the weight of eggs (r = 0.29), whereas there is a correlation between the selling price of the duck and its weigth (r = 0.82). The weight of the duck justified at 68.2% prices variations.

The guinea-fowls and their eggs are not nearly all sold at market of Kisangani. This, the selling occurs at the dwelling place or in the farms. However, the selling price of the guinea-fowl is fixed in American dollars, due to the present economical conjuncture, whereas the price of the guinea-fowl egg is determined by the selling price of the bottle of coca-cola. By taking into consideration the present economical crisis, the selling price of the egg of the guinea-fowl is always falling. It varies between 80,000 Fc (Congolese Franc) and 100,000 Fc (Congolese Franc) despite the weight and the size.

Constraints

In the scope of this study, the objective is to disclose different social and economical constraints related to the production and the art of commercializing ducks and guinea-fowls.

A. Social constraints

Table 6 Social constraints related to the production at the breeders

Fowls	Constraints				Total
	A	B	C	D	
Duck	9	6	13	3	31
Guinea-fowl	1	1	0	10	12
Total	10	7	13	13	13

Source: Investigation made from 21 September 2010 to 28 September 2011
Legend: A: Theft, B: Killing, C: Theft and Killing, D: Other diseases, entourage hostilities

In applying the test of Khi-two at the threshold of 5%
X^2 cal = 22.78; X^2 tab (3; 0.95) = 7.81 whence X^2 cal > X^2 tab

The test shows a significant difference between these two groups of breeders, that they are bound to some constraints of social order. The raising of ducks seens to be bound to predation (theft and killing), which is not the case raising guinea-fowl. This can be explained by the fact that the guinea-fowl is more appreciated by passers-by and neighbors. This it is considered as the bird of contemplation and principally of high reputation.

Nevertheless, because its chirps during the night, the guinea-fowl hinders neighbors in their sleep and causes them to become hostile to the bird. We can then say that social constraints can impede the production even discourage the poultry-farmers as they can be at basis of conflicts with neighbors.

B. Economical constraints

Table 7 Some economical constraints related to commercialization

Fowls	Constraints				Total
	A	B	C	D	
Duck	10	3	7	11	31
Guinea-fowl	1	2	7	2	12
Total	11	5	14	13	43

Source: Investigation made from 21 September 2010 to 28 September 2011.
Legende: A: Low selling price, B: Lack of consumers, C: High production cost, D: Other worries

The test of khi-two at the threshold of 5% gives us
X^2 cal = 6.70; X^2 tab (3; 0.95) = 7.81 whence X^2 cal < X^2 tab

From this result, we come to the conclusion that there is no big difference between the two groups of breeders. The raisers of ducks meet with some difficulties in selling them as a great numbers of consumers dislike them. Consequently the raisers of ducks are compelled to sell them at a very low price despite their weight and size. The selling price of guinea-fowls remains practically the same (10$). In spite of this consumers dislike eating them, too. Consequently the raising of guinea-fowls aims at selling eggs. The consumption of their flesh remains quite unnecessary for the majority of the inhabitants of Kisangani.

C. Criteria of consumers choices towards eating

Fowls	Criteria				Total
	A	B	C	D	
Duck	8	16	5	3	32
Guinea-fowl	0	0	3	11	14
Total	8	16	8	14	46

Source: investigation made from 21 September 2010 to 28 September 2011
Legend: A: Low selling price, B: Weights, C: Alimentation habits, D: Other (prestiges, cost)

The test of Khi-two at the threshold of 5% gives us
$X^2cal = 26.00$; $X^2tab\ (3; 0.95) = 7.81$ whence $X^2cal > X^2tab$

The result of the test Khi-two that there is a big difference and that the low selling price, the weigth, the alimentation habits are to be taken into consideration in the flesh of the duck, whereas the prestige is the only basic criteria for those who love eating the flesh of the guinea-fowl.

CONCLUSIONS

An investigation has been made through different communes of Kisangani: as a whole, 31 breeders of ducks and 12 of guinea-fowl have been selected for our research.

As far as the commercialization is concerned, we have witnessed the central market of Kisangani which result in the sale of 22 ducks and 23 eggs on 15 March. As for guinea-fowls, not any sale of them has been noticed. We have only collected the fixed prices of their eggs and counted the number of the birds for sale.

On the total of 490 subjects which constitute our sampling of duck, there are 26.53% of ducklings, 12.04% of drakes and 16.43% of ducks. In the same way, on the total of 76 subjects selected from guinea-fowls, there are 7.89% of young guinea-cocks and 40.79% of guinea-hens. The poultry breeders of Kisangani prefer the raising of ducks. As the guinea-fowls generally live in pair, the breeders of these birds do their best in order to meet this requirement. It has been also found a neat disparity between the number of young guinea-fowls and that of young male ducks with regard to the number of old birds. This is due to their expressed morality.

The duck lays about 13 eggs monthly and the guinea-hen 14 if the bird is not attacked by a disease and if it does not undergo any molting. The laying of a reduced number of eggs can be caused by the food intake when it is insufficient and poor.

Thus, among other constraints impeding the productive capacity are a weak intensity of eggs laying and especially the high mortally rate of ducklings and of young guinea-fowls. From these constraints can be added the theft, the killing of the birds, the outbreak of some diseases, bad techniques used in breeding the poultry etc.

The constraints hindering the commercialization of ducks are bound to the fact of selling them at low prices and to that of consumers alimentation habits. They both discourage breeders to produce more birds which they cannot sell at a profit.

It would be desirable to boost poultry farming activities in general and particularly that of breeding ducks and guinea-fowls by straddling breeders, prize the ducks and their eggs highly taking into account the production cost, reduce the guinea-fowls selling price below the consumers reach, vulgarized the nutritions value of these birds, try to lower the mortality rate of ducklings and young guinea-fowls by keeping the birds in a paddock and improve the production of leguminous plants such as soya beans and of cereals such as maize.

A more accurate evaluation of local species performances and of principal constraints to the expression of their potentialities could precede a strategy of genetic improvement based on the selection and the interbreeding of the birds.

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