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THE IMPORTANCE OF POULTRY FARMING IN SENEGAL

by

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Poultry farming in Senegal has developed dramatically since independence in 1960. Average growth reached 18.9 % in the period from 1960 to 1993. A period of extremely high growth rate of over 23 % from 1960 to 1985 was followed by a slower growth rate of 3.3 % in the period from 1980 to 1985. Since 1985, a higher positive trend of about 17.2 % has again been recorded. However, poultry meat consumption in Senegal is very low. According to the estimates of the Animal Breeding Department of the Ministry of Agriculture, it was 1.12 and 1.24 kilograms per head for 1986 and 1988 respectively. The Food and Agriculture Organisation of the UN (FAO) quoted an average per caput consumption of about 3.09 kilograms of poultry meat and 34.46 eggs for Senegal in 1992 (Qureshi, 1994). It is therefore well behind other meat consumption (8.6 kg).

While fishing helps to provide the population with animal protein on the coast (here fish consumption is around 30 kg per head), it is hoped that poultry farming can be developed in inland areas to provide a reliable source of protein. However, it is not just technical problems which stand in the way of this development. "Food bans" or "taboos" exist amongst the rural population (Guëye and Bessei, 1995). Children under the age of three and girls in general are traditionally forbidden to eat eggs. However, these traditions appear to be gradually disappearing.

Poultry farming in Senegal can be divided into two different types of production: modern semi-intensive poultry farming, which is found mainly in and around the towns and traditional smallholder poultry farming in the country.

Semi-intensive poultry farming

The semi-intensive production sector imports European hybrid lines (Lissot, 1965). It is based on relatively modern production methods. The upturn in this sector is mainly due to the setting up of cooperatives. Rapid development is facilitated by importing feed supplements and veterinary products by direct flight from Europe. Semi-intensive poultry farming also benefits from the fact that various raw materials are available for the production of high quality poultry rations and the proximity to thriving commercial markets provides good outlets.

Hybrid lines which are imported mainly from France and Belgium include the commercial broilers, such as Atlas, Jupiter, Arbor Acres, Derco 109, Hybro, Shaver, Hubbard and Vedette as well as layers, such as Ross, Leghom, Derco and Shaver Starcross 288. All the imported broiler lines have white plumage which distinguishes them from the local breeds. Total chick production has more than doubled in the last five years. In 1992 local chick production, which amounted to 86 % of total production, overtook imports for the first time. This is due to the fact that local production increased much faster than chick imports.

Only 10 % of semi-intensive poultry farming is in the hands of full-time poultry farmers (Steyaert et al., 1988). The lion's share is owned by senior officials and financially well-off people who are engaged in poultry farming as a sideline. The situation is the same in the neighbouring countries of Mali, Burkina Faso and Niger (Desselas, 1984; Kounta, 1992).

Studies have shown that there seems to be a positive correlation between farm size and broiler performance (Table 1). Evidently management techniques are generally better on the larger farms than on the smaller ones. Unsuitable poultry housing, lack of knowledge on the part of poultry farmers, an absence of technical support, high commercial feed prices, poor synchronisation of the production cycle with market requirements and periodic competition from other meats are obstacles which threaten the upturn in semi-intensive poultry farming (Legrand, 1988; Steyaert et al., 1988).

Smallholder poultry farming

In rural areas poultry meat is the main source of animal protein. 70 % of all Senegalese poultry meat is produced on smallholdings. This accounts for 12 % of total meat consumption (Kébé, 1989). Poultry are kept mainly by the

Table 1 = Production parameters on broiler units of varying size (Steyart *et al.*, 1988)

Parameter	No. of birds per batch		
	< 500	5 0 0 - m	> 5000
Chick mortality, %			
0-1	100	0	0
1-2	0	100	100
Broiler deaths, %			
2-7	73	70	100
7-10	27	30	0
Marketing age, days			
40-50	33	60	50
51-70	67	40	50
Marketing weight, kg			
1.2-1.7	33	70	50
1.8-2.0	67	30	50
Feed conversion ^a			
2-3	43	78	100
> 3	57	22	0

Kilogram of feed per kilogram of liveweight gain

poorer sections of the rural population. It is regarded as an unimportant sideline involving low costs and little work.

A local breed, which is generally known as the "African hen", "Bush hen" or "Sahel hen", is predominantly found on poultry smallholdings. The "African hen" is a very hardy breed which has adapted very well to the particular environmental conditions (heat, cold, rain and periodic feed shortages). The local breed shows a great variety of feathering. They can be plain white, black, yellow, grey and red as well as all kinds of colour combinations, such as goldy-yellow, silvery-white, pale red, and yellowy-brown. In many cases, the wings and tail feathers are black tinged with brown. Rare cases of naked neck occur, which are caused by a recessive single gene (na) (Buldgen *et al.*, 1982). These birds are called "n'daaré" in the local dialect. Their hatchability is good. Another remarkable genetic variant are hens with the "frizzle" gene. The loose feathering enables them to dissipate body heat more easily than normally feathered hens. This, as well as the naked neck gene, helps to increase heat tolerance.

As is the case on practically the whole of the African continent, local breeds are the result of years of haphazard crossbreeding between various lines of native and foreign origin. The term "breed" is therefore not correct in the breeding sense (Dar-é, 1977). Local breeds as a rule have a lower bodyweight. Fully grown hens seldom weigh more than 1 kilogram and cockerels more than 1.5 kilograms. However, the population prefers the meat from local

breeds to that of imported breeds and regards it as a delicacy. It is often served to guests on special occasions. The laying rate of local breeds is extremely low. The annual yield per hen is 50 to 60 eggs weighing around 35 grams. Egg production per hen can be increased to a maximum of 90-100 by improving feeding and management techniques. The hen goes broody frequently and has good mothering ability (Doutressoule, 1947). There is an 80 % hatching rate and the chicks are taken from the hen at three to four weeks (Buldgen *et al.*, 1992). After this, the hen moults and starts to lay again.

In a research programme 100 local hens were taken to a testing station, where their rearing and growth parameters were compared with those of birds living in rural conditions (Buldgen *et al.*, 1992). The results are summarised in Table 2. It can be seen that the local breeds at the station lagged behind in growth rate in the period up to ten weeks (335 compared with 631 g). This can be put down to difficulties in adapting to being kept in a confined space or to the highly concentrated feed (13.4 MJ of metabolizable energy). The wide weight range for both management systems is evidently due to the high genetic variability of the stock.

Table 3 compares the performance results of local laying hens kept in rural conditions with those at the test station. The birds at the test station were again divided into two groups, those with supplementary lighting and those

Table 2 = Performance parameters of Senegalese hens in rural conditions and at a test station in intensive management conditions (Buldgen *et al.*, 1992)

Performance parameter	Rural conditions	Test station
Liveweight, g/bird		
1 to 5 day old chicks	34 ± 5	37 ± 5
3 week old chicks	58 ± 10	62 ± 10
10 week old chicks	631 ± 211	335 ± 110
20 week old chicks	1034 ± 39	1282 ± 169
25-26 week old chicks	841 ± 169	847 ± 184
Adult birds (≥ 1 year)	1380 ± 150	1423 ± 198
Adult birds (≥ 1 year)	1229 ± 165	899 ± 179
Adult birds (≥ 1 year)	1803 ± 4	
Adult birds (≥ 1 year)	1350 ± 223	
Feed conversion		
0-3 weeks		2.5 - 3.6
4-25 weeks		7.2 - 8.1
C-25 weeks		6.3 - 7.7
Carcase yield ^a at 25 weeks, %		
		79
		67

Carcase weight (without giblets) in relation to liveweight

Table 3 – Reproduction parameters of local Senegalese hens kept in rural conditions and at a test station with and without an artificial lighting programme (LP) (Buldgen et al., 1992)

	Local conditions	Test station	
		with LP	without LP
Sexual maturity, weeks	25	20	20
Laying rate, %	12	24 ± 13 ^{b)}	26 ± 17 ^{b)}
Egg weight, g	40 ± 4	44 ± 1	40 ± 4
Annual egg production	40 – 50	80 – 90	90 – 100
Feed consumption, g/day/bird	–	102 ± 14	78 ± 17
Overall feed conversion ^{c)}	–	13	21
Fertility, %	–	81	–
Hatching rate ^{d)}	80	77	–

^{b)} in a 30-week laying period

^{c)} in a 42-week laying period

^{d)} during the 30- and 42-week laying period

^{e)} as a % of the eggs fertilised

without lighting. The superior feeding and management conditions at the station meant that the hens were ready to lay at 20 weeks instead of 25 and there was a rise in egg numbers. The lighting programme not only increased the egg weight but also laying persistence. The importance of the lighting programme can also be seen from the laying curve (Fig. 1). Hens without lighting have a very irregular laying pattern. Laying peaks occur every four weeks, which could be due to variations in the light from the moon (Sall, 1990; Buldgen et al., 1992).

Besides the lighting programme, egg collection also plays an important part in improving the egg production of local breeds. Daily egg collection postpones broodiness and therefore leads to higher rates of lay. Feed consumption could only be recorded at the station. It was 102 grams per hen per day for the birds with a lighting programme and 78 grams per hen per day for those without. The variation is due to the difference in laying activity. Because of the low rate of lay, the feed conversion rate of the birds is very poor and cannot be compared with that of hybrid layers on intensive units. However, the fertility and hatching rate of about 80 % lie within acceptable limits.

These results show the performance limits of local breeds. In improved management conditions, it is advisable to use breeds or crossbreds with a higher genetic performance. Crossbreeding with Rhode Island Red, New Hampshire, Plymouth Rock or other performance selected breeds, or the use of pure lines which still show good vitality, could greatly improve performance in rural conditions.

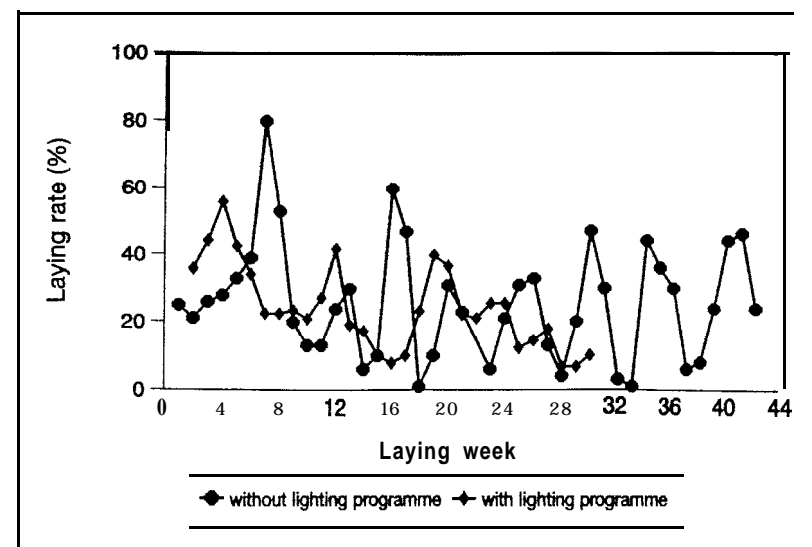


Fig. 1 – The laying curve of Senegalese hens with and without a lighting programme (according to Buldgen et al., 1992).

REFERENCES

- BULDGEN, A. – F. DETIMMERMAN – B. SALL and R. COMPÈRE (1992): Étude des paramètres démographiques et zootechniques de la poule locale du bassin arachidier sénégalais. Bull-Rech. Agron. Gembloux 23 (4): 345-356. Courrier Avicole 845, 44-46.
- DARÉ, L. (1977): Contribution à l'étude de l'aviculture au Niger.
- DESSELAS, L. (1984): L'aviculture au Niger: un avenir plein de promesse, mais un essor difficile.
- DIOP, A. (1982): Le poulet de chair au Sénégal: production, commercialisation, perspectives de développement.
- Direction de l'Élevage: Jahresberichte von 1960 bis 1993. Landwirtschaftsministerium, Dakar, Sénégal.
- Diplomarbeit I.N.D.R., Thiès, Sénégal.
- Doktorarbeit E.I.S.M.V., N 9, Dakar, Sénégal.
- Doktorarbeit E.I.S.M.V., N 8, Dakar, Sénégal.
- Doktorarbeit E.I.S.M.V., N 13, Dakar, Sénégal.
- Doktorarbeit E.I.S.M.V., N 3, Dakar, Sénégal.
- DOUTRESSOULE, G. (1947): L'élevage en Afrique Occidentale Française. Edition Larose.

E.I.S.M.V. - 1. N.D.R.

GUÈYE, E. F. und W. BESSEI (1995): Über Nahrungsverbote und **Tabus** für Geflügelprodukte im Senegal. Der Tropenlandwirt, **Beiträge zur tropischen Landwirtschaft und Veterinarmedizin**, 96. Jahrgang, **April 1995, 97–109.**

KÉBÉ, C. (1989): Étude des protéines conventionnelles et non conventionnelles au Sénégal.

KOUNTA, A. O. S. (1992): Note technique sur le développement de l'**aviculture** au Mali.

LEGRAND, D. (1988): Situation actuelle de l'aviculture sénégalaise: types et méthodes d'élevage des poulets de chair et des pondeuses.

LISSOT, G. (1965): **Poules et Oeufs**. Flammarion, Paris.

MBAYE, ND. C. (1992): Étude des performances de croissance et de ponte chez des sujets avicoles hybrides issus d'un croisement améliorateur en région sahéio-soudanienne du Sénégal. Diplomarbeit E.N.S.A., Thiès, Sénégal.

PARENT, R. - A. BULDEGEN - P. STEYAERT and D. LEGRAND (1989): Guide **pratique** d'aviculture moderne en climat sahéio-soudanien de l'Afrique de l'Ouest.

QURESHI, A. A. (1994): Consumption of **poultry** in Africa continues to drop. **World Poultry-Misset** 10 (4): 30–33.

Revue Elev. Méd. **vét.** Pays trop. 45 (3-4): 341–347.

SALL, B. (1990): Contribution à l'étude des possibilités d'amélioration de la production en aviculture traditionnelle: Mesure du potentiel de la race locale et des produits d'un croisement améliorateur.

STEYAERT, P. - A. BULDGEN - A. DIOUF and R. COMPÈRE (1988): L'élevage moderne de poulets de chair au Cap-Vert et à Thiès (Sénégal). Situations et perspectives.

Tropicultura 10 (3): 103-105.