

# CHARACTERISATION OF POULTRY FARMING IN TWO SUBURBAN AREAS OF ABIDJAN (IVORY COAST) AND THE USE OF PLANT EXTRACTS IN THESE FARMS

## ABSTRACT

The objective of this study was to characterize poultry farming systems in Bingerville and Yopougon, two peri-urban areas of Abidjan, and to analyze the use of plant extracts in poultry health management. To this end, a cross-sectional survey was conducted among 58 farmers using well-structured questionnaires. The data collected were analyzed using descriptive statistics with SPSS Statistics 25 software, while Excel 2016 was used to produce the graphs. The farms surveyed were mainly located in Yopougon (69%) and run by men (96.6%), with an average age of  $38.54 \pm 0.16$  years and mainly of Ivorian nationality (72.4%). Among these farmers, 34.48% were illiterate and farming was the main activity of 82.76% of those surveyed, although only 15.52% had received formal training in farming. Livestock farming systems were dominated by the semi-modern method (60.34%), with herds ranging from 8 to 6000 head. The species raised mainly included hybrid chickens (32.8%), laying hens (24.1%), quails and African chickens (20.7% each). In addition, digestive, respiratory and skin diseases were frequently observed (84.48%). While the majority of farmers used modern treatments (72.41%), 22.41% used plant leaves, administered orally to their poultry. Thus, the plant species identified (*Moringa oleifera*, *Basilicum canum*, *Urticadioica*, *Talinum paniculatum*, *Phyllanthus amarus* and *Spinacia oleracea*) have shown preventive efficacy against various avian diseases. Hence, the rational and scientifically supervised integration of plant extracts could be an alternative for improving the productivity, health and sustainability of poultry farms.

**Keywords :** Poultry, Ivory Coast, plants, health

## Introduction

In sub-Saharan Africa, poultry farming is an essential part of animal production. This type of farming helps to create or increase the livelihoods of peri-urban and rural populations (Vidogbena *et al.*, 2010). In Ivory Coast, poultry farming plays an important role in the national agricultural economy, particularly in the peri-urban areas of Abidjan, where it contributes to the livelihoods of local populations experiencing constant demographic growth (FIRCA, 2024; IPRAVI, 2025).

Furthermore, the development of this type of farming in this area is part of a broader trend towards diversifying farmers' sources of income while meeting the high demand for animal protein (FAO, 2020). Various livestock farming systems coexist in the peri-urban area of Abidjan and very often face significant economic losses, generally due to avian diseases that slow down their production (Brou *et al.*, 2020). To combat these diseases, farmers frequently use antibiotics, which pose public health risks due to the emergence of antimicrobial resistance caused by the overuse of these antibiotics (Manyi-Loh *et al.*, 2018). In this context, the use of medicinal plant extracts is one of the most common alternatives for improving animal health and productivity (Alloui, 2013 ; Pashaei *et al.*, 2024). Indeed, various studies have highlighted the anti-inflammatory, antimicrobial and immunostimulant properties of certain local plant extracts that can benefit poultry (Pashaei, 2024). The integration of various plant extracts for care or in feed by farmers is a well-known practice among farmers in the peri-urban areas of Abidjan (Jambwa, 2022).

However, an in-depth characterization of these farms and an analysis of phytotherapeutic practices would be necessary to understand the challenges faced by these farmers. This is the focus of the present study, which aims to characterize poultry farms in two peri-urban areas of Abidjan, namely Bingerville and Yopougon. It then analyzes the use of plant extracts in these farming systems.

## Materials and methods

### Study site

The study was conducted in peri-urban areas of Abidjan, specifically in the municipalities of Bingerville and Yopougon (Ivory Coast) in 2025.

### Study population

The study population consisted of people involved in poultry farming. The inclusion criteria were that all individuals involved in poultry farming were included. However, individuals not involved in poultry farming were excluded from the study.

### Materials

#### Technical materials

The materials consisted of survey forms (questionnaires) and pens.

53	<b>Methodology</b>
54	<b>Study method</b>
55	This study involved collecting and analysing data from a prospective, descriptive survey. A total of 58
56	individuals were interviewed. Information was collected from the survey forms over a period of three (3) months
57	and covered:
58	- Sociodemographic characteristics;
59	- Types of poultry raised
60	- Farming systems;
61	- Livestock
62	- Poultry feed;
63	- Production;
64	- Poultry health monitoring;
65	- Use of plants
66	<b>Statistical analyses</b>
67	The collected data were analysed using SPSS Statistics 25 software. This analysis was descriptive and made it
68	possible to determine the numbers, mean, maximum and minimum values.
69	<b>Results and discussion</b>
70	<b>Results</b>
71	<b>Socio-demographic characteristics</b>
72	<b>Study site</b>
73	Two sites were included in this study. The study population was divided into 31% (18 farms) for the Bingerville
74	site and 69% (40 farms) for the Yopougon site.
75	<b>Gender of the surveyed population</b>
76	Data analysis showed that the respondents consisted of 56 male farmers and 2 female farmers, representing 96.6%
77	and 3.4% of the study population, respectively.
78	<b>Age of the study population</b>
79	The age of the surveyed population ranged from 24 to 49 years, with an average of $38.54 \pm 0.161$ years.
80	<b>Nationality of the study population</b>
81	Several nationalities were identified during this survey. However, Ivorian nationality was the most dominant,
82	accounting for 72.4% of the population, or 42 livestock farmers. Malinké nationality was the least represented,
83	accounting for 1.7% of the study population, or just one livestock farmer.
84	<b>Marital status of the study population</b>
85	The distribution of the surveyed population was based on marital status. The results showed that 70.69% of the
86	population were married, representing 41 livestock farmers, compared to 29.31% who were single, representing 17
87	livestock farmers.
88	<b>Main activity</b>
89	The majority of the population surveyed had livestock farming as their main activity, representing 82.76% or 48
90	peoples. The other respondents practised livestock farming as a secondary activity: one (1) farmer (1.72%), two (2)
91	nurses (3.45%), two (2) mechanics (3.45%), one (1) carpenter (1.72%), two (2) livestock technicians (3.45%) and
92	two students (3.45%).
93	<b>Level of education</b>
94	A total of 37.93% of respondents had a secondary education, representing 22 individuals. Among the respondents,
95	6 had a primary education (10.35%), 10 had a higher education (17.24%) and 20 were illiterate (34.48%).
96	<b>Qualification in poultry farming</b>
97	Analysis of the results showed that 15.52% of respondents, or 9 poultry farmers, had received training in
98	poultry farming, compared with 84.48%, or 49 poultry farmers, who had not.
99	<b>Characterisation of poultry farms</b>
100	<b>Types of poultry raised</b>

101 The resultsshowedthat 20.7% (12 farms), 24.1% (14 farms), 32.8% (19 farms) and 20.7% (12 farms) of  
102 farmsraisedquail, layinghens, hybridchickens and Africanchickens, respectively. In addition,  
103 turkeyfarmingaccounted for 1.7%, or just one (1) farm.

#### 104 **Farmingenvironment**

105 All farms (100%) werelocated in rural areas.

#### 106 **Farmstatus**

107 Variousfarmstatuseswererecordedduring the survey. Thus, 43.1% (25) of farmswerefamilyfarms, 51.72% (30)  
108 wereindividualfarms and 5.18% (3) wereacademicfarms.

#### 109 **Farmingsystems**

110 The farmingsystemsused in thisstudywere 60.34% (35) semi-modern systems, 27.59% (16)  
111 traditionalfarmingsystems, and 12.07% (7) modern farmingsystems.

#### 112 **Livestock**

113 The livestock on the farmssurveyedrangefrom 8 to 6000 birds, with an average of 1243.29±218.11 birds.

#### 114 **Poultryfeed**

115 The majority of farmers (34 farmers) gave theirpoultrywell water, i.e. 58.62%, 6.9% (4 farmers) usedborehole  
116 water and 34.48% (20 farmers) usedtap water.

117 With regard to poultryfeed, 89.66% (52 farmers) of the farmerssurveyedfedtheiranimalsindustrialfeed, compared  
118 to 10.34% (6 farmers) whoformulatedtheirrownfeed. Among the industrialfeedused, feedfrom the  
119 Facicompanywasused by 3.85% (2 farmers) of farmers for chickrearing, growth and  
120 egg laying.RegardingIvograinfeed, itwasused by 42.31% (22 farmers) for chickrearing, 61.53% (32 farmers) for  
121 growth and 73.08% (38 farmers) for egg laying. As for KOUDIJS feed, itwasused by 53.84% (28 farmers) for  
122 chick starter feed, 34.62% (18 farmers) for growthfeed and 23.07% (12 farmers) for layingfeed.

#### 123 **Common diseases**

124 Among the poultryfarmerssurveyed, 49 (84.48%) saidtheycommonlyencountereddiseases, compared to 9  
125 (15.52%) whodid not commonlyencounterthem. Of the 49 poultryfarmers, 83.67% (41 farmers)  
126 commonlyobserved digestive diseases, 14.29% (7 farmers) commonlyobservedrespiratorydiseases, and 2.04% (1  
127 farmer) commonlyobserved skin diseases.

#### 128 **Prophylaxis**

129 Only 22.42% (13 farmers) of farmersusedtraditionaltreatments, compared to 72.41% (42 farmers) whoused  
130 modern treatments and 5.17% (3 farmers) whodid not use anytreatments. Sanitaryvacuumingwaspractised by  
131 62.10% (36 farmers) of farmers, compared to 37.9% (22 farmers) whodid not practiseit.

#### 132 **Use of plant extracts**

133 Analysis of the resultsshowedthatonly 13 farmers, or 22.41%, used plant extracts in theirlivestockfarming,  
134 compared to 45 farmers, or 77.59%, whodid not use plants in theirlivestockfarming.

135 Amongthosewhoused plants, 61.54% (8 farmers) used plant extracts for therapeuticpurposes, compared to  
136 38.46% (5 farmers) whousedthem to feedtheirpoultry. Whether for therapeutic or nutritionalpurposes, all plant  
137 extractswereadministeredorally and only the leaveswereused by the farmers.

#### 138 **Names of plants used**

139 Various plants wereused by the farmers, the mostcommonlycitedbeing Moringa oleifera (11 times).  
140 Urticadioicawascited 3 times, Basilic canumwascited 2 times, and Talinumpaniculatum, Spinaciaoleracea and  
141 Phyllanthus amaruswereeachcited once.

#### 142 **Effects of plant extracts on diseases**

143 All farmers (8) using plant extracts to prevent digestive, respiratory or skin diseasesaidtheyweresatisfiedbecause  
144 none of thesediseaseswereobserved in poultrythatregularlyconsumed plant leaves.

#### 145 **Discussion**

146 The surveyresultsshowed a highernumber of poultryfarmssurveyed in the municipality of Yopougon compared  
147 to Bingerville. This spatial distribution seems to resultfrom the methodologicaltargeting of layinghenfarms.  
148 Bingerville has a recognisedhistory of broilerchickenfarming.In addition, rapid urbanisation in this area has

149 contributed to a reduction in the amount of land available for pastoral activities, leading to a steady decline in the  
150 number of livestock farms in the area (FAO, 2019 ; Kouame *et al.*, 2018). This trend, already observed in  
151 several African peri-urban areas, confirms the decisive role of urbanisation in the reconfiguration of animal  
152 production systems (FAO, 2020). The predominance of men among the farmers surveyed reflects the  
153 greater involvement of men in poultry farming in the rural areas of Bingerville and Yopougon. This situation  
154 could be explained by a socio-cultural division of roles, whereby women are more involved in trade and  
155 market gardening than in livestock farming itself. Indeed, livestock farming is traditionally perceived as an  
156 activity that is the responsibility of male heads of household (MINADER, 2017).

157 These results are consistent with those reported by Brou *et al.* (2020) in the rural area of Dimbokro,  
158 where low female participation in poultry farming was observed. In contrast, observations by Silué (2017) in  
159 Kabadougou highlighted the majority involvement of women in traditional poultry farming. This divergence  
160 highlights the influence of the local socio-cultural context and the type of farming system on the distribution of  
161 roles according to gender. The average age of respondents was estimated at  $38.54 \pm 0.161$  years,  
162 indicating that poultry farming is mainly practised by young people, reflecting the general demographic structure of  
163 the Ivorian population (INS, 2021). Furthermore, the predominance of  
164 Ivorian nationality among respondents is naturally explained by the fact that the study was conducted in Ivory Coast.  
165 In addition, the majority of farmers were married, a marital status involving family responsibilities that may  
166 encourage them to seek income-generating activities or to diversify their sources of income.  
167 Poultry farming thus appears to be an economic strategy aimed at ensuring household financial stability, either as a  
168 complement to or a substitute for other activities (Ouattara *et al.*, 2019). Livestock farming was the main activity  
169 for the majority of respondents. As these farmers are located on the outskirts of Abidjan, the economic capital of  
170 Ivory Coast, they benefit from a large consumer market, making poultry farming economically attractive (FAO,  
171 2020). Furthermore, as livestock farming does not occupy the entire day, it allows farmers to engage in  
172 other income-generating activities. However, only 15.52% of farmers had received formal training in  
173 poultry farming. This low proportion suggests that farming is perceived as a simple and accessible activity,  
174 even though its success depends on specific technical knowledge in nutrition, hygiene and health management.  
175 Several studies have shown that a lack of training is a major factor limiting the productivity and profitability of  
176 poultry farms, particularly in terms of feeding, biosecurity and health management (Sonaiya and Swan, 2018).  
177 Despite this, the relatively high level of education observed among respondents can be interpreted as the result of  
178 Ivorian public policies implemented in favour of universal schooling for the sustainable improvement of human  
179 capital (MENETFP, 2020).

180 All of the farms surveyed were located in rural areas, mainly in small villages offering a relatively quiet  
181 environment. This location is conducive to poultry welfare, as stress reduction is recognised as a key factor in  
182 improving zootechnical performance (Bessin *et al.*, 2016). The poultry species encountered included quail,  
183 laying hens, African chickens, turkeys and, predominantly, hybrid chickens. The choice of the latter is explained by  
184 their rapid growth, higher weight and organoleptic qualities similar to those of local chickens, which are  
185 highly appreciated by Ivorian consumers. In addition, their higher economic value on the market is a major  
186 incentive for farmers (Kouadio *et al.*, 2019).

187 The dominant farming system was semi-modern, with farms that were mainly individual or family-owned and a  
188 limited number of academic farms. The average herd size of  $1,243.29 \pm 218.11$  heads is characteristic of this type of  
189 system, which lies between traditional and intensive farming (FAO, 2019). With regard to watering, the  
190 widespread use of well water can be explained by the limited access to drinking water in rural areas and its cost,  
191 unlike well water, which remains free. However, this practice can pose a health risk with water of  
192 uncontrolled microbiological quality (WHO, 2017). Feed was mainly industrial for the start-up, growth and laying  
193 phases. Although more expensive, these feeds are preferred because of their superior zootechnical performance  
194 compared to artisanal feeds, which are often nutritionally unbalanced (Ravindran, 2013). The pathologies  
195 encountered were mainly digestive, respiratory and skin-related, with digestive disorders predominating.  
196 These results are similar to those reported by Brou *et al.* (2020) and could be linked to shortcomings in hygiene,  
197 water quality and feed management. Despite these health risks, 5.17% of farmers reported that they did not  
198 provide any care for their poultry, thereby exposing their farms to significant economic losses. The other farmers used  
199 modern veterinary medicine or traditional treatments.

200 The study revealed that 13 farmers used plant extracts, administered orally for therapeutic or prophylactic purposes.  
201 This practice is part of an effort to reduce the use of antibiotics and prevent antimicrobial resistance, a major  
202 global public health issue (WHO, 2017). Leaves from *Moringa oleifera*, *Urtica dioica*, *Ocimum canum*,  
203 *Talinum paniculatum*, *Spinacia oleracea* and *Phyllanthus amarus* were washed and given directly to poultry. These  
204 plants are known for their nutritional, antimicrobial, antiparasitic and immunostimulant properties,  
205 which contribute to improving the health and zootechnical performance of poultry (Gueye and Diouf, 2016 ;  
206 Abdullahiet *al.*, 2019).

207 **Conclusion**

208 The characterisation of poultry farms in the Youpougon and Bingerville areas, on the outskirts of Abidjan,  
209 revealed that the majority of farmers were young, male, married, literate and untrained in animal husbandry. The  
210 farming systems were semi-modern, with an average flock size of 1000 birds, including quails, laying hens,  
211 hybrid chickens, African chickens and turkeys. The farmers surveyed prioritised industrial feed while using well water  
212 to water their livestock. To combat disease, some farmers applied modern treatments, while others preferred to use  
213 leaves from plants known in African pharmacopoeia.

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