

**POULTRY KEEPING AS AN
INCOME-GENERATING ACTIVITY**

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Guinea Natural Resources Management Project**

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POULTRY KEEPING AS AN INCOME-GENERATING ACTIVITY

A. Background

The Community Enterprise Development (CED) component of the Guinea Natural Resources Management project (NRMP) has identified improved poultry keeping as a potential income-generating activity for the target population in the project watersheds. One villager in Falloulaye (Dissa) has requested project assistance to establish a commercial poultry enterprise. Estimates have been made for an operation of 500 layers, and project staff have been discussing other possible options with the villager.

In Diaforé, improved roosters have been introduced to four villages, with the intention of improving village flock size and productivity. Technicians in the Koundou watershed have also identified villagers interested in improved poultry keeping. Information on levels of technology and sustainability of efforts will be beneficial to the Koundou technicians in their conceptualization of future projects.

B. Purpose

- Evaluate cost estimates completed by local engineers for the construction of a chicken house and the establishment of an egg production enterprise in Dissa.
- Determine the optimum size of layer operation most appropriate for small farm holders in the project area.
- Recommend feed mixes for small scale poultry operations in the project area.
- Inspect indigenous poultry keeping operations with CED technicians and the *animatrices* to understand the local methods of raising poultry.
- Conduct brief training sessions with CEDs and *animatrices* to familiarize them with the basics of intensive poultry keeping, including visits to commercial egg production farms in Labé for hands-on training.

C. Level of Effort

I carried out this assignment in conjunction with other tasks in Guinea, and devoted three working days to the effort. I traveled to each watershed to look at traditional poultry operations as well as project activities during the second and third weeks of February, 1994, concurrently with site visits for the project assessment and annual work plan sessions.

D. Persons Contacted

The people with whom I worked during this assignment are:

S.K. Reddy Bill Polidoro	Project Officer, USAID/Conakry Project Manager, USAID/Conakry
K.B. Paul Steve Aversa Miriam Diallo	Chief of Party, Chemonics Community Enterprise Development (CED), Chemonics Animatrice, Chemonics
Rive Diallo Mama Malal Baldé	Director, WMU/Kouratongo CED, WMU/Kouratongo
Alpha Bacar Bah Bocar Sow Miriam Oury Baldé	Director, WMU/Linsan Saran CED, WMU/Linsan Saran Animatrice, WMU/Linsan Saran
Pe Vincent Gamy Abdulaye Toure Mme. Diallo	Director, WMU/Sougueta CED, WMU/Sougueta Animatrice, WMU/Sougueta
Safey Barré Mamadou S. Sow	Director/Centre de la Formation de l'Élevage/Labé (CFEL) Veterinarian/CFEL
Imam Diallo	Manager, Kahéré Centre de l'Aviculture

E. Summary

This technical assignment was cut short for a variety of reasons, primary of which was the importance of completing the project assessment and the development of the annual work plan. Nevertheless, I was able to visit each of the three watersheds, one large commercial intensive integrated poultry farm near Kindia, and three large commercial egg production farms in Labé. I also paid a visit to the Centre de Formation de l'Élevage in Labé (CFEL), and the small hen house of the project's CED specialist. In addition, I conducted two two-hour workshops at the project management unit (PMU) for all the *animatrices* and CED staff for the project to give them the basic concepts behind intensive commercial poultry management.

F. Observations

While in the watersheds, I was able to observe traditional methods of poultry keeping, and came to the conclusion that intensive poultry management would indeed be a foreign concept for villagers to undertake. Chickens are allowed to wander freely to forage for food and are rarely vaccinated. I was fortunate to see a number of improved roosters thriving in the local, free-range environment. In all three watersheds, villages have similar traditional

poultry houses where the birds are enclosed each night and released every morning. These houses are built near the family quarters and are made of bamboo or palm poles with grass thatch roofs and mat walls and are elevated approximately four feet above the ground to protect the birds from nocturnal predators. I also inspected a similar dwelling, usually located next the poultry house, of similar design but much larger, to keep the family's goats protected at night.

Through the *animatrices*, I learned more about traditional poultry husbandry. Women and children are responsible for the birds. They do not normally feed them during the rainy season, but during the dry season do give them corn and kitchen scraps daily. Water is made available to the birds near the main house throughout the year. Some families collect eggs periodically to sell in the markets, while others collect the eggs only rarely, preferring to have them hatch to increase flock size. Mature birds are killed and eaten on special occasions such as when visitors come, holidays, etc., and are sometimes sold in the market. The women keep the money from egg or chicken sales and use it for household purchases. Local fowl are almost never vaccinated, although cattle usually are, and goats are occasionally vaccinated. Consequently, many birds die, especially during the rainy season, from symptoms that sound like Newcastle's disease. The second most prevalent cause of death in the flock is due to predation by wild animals, especially hawks.

In comparison, visits to commercial operations showed elements of good poultry management. In all cases, the birds were the French Babcock variety "Isa Brown," a dual purpose bird with Rhode Island Red size and appearance in the females, laying brown-shelled eggs. The Isa Brown has a sex-linked coloration permitting sexing at hatching: males have predominately white and females have red chick feathers.

F1. Kahéré Centre de l'Aviculture

On Monday, February 14th, I visited the Kahéré poultry center about 20 km south of Kindia with K.B. Paul. The center has two farms, one for the breeders and the other for commercial operations. The Isa Brown stock raised at the Kahéré poultry operation is owned and managed by the Diallo family, originally from a village named Kahéré near Labé. The grandparent flock's fertilized eggs are brought from the breeding farm to the family's commercial egg operation where they are incubated. The 30,000-egg capacity incubators have a 90 percent incubation rate. Day-old birds are sold to the public; the farm also raises birds to various ages for sale ranging from one to four months for the pullets and up to five months for the cockerels. Sometimes the cockerels are sold as breeders or for meat. All birds are vaccinated against Newcastle's before leaving the farm.

The commercial egg center also produces three different feed mixtures—for chicks, pullets/cockerels, and layers—there is no ration for broilers. Feed concentrate is imported from France to be mixed with locally available feedstuff. The chick feed has 15 percent concentrate composition including a coccidiostat; the other two mixtures only use 5 percent concentrate. Periodically samples of feed are sent to the University of Conakry for testing and occasionally to a French laboratory to ensure that the right dietary balances are

maintained. Feeders and laying boxes are made locally; all drinkers are imported from France. The Diallo brothers learned their poultry husbandry in France.

I was led on a tour of one of the two commercial laying houses containing 1,100 layers each; I did not visit the breeding farm. The houses contained deep rice bran litter and had screens on the two widest sides for air circulation. The drinkers were about 12 inches above the floor and connected to hoses for a constant flow of water from the farm's well. The gravity flow feeders were suspended at about the same height as the drinkers but had to be filled by hand daily. Locally made wooden, two-tier laying boxes were around the walls and appeared to be open to the light. There were floor eggs. According to "Imam" Diallo, egg production for these 18 month-old hens was 82 percent. However, all the hens in production were fitted with spectacles to reduce cannibalism. Debeaking was not done. (Every commercial operation I saw in Guinea had hens similarly fitted. When I asked Mr. Diallo about the high incidence of cannibalism, he said it was a characteristic vice of the Isa Brown variety.)

When I inspected the brooding unit I saw that the chicks were keeping away from the heating element, indicating it was too hot, and suggested to Mr. Diallo that it be turned off. It was done, and a number of chicks went eagerly to the drinkers, which were near the heating elements, to quench their thirst.

In summary, the farm had reasonable management; however, a number of things could be done to improve its efficiency. My greatest concern was the cannibalism.

F2. Labé Commercial Farms

On Saturday, February 19th, I visited two commercial farms within the city limits of Labé with Steve Aversa, Miriama Diallo, and *animatrices* and CED personnel from the watersheds. The first farm is owned by a man living in Conakry who has a full-time farm manager. The hens are of the Isa Brown variety from Kahéré; again, all were fitted with spectacles. The farm buys most of its feed from Kahéré as well but sometimes mixes its own. The feeders and drinkers were bought in Conakry and were made in Guinea. All of the 1,150 hens were on a deep litter floor on a Kahéré type house; although all of the hens were wearing spectacles due to cannibalism, a number had been debeaked as well. The hens had achieved a laying production high of 87 percent but now, in their twelfth month of lay, they were down to 52 percent. The farm kept good egg production and mortality records but did not have an isolation unit.

I conducted a training session for the project staff on the characteristics of good poultry husbandry, including how to discern if birds are good layers. I offered advice to the managers on ways to improve the farm's management, including ways to improve marketing of the eggs, all of which are sold in Conakry.

The second farm we visited was a new operation owned by a local trucking magnate who had a veterinarian advising him on the management of his farm. The house type was the same deep litter style as Kahéré and the hens were also from the center. Management

was better than that of the first farm, but the laying percentage for the nine-month-old hens was low, around 70 percent. The veterinarian said his two major problems were cannibalism and prolapse, both indicators of possible dietary problems. The vet kept insisting he needed to increase the birds' vitamin consumption rather than provide a balanced feed, a common misconception. All hens were fitted with spectacles. The drinkers and feeders were both bought in Conakry and made locally by blacksmiths. Feed was brought in from Kaheré in the owner's trucks, and he indicated a willingness to carry feed at a nominal cost to other poultry farmers in the project area if they would arrange to pick it up at his farm. After our initial visit we went with the owner and the vet to a new unit where 500 month-old pullets from Kaheré were to be delivered soon.

At both farms I gave project personnel ideas on how to improve the unit's operational efficiency. In general both farms need to raise their feeders and drinkers, darken the nest boxes, add more litter to both floor and nest boxes, and cull out the non-productive hens. Because it was a Saturday and most participants were tired due to their fasting for Ramadan, we decided to postpone the last visit to the poultry farm managed by handicapped people.

On February 23rd, PMU animatrice Miriama Diallo and I visited the handicapped people's farm and found it to have the most serious management problems with their Kaheré-bred Isa Brown stock. All birds were fitted with spectacles and showed indications of cannibalism. There were two deep litter units of the same style as Kaheré; one contained 523 hens and the other 378; the laying percentages were about 55 percent and 70 percent respectively. We spent over an hour giving advice to the resident veterinarian and his staff on ways to improve the operation. Due to economic reasons, the farm mixes some of its feed and sometimes gives its birds Kaheré rations. The constant flux in feedstuff may be a major reason for the low production.

F3. Poultry Husbandry Workshops

On Friday, February 18th, I conducted two two-hour workshops for BRP and PMU animatrices and CEDs, presenting the basics of poultry management. None of the participants had ever raised poultry except Steve Aversa, who had a flock of ten hens. A major focus of the workshop was to encourage small-scale commercial units to use improved hens, a balanced feed mixture from Kaheré, and as much locally produced equipment as possible—including using an adaptation of the traditional goat shed for the poultry. I left behind drawings of locally made shelters, feeders, and drinkers, and will send out better designs of low but appropriate technology from the U.S. I also obtained copies of the training manuals on low-cost poultry production in Africa produced by the U.S. Peace Corps in English and French, since the Peace Corps does not have copies available, and sent them to Guinea.

F4. Centre de Formation de l'Élevage à Labé—CFEL

After I saw the low level of knowledge of intensive poultry management of project personnel, I visited the CFEL center in Labé with Dr. Paul to see what training courses and facilities were available. The center does not conduct any poultry training and does not

officially have any poultry. A mixture of species, breeds, and ages of birds running around the center belonged to the station manager; their management was unsatisfactory for any training models needed to introduce the concepts of commercial poultry keeping. Another solution will have to be found.

G. Recommendations

As poultry husbandry in the project area is traditional, subsistence, and extensive, I am very cautious about recommending a high-risk investment in setting up modern intensive egg production operations for any of the target population. Raising poultry on a commercial basis requires a significant capital investment to feed and nurture the birds for more than five months before the first eggs are laid, i.e., before any income is generated. Therefore, to decrease the amount of risk exposure, I recommend that incipient poultry farmers begin their experimental farms modestly by using local building materials whenever possible, and feeding the birds a balanced feed mixture, available for sale at Kahéré. Money savings should be encouraged by using local materials for shelters, feeders and drinkers—not by skimping on vaccinations or balanced feed mixtures.

Additionally, a rapid appraisal should be done of potential market opportunities, following Kedrock's micro-economic marketing methodology report (December 1993), to confirm there will be a good market for poultry products.

1. I evaluated the cost estimates completed by local engineers for construction of a chicken house and establishment of an egg production enterprise in Dissa. I would advise the beginning farmer to choose the least costly design and to begin with only 100 hens, which he should purchase at one month of age. I also recommend the farmer either hire someone who has hands-on intensive poultry management experience or make arrangements with the Kahéré center to train his farm manager. The farmer should be aware of the growing competition in the egg production business in Guinea and his feasibility study should be conservative; i.e., it should take into account an average production of 60 percent with a possible decrease in the price of eggs as competition forces prices down.

2. Based on the low input level of poultry keeping in the villages and the high relative level of investment risk involved in intensive egg production for small, subsistence farmers in the project area, the optimum size to begin layer operation would be between 10 and 25 hens. Individual farmers will more likely be more conscientious than groups of farmers and therefore more successful. However, cooperative or group efforts should be encouraged to reduce transportation costs for the importation of feed and possible exportation of eggs and spent layers.

This is assuming there is a good local market for the eggs; producers should not initially count on exporting the eggs out of the locality until quality control, transportation, and marketing mechanisms are in place. Obviously a feasibility study should be done before advising anyone to put money into a poultry operation that will not produce its first egg until the hens are around six months old. I also recommend that the birds be kept in traditional style dwellings; an adaptation of the off-ground goat shed design would be satisfactory. A

small mud brick unit with deep litter would also be fine, if its construction were not too expensive. The management focus should be on the importance of vaccination against endemic diseases and good flock management, the basis of which is a constant availability of clean water and balanced feed for the birds, not on building a sophisticated poultry house or purchasing state-of-the-art feeders and drinkers.

3. It will be possible to train local carpenters and blacksmiths to make efficient and improved feeders and drinkers, using locally available materials at low cost. The designs contained in the Peace Corps training manual will be good models to follow, although blacksmiths are already making galvanized feeders and drinkers for sale in Conakry. The two farms in Labé used this equipment. I suggest the CED specialist look into this incipient industry for possible introduction into the watersheds, when appropriate.

4. Due to the novelty of intensive poultry keeping, I do not recommend that local people mix feed for small-scale poultry operations in the project area. The feed is the most critical element of the operation. If the farmers have to learn to make feed and water available throughout the day as well as provide shelter for the birds, it is too much to ask that they also mix the feed. I do not recommend that the "poorest of the poor" become the villages' first poultry farmers; the better-off citizens, who can afford to buy the birds and feed, should serve as the local models. However, once the larger farmers become more accustomed to intensive poultry management, they could import concentrate and mix their own feed.

5. Although one of the CED specialists had a good textbook understanding, none of the *animatrices* or CED specialists were familiar with hands-on intensive poultry keeping and would therefore be unable to realistically teach anyone how to raise poultry commercially. I therefore advise that the project investigate conducting a longer, more hands-on training program for its personnel. Two to four weeks on an operational farm would be satisfactory for motivated technicians to learn the basics of intensive poultry keeping. Such an arrangement might be made at the Kahéré farm or elsewhere, including at the operations in Labé. To save money, it would be advisable to find a terminating French-speaking Peace Corps volunteer poultry specialist to conduct this session.

6. The exchange program for the improved cocks appears to have an extremely high mortality rate among cockerels before they are distributed to the villagers. An acceptable mortality would be between 5 and 15 percent, not the 25 percent experienced during the first batch. I recommend that until the poultry managers can learn how to care for the pullets and cockerels correctly, all birds be bought as old as possible, i.e., close to point of lay or breeding.

7. I recommend that project personnel inform interested women in the benefits of improved poultry management practices, including vaccination of indigenous fowl against endemic diseases, e.g., Newcastle's, using the project-trained para-veterinarians, if possible. They would also learn how egg production would increase, even with indigenous fowl, if the birds received better feed, i.e., supplemental to what they can forage for themselves. This

extension message should also include teaching the village women in the nutritional value of eggs for them and their children.

8. I brought back a sample of Kahéré farm's layer mash and had it analyzed by a private company to determine if a dietary deficiency could have provoked the high incidence of cannibalism among the Isa Brown variety of birds. Normally one would expect a salt or protein deficiency as typical causes of this vice, so the lab made special tests to look for the levels contained in the mixture for these two ingredients. The results indicate that there was not even a trace of salt in the ration, a clear cause for cannibalism, prolapse, and a variety of other problems. I recommend that Steve Aversa bring up this matter with the Kahéré farm and try to obtain the proportions of feedstuffs actually used in the mixture as well as the nutritional and mineral composition of the imported concentrate.