



# Clay incubator: a pro poor initiative to incubate eggs for inclusive guinea fowl farming, Mali

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<b>Country of first practice</b>	Mali
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<b>Sustainable Development Goals</b>	No poverty, zero hunger, and life on land

## Summary

This practice describes innovative egg incubation methods for inclusive guinea fowl farming. The clay incubator materials and how to prepare the egg tray are detailed. The Procedures to be observed during the operation of the clay incubator and the prerequisites for success are also noted. Information is also given on how and when egg laying occurs as well as the practice's Scope of replication and sustainability. Finally, context is provided on where the practice stemmed from in Mali.

## Description

The materials for building the clay incubator include

- clay bricks (six to eight);
- wet mixed mud clay;
- sand;
- a kerosene lamp (Luciole brand);
- an egg tray;
- a thermometer;
- one meter of black plastic;
- a piece of sheet metal;
- a piece of wood plank or board;
- some nails;
- four pieces of pipe (small diameter); and
- four wooden sticks.

### 1. Steps for building the clay incubator

- First, build a wooden egg tray with a size according to the planned number of eggs

(150, 200, 300, 400 eggs). The dimensions of the egg tray depend upon the quantity of eggs for hatching. For 150 eggs, the dimensions are 50 cm of length, 60 cm width and a frame of 12 cm height. For other capacities only the length should be adjusted, 1 m for 200 eggs, 1.5 m for 300 eggs and 2 m for 400 eggs.

- Put the egg tray on the floor to measure the size of the incubator. Build the first row of clay bricks on three sides around the egg tray and leave one side open for the door.
- Place two big nails on each of the two lateral sides of the wall to support the egg tray.
- Then build the second row of bricks in which four pieces of pipe are put for ventilation of the incubator. Finally level the top of the three walls with a layer of clay or mud.
- To build the roof, measure the dimensions of the upper part of the incubator and prepare a piece of metal sheet according to these dimensions that will cover the top of the three walls of the incubator.
- Fix the metal sheet with a wooden bar and nails. This top cover will keep the heat inside of the incubator.
- The front cover of the incubator is made from a



piece of black plastic which is fixed at the upper side by a piece of wood to hold it in place. Another piece of wood is fixed at the bottom of the plastic cover to ensure that the cover remains closed.

- Cover the bottom of the incubator with sand that will be moistened during operation to control humidity within the incubator. Put a small row of mud (2 to 3 cm) in front of the sand to keep it in place.
- The distances between the sand and the egg tray should be 20 cm and from the sand to the top cover 55 cm. The lamp which will be put onto the tray should not touch the top cover.

## 1.1 Procedures to be observed during the operation of the clay incubator

- The eggs must be cleaned and carefully put into the tray.
- The kerosene lamp for heating of the incubator must be put into the middle of the egg tray and kerosene only refilled outside the incubator.
- The thermometer should be put into the centre to control that the temperature remains in the range of 37 to 39° C.
- The black plastic cover should be closed to keep the inside of the incubator at the desired temperature which should be controlled by adjusting the lamp.
- To control the humidity water should be regularly sprinkled on the sand inside the incubator; the frequency will depend on the climate of the location.
- The eggs need to be turned manually one by one at least twice per day. To turn the eggs quickly, the farmer should remove two to three rows of eggs and move the remaining eggs toward the empty space. The eggs removed are replaced in the free space.

- Marks should be put on the different sides of the eggs for controlling if the egg has been turned.

## 1.2 Prerequisites for success

- The clay incubator must be built in a place protected from rain, wind and other climatic factors.
- The eggs must be fertile.
- The temperature must always be kept between 37 to 39° C.
- A good quality kerosene lamp (Luciole brand) should be used as well as good quality of kerosene to avoid smoke inside of the incubator.

Figure 1. Presentation of the clay incubator



Figure 2. Preparation of the hatching process



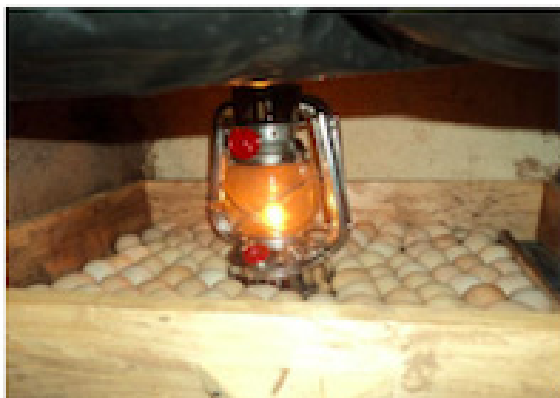


Figure 3. Closing the clay incubator door



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Figure 4. Eggs in the clay incubator



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Figure 5. Eggs marked for checking of turning



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## 2. How has it worked?

Traditionally, Guinea fowls lay many eggs during the rainy season. One Guinea fowl female lays one egg per day and can provide

90 to 100 eggs depending upon the length of the rainy season. When the bird has laid 30 to 35 eggs, it starts the incubation. But to have enough eggs from one Guinea fowl female, farmers remove one egg daily after three days. The principle is that at least one or two eggs must be left so that the bird does not change its laying place.

Figure 6. Welcome keets!



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## 3. Scope of replication and sustainability

The clay incubator is easy to replicate because it is made with locally available materials and it can be built by any farmer with a minimum of skills. Experiences showed that farmers adopted the good practice based on a single visit to the farmer who first developed the clay incubator. Therefore, “hands on” training would be an effective way to train farmers and further scale-up the technology. The training to build clay incubators combined with modern poultry training would allow a better understanding how to handle this good practice.

## 4. Validation of the practice

This practice was invented by a 31 years old resource-poor farmer, Mr. Nouhoum Traoré, from a village called Djéla (rural commune of Gouendo, cercle of Baraouéli). He got the idea when he noted the high demand for Guinea fowl, its high price and the small capacity of his incubator. The clay incubator



was made for a higher capacity which can, depending on one's capacity, hatch up to 400 eggs. If all the eggs are fertile the hatching rate is under optimum condition 80 to 90 percent (A. Kanoute et al., 2008, 2009, 2010).

#### **5. Further reading**

- Clay incubator: a pro poor initiative to incubate eggs for inclusive Guinea fowl farming.

#### **6. Agro-ecological zones**

- Tropics, warm

#### **7. Objectives fulfilled by the project**

##### **7.1 Women-friendly**

The practice is easy to use and accessible

##### **7.2 Resource use efficiency**

Improved egg rearing and poultry management

##### **7.3 Pro-poor technology**

Hands on training and its easy replication, makes this practice pro poor given that the outcomes allow for increased production leading to higher sources of food and additional income.