

## Indigenous technical knowledge in duck production in Tamil Nadu

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Duck is the only species, being maintained under traditional extensive system of rearing. Therefore, the traditional practices evolved by the farmers over time in the management of ducks were documented and presented.

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Among various species of poultry, ducks are sturdy and prolific in nature. Indigenous ducks of our country constitute more than 90% of the total duck population and the second largest species contributing towards egg production in India. Duck rearing is still in the hands of poor rural farmers, who depend mainly on ducks for their livelihood and employment. The extensive coastal line with many inland water ways are the potential sources for their existence (Fig. 1). Since duck farming has not undergone any process of industrialization, its husbandry practices are traditional, nomadic and sometimes primitive. Therefore, the traditional practices which have been evolved from time to time, from ancient days since adoption of duck rearing by the farmers, still exist and proved to be efficient and economical for sustainability. Hence, the paper discusses various indigenous technical knowledge (ITK) followed in various aspects of duck farming system.

### Methodology

The study was undertaken in Uthiramerur *taluk* of Kancheepuram district and Tindivanam *taluk* of Villupuram district of Tamil Nadu, where the duck flocks were highly concentrated (>100 in each *taluk*). The information regarding indigenous technical know-how practices in duck farming had been elicited through Participatory Rural Appraisal (PRA) conducted in Uthiramerur and Tindivanam areas. The ITKs pertaining to hatching operations and other managerial aspects were collected during the visits made to the individual duck units in the study area. In

the study, a total of 150 duck farmers (75 from each *taluk*) were included.

### Results and discussion

Of various animal husbandry practices such as dairy, sheep and goat farming, piggery, duck rearing, backyard chicken production, etc. duck production is the only farming practice sandwiched with indigenous technical practices in each and every sphere of management.

#### Incubation and hatching operations

Unlike the common hatchery practices followed in commercial chicken production, broody hens were found to be widely used for hatching duck eggs, thereby making the hens as live incubators. Therefore, artificial incubation was not at all practised. Mud pots and bamboo baskets were used for hatching purpose (Fig. 2) with paddy straws as bedding material. The duck eggs were placed in the pots over the bedding material and the broody hen was made to sit on eggs. The hen and the pot were covered by the bamboo baskets. About 15-20 duck eggs were set per broody hen for 28 days. The same broody hens could be utilized for two hatches continuously. Usually, the ectoparasite, louse (*Menopon gallinae*) was the common menace in the broody hens reared in the backyard and hence delousing was done with the help of *Vasumbu* (*Acorus calamus*) powder before allowing them for incubation. The hatching operation was carried out in two different seasons; one during June to August (Southwest monsoon) and the other during September to November (Northeast monsoon). Even though, the incubation of large number of eggs

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under many broody hens is a cumbersome process, the farmers expressed their satisfaction and desire to incubate only under broody hens as they believe that this practice would yield a higher percentage of viable ducklings. Efficient utilization of space in the incubation room was made by incubating duck eggs in a three-tier system (Fig. 3). In Assam, failure to obtain higher hatchability in artificial incubation led to practicing of natural hatching in preference to artificial hatching by farmers. At present, natural incubation by using brooding hens are getting replaced by artificial incubation using forced draft incubator for hatching large number of eggs at a time.

#### **Improvised hatching apparatus**

A progressive duck farmer, named Mr Sathyababu from Orathur village of Thiruvallur district, is practising hatching of duck eggs using a cabinet made up of wooden reapers (Fig. 4). At the bottom of the cabinet chicken mesh is fixed for holding the hatching eggs. The cabinet is placed in a small room with asbestos roofing and cement flooring with brick wall. For providing temperature, 40 watt incandescent bulbs are used and fixed 15 cm above the level of eggs arranged. The temperature in the cabinet is controlled by Ether capsule device. For providing humidity, old gunny bags and clothes are hanged around the cabinet, which are periodically soaked in hot water. Since, the eggs are placed in the open surface in the cabinet, the atmospheric air provides the required oxygen for the development of the embryos. Thus, the cabinet provides all physical parameters such as optimum temperature (38°C), relative humidity (70-80%) and ventilation (21% oxygen) for the successful development of the embryo. The whole arrangement looks like a walk-in incubator. The capacity of his unit is 18,000 to 20,000 eggs at a time with six compartments. The loading capacity varies according to the local demand. The farmer attributed that he is getting 70-80% total hatchability under normal circumstances. It is also learnt that he is not practicing any hatchery sanitation procedures such as fumigation and cleaning of eggs with disinfectants. The cabinet is cleaned with dettol solution after taking the hatch. Prior to hatching, the unfertilized eggs are to be removed from the hatching operations. This was achieved by conventional candling operation on the 5<sup>th</sup> day of incubation using kerosene lamp (Fig. 5) to remove the unfertilized eggs thereby improving the hatchability percentage. But in

the commercial chicken production, electric candler were used for the purpose. With these practice, the hatchability was found to range from 60.5-62.5% with a mean of 61.5±1.96. This kind of practice is beneficial to the duck farmers who are usually in remote areas, suffering from erratic power supply (electricity). Moreover, the poor duck farmers can not afford to purchase the modern incubators.

#### **Routine management of ducklings**

The ducklings were accommodated in an enclosure guarded by the woven coconut leaves. Chopped paddy straw and sand were used as litter material which also gave warmth to the ducklings. Sometimes, lorry tyre was also used to brood the ducklings (Fig. 6) in a close confinement. This close confinement and accommodation of 150 to 200 ducklings in one partition under the low roof protect the ducklings from chilling as a result of conservation of metabolic heat. This brooding technology has been adopted since time immemorial and perfected over generations. Bamboo baskets are also utilized for brooding the ducklings (Fig. 7). A small opening is provided on the side ways for the ducklings to come out of the basket during feeding. Sometimes, instead of coconut leaves, guards were made of bamboo sticks, i.e. six hundred sticks were woven together with 3.8 cm interlacing space for 20 dozen ducklings. The structures could be easily dismantled and taken to places wherever the ducks migrated for feeding. In some places, ten coconut leaves were woven together to provide guards for as many as 80 dozen ducklings. Instead of coconut leaf guards, the palm leaf woven *thatties* (thatched material) called *Sambu* were used as guards. These enclosures are stronger and durable than the coconut leaf enclosure. Basket like round structures are made of bamboo sticks for transporting the ducklings from one place to the other as well as for selling (Fig. 8).

#### **General management of adult ducks**

In this nomadic style of duck farming, no permanent or heavy structural housing was followed. The enclosures were made of closely woven bamboo sticks and plastic wire net in a raised platform and ducks were kept only during night hours (Fig. 9).

#### **Other management**

For identification of different flocks in the same locality, different markings were used by the farmers.

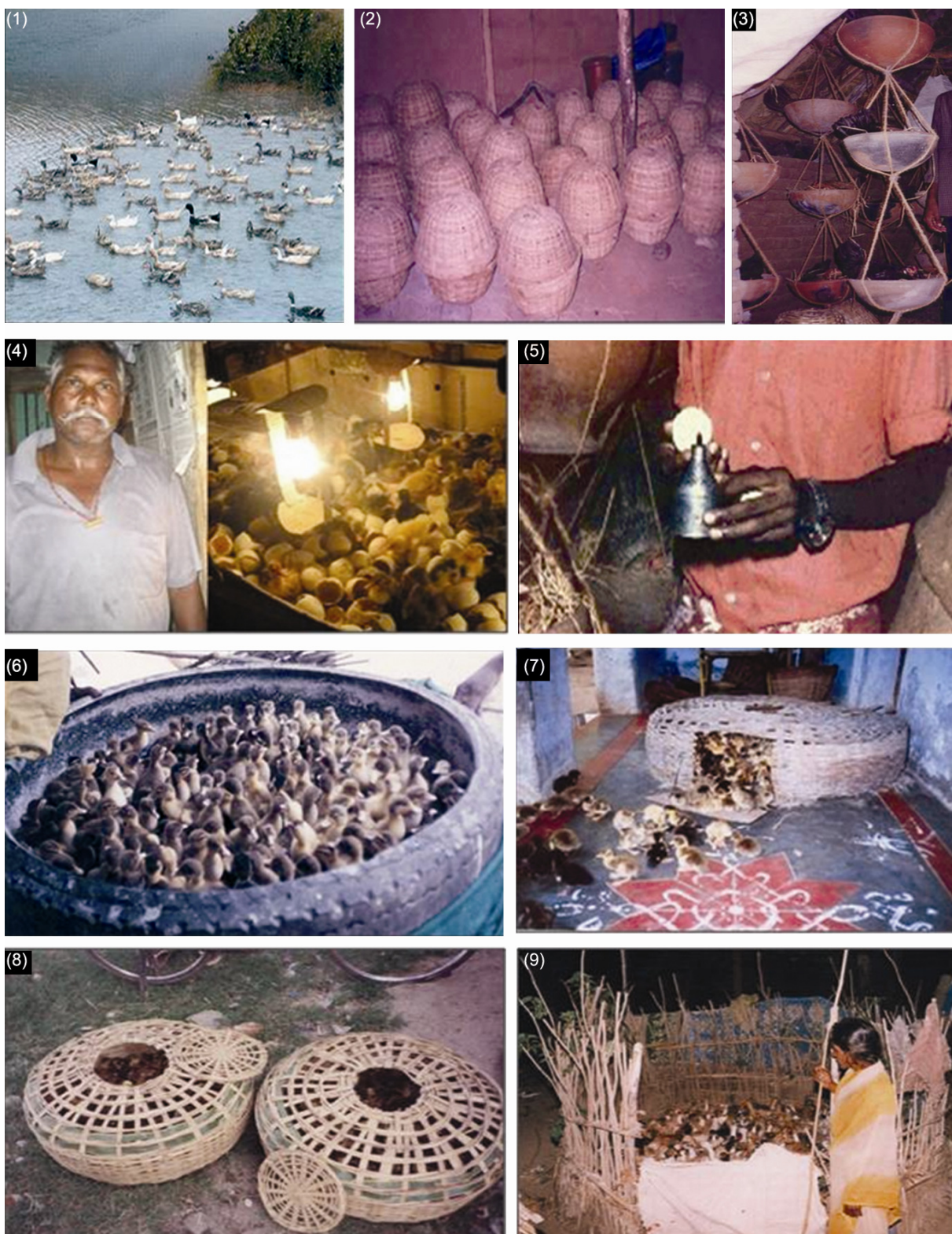


Fig. 1–Ducks in the waterways; Fig. 2–Mudpots and bamboo baskets in hatching operation; Fig. 3–Hatching duck eggs in a traditional three tier system; Fig. 4–Incubation of duck eggs in a wooden cabinet; Fig. 5–Candling a duck egg using kerosene lamp; Fig. 6–Brooding ducklings with pneumatic tyre; Fig. 7–Brooding ducklings in a bamboo basket; Fig. 8–Bamboo basket for transportation the ducklings and Fig. 9–Closely woven bamboo slides for housing ducks during night.

Branding the bills, cutting the web of foot or feet, colouring the feathers underneath the wings, toe punching and wing cutting were the common markings used by the farmers. Branding of bills was done using red hot wire or with the thin iron rods with different style of markings as a permanent mark for life long. Colouring was done with the help of fast dye used in the textile industry. Hence, no tags or wing bands (as applied in chicken) are used for identification of ducks.

#### Disease management

Some of the common ailments among ducklings were coryza and the respiratory distress due to exposure to chill weather during heavy mist, besides duck plaque which causes high morbidity and mortality. During summer season, swelling of joints, gasping for breath, etc. were noticed. To treat the above diseases, the farmers used a decoction made of *Poduthalai* leaves (*Lippia nodiflora*), roots of paragrass, *Omum* and *Vasambu* (Sweet flag; *Acorus calamus* L). These materials are ground well, mixed in water and boiled. *Vasambu*, the underground stem of the aromatic marsh herb is a medicine described earlier in *Ayurveda* as having beneficial effect on the body as a stimulant tonic and antispasmodic<sup>1</sup>. This keeps the living being always alert and active, makes resistance to diseases and gives more stamina.

#### Ducks as biological control of pests

When ducklings/ducks were used in between the paddy plants in the rice field, they fed upon the larvae and insects of all the pests of rice like brown hopper, case worm, etc. This kind of control maintains the ecosystem intact without any chemical or pesticide pollution. Sholev<sup>2</sup> also opined that the duck could be used as a scavenging bird utilizing large amounts of insects, thus having a two-fold benefit of improving feed utilization efficiency and reducing insect problems in the field. It is quite interesting to note that

in China, ducks were specially trained to ingest gross hopper which otherwise would destroy agricultural lands<sup>3</sup>.

#### Conclusion

In spite of primitive management and nomadic rearing, the ducks are able to lay 160 to 200 eggs per annum. The traditional system of duck rearing is still dominant not only in the state and most part of the country. Many improvement measures in duck husbandry using improved/recognized breeds have not proven to be accepted by the farmers. These indigenous practices are proved to be economical for the poor farmers, thereby making the ducks well-suited to the agro-climatic conditions of India and the level of management practised. Since, the duck production is still a kind of nomadic and traditional system, change over occurred as in chicken production could not be possible and hence, validation of these practices are to be carried out to refine the existing practice.

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