Hatchability and fertility of indigenous chicken and duck eggs, and some causes of chick and duckling mortality in Kenya


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Abstract

Flocks under study are located in the suburbs of Nairobi province and Machakos district. They belonged to smallholder farmers. Twenty seven clutches of eggs given to indigenous chickens to seat on, and 10 clutches of eggs given to ducks to seat on were investigated for six months. The number of eggs in each clutch ranged from 6 to 19 with an average of 12 eggs. Duck eggs had a hatchability of 82.3% and fertility of 89.5% while chicken eggs had a hatchability of 66.2% and fertility of 82.8%. Staphylococci spp., Streptococci spp., Enterococci spp., Escherichia coli, Proteus spp., and other aerobic bacteria were commonly isolated from un-hatched eggs, dead embryos, dead chicks, and ducklings. These were comparable with bacterial isolates recovered from cloacal and pharyngeo-tracheal swabs taken from adult birds from these farms and cultured on blood and McConkey Agar base. The main causes of chick and duckling mortalities were yolk sac infections, colibacillosis, and nutritional deficiencies. Other causes of mortality encountered were ectoparasites (fleas [Echidnophaga gallinacea] and lice [Menopon gallinaceum]); and predators like kites, hawks, mongoose, dogs, wild and domestic cats.

Introduction

Indigenous chickens and ducks comprise over 80% of the 25 million poultry population in Kenya (Anon., 1996; Mbugua, 1990a, b; Njue et al., 2002). This makes poultry the most abundant livestock in Kenya (MALDM, 1994). These are reared in small flocks in villages and scavenge for most of their own body feed requirements (Mbugua, 1990a). The birds contribute significantly to the villager socio-economic needs (MLD, 1989). However, the production of these birds is limited by diseases, poor nutrition, housing, and predators. Among these, diseases are most important (Guye, 1998).

In Kenya, it is reported that only 20 – 30% of the hatched chicks reach maturity age (MLD, 1989 and 1991). There is a need therefore to investigate some of the causes of indigenous bird losses that limit their production in Kenya. Among the known causes of bird losses are poor egg fertility, poor hatchability, and high chick and duckling mortality rates. However, these parameters are not well documented in indigenous chickens and ducks.

This study aimed to investigate the possible causes of chick and duckling mortality, low hatchability and low fertility rates of indigenous chickens and duck eggs in peri-urban poultry farms in Nairobi city and Machakos district, and investigate whether the common cloacal and pharyngeo-tracheal bacterial flora from farmed birds play a role in egg hatchability and infertility, and chicks and ducklings mortalities.

Materials and Methods

A six months study was undertaken from August 2001 to March 2002 to monitor poultry in 7 indigenous chicken and 3 duck flocks. Of the 10 flocks, 4 chicken and 2 duck flocks were located at Embakasi division, Nairobi, while the other 3 chicken flocks were in Athi River division, Machakos District, and 1 duck farm was located in Dgoretti division of Nairobi. On the farm, records of total eggs incubated, hatched chicks or ducklings and un-hatched eggs, chick or duckling mortality, and predation at farm level were kept.

Hatchability and infertility rates

Twenty seven clutches of indigenous chicken eggs were given to birds to seat on at the farm. The number of eggs in each clutch ranged from 6 to 19, with an average of 12 eggs. The clutches from each farm ranged from 2 to 10.

Ten clutches of indigenous duck eggs were given...