

Poultry housing and management in developing countries

Management and housing of semi-scavenging flocks

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The large majority of families in rural regions of many developing countries own small household flocks of semi-scavenging poultry (mostly chickens), which often make significant contributions to poverty alleviation and household food security (Alders and Pym, 2009). However, the increasing density of human settlements has resulted in a decrease in the scavenging feed resource base (SFRB) in urban and peri-urban areas. This, combined with government action associated with the risks of disease transfer, particularly highly pathogenic avian influenza (HPAI), to humans and commercial poultry, is leading to a steady reduction in the number of peri-urban scavenging flocks of family poultry in many countries, and the large majority of these flocks are now located in rural regions.

Small (five to 30-bird) family-owned flocks, usually of indigenous breed or crossbred birds, are given household food scraps and sometimes small amounts of grain or grain by-products, and spend much of their time during daylight hours scavenging around the house and yard for seeds, insects, snails, earthworms, grass, shoots, fallen fruit, frogs, etc., depending on the local environment and season. Household scraps and supplementary grain typically comprise a significant proportion of the energy intake of these birds, particularly in the dry season (see Poultry Development Review on Poultry feed availability and nutrition in developing countries). Birds are not usually provided with water, so have to obtain it from the environment. This can have a marked impact on their health and productivity, particularly in the dry season.



Household flock of scavenging chickens provided with night-time shelter under the human dwelling (Myanmar)

HOUSING

One of the defining features of the semi-scavenging production system is the lack of management compared with most other production systems (Gueye, 2000). The birds are very much on their own, and their productivity is usually quite limited by the typically meagre nutritional inputs they receive. Housing is mostly limited to some form of enclosure for the birds at night, to protect them from predation, theft and environmental exposure, and to provide a site for supplementary feeding. Enclosures also make it possible to catch birds for vaccination, although this is by no means a regular or common practice with semi-scavenging poultry. Birds' night shelters may be a separate structure, under the human dwelling, or even within their owner's home. However, it is not unusual for birds to be provided with no shelter, and to roost in trees at night. Where a separate structure is available, it is usually a simple construction made from local materials.

Indigenous breed birds are seldom reared or housed in confinement, as their productivity (egg and meat production), even under good-quality *ad libitum* feeding, is insufficient to warrant the cost of this level of management. Confinement rearing may be justified for some higher-producing indigenous strains or cross-breeds, where there is a niche market for their eggs or meat. Conversely, improved breed/strain commercial birds cannot perform at their genetic potential under semi-scavenging management conditions, so are not suitable for this form of production. The survival of commercial genotypes (particularly broilers) is severely compromised under scavenging systems.



Semi-scavenging poultry production (Lao PDR)



Poultry house for overnight shelter (Mozambique)



House with woven banana-leaf nests for chickens under the eaves (Philippines)

EGG MANAGEMENT AND REPRODUCTIVE PERFORMANCE

Most rural families keeping small flocks of poultry provide the hens with nests; nests constructed of woven banana leaves or similar materials are very suitable and common in the wet tropics. These are often placed off the ground, to reduce problems with predation. The hen typically lays a clutch of ten to 15 eggs in the nest, and then sits on them. In some cases, the owner might take a number of eggs for eating or sale, but in most communities and cultures the majority of the eggs laid are left in the nest to be hatched by the hen. Most indigenous hens are excellent incubators, and typically ten chicks hatch from a setting of 12 eggs. However, in many cases, fewer than five of these will survive to six weeks of age, owing to predation, disease, malnutrition and climatic exposure.

MANAGEMENT INTERVENTIONS

In many countries, aid projects involving scavenging poultry flocks have demonstrated that it is possible to reduce chick attrition rates dramatically by practising confinement rearing of the chicks with the hen for the first week or two, supplemental feeding of the hen and creep-feeding of the chicks over this period, and regular vaccination of all birds in the flock, including chicks, against Newcastle disease (Henning *et al.*, 2009). These measures allow farming families to rear all surviving chicks to about six weeks, but the birds must also be provided with adequate nutrition from the SFRB or supplementary feeding until they are slaughtered or sold. If the SFRB is inadequate, and supplementary feed is either not available or is too expensive, the family has the option of setting fewer eggs under the hen, and either eating or selling the surplus. This is the most sustainable option in most situations, but may not be readily accepted in all cultures and communities.

Males surplus to requirements for breeding or cock fighting are kept for slaughter. Owing to high levels of chick attrition, this will often apply to only one or two birds per hatch. The large majority of village chicken strains in many developing countries grow slowly, even on relatively high levels of nutrition. Birds are typically slaughtered at about 1.0 to 1.5 kg live-weight at somewhere between 12 and 20 weeks of age. Management of these birds is usually the same as for the rest of the flock, receiving household scraps and small amounts of grain or grain by-products every day to supplement their scavenging. The use of larger-bodied cross-bred birds can have deleterious consequences where feed inputs are restricted, as the growing birds may receive sufficient food to meet only their maintenance requirements. This also applies to larger-bodied laying hens, when egg production can suffer.

One of the major constraints to improving productivity in many regions is the limited availability of suitable prepared feed or feed ingredients for hens and young chicks in the first week or two following hatch. In these regions, considerable efforts are needed



Hen and young chicks kept in cages for the first two weeks post-hatch (Philippines)



Improved chicken housing (Afghanistan)

to identify suitable locally available ingredients and diets that provide the nutrients required by chicks and hens at this stage.

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