

# Country Report: Zambia

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POULTRY contribute greatly to the protein requirements of the rural population and also to the income generating power of the family. It has been recognised that households with both livestock and crops as their sources of income are better able to cope with the effects of drought and devastating cattle diseases that reduce animal draught power. Newcastle disease (ND) is the main limiting factor in rural poultry production systems. The disease, first reported in 1952, was originally concentrated along the line of rail where the largest concentration of birds occurred. There was a definite correlation between the number of outbreaks and the amount of vaccine used in any one year.

With the introduction of the private sector into the provision of vaccine and increased extension in these areas, the incidence of ND along the line of rail has greatly reduced and the highest number of reports is now from the rural areas. The education of traditional farmers on poultry husbandry, the availability of a vaccine not requiring a cold chain and that is easily applied to small flocks, will greatly reduce the incidence of this disease. The control of this disease in rural settings will greatly increase the productivity of village chickens and the benefits this generates. Through the provision of free extension services and the provision of micro-credit, the Zambian government is committed to increasing poultry production in rural areas.

Zambia's population is currently estimated at some 10 million people. Sixty five per cent of this population lives in urban centres where employment opportunities have become scarce and social infrastructure inadequate. The balance of the population that lives in the rural setting is mostly occupied with subsistence farming, fishing, logging and small-scale trading. There are few industrial activities away from the main urban centres, along the line of rail.

Official estimates put current land utilisation for agriculture activities at below 20% of the arable land available. Of this 75% is used by small-scale farmers (85% of farmers) while the remaining 25% is used by the commercial farmers (15% of farmers).

Zambia has vast tracts of land (forests and plains) that are ideal for livestock farming that is concentrated in the central, southern, eastern and western regions of the country. The livestock sector comprises 2.6 million cattle, 500 000 goats, 75 000 sheep and 300 000 pigs. Poultry production is estimated at around 12 million broiler birds, 3 million commercial layers and 11 million village chickens.

## Village Poultry

The poultry industry in Zambia is based on two distinct systems. The first is the commercial system where broilers are obtained from hatcheries and reared for six weeks on commercial feed and in properly designed chicken runs. The commercial system is mainly along the line of rail in close proximity to the major towns. The second is the village system where chickens scavenge for food and take an average 20–22 weeks to reach maturity. These birds obtain food from the village environment and often they must find their own sources of water. However, some owners do supply drinking water close to the house. They also sometimes receive supplements in the form of household scraps or crop by-products.

The standard of housing varies greatly. Village chickens spend the nights either in the family kitchen, a run made of straw, or roosting in trees. Structures are usually small and low to prevent thieves and predators gaining access to the poultry.

Village chickens in Zambia are not homogenous and are impossible to monitor. Little information is available on local breeds, but the use of special names for them in local languages indicates that they represent fixed types with recognisable and distinguishing characters. Generally, the small dwarf breeds with naked necks are found in the valley areas

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of the Zambezi and Luangwa Rivers. The plateaus have a slightly larger bird. The adult weight of village birds averages 1.2 to 1.5 kg live weight attained at 22 weeks of age or later. Village chickens lay on average 70 eggs per year that weigh 40–42 g. The birds brood 7–18 eggs at a time. Hatchability is 85–90%. Mortality is high, with 55% of chicks dying due to predators (dogs, cats, and wild birds), nutritional deficiencies or disease.

The poultry industry system is largely in the hands of women and children. Although ownership is by both women and men, it is the women who ensure that the birds are tended. It is also the women who decide which bird is to be sold or slaughtered. Village chickens fetch a premium price in Zambia.

Traditionally cattle are the livestock with the most cultural and economic significance. Poultry are generally ranked below ruminants. When considering the different types of poultry, however, chickens are preferred to guinea fowl, turkeys, ducks or pigeons. Poultry not only provide important sources of animal protein but are also considered as assets that can easily be converted into cash. They are often sold or bartered in response to household or farming needs. The requirement for schoolbooks or fees at the beginning of the school year triggers such sales. Most social occasions are marked by the slaughter of chickens (the arrival of important guests, cultural festivals etc). Chickens are also used to pay for minor misdemeanours and feature prominently in local rituals.

The constraints to the production of village chickens include inadequate housing, nutritional deficiencies, predation and disease. Newcastle disease has been identified in Zambia as the leading killer of village chickens, followed by worm infestation, mycoplasmosis, parasitic (external) infections and coccidiosis.

### **Epidemiology of Newcastle Disease**

The disease was first reported in native fowls in Zambia in Mazabuka, the Southern Province, in May 1952. By 1957, it had spread to the major poultry producing areas of the country. Previously, the largest number of outbreaks was always recorded in Central Province followed by Southern and Copperbelt Provinces. This has now altered with the highest number being in North-western Province followed by Eastern and then Southern Provinces. The reasons for the change have been the demarcation of Lusaka Province from Central Province in 1976, increased availability of vaccine in the 1990s in urban areas, and the education campaigns by both government extension staff and the private sector.

Most outbreaks are in the traditional sector. The disease is enzootic in the rural areas. The difference in disease incidence between the traditionally and commercially managed flocks is explained by the differences in vaccination and husbandry practices followed under these two management systems. A survey conducted by the Central Veterinary Research Institute (CVRI) in 1991 on the vaccination coverage in the Copperbelt and Lusaka Provinces showed that only 10% of the traditional farmers vaccinate. The cold chain required to properly vaccinate against ND reduces vaccination opportunities among village flocks.

Although reports come in all year round there is slight peak in the months of January to March and September to November. There are two schools of thought as to why this is so. September to November is a hot dry season with increased wind flow throughout the country. January to March is cool and humid with heavy rains. Both seasons are thought to favour the airborne transmission of the virus (Sharma et al. 1988). The second school of thought believes that the peaks are due to both climatic and social factors, i.e. extensive travelling to visit friends carrying live chickens, and the need in January for cash to meet school fee requirements (J.C. Katongo, unpublished data). Other factors associated with the transmission of Newcastle disease are the exposure to the natural environment and the keeping of flocks of various ages.

All isolates from field outbreaks have been identified as virus strains of the viscerotropic, velogenic pathotype. Mortality is usually high, ranging from 70–100%.

The methods used in the diagnosis of ND are haemagglutination (HA), haemagglutination inhibition (HI) and egg inoculation. The results obtained at CVRI are communicated to the veterinary field services, which institute measures of disease control.

### **Control Measures**

It is a statutory requirement that all suspected cases of ND be reported to the office of the Department of Animal Production and Health. Legislation stipulates that once the laboratory confirms the presence of the disease, a ND infected area is declared. The infected area normally covers a radius of 20 kilometres around the outbreak area. Regulations remain in effect for two months following the last confirmed outbreak. Movement of all avian species in and out of the infected area is forbidden. The policy of government is to enforce vaccinations, with farmers paying for vaccinations. The government stopped providing free ND vaccine in 1978 due to financial

constraints. The cost of the vaccine is USD2 per 1000 birds.

The commercial hatcheries vaccinate day-old chicks using Hitchner B1 by intranasal or eyedrop routes. Farmers are advised to revaccinate boilers at 7 and 21 days with La Sota vaccine or Clone 30. Layers are revaccinated at 10 weeks of age. In village flocks, vaccination is limited due to various reasons, which include: lack of proper storage and cooling facilities at village level; low concentration of chickens per village (30 to 60 chickens); multiple ownership of chickens within village flock; unavailability of the vaccine; and inadequate extension services.

Both conventional and traditional remedies are used in the treatment of ND at village level. During a survey carried out in 1991 by CVRI and the University of Zambia it was found that 39% of farmers used traditional medicine and 14% used conventional medicine (amprolium and tetracycline being the most common).

Almost all medicines were administered via drinking water. Traditional methods include the following trees and plants (in general leaves and stalks are added to drinking water): *Agave sisalana*, *Aloe* species, *Apodytes dimidiata*, *Cassia obtusifolia*, *Cissus quadrangularis*, *Capanifera baumiana*, *Diplorhynchus condyocarpus*, *Droogmansia pteropus*, *Swartzia madagascariensis*, *Euphorbia tirucalli*, *Ficus* species, *Imulia glomerata*, *Isobertinia anglonensis* and *Kigelia africana*. The two main exceptions are that of the roots of *Droogmansia pteropus* and the bark of *Swartzia madagascariensis* were used occasionally and not the leaves.

No work has been done to evaluate the efficacy of these remedies.

### Poultry in Households

Rural poultry is an important element in diversifying agricultural production and increasing household food security. Cattle are rarely slaughtered for home consumption unless for the funeral of a rich man (Southern Province of Zambia) or for an important festival such as a wedding. Therefore, an increase in cattle numbers translates only minimally into an increase in the availability of animal protein or cash. Chickens, however, are readily slaughtered on many occasions depending on the availability.

The Southern Province of Zambia has in recent years been devastated by both drought and the cattle disease theileriosis, which has decimated draught power. A small study found that households with chickens were more able to survive the drought and recover the following year than households without chickens.

The Government of Zambia, in conjunction with cooperating partners such as German Technical Assistance and the International Fund for Agricultural Development, are supporting local cooperatives with financial assistance so that they can improve their agricultural production. Amounts of up to USD2500 are lent to cooperatives for agriculture-related activities. It has been found that in groups made up entirely of women poultry production is the most favoured activity.

**Table 1.** Four districts showing number of poultry projects/women's groups.

District	Total no. of groups	Women's groups	Poultry loans
Choma	87	18	34
Monze	12	5	3
Mazabuka	12	1	0
Siavonga	41	5	2

It appears that women prefer poultry production as it easily fits in with their other duties around the homestead. The benefits of owning chickens are also appreciated.

Both non-governmental organisations and government are carrying out extension services. For poultry-raising to be truly sustainable, the government must ensure that it is village chickens that are kept by these farmer groups and not commercial flocks in a village setting.

### References

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