

Country Report: Zimbabwe

F. Chitate and M. Guta¹

POULTRY meat is an important source of animal protein in the rural areas of Zimbabwe. Almost every household in rural areas owns indigenous chickens. The village poultry production system can be described as one of low input in terms of feed and veterinary costs with considerable output in the form of eggs and meat. A rigorous economic study on the village poultry production system is still to be undertaken. Although the importance of village poultry may be low compared to other stock like cattle, sheep and goat, ranking in terms of profitability may not necessarily place poultry as the lowest.

Village Poultry Production

The indigenous bird is mostly free-range although there is confinement in the rainy season during planting. The production system is largely subsistence with very limited sales of birds or eggs. The average flock size is 20 birds consisting of one cock, four hens, seven growers and eight chicks. On average, a hen lays about 38 eggs per year. Village poultry is generally less productive compared to the exotic commercial birds.

The village chicken has a dual-purpose, and is selected and raised for meat or egg production. The indigenous birds vary considerably in size, colour, shape of comb and other features. In the eastern parts of the country, the naked-neck variety, which is also a large bird, is commonly seen. Very small bantams are found throughout the country, and there are also some varieties with short and bowlegs. Generally, the naked-neck variety is favoured for its size and good mothering.

The indigenous birds range freely in search of food, with about 85% of farmers providing no supplementary feed. Where supplementary feed is given, it varies, depending on the time of the year and type of crops grown locally. Generally, cereal grains, including maize, millet, rapoko, sunflower,

sorghum, and 'sadza' prepared from the local grains, are the main supplement. Supplementation is implemented at specific periods like during the planting season and during chick rearing. In some communities, chicks are removed from the mother and kept in confinement where they are fed maize meal and whole cereal grains. Some households also provide vitamin and mineral supplementation for the chicks. One of the main reasons for confining the young chicks is to prevent predation by birds of prey like eagles and crows. In a socioeconomic study of 280 households, it was found that 98.3% of farmers provide water for their birds in the dry season, while 95.6% did in the wet season.

The same study found that more than 90% of households provide housing for the chickens. The type of housing does vary and includes fowl run, kitchen, main house and woven basket. The study also found that 3.3% of the households did not provide any accommodation and so birds had to perch in trees at night. The fowl runs, which are the commonest type of housing, are built from various materials like bricks and poles, and roofed using asbestos, corrugated iron sheets or thatched with grass.

Women play a pivotal role in village poultry production while men concentrate on other livestock like cattle, sheep and goats, or may work in urban centres. Between 55% and 65% of the chickens are owned by women. The main activity of women includes assistance during brooding and cleaning the fowl run, while men dominate the provision of supplementary feeding. Building of fowl runs, and opening and closing fowl runs are mixed duties where all members of the family participate. Although poultry are primarily women's responsibility, some 25% of women cannot make production decisions alone. About one third of poultry is owned communally within the household.

Poultry play a key role as both a source of high protein food and income, and often as a source of garden manure. Input costs are among the lowest compared to other enterprises like cattle, sheep or

¹Department of Veterinary Services, Central Veterinary Laboratory, PO Box CY 551, Causeway

goat. Poultry have the fastest turnover and require limited land area.

Cultural importance of village poultry

There is a considerable amount of trade, gifting and exchange of poultry in the rural areas. Traditional healers request a live bird as consultation fee in some cases. Chickens are also very useful for barter in exchange for goods like grain. Chicken dishes are always served during traditional social functions, especially those involving in-laws. In some rural communities the black chicken is used to exorcise evil spirits.

Constraints to village chicken production

Some of the constraints to village poultry production include: poor management (nutrition and housing); disease, inadequate extension; and lack of credit facilities. It was observed in a study that only 15% of interviewed poultry owners gave supplementary feed. In the same study, about 55% chick mortality was recorded and nutritional stress was suspected as one of the most likely cause in that age group. The relatively low annual egg production of about 38 per hen could be explained in part by a low level of nutrition. A significant number of chicks fall prey to eagles, squirrels or snakes when they are not housed or the housing is poor. Disease is another constraint and important diseases include Newcastle disease (ND), infectious bursal disease, infectious coryza, fowl pox, coccidiosis and parasitosis (external and internal). Limited poultry health extension was confirmed when 44% of women interviewed felt they did not have the skills to treat their birds. Availability of credit was considered by 73% of the women interviewed to be necessary for improved poultry production. Credit was needed for construction of good poultry houses, wire mesh fencing and purchase of feed and veterinary medicines.

Newcastle Disease Control

Currently the Department of Veterinary Services continues to control ND by ring vaccination in response to outbreaks. Vaccines currently used include NDV4-HR, La Sota and Immopest. Following the implementation from 1996 to 1998 of the FAO Technical Cooperation Programs Emergency Assistance for the Control of Newcastle Disease TCP/ZIM/4553 and TCP/ZIM/8821, establishment of a community-based approach to ND control was emphasised. Farmers were taught how to deliver the NDV4-HR vaccine using eyedroppers. Routine vaccination for ND has become the responsibility of the poultry owner, while the Department stocks the vaccine throughout its

network of Provincial, District Offices and Animal Health and Management Centres. The vaccine is provided free now. Other control strategies include quarantine and movement control.

Some households interviewed during the socio-economic study reported that they used crushed aloe as a broad-spectrum remedy for most poultry diseases. Snuff (tobacco) was used for control of fleas. Parasites in the poultry house were controlled through burning, where asbestos or corrugated iron sheets were used for roofing.

Epidemiology of Newcastle Disease

ND is probably the most feared disease of poultry throughout the world, and the disease has spread to all continents in recent decades. Zimbabwe has had limited outbreaks of ND, apart from the major outbreaks of 1994. There have been three limited outbreaks, the first in 1957 along the border with Zambia, and in 1975 and 1986 along the border with Mozambique. On all occasions strict quarantine, movement control and vaccinations quickly controlled the disease. The worst epidemic of ND in Zimbabwe started in December 1993 in Sengwe communal area of Chiredzi district along the border with South Africa. By June 1994, the disease had affected most of the communal areas of Masvingo province. Because of the complexity of rural movements, control of poultry movement ceased to be effective as a means of controlling the disease. Three months later, the disease had spread to most provinces making vaccination the only logical control strategy.

The Department mounted vaccination campaigns using La Sota eye drop and injectables like Immopest or Newcavac Nobilis concurrently. Birds vaccinated were ten million in 1994 and six million in 1995, all in the communal sector. ND has largely been a disease of the rural backyard flocks. Few outbreaks were experienced in the commercial sector due to the strict bio-security and routine vaccinations. In 1995 out of a total of 172, outbreaks, only 14 (8%) were reported from commercial flocks. None of these was large commercial producers who had good bio-security and zoo-sanitary controls. During 1996, no commercial flocks recorded outbreaks of ND and the 21 outbreaks reported were all in back yard rural poultry. Table 1 shows the annual occurrence of ND and vaccinations by the Department of Veterinary Services (DVS) in the communal areas.

During the period 1994 to 1999, a series of epidemic cycles occurred coinciding with periods of highly susceptible bird populations. The hatching period peaked in June while in other areas continued

through until September and October. The high proportion of very young birds from June to October could explain the epidemic peaks during these times of the year. The cost of vaccine delivery in the communal areas was such that vaccinations could not be sustained every four months to keep the susceptible population low. The need to maintain a cold chain during delivery made it impossible to hand over vaccination to the poultry owners in the communal areas. From the socioeconomic study, transfer and movement of birds between villages and regions are quite common enabling owners to use them for celebrations, gifts, for barter trade and as ready sources of cash. This considerable uncontrolled movement of birds does contribute to the spread of infection.

Table 1. Annual occurrence of ND and vaccination of rural poultry by DVS.

Year	No. of ND outbreaks	No. of birds vaccinated
1994	281	10 000 000
1995	172	6 000 000
1996	21	215 800
1997	64	371 600
1998	80	3 837 400
1999	8	417 000

Only nine out of some 250 ostrich flocks were affected by ND since the beginning of the outbreaks in 1993. Apart from the affected properties, no ostrich properties have vaccinated against the disease, leaving the vast majority of ostriches in Zimbabwe unvaccinated.

Diagnosis of Newcastle Disease


ND is a notifiable disease, which means that any person is required by law to report the disease, whether confirmed or suspected, to the veterinary authorities. Disease surveillance is implemented through a network of eight provincial offices, 58 district veterinary offices and 320 animal health and management centres (AHMCs). A standard form (Figure 1) was developed for disease reporting. The AHMCs are confined to the communal resettlement and small-scale farming areas. Staff are required to report suspected ND within 24 hours to the Epidemiology Unit of the Field Branch. Based on post-mortem findings and epidemiology, a provisional diagnosis is made and control measures are initiated. Samples which include trachea, cloacal swabs, lung, brain, spleen, liver, kidney and bone marrow are collected and sent to the Central Veterinary Laboratory (CVL) in Harare by courier service for confirmation.

The objective in the diagnosis of ND is to reach a decision on whether or not to implement control measures. Neither clinical signs nor post-mortem lesions of ND are pathognomonic due to the wide variation in virus strains, host species, immune status and other factors. Similarly the presence of lentogenic ND virus (NDV) strains in birds in most countries and the almost universal use of live vaccines means that mere demonstration of infection, such as the presence of NDV in a host, without characterising the infective virus is inadequate. Of particular importance in the diagnosis of ND is that it may cause severe losses and have adverse effects on trade in poultry and poultry products such that control measures are usually defined at national or international level.

In Zimbabwe, laboratory diagnosis of ND is based on virus isolation in 9 to 11 day-old embryonated chicken eggs from breeder flocks. The embryonated eggs should ideally come from an unvaccinated flock free from NDV infection. Since the egg supply to the Virology Section of the CVL is from a ND vaccinated flock, there exists a risk of antibody interference with virus isolation. Care is taken to avoid rupture of the yolk sac, which contains antibodies that could contaminate the allantoic fluid leading to neutralisation of virus. It is important that the eggs are well chilled at 4 degrees Celsius for six to twelve hours before harvesting the allantoic fluid to reduce the risk of erythrocyte contamination of the fluid. After virus isolation haemagglutination (HA), haemagglutination inhibition (HI) and mean death time (MDT) are performed for characterisation of the virus. The virus isolation method is based on that given in A Laboratory Manual for the Isolation and Identification of Avian Pathogens, Third Edition, 1989, and the OIE Recommended Diagnostic Techniques and Requirements for Biological Products, Volume 1, 1989.

Extension Services

Extension services working with rural poultry in Zimbabwe include those departments under the Ministry of Lands and Agriculture, namely: Department of Veterinary Services (DVS); Department of Agricultural and Technical and Extension Services (AGRITEX); and Department of Research and Specialist Services (DRSS). Non-governmental organisations also provide extension services in the villages. DVS mainly provides extension in poultry health while AGRITEX and DRSS provide extension in poultry husbandry. Through its network of 320 AHMCs, the department's Veterinary Extension Assistants (VEAs) are responsible for disease investigation and advice on poultry disease control.



DEPARTMENT OF VETERINARY SERVICES

FIELD, EPIDEMIOLOGY AND EXTENSION REPORT

**SHADED BOXES
MUST BE COMPLETED**

PROVINCE
DISTRICT

OWNER
STATION

FARM ADDRESS/ DIP TANK

YOUR REF

DISEASE
GRID REF

Disease Code (if listed over)

FOLLOW UP REPORT?
(of previously reported outbreaks)
TICK **YES** **NO**

DATE OF DIAGNOSIS	SPECIES	EPIDEMIOLOGY			DISEASE CONTROL		
		NUMBER			NUMBER		
		At Risk	Of Cases	Of Deaths	Treated	Vaccinated	Other

TICK as appropriate	CONTROL	SECTOR	AFFECTED POPULATION			
DIAGNOSIS	vaccine	commercial	SEX	AGE	SYSTEM	
laboratory	treatment	communal	male	neonate	dairy	(cattle only)
clinical	quarantine	small scale	female	<6 mo	beef	
pm	dip	resettlement	castrate	6m-1yr	mixed	
suspect	other	other	all	adult	other	
	none			all		

Wildlife involvement in transmission? **YES** **NO** **?**

Comment on 'other' marked above

Main clinical signs/ post mortem findings:

Comment on epidemiology: (source, rate of spread, vectors, reservoirs)

Signature:

(tick) **POSITION**

VET	AHI
VEA	LAY

NAME

Figure 1. Disease field report form.

Meetings, field days and shows are also conducted to disseminate information. Extension packages (leaflets and manuals) are produced by all the service departments according to needs, and in collaboration with farmers through Participatory Rural Appraisal (PRA) techniques.

Potential for Village Chicken Production

Village chicken production has great potential if the constraints to production are alleviated. Improvement in health management would prevent the high chick and grower mortality that has been observed. Since 81% of farmers interviewed had no training in poultry management, a lot could be achieved with training. Given that women are the major stakeholders, there may be opportunities for extension workers to work in collaboration with key local women or women's groups. Predators contribute significantly to poultry losses and with good housing the problem could be alleviated.

Institutional and Human Resource Support

DVS staff which interact with village poultry producers include 85 veterinarians, 91 Animal Health Inspectors (AHIs) and 275 Veterinary Extension Assistants (VEAs). More than 1500 Extension Workers from AGRITEX and eight Specialist Officers from DRSS also provide extension and training to the villagers. DVS and AGRITEX extension workers are housed at the same offices hence they complement each other in service delivery. Specialists from the DRSS are mainly involved in research and the technologies and knowledge acquired is passed on the extension agents in DVS and AGRITEX for dissemination in a language suitable to the farmers. NGOs working in particular project areas are also involved in training farmers usually in conjunction with DVS and AGRITEX staff. There is very limited private sector involvement in the rural areas except for a few veterinarians working in their private capacity. Recently an

Agricultural Training Institute was dedicated to communal farmer training, and courses include poultry production.

Marketing of Poultry

In a survey carried out, communal farmers preferred indigenous chickens for their good taste to the improved broilers on the market. Hence, the indigenous chicken is well received by communal farmers and the only obstacle is the failure to meet demand due to the current low productivity. Opportunities exist in the rural areas through local butcheries, hospitals and schools, all demanding large quantities of chickens that at present could not be fulfilled by the farmers. In fact, marketing was not perceived as a problem by 70% of farmers.

Currently, marketing is limited to live birds and, because of the small numbers involved, there are no problems being faced. There is virtually no trade in eggs or meat of indigenous chickens at the moment.

Research and Development

The Department, through two FAO TCPs (TCP/ZIM/4553 and TCP/ZIM/8821) carried out research into the possibility of delivery of the NDV4-HR vaccine through locally available grains. Although rapoko was the best vaccine vehicle, challenge of birds after six vaccinations produced unacceptably low protection. Hence, feed-based vaccine delivery was considered ineffective. During field trials, the NDV4-HR and I-2 strains produced good protection, more than 90% when given by eye drop method.

Socioeconomic studies conducted yielded valuable information on rural poultry husbandry, health constraints and flock dynamics. As a result, extension packages are being produced to address some constraints to rural poultry production.

The Department of Research and Specialist Services is currently conducting studies on the performance of indigenous birds under deep litter system and with improved feeds.