

Country Report: Namibia

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NAMIBIA has a land surface area of 823 000 square kilometres and a human population estimated at 1.7 million with about 70% living in rural areas. It is a largely arid country with over 90% receiving less 500 mm of rain per annum. This greatly limits the country's agricultural potential, particularly the growing of grains and cereals needed for poultry production. As a result, commercial poultry farming is not a significant form of farming and most of the chickens are found in small flocks in rural households, farms and urban areas. Chicken and egg production is often omitted in most agricultural statistics. Most of the country's chicken and table egg requirements are provided for by imports.

It is estimated that there are less than half a million chickens in the whole country. Except for a few commercial flocks around the major urban areas (Windhoek and Okahandja), most of the chickens are in smallholder flocks consisting of 6 to 10 chickens per household in both rural and commercial farming areas. An estimated 48% of the chickens are in rural villages. Management of flocks is minimal and losses due to malnutrition, thirst and diseases are significant. Any improvement in chicken production through better management and disease control has the potential for addressing protein requirements of rural families.

Reasons for Keeping Chickens

Small-scale chicken farming is common and popular among both rural farmers and urban dwellers who utilise chickens and eggs as an important source of protein. Rural diets are generally high in carbohydrate and the inclusion of chicken and eggs adds a much-needed balance to the staple diet. Studies carried out in the Kavango region of the country showed that 90% of all farmers owned chickens. The

same study showed that about 50% of the farmers had chickens as their only livestock. It could be concluded that the chicken is an important livestock in poor households. The situation is likely to be the same in the rest of the country.

Chickens are kept primarily for provision of household meat and eggs and to a limited extent for marketing. In the northern communal areas, chickens are considered a delicacy and often only slaughtered on important occasions like the welcoming of an important visitor (e.g. the husband coming from town) and sickness in the family. At the household level, chickens are more disposable compared to larger livestock such as sheep, goats and cattle, and are therefore more likely to be slaughtered to provide the family with protein and to be presented as gifts.

In some areas, when chickens are slaughtered for visitors, they are given a chance to select their favourite portions before the hosts take a share. In general, there are no taboos regarding the consumption of chicken or eggs.

Among the Herero people further south, chicken meat is not valued much and some adult males do not partake of chicken dishes. Here, chickens are sometimes kept solely for waking up people in the morning. Chickens are generally not kept with a view to selling them for profit. Eggs are seldom gathered for consumption except when they have been abandoned by the hen.

Chickens are kept in all parts of the country with the majority being in backyard flocks. In the commercial farming areas, chickens are kept in small flocks by the farm owners and their workers and the mode of farming is not very different from that in the villages.

Village Poultry Production Systems

Breeds of chickens

A number of indigenous breeds are kept in villages. These include:

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Table 1. Distribution of poultry in Namibia.

Region/area	Chicken population	Remarks
East Caprivi	25 500	Rural
Kavango, Omega	44 318	Rural
Ondangwa	49 900	Rural
Opuwo/Sesfontein	12 886	Rural
Otavi, Tsumeb/Mangetti West	6 994	Commercial/urban/rural
Grootfontein/Mangetti East	11 811	Commercial farming areas /urban + rural
Okahandja/Ovitoto	67 177	Peri-urban and rural
Outjo/Khorixas/Kunene South	13 677	Commercial farming area + rural
Otjiwarongo/Okakarara	30 754	Commercial farming area + rural
Gobabis + surrounding areas	37 902	Commercial farming area + rural
Omaruru + surrounding areas	17 779	Peri-urban + rural
Walvis Bay/Swakopmund	10 503	Peri-urban
Hardap	17 705	Commercial farming area
Karas	19 085	Commercial farming area + rural
Windhoek/Rehoboth	84 532	Commercial farming areas + peri-urban
Grand Total	450 523	

Source: Directorate of Veterinary Services, 1999 Census.

- Ovambo line, which comes in a variety of feather colour and patterns;
- Venda line, a black and white chicken, but also available as brown and white;
- Naked-neck line, a heat-tolerant breed available in a number of feather colours and feather patterns; and
- Kavango.

Except for the Venda and Naked-neck lines, which originated from South Africa, the names of the other breeds refer to regions in Namibia from which the chickens originate. The indigenous breeds are dual-purpose; that is, they are kept for production of eggs and meat. The hens become broody and incubate their own eggs. The males are kept mainly for meat and the females for breeding. Chickens start laying eggs from about 4 months of age. The indigenous chicken lines are very hardy and well adapted to the hot climate, thus making them suitable for rearing in isolated areas without electricity and far from suppliers of commercial feed.

Potential production by indigenous chickens is quite competitive compared to exotic breeds. Hens can lay up to 100 to 150 eggs per year if eggs are collected and not left for natural incubation (compared to 220 to 300 for exotic breeds). If the eggs are not collected, approximately 12 eggs are laid before the chicken becomes broody. The fertility of indigenous chicken eggs compares well with that of exotic breeds. The use of old cocks in most villages however, results in fertility being significantly lower (A. van Nierkerk pers. comm.).

There appear to be no breed preferences, but having a distinct feather pattern is a trait liked for ease of identification of individual birds. Extension workers and

researchers promote indigenous breeds in preference to exotics because of their hardiness and reasonable production under minimal management.

Studies done in the North Central region of the country revealed that flock sizes are 8 to 15 adult chickens with a few flocks of up to 30. About one cock is kept for every 10 chickens. The number of chicks varies with the season. They found around nine chicks per household of which only three were expected to survive to 20 weeks. Chick mortality was highest at the end of the hot dry season (August to November) (Muradzikwa, pers. comm.).

Housing and nutrition

Housing of chickens varies widely depending on the area. This ranges from traditional housing made of grass and poles in the north to wire mesh fences further south. In the crop farming areas of the north, housing is mainly provided to stop birds from destroying crops near the household. Sometimes no housing is provided and chickens shelter wherever they can find it, including bushes, trees and under grain storage huts. In the Kavango region in north-eastern Namibia, it is estimated that 96% of chicken rearing households had no proper housing and chickens were found perching on kraal poles, felled trees, roof tops, old vehicles and in trees (Toto pers. comm.).

Management is generally non-existent and the chickens practically look after themselves. Extra feed and clean water are rarely provided. It is not surprising therefore, that production is low.

The chickens are kept at the homestead and left to scavenge around the houses to wander in nearby

bushes. Cattle and goat kraals are popular scavenging sites. Their diet consists of insects, greens, seeds, mahangu grains (finger millet) and leftovers from human diet. At night, some farmers close in their birds for protection from predators.

Chickens lay their eggs anywhere and they are sometimes difficult to find. It is not surprising that the eggs may fall prey to snakes and dogs. Approximately 12 eggs are laid in a clutch; free-ranging chickens may produce up to four clutches a year.

Current research emphasises the advantages of providing good housing, shade and provision of supplementary feeding (up to a quarter of requirements) as a way of improving production.

Role of women and children

Although ownership of chickens is claimed by all, the actual management of chickens is minimal. Women play the more significant role in feeding the chickens with kitchen leftover food and providing water. Men sometimes assist in the construction of housing where this is provided. In general, chicken rearing has rather low returns compared to other livestock and so the attention given to them is low. It is not surprising therefore, that rearing is relegated to women and children.

Constraints on production

The major constraint on poultry production by small-holder farmers is the lack of management skills. If production were to be increased significantly, the provision of feed, water and shade would become more significant factors. Training needs to be provided on housing, nutrition and disease control. A study in the North Central region (Muradzikwa pers. comm.) showed the mortality rate of chicks to be about 60% before 4 weeks of age, rising up to 100% in winter. Up to 60% losses of chicks before 4 weeks of age are common. The main causes of losses were identified as predators, theft, cold weather, dehydration, and disease and parasite infestation. Because they are free ranging, chickens are sometimes seen as a nuisance when crops are still young. The high mortality of chicks means that farmers are always trying to build up their flocks.

Animal Health Control

In spite of chickens being raised in small numbers and under free-ranging conditions, significant losses due to disease have been reported. Apart from exceptional cases, the control of poultry diseases, internal and external parasites, is the owner's responsibility. Control of diseases such as Newcastle disease (ND) is only done at government expense where the

disease has been confirmed in an area with large chicken populations. Where losses are likely to be limited to a few birds, the owner is advised to take the necessary control him/herself. No routine vaccination campaigns against any poultry diseases are done except to contain outbreaks.

There is, however, very little in the way of preventive measures practised by the farmers. A few farmers use smoke to control ectoparasites in the chicken houses and some believe that *Aloe vera* protects against ND (Mkandawire pers. comm.).

Newcastle disease, avian influenza (fowl plague) and psittacosis are notifiable diseases, which means that the owner must report their occurrence to the official veterinary services.

The state veterinarian provides diagnosis and confirmation of poultry diseases. Where material is available for post-mortem, laboratory confirmation can be sought. The long distance to villages makes follow-up investigations expensive and hence the cycle of infection and losses may persist.

Of the notifiable diseases, only ND is economically important, mainly because of its potential detrimental effect on the ostrich industry. Avian influenza has never been reported, whilst psittacosis only occurs sporadically. The other important poultry diseases recorded in Namibia in the last few years are summarised in Table 2. It must be noted that a lot more incidents of disease go unreported because of the low economic value placed on chickens.

A number of other poultry diseases have also been reported through the national veterinary information system. These include internal parasites, fungal infections, gout, ascites, unspecified bacterial infections, enteritis, chronic respiratory disease, mycoplasmosis, ophthalmitis and conjunctivitis. Their significance in poultry rearing in backyard is practically unknown.

Newcastle Disease and its Control

Newcastle disease is by far the most important infectious cause of mortality in village chickens. The first outbreak of ND was confirmed in 1950 and controlled by vaccination. Further outbreaks were reported in 1972–73 from several districts in the country. Apart from a single case in a parrot in 1974, no further outbreaks of ND were diagnosed in chickens until 1989 when it occurred in the Caprivi region. The disease has since spread westwards and southwards.

Except for two outbreaks among ostriches in 1995, all outbreaks involved chickens and rarely other poultry. The flocks involved were generally small and reared in the backyard. It is generally accepted that the reported cases are only the tip of

Table 2. Reported incidence of some poultry diseases for years 1995 to 1999.

Disease/Cases in year	1995	1996	1997	1998	1999
Infectious bronchitis	0	0	44 (5 foci)	24 (2 foci)	26 (5 foci)
Infectious laryngo-tracheitis	12	0	0	48	0
Fowl cholera	0	0	20 (1 focus)	0	0
Gumboro disease	0	15 (susp.)	Suspected	15 (2 foci)	5 (11 focus)
Fowl pox	9	128 (5 foci)	2237 (20 foci)	137 (11 foci)	157 (19 foci)
Marek's disease	0	0	0	5 (2 foci)	5 (2 foci)
Infectious coryza	205	0	6	685 (4 foci)	4 (1 focus)

Table 3. Recent outbreaks of Newcastle disease.

Year	No. of Foci	No. of Cases	% Dead	Remarks
1995	22	6427	54	Cases included 50 ostriches; Ondangwa, Omaruru (5504) and Keetmanshoop reported most of the cases
1996	13	574	88	Most cases around Grootfontein and Otjiwarongo
1997	21	688	73	Rundu and Ondangwa had most cases
1998	19	764	69	ND spread throughout the country, many other foci suspected
1999	12	803	Details not yet available	Widespread

Source: Director of Veterinary Services Annual Reports.

the iceberg and that most outbreaks go unreported. Besides the confirmed cases of ND, more cases which list ND as the causative agent are reported. All diseases (including infestation with ectoparasites) in which nervous symptoms are observed are often reported as ND.

Epidemiology of Newcastle Disease

Most of the outbreaks occur in backyard flocks and affect all age groups. The virus strains involved are mainly velogenic and respirotropic.

The following are the most commonly reported signs as recorded by veterinarians in their disease report forms in which ND is given as the diagnosis:

- Respiratory signs: difficult breathing, gaping, nasal discharge, coughing;
- Nervous signs: prostration, frenzy, paralysis (legs, neck, wings), inability to swallow, poor coordination, generalised weakness;
- Demeanour: dullness, depression, somnolence;
- Gastro-intestinal: diarrhoea (white, greenish), enteritis, anorexia (sudden onset).

The duration of illness is one to three days (rarely up to seven) and mortality in affected flocks ranges from 10–100% in susceptible flocks. The disease is often self-limiting in that it eliminates the host. The cycle of infection is maintained by premature restocking of flocks and attempts to move already infected birds to 'safer' areas. No attempts at pre-

ventative bio-security, except those imposed by the state veterinarian, are undertaken.

Diagnosis and reporting of Newcastle disease

Newcastle disease is a notifiable disease. Farmers report deaths or suspected outbreaks based on clinical signs to veterinary officials. Follow-up investigations are done by the local state veterinarian who will submit samples to the local veterinary laboratory for confirmation. Sometimes samples are sent to laboratories in South Africa. Diagnosis is based on serology and histopathology. Virus isolation and typing; and inoculation into eggs to determine cytopathic effects is not done routinely. As with other notifiable diseases, reports of outbreak are sent to a central epidemiology unit at the head office. Reporting officers have an opportunity to validate their diagnosis on a monthly basis.

No attempt has been made to establish if seasonal patterns exist.

The disease spreads through the neighbourhood killing many chickens before vaccinations can control the disease. The disease is introduced to new areas through infected chickens brought from affected areas, often as gifts after a visit. There is continuous traffic of chickens across the country and the situation is exacerbated by attempts to rebuild flocks after disease outbreaks. Wild birds are also believed to act as carriers for ND virus.

Table 4. Cases of Newcastle disease in poultry reported from 1995 to 1999.

Cases Mth/Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total foci for year
1995	40	0	41	377	0	0	5601	7	33	50	275	0	22
1996	82	14	229	39	16	0	0	158	0	6	0	39	13
1997	124	0	18	30	18	35	0	90	23	50	76	224	21
1998	60	0	40	10	32	26	123	41	394	23	15	0	19
1999	0	1	639	6	0	9	65	1	0	0	60	0	12

Paskin (1995) noted the negative food security implications of Newcastle disease in rural flocks, and estimated the value of lost protein at N\$ 148.00 (USD 22) per household per annum. Noting the low cost of ND vaccine, he concluded that the control of ND through prophylactic vaccination was highly beneficial (benefit:cost ratio 14.8). Thus, ND control can be an efficient and well-targeted approach at improving food security at household level among the rural poor.

Control of Newcastle disease in rural flocks

The disease has been notifiable since 1962. ND outbreaks occurring up to the early 1970s were all rigorously controlled by culling of infected flocks, quarantine and compulsory state-sponsored and controlled vaccinations. Private control of the disease was not permitted. This strategy was abandoned with the introduction of commercial broiler farming in the major centres (Schneider 1994).

The current strategy employed in rural areas involves increasing awareness of the disease. It involves advice to vaccinate all birds within 20 kilometres of a confirmed infected focus, quarantine and movement restrictions. Where suspected outbreaks pose a risk to ostrich farming areas and in cases where many flocks are at risk as in urban areas, vaccination campaigns at government expense are conducted. In general, the owner buys his own vaccine. Farmer cooperation is generally good during government-sponsored campaigns since they are aware of the serious damage that can be caused when Newcastle disease affects a naive flock.

The purchase of ND vaccine and prophylactic vaccination of chickens is only permitted following authorisation by the state veterinarian. Preventive vaccination against Newcastle disease works well when both vaccination and supply of the vaccine is done by veterinary staff, but not so well when farmers have to acquire the vaccine and do it themselves.

The vaccine comes in large doses (usually 1000), which is not suitable for dealing with flock sizes of less than 50 birds, leading to a massive wastage of

unused vaccine. Because of the lack of electricity and other basic infrastructure, maintenance of the cold chain is difficult.

The management systems also make vaccination of chickens difficult. Because the chickens often roam free, it is difficult to catch all birds for vaccination.

Economic Potential

The potential for improved chicken production in rural areas will remain good as long as the birds are not fed intensively since most of the feed has to be imported. The generally accepted way forward is to improve indigenous chicken production at household level through better management (feeding, watering, hygiene, and provision of shelter) and control of the major infectious and non-infectious causes of mortality.

Institutional resources

A number of projects to improve chicken production in rural areas are currently under way. One of the main projects is based at the Mashare Agricultural Development Institute near Rundu in the Kavango region. Another project active in the North Central region tried to find the impact of disease in backyard chickens and work out various vaccine regimes against ND. The latter study showed chickens to be highly susceptible to ND and that vaccination conferred protection for very short periods (Talavera 1997).

Marketing opportunities and strategies

Production of eggs and chickens is generally at a very low level and very little marketing occurs except when owners need cash. The distance of most rural areas from urban areas will continue to limit the market for chickens and eggs to the areas where they are produced. The general poverty in these areas suggests that the local market will also be very limited. Any efforts to increase chicken production must thus be aimed at improving food security at household level. Informal marketing of eggs, live

chickens and chicken stew will however play a small but significant part in the economies of rural dwellers.

Research and Development Priorities

Research and extension efforts should be directed at the main constraints identified as the lack of management skills and poor control of diseases through hygiene, bio-security and vaccination against diseases such as ND. Efforts should be made to make the delivery of vaccine to these remote areas easier. The availability of heat stable and easily administered vaccines would go a long way towards alleviating current problems. The capability of the official veterinary services to control poultry diseases needs to be strengthened. Research and extension should aim to

increase the value of chickens in the context of protein availability at household level.

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