THE farmer's weekly

HOW TO GUIDE: POULTRY

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EDITORIAL TEAM
General manager Gary Wium
Editor Janine Ryan
Project coordinator Zunel Laing
Art director Louis Kruger
Designer Mario Ferlito
Chief sub Jenna van der Walt
Copy editors Fanie de Villiers, and Trevor Cramer
DIGITAL TEAM
Digital editor Sindira Chetty

ADVERTISING AND MARKETING
Andy Nxumalo, 010 971 3773, andyn@caxton.co.za
Bev Geldard, 082 557 4662, bevg@caxton.co.za
Erika Pienaar, 083 286 7092, erikap@caxton.co.za
Zona Haasbroek, 082 960 7988, zonah@caxton.co.za
Rowena Nundkumar, 010 971 3774, rowenas@caxton.co.za

farmer's weekly

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About the Poultry How-to Guide

Whether you're starting your first flock or expanding an existing enterprise, the *Farmer's Weekly Poultry How-to Guide* is designed to be a practical companion throughout your poultry farming journey.

Developed in collaboration with industry role players, it combines hands-on knowledge with proven farming principles to help you make informed decisions with confidence.

The guide follows the natural progression of a poultry enterprise, beginning with planning, production systems, housing, and infrastructure, before moving on to the day-to-day management of your flock.

Within these pages, you'll find guidelines on brooding, nutrition, water management, biosecurity, health and disease management, parasite control, record-keeping, marketing, financial management, and business growth.

Whether you read it from cover to cover or use the contents page to navigate to a specific topic, we hope this guide becomes a trusted reference that supports you in building a productive, profitable, and sustainable poultry enterprise.

A new chapter of this guide will be published every Friday for the next 10 weeks.

What every new poultry farmer should know

If you are considering poultry farming, or have recently started, you will already know there is a lot to learn.

That is really the purpose of this guide.

Over many years, *Farmer's Weekly* has spoken to poultry farmers and industry specialists across the agriculture sector. We have seen successful operations grow, but we have also reported on the mistakes, challenges and difficult lessons that come with farming.

With this guide, we want to bring some of those lessons together in one place.

This How-To Guide is not intended to tell you everything there is to know about poultry farming. Rather, we hope it gives you a good overview of the business and helps you understand the areas that deserve your attention. From housing and feeding to bird health, management and the financial side of the operation, each part plays a role in the success of your farm.

One of the advantages of starting today is that you do not have to learn every lesson the hard way. There is a great deal that can be learnt from farmers who have gone before you. *Farmer's Weekly* has had the privilege of documenting many of those experiences over the years, and we hope the insights contained in these pages help you make better decisions in your own operation.

Your farm will be different from the next farmer's. Your circumstances will determine what works for you. Use this guide as an overview, ask questions, get advice where you need it, and keep looking for ways to improve what you are doing.

Poultry farming can be challenging, but it can also create real opportunity for farmers who approach it with good information, careful management, and a willingness to learn.

We hope this guide helps you along that journey, and that some of the lessons *Farmer's Weekly* has gathered over the years can help you make the most of the opportunities ahead.

GARY WIUM
GENERAL MANAGER, FARMER'S WEEKLY

Supporting the farmers who feed the nation

Poultry farming is, without exaggeration, the quiet powerhouse of South African agriculture. Whether it's a backyard flock providing essential protein to a household in rural KwaZulu-Natal, a medium-scale enterprise supplying local spaza shops in Gauteng, or a high-tech commercial broiler operation in the Western Cape, chickens are central to our nation's food security. Poultry remains the primary and most affordable source of animal protein for millions of South Africans. Yet, despite its critical role, entering and navigating the poultry industry presents a steep learning curve fraught with distinct local challenges.

It is precisely this reality that inspired the creation of this comprehensive how-to guide. In an era marked by shifting climatic conditions, fluctuating feed prices, biosecurity threats like avian influenza, and ongoing pressure on local supply chains, passion alone isn't enough to build a resilient farming business. Success requires actionable, science-based, and context-specific knowledge.

This guide was compiled to bridge the gap between technical expertise and on-the-ground application. Within these pages, you'll find clear, practical instruction covering every link in the production chain: from selecting the right breeds and designing biosecure housing to managing nutrition, flock health, and market access.

For more than a century, *Farmer's Weekly* has operated under a clear and enduring mandate: to inform, educate, and empower the agricultural community of South Africa. Since 1911, our publication has stood as a trusted partner to farmers, serving as a platform where proven farming practices meet modern innovation. We've always believed that a thriving agriculture sector is built not on isolated success stories but on the widespread dissemination of sound, practical advice that helps every farmer perform better tomorrow than they did today.

Publishing this standalone guide directly fulfils that founding mandate. *Farmer's Weekly* has never been merely an aggregator of news; it is a tool for development, business growth, and rural empowerment. By lowering the barrier to technical knowledge, this guide empowers emerging farmers to transition to commercial viability, while providing established producers with a reliable, updated reference to optimise their efficiencies.

As you flip through the pages of this guide, my hope is that it becomes a trusted companion on your farm. By putting practical, proven strategies directly into the hands of producers, we reaffirm our commitment to driving the agricultural economy forward.

Welcome to the *Farmer's Weekly* Poultry How-to Guide. May your flocks thrive and your enterprise flourish. Happy farming!

JANINE RYAN
EDITOR, FARMER'S WEEKLY

Your poultry farming journey starts here

Some of the best lessons in agriculture aren't learnt in a classroom; they're learnt in the field, in the poultry house, and through conversations with people who have dedicated their lives to farming.

When putting this how-to guide together, one thing became abundantly clear: successful poultry farming isn't about finding a single secret to success. It's about consistently applying the right management practices, paying attention to the smallest details, and never stopping the pursuit of knowledge.

This guide was created with one purpose in mind: to place practical, trusted information in the hands of farmers. Whether you're preparing for your very first poultry flock or looking to improve an established enterprise, I hope these pages provide not only answers but also confidence to make informed decisions, solve challenges, and continue growing your business.

Agriculture has a remarkable way of bringing people together. It's a sector built on resilience, innovation, and a willingness to help others succeed. My hope is that this publication reflects those same values and becomes a trusted companion throughout your farming journey, and one you can turn to whenever you need guidance, reassurance, or a fresh perspective.

Thank you for choosing this guide. May it encourage you to keep learning, to be confident in your farming, and to build a poultry enterprise that's productive, sustainable, and rewarding for years to come. I wish you every success on your journey.

ZUNEL LAING
EDITORIAL PROJECT COORDINATOR

Committed to your success

For many South Africans, chicken production presents an opportunity to enter the farming and business world and become independent and self-sufficient. Hollard itself is a testament to innovation and entrepreneurship, and we support every effort to enable people to achieve their goals and create a better future for themselves.

Business ventures are fraught with risk and uncertainty, and farming is no different. In fact, farming is even more exposed to risk, as producers battle the natural environment every day.

Poultry farming requires determination and the ability to manage various risks in a coherent way. There are risks in the poultry industry that insurers and governments haven't found solutions to, as they are simply too big for any one entity to cover, and farmers are left to fend for themselves. Poultry are susceptible to a range of diseases and health challenges, making effective flock health management essential.

Food security is important to everyone, and poultry are a critical source of protein. Consumers are becoming increasingly aware of how food is produced and, rightly so, are insisting on responsible production practices.

This guide aims to arm you with the basic knowledge on how to start and manage a poultry farm, whether it be in your backyard or on a commercial scale. With time and dedication, you can grow your small start-up into a multinational operation!

By supporting this guide, we believe we're making a meaningful contribution to agriculture, communities, and individuals as South Africa works towards a more self-sufficient and food-secure future. At Hollard, we're proud to play our part in helping to create a better future for all.

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1

Introduction to poultry

Poultry production begins with understanding the fundamentals. In this first section of the *Farmer's Weekly Poultry How-to Guide*, you can explore the role of chickens in food production, the different production systems available, and the key terminology every new farmer should know. This foundation will guide your farming decisions from the very beginning.

OVERVIEW

- Key poultry industry terminology
- The role chickens play in society
- Types of production
- Broilers vs layers
- Chicken facts and fiction

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Key poultry industry terminology

GENERAL	
Breeder	A chicken kept for reproduction rather than meat or egg production
Broiler	A chicken bred specifically for meat production
Chick	A newly hatched baby chicken
Cockerel	A young male chicken under 20 weeks old
Free-range system	A production system in which birds have regular daytime access to an outdoor area
Hen	An adult female chicken over 20 weeks old
Intensive system	A high-density commercial production system in which birds are housed entirely indoors or in cages
Layer	A hen bred specifically for egg production
Pullet	A young female chicken under 20 weeks old
Rooster/cock	An adult male chicken
Semi-intensive system	A production system that combines indoor housing with limited outdoor access
EGG PRODUCTION	
Clutch	All the eggs laid during a single laying cycle
Egg tooth	A small, sharp point on a chick's beak used to break open the shell
Hatchery	A specialised facility where eggs are incubated and hatched
Incubator	A controlled environment used to incubate and hatch eggs
Pipping	The process of a chick breaking through the eggshell during hatching

MEAT PRODUCTION	
Bleeding	The controlled draining of blood from a bird immediately after stunning
Defeathering	The mechanical or manual removal of feathers from a slaughtered bird
Evisceration	The mechanical or manual removal of the internal organs (viscera) from a slaughtered bird
Scalding	The process of immersing a slaughtered bird in hot water to loosen its feathers before plucking
Stunning	The process of rendering a bird unconscious and unable to feel pain before slaughter
ANATOMY & PHYSIOLOGY	
Comb	The fleshy red structure on top of a chicken's head
Cloaca	The common opening through which waste is excreted and eggs are laid
Gizzard	The muscular part of a chicken's digestive system that grinds food
Wattle	The fleshy lobes hanging beneath a chicken's beak

Chickens play a vital role in our society

The poultry industry is a vital part of global agriculture, providing a significant portion of the world's protein supply through both meat and eggs.

In South Africa, poultry farming plays a dominant role in food security and economic development, contributing 16,6% of all agricultural production and nearly 40% of all animal product sales.

A mature chicken is an important contributor to agriculture. SUPPLIED

Chicken remains the most consumed animal protein in the country, surpassing beef, pork, and mutton due to its affordability and versatility.

FOOD SECURITY

Chicken meat and eggs are:

- High in protein, which is essential for muscle growth and body repair;
- Low in fat, particularly the white meat from the chicken breast;
- Rich in vitamins A, D, E, and B12, as well as essential minerals like iron and selenium;
- Affordable, compared with other meats, making it accessible to low-income households.

Due to the efficient feed conversion ratio (FCR) of poultry compared with other livestock, chickens require less feed to produce 1kg of meat or eggs, making poultry farming one of the most resource-efficient food production systems in the world.

ECONOMIC IMPACT OF CHICKEN PRODUCTION

Chicken production is not only a key contributor to food security but also a major economic driver.

Producers engage in different marketing strategies based on their scale of production:

- **Contract farming.** Many commercial producers operate under agreements with processors or retailers, supplying a fixed number of birds or eggs per cycle.
- **Independent sales.** Small-scale farmers often sell live chickens or eggs at local markets, offering flexibility but requiring strong marketing skills.
- **Retail partnerships.** Some farmers establish agreements with supermarkets or butcheries to ensure steady demand.

• *Refer to the master reference register for sources.*

TABLE 1: POULTRY'S ROLE IN FEEDING HUMANS	
Converting feed to food	Maize, soya beans, animal industry offal, minerals, vitamins, and a variety of other products that aren't readily consumed by humans are combined and fed as balanced diets to broilers and layers to produce meat and eggs. Chickens transform these products into highly nutritious sustenance for humans. Eggs are the most comprehensive source of nutrition for humans. The protein in eggs serves as a benchmark against which all other proteins are measured for their capacity to promote growth in young animals and humans. Eggs also contain all of the vitamins and microminerals required for proper development, as well as fats and oils for energy.
Efficient FCR	Chickens have lower energy requirements than cattle for sustaining their own bodies, making them particularly efficient converters of feed to meat and eggs. This is why these items have remained relatively inexpensive in comparison with beef and mutton.
Consumption of poultry meat and eggs	Since 2010, more poultry meat has been produced and consumed (36,1kg/person/year) than the combined figure for beef, mutton, and pork (23,5kg/person/year). Egg consumption is around 156 eggs/person/year.

Eggs are a by-product of chickens and a natural source of nutrition for humans.

A guide to chicken production systems

For emerging farmers, understanding the structure of the poultry industry, the different types of chicken production, and the basic principles is essential for success.

STRUCTURE OF THE CHICKEN INDUSTRY

Chicken farming can be divided into two primary industries:

1. Broiler production: chickens bred for meat production.

2. Layer production: hens bred specifically for laying eggs.

BROILER PRODUCTION

Broilers are fast-growing chickens, typically reared from day-old chicks up to 33 to 35 days of age, when they reach the optimal weight for processing.

The broiler industry is highly commercialised, with production facilities designed to maximise growth rates, feed efficiency, and meat yield.

Large-scale broiler farming operations ordinarily supply supermarkets, butcheries, and fast-food chains, while smallholder farmers often sell live birds to local markets. Broiler breeders, on the other hand, keep parent-stock chickens whose offspring go on to become broilers. These birds aren't reared for meat but rather for their superior genetic traits, which ensure their offspring grow efficiently in a commercial operation.

EGG PRODUCTION

The egg industry consists of commercial layers, which are hens specifically bred for high egg production. Hens start laying eggs at around 18 to 20 weeks of age and continue producing for approximately 12 to 18 months before being replaced.

A subset of the egg industry includes breeder laying farms, where hens produce fertile eggs that hatch into either broilers (for meat production) or pullets (young hens that will later become commercial layers).

Commercial poultry production combines careful management, biosecurity, and nutrition to ensure healthy, productive flocks. PHOTOS: FW ARCHIVE

TYPES OF CHICKEN FARMING SYSTEMS

Chickens can be farmed under different systems, depending on scale, resources, and market demand. Each system has its own advantages and challenges.

1. INTENSIVE SYSTEM
This system is the most common commercial poultry farming method, requiring substantial capital investment. Chickens are housed in climate-controlled structures with automated feeding and watering systems.

- **Key features:**
  - High stocking density;
  - Birds show efficient feed conversion and rapid growth;
  - Strict biosecurity measures are implemented to prevent disease; and
  - Requires significant investment in infrastructure and management.

Intensive system

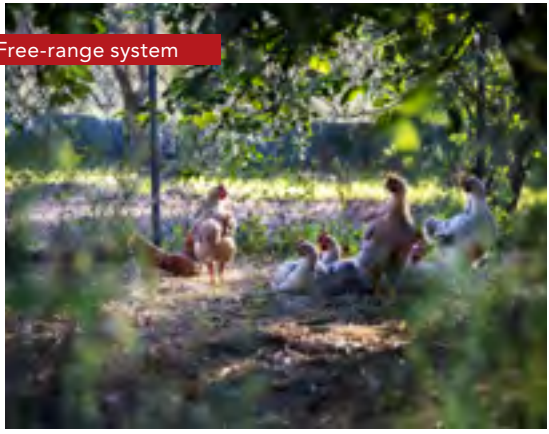
2. SEMI-INTENSIVE SYSTEM
In this system, chickens are given access to both indoor housing and outdoor areas. Farmers provide supplementary feed but allow birds to forage for part of their diet.

- **Key features:**
  - Strikes a balance between controlled feeding and natural foraging;
  - Requires moderate capital investment;
  - Promotes better welfare conditions compared to intensive systems; and
  - Is suitable for niche markets that prefer free-range products.

Semi-intensive system

3. FREE-RANGE SYSTEM
This system allows chickens to roam freely. It is most commonly used in areas where poultry are raised for household consumption or on a small scale.

- **Key features:**
  - Requires low input costs but also involves low productivity; and
  - Birds scavenge for their own food, leading to inconsistent growth rates.


Free-range system

Broilers vs layers: which should you farm?

The choice between farming broilers or layers is perhaps as difficult a question to answer as, 'Which came first, the chicken or the egg?' This is because there's no quick or fool-proof answer, and every farmer must decide for themselves which one is likely to work best in their system.

In this section, we look at various broiler and layer breeds to help you make an informed decision. The list is by no means exhaustive, and there are many other breeds to choose from, but we chose those that are largely used in intensive, commercial, operations.

BROILERS

A broiler is any chicken bred specifically for meat production. In South Africa, most commercial broilers typically reach slaughter weight between 32 and 34 days of age, but in other parts of the world, they may be slaughtered later. In the US, for example, broilers are typically slaughtered at around 47 days, while in the EU, they are slaughtered at 42 days.

Broilers typically have white feathers and yellow skin. According to Eagles Pride Hatchery, broilers are usually grown as mixed-sex flocks in large chicken houses. For large commercial operations, broilers are generally produced intensively. However, they can also be produced in free-range systems under more extensive conditions. In a commercial system, broilers are provided with high-protein feed. Eagles Pride Hatchery explains that this feed, combined with artificial lighting conditions, encourages the birds to eat, leading to rapid growth.

Broiler production starts on a breeder farm, where broiler hens are raised to produce fertile eggs. As with other livestock, broilers are selected for genetic traits that promote fast growth, high feed efficiency, and high-quality meat.

The eggs are collected and transported to hatcheries, where they are incubated in a controlled environment in terms of temperature, humidity, and ventilation. The eggs generally hatch within 21

The choice of broiler breed influences growth rate, feed efficiency, and overall production performance.

days. The chicks are then vaccinated and transported to a broiler farm.

ON THE FARM

In an intensive operation, broiler chickens are raised in specialised housing systems designed to provide optimal conditions for growth. These houses are equipped with automated feeding, watering, and ventilation systems to maintain a stable environment.

While the broilers receive high-protein feed, the composition of the feed changes depending on the growth stage the birds are in. For example, a starter broiler (between 10 and 14 days) is fed a different diet to a grower (up to 28 days), and a grower is fed a different diet to a finisher (up to 34 days).

Once the broilers have reached the desired weight, they are transported to an abattoir and processing plant, where they are slaughtered and processed. The slaughtering process involves stunning, bleeding, scalding, defeathering, evisceration, and chilling. The carcasses are then cut into various products, such as parts and deboned meat.

Once the birds are slaughtered and their meat processed, the carcasses or carcass pieces are packaged and distributed to retailers, wholesalers, and consumers.

BREEDS

In broiler production, specific breeds have been developed for rapid growth, feed efficiency, and high-quality meat.

The most commonly used breeds or strains in broiler production are:

- **Cornish Cross (Cornish X)**

The Cornish X is the most prevalent broiler breed in commercial production around the world.

It is a hybrid resulting from crossing Cornish and Plymouth Rock chickens. The Cornish X has a broad, muscular build,

Layer breeds are selected for their ability to produce eggs efficiently over an extended production cycle.

white feathers (desirable in commercial production because they result in a cleaner-looking carcass after processing), and yellow skin (appealing to the market).

Due to its high feed conversion ratio (FCR), which indicates an animal's feed efficiency, the Cornish X can reach marketable weight of around 2,4kg to 4,5kg by six to eight weeks of age. A high FCR also means that the breed needs less feed to gain sufficient marketing weight. The Cornish X is also known for its meaty breast, and well-developed thighs and drumsticks.

TAKE NOTE OF THE FOLLOWING BEFORE BUYING THIS BREED:

The Happy Chicken Coop says that if allowed, the Cornish X will eat a lot more than it should, and could develop leg and heart problems. This means the farmer will have to control access to feed, and cannot simply leave feed in feeders.

It adds that the Cornish X doesn't forage, and must therefore be provided with feed. The breed also drinks a lot, which means the farmer must ensure they provide adequate water at all times.

The birds also defecate a lot more than other breeds, says The Happy Chicken Coop, and because broiler feed is generally high in protein, their faeces tend to smell.

The Happy Chicken Coop adds that the Cornish X is a particularly finicky bird that doesn't do well in the heat or cold. Therefore, farmers need to ensure the birds are kept in temperature-controlled housing.

Because of these factors, the Cornish X is not an easy chicken to rear, and requires a lot of daily care.

- **Ross 308**

The Ross 308 is known for its robust performance across a wide range of environments and management systems. It has a broad, muscular body, which is particularly well-developed in the breast area, making it highly valued for meat production. The breed is compact with a sturdy frame, providing the strength necessary to support its rapid growth and significant body weight.

The Ross 308 has white feathers, which are favourable, as they make for a 'cleaner-looking' carcass after processing. Like the Cornish X, the Ross 308 also has yellow skin. It can reach its typical marketing weight of around 2kg to 3,2kg by five to seven weeks of age.

The breed is robust and resilient, with good resistance to common poultry diseases when managed properly, making it suitable for a range of production environments.

The breed performs well in a variety of climates and management systems, from intensive commercial operations to more extensive farming practices.

HOWEVER, THERE ARE SOME THINGS YOU SHOULD CONSIDER BEFORE

INVESTING IN THIS BREED: as the Ross 308 grows so quickly, it could lead to leg problems, lameness, or skeletal disorders. Thus, these chickens cannot be kept for a long period of time and must be slaughtered at an early age.

The breed's rapid growth can also lead to cardiovascular problems, such as heart disease and fluid build-up in the abdomen, as its organs may struggle to keep up with its body size. Respiratory issues can also arise due to the stress placed on their systems.

The Ross 308 requires a carefully managed diet. This means the farmer will need to closely monitor nutrient intake.

The breed is also sensitive to variations in temperature and humidity, so it is best raised in chicken houses, where the environmental conditions can be easily controlled.

Modern broilers are bred to convert feed efficiently into meat, making nutrition and management critical to ongoing success.

- **Cobb 500**

The Cobb 500 is known for its excellent growth performance, high feed efficiency, and consistent meat yield. Developed by Cobb-Vantress, the breed is widely used in commercial poultry production.

The Cobb 500 has a broad, well-muscled body, with particular emphasis on breast muscle development. This makes it highly desirable for meat production. It has a sturdy, compact frame, white feathers ,and yellowish skin. It can reach a marketable weight of between 2kg and 3,2kg at five to seven weeks of age.

Ideally, the Cobb 500 isn't suited to extensive production, as its rapid growth and heavy body makes its less active. Thus, it is better suited to intensive production.

LAYERS

Layers are chickens specifically bred to lay eggs. The more eggs a hen lays, the more profitable that hen is for the farmer. Thus, layer hens have been intensively bred to ensure they produce as many eggs as possible over as long a period as possible. With the correct nutrition, housing, and

management, layer hens usually begin laying between the ages of 18 and 22 weeks.

In South Africa, several layer chicken breeds are commonly used for egg production. These breeds are selected for their high egg-laying capacity, adaptability to local conditions, and overall hardiness.

The Lohmann Brown is a popular commercial layer breed known for its high egg production and adaptability to different production systems.

- **Hy-Line Brown**

The Hy-Line Brown is known for its excellent egg production, with hens producing more than 320 eggs on average at the age of 72 weeks. (Age is an important factor when it comes to how many eggs a hen lays. Egg production tends to drop after two years [104 weeks].) The eggs are brown-shelled, and the breed is highly adaptable to various environmental conditions.

The Hy-Line Brown is known for its calm temperament and disease resistance. It also has a strong feed-to-egg conversion ratio, meaning the breed produces a large number of eggs on less feed, making it cost-effective for intensive operations. Considering its hardiness and robustness, the breed is also ideal for free-range or organic systems.

The Hy-Line Brown has reddish-brown feathers, often with white streaks or flecks scattered throughout, giving it a characteristic light-brown appearance. The breed is medium-sized, with a robust and sturdy body structure. These chickens aren't overly large but are compact and typically show a broad chest. The breed has a bright, single red comb, with a similarly coloured wattle and earlobes. The legs are generally clean, yellow, and featherless. The feet are strong and designed to support their active foraging habits.

- **Lohmann Brown**

The Lohmann Brown is recognised for its consistent egg production and low feed consumption. It lays brown eggs and is favoured for both commercial and small-scale farming.

The breed is hardy and adaptable, and performs well across different regions and climates. Like the Hy-Line Brown, the Lohmann Brown lays around 320 eggs per year at the age of 72 weeks.

The Lohmann Brown looks similar to the Hy-Line Brown. It has light- to medium-brown or reddish-brown feathers, often with some white underfeathers, which

gives it a sleek, uniform appearance. The breed is medium-sized, compact, and generally muscular, yet it maintains a relatively light weight. It has a single, bright-red, upright comb, and the wattles and earlobes are also red. The comb can be slightly larger in hens compared with roosters, especially during peak laying periods. The Lohmann Brown has strong, yellow, featherless legs. Like the Hy-Line Brown, it is a natural forager and can thus be raised intensively in a housing system, or for the free-range or organic market.

- **ISA Brown**

The ISA Brown is renowned for its prolific egg-laying ability, producing more than 340 eggs annually at the age of 72 weeks. The eggs are brown, and the hens are known for their docile nature.

The breed is adaptable, easy to manage, and has strong resistance to common poultry diseases. The ISA Brown has reddish-brown or

Table 1: Comparison of the three predominant broiler breeds used worldwide

	Cobb 500	Ross 308	Cornish X
Origin	Developed by Cobb-Vantress	Developed by Aviagen	Hybrid of Cornish and White Plymouth Rock
Use	Commercial broiler production	Commercial broiler production	Commercial broiler production
Growth rate	Rapid (marketable weight in 5–7 weeks)	Rapid (marketable weight in 5–7 weeks)	Rapid (marketable weight in 6–8 weeks)
FCR	Excellent	Excellent	Excellent
Body structure	Broad, muscular body; compact frame	Broad, muscular body; compact frame	Broad, muscular body, especially in the breast
Breast meat yield	High	High	Very high
Feathering	White, dense, uniform	White, dense, uniform	White, dense, uniform
Skin colour	Yellow	Yellow	Yellow
Adaptability	Highly adaptable to various environments	Highly adaptable to various environments	Generally adaptable to various environments
Health and robustness	Strong disease resistance	Strong disease resistance	More prone to health issues
Suitability for intensive systems	Highly suitable	Highly suitable	Highly suitable
Suitability for alternative systems	Less suited to free-range or organic production	Less suited to free-range or organic production	Not typically used
Reproductive traits	Consistent hatchability, uniform flocks	Consistent hatchability, uniform flocks	Variable; may require specific breeding
Market presence	Popular worldwide, particularly in large operations	Popular around the world, and widely used in various regions	More commonly used in the US, but recognised worldwide
Environmental sensitivity	Requires controlled environment for optimal performance	Requires controlled environment for optimal performance	Requires controlled environment for optimal performance; less robust in suboptimal conditions

Table 2: Hy-Line Brown statistics	
Eggs (units per year)	
Age of hen (free-range)	
60 weeks	Up to 270
72 weeks	Up to 344
90 weeks	Up to 445
Age of hen (housed)	
60 weeks	Up to 266
72 weeks	Up to 338
90 weeks	Up to 434
Liveability (%)	
60 weeks	97,4
80 weeks	95,1
90 weeks	93,5
Average egg weight (g)	
26 weeks	59,2
32 weeks	61,9
72 weeks	64,8
Egg mass/housed hen (kg)	
18–90 weeks	26,8
Haugh units	
38 weeks	90
56 weeks	84
72 weeks	81
90 weeks	79,7
FCR (kg feed:kg eggs)	
20–60 weeks	1,9:2,06
20–72 weeks	1,91:2,08
20–90 weeks	1,98:2,15
Source: hyline.com	

chestnut-coloured feathers, often with lighter or white feathers on the underside and around the neck and tail. This gives it a sleek, attractive appearance.

Like the breeds discussed earlier, the ISA Brown is a medium-sized chicken with a compact and robust body. It has a single, red, upright comb that's well-developed, along with a similarly coloured wattle and earlobes. The comb may grow slightly larger in hens during their peak laying periods.

The legs are yellow and featherless. They're also strong and built to support the bird's active foraging and constant movement.

Table 3: Lohmann Brown statistics	
Eggs (units per year)	
Age of hen (housed)	
72 weeks	324
80 weeks	367
90 weeks	416
Egg mass/housed hen (kg)	
72 weeks	19,99
80 weeks	22,75
90 weeks	25,94
FCR (kg feed:kg eggs)	
	2,15:2,25
Liveability (%)	
Rearing	98% to 99%
72 weeks	94% to 95%
90 weeks	91% to 92%
Source: lohmann-breeders.com	

Table 4: ISA Brown statistics	
Eggs (units per year)	
Age of hen (housed)	
80 weeks	374
90 weeks	425
100 weeks	470
Total egg mass/housed hen (kg)	
80 weeks	23,4
90 weeks	26,7
100 weeks	29,6
Liveability (%)	
80 weeks	94
90 weeks	93
100 weeks	93
Average egg weight (g)	
80 weeks	62,6
90 weeks	62,8
100 weeks	63
Haugh units	
80 weeks	81
90 weeks	81
100 weeks	81
FCR (kg feed:kg eggs)	
80 weeks	2:2,08
90 weeks	2:2,11
100 weeks	2:2,15
Source: isa-poultry.com	

Table 5: Differences between raising layer and broiler chickens		
	Layers	**Broilers**
Duration	Layers take longer to reach maturity (around 18 to 20 weeks) before they start laying eggs. Once they begin, they continue producing for about one to two years.	Broilers are raised for a much shorter period (usually six to eight weeks) before they're ready for slaughter. This quick turnaround time makes broiler farming more attractive for rapid returns.
Management	Layers require long-term care, regular feed, water, lighting, and health monitoring to maintain consistent egg production. Housing and equipment need to be set up for egg collection.	Broilers are typically less labour-intensive compared with layers. They grow quickly and require less complex housing and equipment, but they still need proper ventilation, temperature control, and health monitoring.
Feed costs	Layers need specialised feed that promotes healthy egg production, including calcium for strong eggshells. However, after the initial growing phase, their feed consumption stabilises, making feed costs more predictable over time.	Broilers require high-protein feed to achieve rapid growth. Although feed costs are significant, the short grow-out period limits the total feed costs compared with the longer-term feeding of layers.
Revenue	Income is steady as eggs are produced daily, offering continuous cash flow. However, prices for eggs can fluctuate, affecting profitability.	Broilers provide a one-time income at the end of each growth cycle when they are slaughtered. This can provide faster returns on investment, but requires restocking after each cycle.
Labour	Layers require more ongoing management and labour to ensure optimal laying conditions and to regularly collect eggs.	Their short growth period reduces labour intensity, but broilers still need daily care, especially in managing the environment (temperature, ventilation) to prevent disease and optimise growth.
Cost efficiency	Layers can be cost-effective over the long term due to their continuous egg production. However, the initial set-up, feed, and longer grow-out time before they generate income can be a financial challenge. Nonetheless, their steady egg production offers consistent revenue.	Broilers tend to be more cost-effective in terms of quick returns and shorter management periods. The quick turnaround allows farmers to earn profits more rapidly, but there's less continuity in income compared with layers.

WHICH IS EASIER TO PRODUCE?

'Easier to produce' is perhaps a misleading concept. Layers and broilers each have their own advantages and disadvantages, and whichever the farmers decides on farm should fall in line with their long-term goals, abilities and infrastructure. Farmers need to consider the purpose of production, the farming system they plan to run, and, quite significantly, market demands.

Table 5 (*see above*) lists the differences between layer and broiler production. All things considered, broilers are generally considered easier to farm because of their shorter growth cycle and less ongoing management compared with layers. In terms of quick return on investment, broilers also tend to be more cost-effective because of their rapid growth and quicker time to market.

By contrast, layers provide ongoing, long-term income through egg production, which can be more stable over time.

Sagritex video series

Audio-visual learning is designed to support and empower people by making knowledge accessible throughout their lifelong learning process.

This comprehensive broiler production video series, developed by Sagritex, supports skills development and serves as a source of information.

The content was created with input from industry specialists and reflects best farming practices. It caters for a range of knowledge levels, from beginners to short-course and diploma-level learners, depending on the topic and intended audience.

The content aims to:

- Make a meaningful difference in people's lives;
- Promote lasting knowledge;
- Enhance skills development;
- Simplify the learning process and encourage ongoing learning; and
- Empower learners to reach their full potential.

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- **Management**
  - Management 1
  - Management 2
  - Management 3
  - Management 4
  - Management of the environment
  - Optimum conditions
  - Managing the grower phase
  - Lighting programme
  - Litter moisture
  - Ideal temperature for age
  - Catching principles 1
  - Catching principles 2
  - Hygiene and sanitation
  - Medication usage
  - Record-keeping
- **Housing**
  - Site selection 1
  - Site selection 2
  - Site selection 3
  - Types of housing 1
  - Types of housing 2
  - Aspects of housing 1
  - Aspects of housing 2
  - Aspects of housing 3
  - Aspects of housing 4
  - House preparation 1
  - House preparation 2
  - House preparation 3
  - House preparation 4
  - Correct ventilation
  - Air-quality requirements
  - Ventilating grower houses
  - Ventilation systems
  - Transition ventilation
  - Natural ventilation 1
  - Natural ventilation 2
  - Heating systems
- **Drinking systems**
  - Drinker systems 1
  - Drinker systems 2
  - Preparation of water equipment 1
  - Preparation of water equipment 2
- **Feeding systems**
  - Feeding systems
  - Feed 1
  - Feed 2
  - Feed 3
  - Preparation of feeder equipment
- **Diseases**
  - Biosecurity practices
  - Biosecurity
    - Programme
    - Farm layout
    - Footbaths
    - Water sources
    - Biosecurity management
  - Disinfection phases
  - Other diseases
  - Bacterial infections
  - Infectious diseases
  - Newcastle disease
  - Clinical signs of Newcastle disease
  - Newcastle disease control
  - Infectious bronchitis
  - Gumboro disease
  - Gumboro disease control
  - Mycoplasma infection
  - Mycoplasma 2
  - Coccidiosis
  - Viruses 1
  - Viruses 2
  - Vaccination
  - Vaccination through water
  - Spray vaccination
  - Reasons for vaccination failure 1
  - Reasons for vaccination failure 2
- **Marketing**
  - Introduction and marketing 1
  - Marketing 2
  - Marketing 3

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BROILER PRODUCTION VIDEO SERIES

The **Broiler Production Video Series** is a comprehensive audio-visual e-learning resource designed to support lifelong learning, practical skills development, and the transfer of industry knowledge. Developed with contributions from industry specialists, the content ranges from introductory to diploma-level learning, depending on the topic and target audience.

The series simplifies learning through practical visual training while strengthening farming skills and improving productivity. It covers the complete broiler production cycle, including management, housing, drinking and feeding systems, disease management, biosecurity, vaccination programmes, environmental control, recordkeeping, and marketing.

Designed as both a learning programme and practical reference resource, the series equips current and aspiring broiler producers with the knowledge and confidence to improve farm management, solve production challenges, and build sustainable poultry operations.

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Fact or fiction?

Before embarking on the journey of keeping chickens, whether to turn a profit or simply provide your household with eggs and meat, it's important to first separate the facts associated with chickens and chicken farming from some of the most common misconceptions.

Chickens that are allowed to roam or are kept in a backyard are as 'clean' as any other animal would be in the same situation. PHOTOS: FW ARCHIVE

BELIEF 1

CHICKENS ARE DIRTY

Chickens are no dirtier than any other animal, but the cleanliness of your birds and their environment will depend on whether you keep their coop or housing structure clean. Thus, your chickens' cleanliness will depend on your management of their housing.

If you regularly change their bedding and scrub out their housing facility, your chickens will be clean.

Chickens that are allowed to roam or are kept in your backyard will forage and kick up dust when given the opportunity. However, this does not make them dirty; they are as 'clean' as any other animal you may keep.

VERDICT: FICTION

BELIEF 2

HENS NEED A ROOSTER TO LAY EGGS

Hens don't need roosters to produce eggs; they are able to produce eggs on their own. This is similar to the reproduction system of the female human: a female does not need a male to ovulate; she ovulates regardless. The same can be said for hens; without a rooster, the hen will still produce an egg. Without intervention, and in a completely organic setting, a hen will ovulate once every 25 hours; thus, she can produce an egg every day. Of course, in more intensive systems

Hens produce eggs whether a rooster is present or not. Roosters are only needed to fertilise eggs.

where eggs are being produced for profit, hens can lay substantially more than one egg a day, if they are given the correct feed (laying mash, which contains certain hormones to stimulate ovulation).

AT THE AGE OF TWO YEARS, EGG PRODUCTION BEGINS TO DECLINE

You only need a rooster if you want your hens to produce chicks.
VERDICT: FICTION

BELIEF 3

HENS LAY EGGS EVERY DAY

This is somewhat true. As mentioned under Belief 2, hens generally ovulate every day, which results in an egg a day per hen. (Again, this is specific to organic systems where no intervention is provided to stimulate hens to lay more eggs).

However, this is only a general rule of thumb, and the frequency at which a hen lays her eggs will depend on her breed and age. For example, after the age of two years, a hen's egg production begins to decline until she no longer produces any eggs at all.
VERDICT: SOMEWHAT FACTUAL

BELIEF 4

ALL CHICKEN EGGS ARE BROWN

Chickens lay eggs of various colours, and this is usually breed-specific. In addition to brown eggs, they can also produce white, blue, or green eggs. Egg colour has no bearing

Chicken eggs come in a variety of colours, not only white or brown.

on taste or nutritional value, but the market may specifically require brown eggs. This is, therefore, an important determination if you're producing eggs for profit.
VERDICT: FICTION

BELIEF 5

CHICKENS CAN CHANGE SEX

This is not true from a biological perspective: a hen cannot become a rooster and a rooster cannot become a hen. Thus, a hen cannot fertilise an egg and a rooster cannot lay an egg.

Nonetheless, chickens can exhibit behavioural traits of the opposite sex. In other words, a hen may act like a rooster, and a rooster may act like a hen. For example, a rooster may allow other roosters to mate with them and try to hatch eggs, while a hen may begin crowing, grow rooster feathers, and try to mate with other hens. These behavioural changes are thought to be caused by hormonal imbalances, or the result of disease or injuries to the chicken's reproductive organs.
VERDICT: SOMEWHAT FACTUAL, IN TERMS OF BEHAVIOUR

BELIEF 6

ONLY ROOSTERS HAVE SPURS

Both hens and roosters can have spurs, depending on the breed. In some breeds, spurs are related to sex, and only roosters have them.

In others, however, spurs occur in both hens and roosters. This is particularly true for the game breeds.
VERDICT: FICTION

BELIEF 7

ALL EGGS TASTE THE SAME

An egg's flavour depends on the hen's diet, so it is absolutely untrue that all eggs taste the same.

All retail-bought eggs may taste the same, but this is mostly because they are produced by hens kept in intensive systems, which receive feed that's very similar in nutritional value and components.

An egg produced by a chicken raised in an organic system, on the other hand, will taste very different to one produced in an intensive housing system.
VERDICT: FICTION

BELIEF 8

CHICKENS KILL EACH OTHER

This is true, particularly if the chickens are kept in a space that's too confined. If a chicken senses that another chicken is weak, it may peck the latter to death. In nature, this is a way to protect the health of the larger flock, as the potentially diseased chicken is eliminated from the flock.

Chicken saddles protect hens' backs from the rooster's claws during mating. CSKK VIA FLICKR

To prevent this from happening, make sure your chickens have enough space. Chickens in restricted spaces may take their frustrations out on smaller, weaker birds.

Chickens are also territorial, so when adding others to the flock, be sure to do so carefully. For example, chicks from a different coop are likely to be killed quite quickly when moved into a new one.

It should also be kept in mind that temperament is breed dependent, and not all chicken breeds are particularly aggressive.

VERDICT: FACT

BELIEF 9

CHICKENS EAT EACH OTHER

Chickens are omnivores, and under the right circumstances, they will absolutely cannibalise each other.

For example, if a chicken dies in a coop or house, and the carcass is not removed timeously, the other chickens may start to eat the carcass. This is also more likely to happen if the birds aren't receiving enough protein. Chickens may also pull out and eat each others' feathers if they don't receive enough protein.

Therefore, it's vital for the health of your birds to ensure they receive adequate nutrition, which includes the right amount of protein.

VERDICT: FACT

BELIEF 10

YOU CAN BUY CHICKEN SADDLES

This is true. Chicken saddles protect hens' backs during mating, preventing the rooster from scraping them with his claws.

Generally, roosters don't hurt the hens during mating, but those that are kept with too few hens or have a particular favourite for mating may be more aggressive during the act, leading to the hen's feathers being scraped off her back and shoulders. Once the feathers are gone, the buffer between the rooster's claws and the hen's skin is gone, and he may actually cut her open during mating. In these instances, it would be wise to invest in some chicken saddles.

VERDICT: FACT

1b

Importance of education

Sound knowledge and understanding of poultry management helps ensure farmers have the necessary inputs in place before they start, while promoting correct bird growth, welfare, and optimal productivity.

OVERVIEW

- An in-depth look at why practical, hands-on training is essential for poultry farming success, sustainability, and profitability.

SOURCES

- KwaZulu-Natal Poultry Institute

Building success with the KZNPI

Mary-Ann Bruton, general manager of the KwaZulu-Natal Poultry Institute, explains why training is essential for profitable, sustainable poultry farming.

WHY IS FORMAL OR STRUCTURED TRAINING IMPORTANT BEFORE STARTING A POULTRY ENTERPRISE?
A good understanding of poultry management is important to ensure a farmer has all the required inputs before starting, and to ensure the correct growth and welfare of birds to optimise productivity.

Training programmes emphasise reading bird behaviour to ensure optimal animal welfare. PHOTOS: SUPPLIED

WHAT ARE THE MOST COMMON KNOWLEDGE GAPS YOU SEE AMONG NEW OR EMERGING POULTRY FARMERS?
- Record-keeping and financial decision-making; and
- Correct management of the environment.

HOW DOES TRAINING INFLUENCE FARM PROFITABILITY AND SUSTAINABILITY?
Delegates get practical hands-on training on best practices and to learn how to manage poultry. Enhanced productivity and decreased mortality can help to improve profitability.

WHAT MISTAKES DO FARMERS TYPICALLY MAKE WHEN THEY ENTER POULTRY PRODUCTION WITHOUT TRAINING?
- Incorrect feeding;
- Incorrect environmental control; and
- Incorrect financial management.

TRAINING PATHWAYS FOR NEW ENTRANTS

WHAT BASIC SKILLS SHOULD A BEGINNER POULTRY FARMER LEARN FIRST?
Bird handling, inputs required, and management of all aspects of production.

WHAT KIND OF TRAINING PROGRAMMES DOES THE INDUSTRY OFFER?
There are many courses available, but not all from reputable service providers. Practical training is virtually non-existent except within company in-service training and internships.

Education plays a key role in closing knowledge gaps in record-keeping, finance, and farm management.

HOW LONG DOES IT TYPICALLY TAKE FOR A BEGINNER TO BECOME PRODUCTION-READY AFTER TRAINING?
Our week-long training can prepare beginners, but the more experience the better! Some things may only be observed after years of farming.

WHAT LEVEL OF LITERACY OR AGRICULTURAL BACKGROUND IS NEEDED TO BENEFIT FROM POULTRY TRAINING?
Most of our training is practical and requires minimal literacy. It isn't necessary to have an agricultural background, although it helps.

Delegates with matric usually cope better with some of the concepts such as record keeping and calculations of productivity. Our courses are NQF levels 1 to 3.

KWAZULU-NATAL POULTRY INSTITUTE

PRACTICAL SKILLS DEVELOPMENT

WHICH PRACTICAL SKILLS ARE MOST CRITICAL FOR DAILY POULTRY FARM MANAGEMENT?

WITHOUT TRAINING, SMALL MISTAKES IN FEEDING OR BIOSECURITY CAN QUICKLY WIPE OUT AN ENTIRE FLOCK

Reading birds' behavioural signals to provide them with an optimal environment.

HOW IMPORTANT IS HANDS-ON LEARNING COMPARED WITH CLASSROOM LEARNING?
Very important! Poultry farming is practical, so learning it should be, too!

WHICH BIOSECURITY PRACTICES MUST FARMERS FULLY UNDERSTAND BEFORE RECEIVING BIRDS?

- Minimising contact in whatever way possible;
- Separating birds of different ages, and managing flocks of different ages;

Practical, hands-on learning is central to effective poultry education and long-term farm success.

- Maintaining 'clean' and 'dirty' areas; and
- Principles of vaccination.

WHICH ANIMAL WELFARE PRINCIPLES SHOULD ALL POULTRY FARMERS BE TRAINED IN?

- Environmental management;
- Feed and water; and
- Signs of disease.

EDUCATION FOR SMALLHOLDER VS COMMERCIAL FARMERS

HOW DO TRAINING NEEDS DIFFER BETWEEN SMALLHOLDER AND COMMERCIAL POULTRY PRODUCERS?

Many of the principles are the same; the key is learning to apply them in different systems.

For example, reading behavioural signals is the same in any system, but management differs between controllers and open-sided houses. Commercial producers may use more feeding phases, while smallholders may adjust feeding by amount.

Equipment differs (chain feeder versus tube feeder), but feeding principles remain the same. Marketing differs, but the principles of marketing are consistent.

WHAT CHALLENGES DO SMALL-SCALE FARMERS FACE WHEN ACCESSING TRAINING OPPORTUNITIES?

Good practical training is expensive and represents a significant proportion of smallholder income, compared with commercial producers. Travelling to training venues can also be costly.

HOW CAN EDUCATION PROGRAMMES BE ADAPTED FOR RURAL OR RESOURCE-LIMITED FARMERS?

For education programmes to be inclusive of rural and resource-limited farmers, they should incorporate the following approaches:

- Prioritise practical, hands-on learning rather than relying on theory-heavy sessions;

- Use simple, local language and avoid technical jargon. Use everyday terms, relatable examples, and storytelling to enhance understanding;
- Incorporate visuals such as pictures, diagrams, and videos to improve comprehension and knowledge retention;
- Promote low-cost, locally available solutions and repurposed materials;
- Deliver training in short, modular sessions, allowing farmers time to practise what they have learnt before progressing to the next module.

Continuous learning ensures poultry farmers stay up to date with evolving industry practices and technologies.

This bite-sized approach supports better understanding and information retention.

BUSINESS AND MANAGEMENT EDUCATION

BEYOND PRODUCTION, WHICH BUSINESS SKILLS SHOULD POULTRY FARMERS DEVELOP?

- Record-keeping and calculations of productivity;
- Financial management.

DO FARMERS UNDERESTIMATE FINANCIAL MANAGEMENT IN POULTRY PRODUCTION?

This is often lacking.

WHICH RECORD-KEEPING SKILLS ARE ESSENTIAL FOR SUCCESS?

Farmers need:

- Financial records (all expenses and purchases);
- Production records (feed intake, mortality, and body weight);
- Other records (vaccinations, chemicals used, rat control ,and so on) are also important.

INDUSTRY READINESS & CAREER DEVELOPMENT

HOW CAN TRAINING INSTITUTIONS HELP FARMERS INTEGRATE INTO FORMAL POULTRY VALUE CHAINS?

Institutes like the KwaZulu-Natal Poultry Institute (KZNPI) involve industry experts in their courses to train and interact with delegates. Networking with other delegates extends beyond the courses.

WHAT ROLE DOES CONTINUOUS LEARNING PLAY ONCE A FARMER IS ALREADY OPERATING?

Farmers never stop learning.

ARE THERE CERTIFICATION PATHWAYS THAT HELP FARMERS GAIN CREDIBILITY

WITH BUYERS OR FINANCIERS?
Training-based certification (capacity building) provides certificates upon completion of recognised training programmes, such as those delivered by KZNPI, and serves as an indicator of a farmer's technical competence.

However, buyers and financiers are ultimately more concerned with the quality and consistency of the chickens and eggs produced, as these directly reflect the farmer's performance and reliability.

FUTURE SKILLS & INDUSTRY NEEDS

WHICH NEW SKILLS WILL FUTURE POULTRY FARMERS NEED AS THE INDUSTRY EVOLVES?
Marketing and traceability.

HOW IS TECHNOLOGY CHANGING POULTRY EDUCATION AND TRAINING?
There are many webinars and online training courses available, but practical skills remain essential.

WHAT ADVICE WOULD YOU GIVE SOMEONE CONSIDERING POULTRY FARMING AS A CAREER TODAY?
Ensure you have a market before starting. Finding a niche market is key. Do the financial calculations. Margins are small, and economies of scale play a role.

PRACTICAL ADVICE

WHAT ARE YOUR THREE NON-NEGOTIABLE TRAINING RECOMMENDATIONS FOR NEW POULTRY FARMERS?
Master biosecurity practices: biosecurity is the first line of defence against disease outbreaks. Farmers must understand how to control access to the farm, maintain hygiene, and prevent contamination through people, equipment, feed, and water.

Poor biosecurity can wipe out an entire flock within days, regardless of how well other aspects are managed.
Understand feeding and nutrition: feed is the biggest cost in poultry production and the biggest driver of performance.

Farmers must learn how to provide the correct feed for each growth stage, ensure consistent access to clean water, and avoid underfeeding or poor-quality rations.

EDUCATION MUST BE INCLUSIVE OF RURAL FARMERS

Good nutrition directly affects growth rates, egg production, health, and overall profitability.

Learn daily flock observation and record-keeping: successful farmers closely monitor their birds every day. This includes checking behaviour, feed and water intake, droppings, and overall health. Keeping simple records (mortality, feed usage, egg production, weight) allows farmers to detect problems early and make informed decisions.

WHAT SHOULD EVERY FARMER KNOW BEFORE BUYING THEIR FIRST CHICKS?
Success in poultry farming begins before the chicks arrive.

- The poultry house must be fully prepared, cleaned, disinfected, and properly equipped.
- Brooding management is critical, as the first two to three weeks determine the overall success and performance of the flock.
- The source of chicks matters, and farmers should purchase them from reputable hatcheries or trusted suppliers.
- Feed and water must be available in advance, ensuring chicks have immediate access to them upon arrival.
- Biosecurity measures (footbaths and controlled access) must be in place before chicks are introduced.
- Have basic knowledge of daily flock management prior to chick placement.

KWAZULU-NATAL
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KwaZulu-Natal Poultry Institute has 90% subsidies available on the following courses:

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2

The set-up before you start

A successful poultry operation begins with proper preparation. Section 2 covers the essential basics of poultry production, including housing options, equipment requirements, water systems and simple biosecurity principles. Getting these fundamentals right creates a solid base for everything that follows.

OVERVIEW

- Cages (making your own coop/materials)
- Equipment overview
- Bedding (bedding and litter management)
- Water system basics
- Biosecurity fundamentals

SOURCES

- Chicken House – 24 June 2016
- Poultry House – 11 August 2023
- Poultry housing Part 1 – 1 June 2018
- Poultry housing Part 2 – 15 June 2018
- Poultry housing Part 3 – 15 June 2018
- Poultry litter – 26 June 2020
- Biosecurity 6 June 2018
- Biosecurity 23 September 2022
- Egg Production 11 March 2022
- Eggs & Chicken 3 March 2017
- Free-Range Eggs - 23 Junie 2017
- Small scale Egg Production 19 November 2021
- Broilers 15 February 2013
- Broiler Production 3 December 2021
- Broiler production Q&A 25 July 2014
- Free-range-Eggs 5 May 2017
- Free-range Eggs 13 December 2013
- Free-range eggs 3 June 2016
- Layer hens 3 July 2015
- 2024 AFGRI-AF-Broiler-Manual
- ARC-Poultry for beginners
- FIT- How to start a chicken farm
- Production guidelines for small-scale broiler
- Broiler vs Layers 31 October 2025
- Egg Production 6 February 2026
- Keep your broilers cool 19 Oct 2012
- Listen to your birds 29 June 2012
- Making a mint 25 tunnels and four hectares 25 February 2000
- Fine-tuning the art of raising broilers 17 Dec 1999
- Better broiler house management 22 June 2012

Tips for building a chicken coop

Food in a coop must be highly accessible to the chickens while remaining inaccessible to pests. PHOTOS: FW ARCHIVE

A well-built chicken coop provides a clean, dry, secure, and well-ventilated environment for chickens. This supports bird health, reduces stress, and improves production performance.

A good coop must:

- Protect birds from weather;
- Prevent predator access;
- Allow proper airflow;
- Be easy to clean and manage.

CHOOSING THE TYPE OF COOP

The type of coop you choose depends on your production system. Some common options include:

- Stationery coops. These can include walk-in coops, which are large enough for humans to step inside comfortably, making cleaning, feeding, and gathering eggs incredibly easy. These also include all-in-one coops, which feature a built-in wooden hen house attached directly to an enclosed wire run. This type of coop is excellent for smaller backyards because it keeps the chickens self-contained.
- Mobile chicken coops. These do not have a floor. Instead, they feature built-in wheels so you can easily move them around the lawn. They allow chickens to forage on fresh grass and bugs while providing natural fertilisation.
- Modular and plastic coops. These are a modern twist on chicken housing and constructed from heavy-duty, double-walled plastics rather than traditional timber. They are highly popular because plastic does not rot, is easy to spray down with a hose, and completely eliminates the nooks and crannies where red mites like to hide and infest a flock.

BUILDING THE COOP

If building a stationery coop, use materials that are durable, easy to clean, and locally available.

The basic structure consists of a frame, made with wooden poles or steel; walls, made from a combination of mesh and sold material; a roof made from corrugated iron or thatch; a floor, which is usually made from concrete, compact soil or raised wood; and fencing, made using wire mesh.

Remember that wood must be treated and maintained to prevent moisture damage and pathogen build-up.

A mechanically ventilated chicken house relies on exhaust fans and automated inlets to regulate temperature, humidity, and air quality.

When building your coop, keep in mind that ventilation is essential, as open sides allow airflow. The coop must be properly ventilated to allow gases like ammonia to escape. Poor ventilation also leads to heat build-up and respiratory problems.

A naturally ventilated chicken house relies on wind pressure and warm air rising to exchange indoor air with fresh outside air.

Position your coop to allow natural airflow across the structure.

When it comes to site selection and layout, ensure that you build or place the coop on well-drained ground. Avoid low-lying, wet areas. If building or placing more than one coop or house, keep distance between them to improve ventilation. Spacing between houses helps prevent disease spread and improves air circulation.

Predators are a major cause of losses. As such, use strong wire mesh when fencing; secure doors and openings; and close the structure at night.

COMMON MISTAKES

Avoid the following common mistakes:

- Building too small, which leads to overcrowding;
- Poor ventilation;
- Weak materials;
- Poor drainage, which leads to wet, unhealthy conditions.

The pitfalls of housing design you should avoid

When designing a poultry house for broilers and layers, there are numerous variables and issues you should consider.

Layer and broiler houses have many similar requirements, with a few exceptions. PHOTOS: FW ARCHIVE

BROILER HOUSE

A broiler house is a specialised structure designed to provide an optimised, highly controlled environment for rearing broilers from day-old chicks to market weight. Its primary function is to maximise bird health, growth rate, and feed efficiency by shielding the flock from external stressors. By carefully regulating temperature, moisture, lighting, and biosecurity, the house ensures maximum comfort and survivability throughout the production cycle. The structure must meet the following technical design standards to function effectively:

- The structure must be built with durable, easy-to-clean materials like concrete floors, and steel or treated wood walls;
- The building must be water proofed to avert rain water and outside dampness from accessing the house;
- The height of the building must be suitable to reduce excessive heat waves, especially in hot regions;
- The floor of the house should be solid, and preferably built from concrete. It should be at least 200mm above ground level to avoid dampness from creeping into the floor;
- It should be built with solid materials and prevent predators (stray cats and snakes), wild birds and rodents from accessing the house;
- Open sides (often with mesh wire) are necessary for ventilation in warm climates to manage heat and ammonia gases;
- It should be so constructed as to make the fowl comfortable every month of the year;
- A foot-disinfection pool should be placed at the entrance of the house;
- It should be equipped with a lighting system and connections for brooder lights.

LAYER HOUSE

Proper layer housing is the cornerstone of a successful egg production enterprise, directly influencing flock health, welfare, and overall farm profitability. A well-designed poultry house creates an optimised environment that shields hens from extreme weather, particularly in hot regions where building height and open-sided wire mesh ventilation are critical to mitigating heat stress and dispersing harmful ammonia gases.

Furthermore, robust infrastructure acts as a vital biosecurity barrier. Constructing the

facility with durable, easy-to-clean materials like concrete floors and steel or treated wood walls ensures effective sanitation while preventing the entry of rodents, wild birds, and predators such as snakes and stray cats. Whether configured for high-volume automated cage systems or spacious floor set-ups, the structural layout must accommodate specific equipment seamlessly.

While there are many similar requirements for layer houses and broiler houses, a layer house's dimensions must be designed to enable installation of layer equipment such as layer cages, and feeding systems in high-volume farms. Where a free range or floor system is chosen, the birds must be provided with laying nests. For floor systems, a maximum of at least six hens per square metre should be allowed for layers that are kept on the floor during their laying period.

SITE SELECTION

When choosing a site for a broiler or layers house, there are a number of considerations. The front of the house, for example, should face north, as a north-facing orientation is ideal for maximum sun exposure in winter and better cooling in summer. The sun also serves as a disinfectant for the poultry house. In terms of drainage, consider the following:

- Water must be able to drain away from the poultry house;
- It is best to place the house on the highest part of the land so that all surface water will flow away rather than towards the house;
- It should be built where no water can back up or where the spring floods will not wash it out;
- It is an advantage to have the land fall away from the house.

As poultry houses tend to produce odours, the house should be built downwind of nearby houses. If construction several houses in one area, separate the houses from each other by 10m to 15m to minimise the potential spread of disease.

Ideally, poultry sites should be located outside of residential areas if the land is available and if the farmer plans to expand the operations in the near future. The poultry house should not be located too far from the water supply and feeding storages for ease of access and movement, and the site should be accessible for delivery vehicles and maintenance.

HOUSING STRUCTURE

When deciding what materials to use for the housing structure, two points are of critical importance: efficiency and cost. A good house is economical, and the aim should be to build a house that suits local conditions with as little expense as possible. However, it is essential that the walls and roofing of the poultry house provide suitable insulation and a dry atmosphere. Damp or extreme temperatures can be deadly for chickens.

In terms of insulation, the materials used in construction will depend on the geographical

Some chicken houses use natural ventilation, like the house pictured above.

location of the farm; where the poultry house is to be built; and available funds. Despite this, the general rule of thumb is that materials to be used should have the following qualities or benefits:

- Maintain a stable, energy efficient and comfortable climate, which will improve birds health and production;
- Materials used should have the ability to reduce heat stress in summer, and prevent cold stress in winter, preventing moisture build-up;
- Significantly lower energy costs for heating and cooling.

For example, in hot regions, it is advisable to use brick walls instead of using zinc panels, and to have the zinc painted white for roofing.

VENTILATION AND ENVIRONMENT CONTROL

Ventilation is critical for the health and productivity of chickens kept in housing.

Natural ventilation involves the movement of air through openings in the housing structure by opening louvers or side curtains to move air from the outside to the inside of the house, and to circulate this air. The circulation of air allows harmful gases like ammonia to escape from the house, helps keep the bedding inside the chicken house dry, and generally maintains the fresh air inside the chicken house.

You should bear in mind the following important things when planning and designing the ventilation of the poultry house:

- The size of the opening determines

the speed with which the air will enter through that opening. Therefore, the size of the opening should not be too big or too small. The regional temperature should be taken into consideration when sizing the openings for ventilation;

- Openings on the open-sided buildings should be adjustable by means of lowering and rolling up of side curtains to obtain the suitable airflow outside to inside of the building;
- In houses with open sides and curtains, ventilation can only take place if the wind is blowing;
- The size of the curtain openings and the wind speed will determine the amount of air that will be replaced inside the building;
- Setting of curtain openings will depend on temperature and strength of the wind. With strong, cold wind the opening facing the wind should be small, while at the other side the opening should be larger;
- The surrounding environment should be free of bushes and tall trees to deter wild birds and predators;
- It should also be free of water ponds to minimise the presence of mosquitoes, which can cause fowl pox in the chickens and create an uncomfortable environment for them.

BROODING INFRASTRUCTURE

If raising day-old chicks, the house used should be well equipped with at least the following:

- Electricity to power the lights and brooding heat lights (infrared lights)
- Heat lights (brooder lights);
- Brooder rings or circles, which can be purchased or made out of cut box sheets or zinc flat sheets;
- The house should be positioned a bit higher than a normal poultry house, so that it is easy to warm it to the desired temperature to keep the small chicks warm;
- Where gas brooder heaters are used, the house should be equipped accordingly to accommodate the heaters and gas supply pipes safely;
- Special coal stoves (heaters) are also used where the price of coal and accessibility is economically viable.

COMMON MISTAKES

There are a number of common construction mistakes that new farmers make when setting up a poultry house. These include:

- Building a poultry house without prior planning and not leaving enough space between houses to minimise the spread of diseases from one house to the other;
- Building in low-lying or water-logged areas, which increases the development of dampness inside the poultry houses and can cause diseases;
- Building houses without proper air ventilation or with too large side

Mechanical ventilation uses fans, like those pictured above, to ensure that the house does not overheat.

A layer house's dimensions must be designed to enable installation of layer equipment such as layer cages.

openings, which makes the ventilation control difficult to manage;
- Building poultry houses with inadequate roofing that leaks during the rainy weather, and is too low to protect the birds from heat radiating from the roof during warm weather conditions;
- Failing to equip houses with side curtains that are easy to adjust.

PLANNING FOR EXPANSION

Farming is a volume-driven business, and as such, farmers should plan for future expansion in order to realise their profit targets and easy expansion of their operation to accommodate all activities in farm without difficulties.

Before erecting and building any infrastructure on the farm site, draught a layout plan of your farming operation and make provision for the following:

- Space and location of poultry houses;
- If farming layers, packhouses and egg storage facilities for egg farms. Eggs should be stored in cool conditions and protected from dust and odours for hygiene and food safety reasons;
- General storage facilities for keeping small farm equipment safe;
- Location of services supplies, such as boreholes and electrical supply;
- Location of living quarters for farmworkers;
- Boundary fencing;
- Open space should be reserved for future development and expansions.

MAINTENANCE AND LONGEVITY

Maintenance is an important part of every infrastructure system to ensure it continues to perform efficiently throughout its design life. It should be planned and carried out regularly at the end of each bird placement cycle in preparation for a new flock.

Maintenance activities include:

- The maintenance that is done at the end of the cycle includes, washing and disinfecting the poultry house and attached equipment fixed inside and outside the building;
- Inspecting and repairing damaged equipment, such as water supply systems, drinking nipples and feeding equipment;
- Inspecting roof leaks and sealing them;
- Checking and servicing temperature-control fans and cleaning ventilation systems;
- Clearing bushes around the poultry house and unblocking rainwater drains;
- Repairing structural defects that have developed in poultry buildings and associated infrastructure.

All the apparatus you need for poultry production

Equipment inside the coop ensures that chickens can eat, drink, grow, and behave normally. Proper equipment improves efficiency, reduces waste, and supports bird health.

FEEDERS

Feeders must allow all birds to eat without competition.

Types of feeders:

- Tray feeders: used for chicks;
- Tube feeders: used for growing birds;
- Trough feeders: used for larger flocks.

Feeders should be:

- Evenly distributed;
- Clean and dry;
- Adjusted to bird height.

Poor feeder management leads to uneven growth and feed wastage.

Equally important are water systems, which must provide chickens with continuous access to clean water.

Types of drinkers:

- Manual drinkers;
- Bell drinkers;
- Nipple systems.

Drinkers must be:

- Cleaned regularly;
- Placed evenly;
- Positioned at correct height.

Dirty drinkers increase disease risk among poultry.

HEATING EQUIPMENT (BROODERS)

Chicks require additional heat during early stages.

Common options:

- Heat lamps;
- Gas brooders.

Requirements:

Laying hens housed in multi-tiered wire enclosures inside a climate-controlled coop. PHOTOS: FW ARCHIVE

- Even heat distribution;
- Correct temperature control;
- Prevent overcrowding under heat source.

BEDDING (LITTER)

Quality chicken bedding is essential to maintaining a healthy and productive poultry house because it fulfills critical environmental functions. It actively absorbs moisture from droppings and spills, keeping the floor dry and significantly reducing

Chicks in a brooder should be provided with a heat plate or a lamp with a red bulb as a heat source.

odour by locking away ammonia fumes. This dry, cushioned surface also drastically improves bird comfort, insulating chickens from the cold floor and encouraging natural scratching behaviour. Conversely, poor litter management turns bedding into a damp, compacted hazard, creating a breeding ground for harmful bacteria that may inevitably lead to severe disease.

Common manterials used for this include wood shavings, straw and sawdust.

NESTING BOXES AND PERCHES

For egg production systems, nesting boxes are essential as they provide clean laying areas. Perches allow for natural roosting behaviour, which also improves egg quality and reduces stress.

CLEANING EQUIPMENT

Maintaining hygiene is essential. Regular cleaning reduces disease risk and improves flock health.

Basic tools a farmer needs includes:

- Brooms;
- Shovels;
- Buckets;
- Disinfectants.

HANDLING EQUIPMENT

Used for daily management and transport.

- Crates for transport;
- Egg trays;
- Catching tools.

COMMON MISTAKES

When stocking and maintaining a poultry house, farmers frequently jeopardise flock health and productivity through a few common equipment mistakes. A primary error is providing too few feeders or drinkers, which forces birds to compete for resources, leading to uneven growth rates and increased flock stress.

Even when equipment is sufficient, dirty feeders and drinkers can quickly become breeding grounds for disease, while an incorrect height placement prevents birds from accessing food and water comfortably, causing unnecessary wastage. Furthermore, poor litter management around these stations can cause moisture build-up, increasing ammonia levels and harmful bacteria in the house. Finally, a lack of basic tools on hand often prevents farmers from performing routine maintenance or making swift repairs, turning minor equipment malfunctions into costly, long-term disruptions.

Choosing the right bedding for better broilers

Bedding material should be free of toxins and should be quick-drying. FW ARCHIVE

Floor management is one of the pillars of successful broiler production, as important as biosecurity, climate control and general animal welfare. Yet this essential aspect is all too often overlooked.

"Neglect any of these and the business will be at risk," says Kobus Visser, managing partner of Mabron Broilers on Löttershof Farm near Caledon in the Western Cape. He owns the business with partner Grant Harper. The operation produces broilers on contract for Elgin Free Range Chickens (EFRC) in Grabouw.

Löttershof is not a typical broiler farm. It produces free-range chickens in three houses located 300m to 400m apart.

All EFRC farms are stocked at a far lower density than the norm. At Mabron Broilers the stocking density is about three quarters of the stocking density of controlled houses, and at 2 025m², Mabron Broilers' chicken houses are double the size of those on other farms that supply EFRC. In addition, each bird can range freely outside the houses, with ample access to sunshine, grit and grass.

Yellow maize is the main feed ingredient, being more nutritious and better for broilers than small grain.

Following EFRC standards, the broilers rarely receive antibiotic treatment, and then only when prescribed by a veterinarian. Strict biosecurity measures prevent disease, while the feeding regime includes probiotics and amino acids that promote good gut health.

LITTER: A KEY COMPONENT

All of this means that litter management is especially important. Indeed, Visser sees litter as the poultry farmer's greatest ally – or worst enemy.

"Good floor management improves the living environment," he explains. "It helps keep birds dry, reduces contact with faecal matter and insulates them from the cold. It improves the environment and reduces stress and vulnerability to disease. The resulting improved feed conversion has a positive impact on growth, which is important in a set-up such as ours that uses no routine antibiotics."

Good floor management starts with selecting the bedding material.

"The ideal material consists of dry friable particles that will stimulate a bird's natural behaviour to dust-bathe," says Visser.

The material should be free of toxins, highly absorbent and quick drying, as wet litter leads to breast blisters, foot burns and ultimately a rejected carcass. Wet litter also emits excessive ammonia, encouraging harmful bacteria and fungi. "Some material is more susceptible to mould than others," adds Visser. Hardwoods and straw, for example, increase the risk of birds developing fungus-related respiratory diseases such as aspergillosis.

The material should not be too coarse, as coarse particles hurt birds' feet and damage the skin. Large particles also tend to cake, making it difficult to separate again. At the same time, material should not be so fine that it increases the amount of dust in the house, leading to respiratory problems in the birds and workers.

"Certain woods, such as meranti, or material containing bark, tend to be too fine," notes Visser.

The material must have good insulation properties to shelter chicks from the cold floor.

The farm has experimented with various materials since broiler production started nine years ago. Chopped straw was found to have particles that were too sharp and tended to cake. The high moisture content of black wattle and eucalyptus shavings made efficient moisture absorption and release a problem.

"I've heard of using shredded newspaper, but apparently it also tends to cake, stays wet and lacks good insulation properties," says Visser. Eventually, he settled on pine shavings

as most suited to the farm's conditions, despite considerable variation in the quality of shavings from different suppliers.

"We use only pine shavings from a supplier specialising in poultry bedding," says Visser. "The supplier dries the wood before shaving it to prevent fungal problems. The end-product is free of contaminants or objects harmful to the birds. The particle size is also perfect. We no longer have to use underfloor heating!"

MANAGEMENT

Having the correct bedding material means nothing if the operation is not managed properly. Mabron Broilers runs 6,3 cycles of eight weeks each annually. Birds go into the houses as day-olds and come out again at about 36 days.

The remaining two weeks of the cycle are used for maintenance and preparing the houses for the next cycle. A tractor removes old litter the day after the last birds leave.

A fruit grower near Greyton buys the litter and composts it for fertiliser. The house is then cleaned and disinfected. Swab samples are taken at various points to confirm that the procedure was carried out correctly or to identify possible problems.

An important goal of floor management is to keep litter dry, so the drinking system is checked for leakage before the next batch of chicks arrives in the house. After this, the system is closely monitored and leaks repaired immediately.

"We gradually raise the drinking nipples as chicks grow to ensure a comfortable drinking height and to prevent them from wasting water," says Visser.

Bedding material should start off dry. "Seven to 10 days before new chicks arrive, we spread the shavings uniformly over the floor to dry completely," explains Visser. "It's almost impossible to fix problems if you start out with damp material." The volume of bedding used is important too: if spread too thinly it cannot absorb as much moisture. The bedding is kept between 7,5cm and 10cm deep – deeper in winter when the moisture level is harder to control and to give the birds extra insulation from the cold.

"In terms of volume of bedding, thicker is better and easier to manage," says Visser.

Heat stress in the houses must be prevented as far as possible, as this will see birds drinking and urinating more, with obvious consequence for the moisture content of the bedding.

When fed in excess, certain ration constituents such as salt or high protein grains such as soya can also lead to wet litter. Environmental factors such as wet humid weather or a very low temperature may also cause wet litter problems if the house master cannot eliminate the moisture effectively.

After the chicks have been introduced, the litter is turned manually every day from the fifth day onwards. This helps to keep the material dry and friable.

"Each house has its own house master, who is responsible for the birds through the entire cycle," explains Visser.

"The birds become very used to the house master. House masters set their own working hours and receive a bonus when the cycle is completed and they have met their production targets. Only a few other people, responsible for carrying out spot checks, are allowed in the houses."

When turning the litter, the house master works the fork through the bedding almost like a plough to loosen up caked material. The birds help with this by dust bathing and scratching in the material.

The house masters keep a watchful eye on the behaviour of their charges, spreading their activities evenly throughout the house to prevent wet patches in specific areas.

Because the birds are reared as naturally as possible, gas heating is limited to the first week of production in summer and the first two weeks in winter when a chick is

not yet fully feathered and cannot regulate its body temperature. The temperature is maintained at around 30°C when chicks go into a house and gradually decreased so that it reaches to 19°C by day 25.

SAVING ENERGY

Temperature and humidity levels are measured at different spots in the poultry house to monitor the microclimate. One rule is to never use heating if a door or something else is open. Opening and closing doors, internal and external curtains, pop-holes and extractor turbines/whirlybirds regulates the poultry house microclimate.

The day before new chicks arrive, the house master covers the whirlybird ports with Styrofoam sheets until they need to remove heat and stale air from the house.

The production cycle starts with the chicks occupying only half the broiler house floor space.

"A double row of curtains through the width of the house creates an air

Straw is not ideal for chicken bedding, as it increases the risk of birds developing aspergillosis. WIKIMEDIA COMMONS

Litter should be kept dry to avoid chicks and chickens becoming sick, and from mould forming. WIKIMEDIA COMMONS

pocket and seals off the birds from the unoccupied half, saving energy and preventing heat loss," says Visser.

"The inner curtains can be removed from day three, depending on weather conditions and the poultry house temperature." As the birds are produced free-range, each poultry house has 44 pop-holes, each measuring 2m x 0,6m, allowing the birds exit and entry.

While EFRC free-range standards stipulate that the birds should have access to the outside from day 14 in summer and day 21 in winter, Visser tries to get them outside as soon as possible. This is usually from around day eight, depending on the temperature outside, but we've had birds out from even the second day under favourable conditions, he says.

"Going out at an early age is beneficial from a bird welfare perspective. It reduces the load on bedding absorption as the birds spend a large part of their day outdoors, giving the floor a rest."

Email Kobus Visser at lottershofoffice@gmail.com.

Why water systems matter

A well-managed water system ensures that chickens have continuous access to clean water, which is essential for feed intake, growth, and overall health. Poor water availability or quality can quickly reduce performance and increase disease risk.

Water intake depends on age, temperature, and production stage.

Chickens drink 1,5 to two times more water than the feed they consume. In hot conditions, water intake increases significantly due to heat stress and higher body temperature.

Types of drinkers:

Different systems can be used depending on the scale of production:

- Manual drinkers: simple and low-cost, but require frequent cleaning and refilling;
- Bell drinkers: maintain a constant water level and are suitable for medium-scale systems;
- Nipple drinkers: reduce contamination and water wastage, but require higher initial investment.

The system must ensure consistent access and cleanliness, regardless of type.

Drinkers must be positioned to ensure equal access for all birds:

- Distribute drinkers evenly throughout the house;
- Avoid crowding in one area;
- Adjust height as birds grow;
- Ensure all birds can drink without

Reliable access to clean water helps support bird performance and reduce disease risk. Good water management supports feed intake, growth and overall bird well-being. PHOTOS: CHUBBYCHICKS

Providing regular clean water at all times is a cornerstone of successful poultry production.

competition. Poor placement can result in uneven growth and stress.

CLEANING ROUTINE

Maintaining a strict cleaning schedule for water drinkers is absolutely critical to ensuring flock health and preventing the spread of deadly waterborne diseases.

Consistently rinsing drinkers daily removes immediate contaminants like feed, dust, and litter that birds inevitably kick into the water. However, rinsing alone cannot remove the slippery biofilm that naturally forms on surfaces, which is why you should thoroughly scrub drinkers two to three times per week to break down this bacterial layer. Finally, disinfecting weekly with a safe sanitising solution kills off any remaining deep-seated pathogens and algae, guaranteeing that the flock always has access to clean, safe, and disease-free drinking water.

COMMON MISTAKES

Farmers frequently make critical mistakes that directly impact flock hydration, growth, and survival. Installing too few drinkers forces birds to compete for water, which causes severe stress and leaves weaker chickens dehydrated.

The risk multiplies when birds are forced to consume dirty water, a frequent consequence of having no cleaning routine. Furthermore, poor placement (such as hanging drinkers at the wrong height or clustering them too close together) makes it difficult for the entire flock to access water easily. Finally, unexpected water interruptions from blocked pipes or empty tanks can quickly turn fatal.

3

Brooding

The first two weeks of a chick's life determine its future performance. In this section, *Farmer's Weekly* explains how to manage temperature, ventilation, feeding, and early health checks. Careful brooding builds strong, healthy birds and sets the tone for the entire production cycle.

OVERVIEW

- Step-by-step brooding management
- Reducing heat stress
- Ventilation

SOURCES

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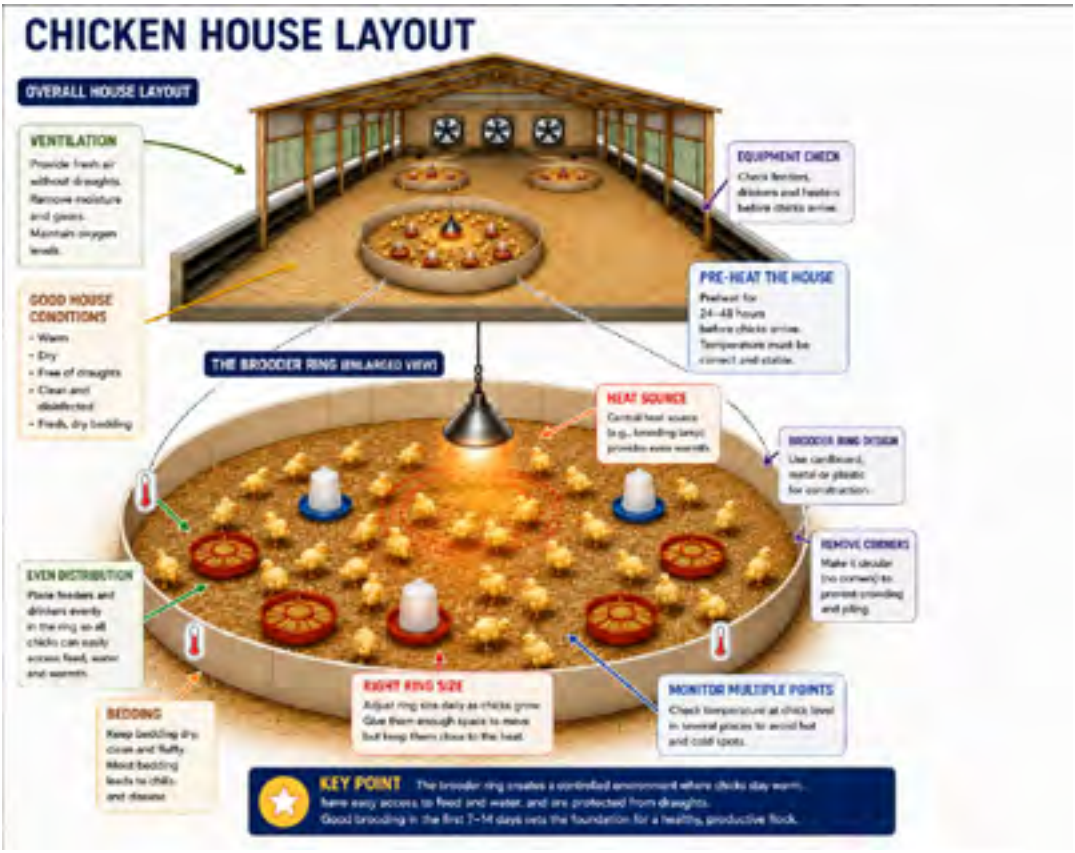
Boosting chicks' early development



A pictorial showing the brooder ring and the general layout of a chicken house.

Brooding is the most critical phase in poultry production. During the first seven to 14 days of life, baby chicks are poikilothermic, which means they cannot regulate their own internal body temperature and thus rely entirely on the ambient environment to stay warm.

Poor brooding leads to:

- A high and early mortality rate;
- Uneven growth;
- Poor feed conversion; and
- Long-term production losses.

Be warned: mistakes made during brooding *cannot* be corrected later.

PREPARING THE HOUSE BEFORE ARRIVAL

Preparation must begin at least 24 to 48 hours before chicks arrive. Ensure that you:

- Clean and disinfect the entire house;
- Remove old litter and debris;
- Install fresh, dry bedding;
- Check all equipment (feeders, drinkers, heaters); and
- Preheat the house.

Chicks should never be placed into a cold or unprepared house. The house must be warm, dry, and free of draughts.

TEMPERATURE MANAGEMENT

Temperature is the single most important factor during brooding. For the first three days, the temperature should not exceed 34°C. From days four to seven, the temperature should not exceed 32°C, and from days eight to 14, the temperature should not exceed 30°C (*see Table 1*).

TABLE 1: IDEAL TEMPERATURES

Age (days)	Temperature (°C)
Day 0–3	32°C–34°C
Day 4–7	30°C–32°C
Day 8–14	28°C–30°C

As the table shows, the house temperature should be gradually reduced as chicks grow.

MANAGING HEAT DISTRIBUTION

When heat isn't evenly distributed throughout the house, it creates distinct microclimates (zones that are either too hot or too cold). Because young chicks follow their instincts to survive, this imbalance triggers a cascade of physical, behavioural, and health problems. To prevent this, ensure heat is evenly distributed:

- Avoid hot and cold spots; and
- Monitor multiple points in the house.

SETTING UP A BROODER RING

The brooder ring creates a controlled environment for chicks. It is a circular enclosure around a central heat source. The brooder ring ensures chicks remain close to heat sources, feed, and water. When constructing a brooder ring, follow these guidelines:

- Use cardboard, metal, or plastic for construction;
- Place feeders and drinkers evenly throughout the ring; and
- Avoid a structure with corners to prevent crowding.

FIRST FEED AND WATER

When placing chicks in the house, make sure they have immediate access to clean water. Dirty water increases the risk of disease.

Use shallow drinkers; this prevents drowning (newly hatched chicks are small, clumsy, and have poor coordination); avoids hypothermia (if chicks fall into or splash around in deep water, their down feathers become wet. Chicks cannot regulate their body temperature well during their first few weeks, so wet feathers can quickly lead to lethal chilling or hypothermia); it allows them easy access to the water (shallow rims allow young chicks to reach the water easily without having to lean over steep edges or struggle to reach the water level); and it helps keep the water cleaner (deep or wide-open bowls encourage chicks to wade through or sit in the water).

You should also ensure immediate access to feed, as early feeding improves gut development and growth.

Make sure to refill drinkers as required. Your chicks should never be without water.

As your chicks get bigger, increase the space between the drinkers to prevent overcrowding and stress, and to give the chicks equal access to water.

HEAT STRESS

Heat stress is a significant problem for all animal producers, and poultry farmers are no exception.

As mentioned earlier, young chicks cannot regulate their internal body temperature, so heat stress is an ever-present threat for young chicks in particular.

Heat stress is caused by overcrowding, high ambient temperatures, and poor ventilation. Look out for the following signs of heat stress in chicks:

- Holding their wings up and away from their bodies, or letting them droop onto the ground to release body heat;
- Panting;
- Moving away from each other;
- Crowding away from heat sources such as brooding lamps;
- Showing lethargy and weakness; and
- Moving around less.

To prevent heat stress in your chicks, lower the ambient temperature. This can be done by adjusting the height of the heat source, improving airflow in the house, and reducing stocking density.

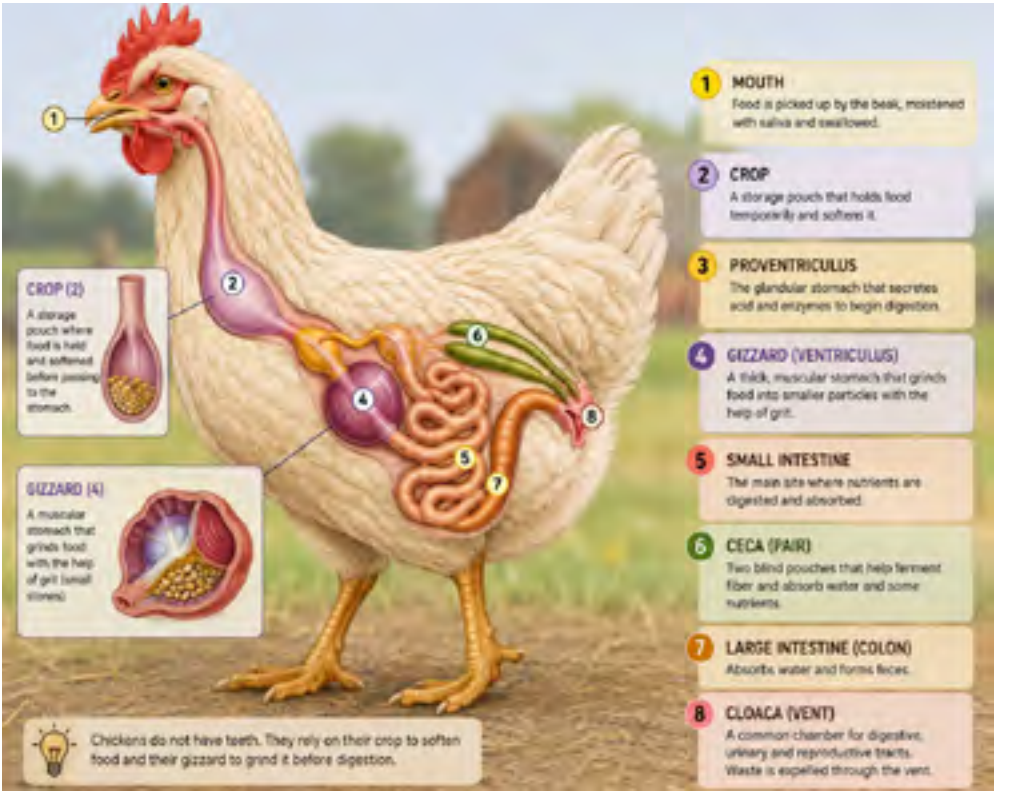
VENTILATION DURING BROODING

Ventilation is critical for overall chick and chicken health. The key principles include:

- Providing fresh air without draughts;
- Removing moisture and gases from the house; and
- Maintaining oxygen levels.

While the next article provides a comprehensive guideline for maintaining ventilation in a chicken house, keep the following quick tips in mind:

- Open small sections of the house to improve ventilation. This will also lower the ambient temperature.
- Avoid direct airflow onto chicks.
- Monitor humidity and smell, as the build-up of dampness and ammonia



A diagram of a chicken's digestive system, including the location of the crop.

are indications of poor ventilation.

BEHAVIOURAL CUES

Chicks provide immediate feedback on conditions through their behaviour. If they are huddled together, you can assume that they're too cold.

In this case, do the following to ***increase*** the ambient temperature:

- Lower the heat lamp or adjust the thermostat on your heat emitter/plate. Raise the temperature at chick height by 2°C to 3°C until they spread out comfortably.
- Check for draughts coming from nearby windows, doors, or ventilation openings. Block cold air currents at floor level while ensuring there is still top-level air exchange.
- Ensure the bedding layer is at least 5cm to 7cm deep. (Cold floors can drain body heat through their feet.)
- Provide lukewarm water at around 20°C to 25°C.
- Place cardboard or draught guards in the corners of your brooder box to create rounded edges. This prevents chicks from smothering each other if they pile into corners to stay warm.

If your chicks are moving away from each other, they are likely too warm. Do the following to ***decrease*** the ambient temperature:

- Raise the heat lamp or adjust your thermostat/heating plate to reduce the temperature at chick height by 2°C to 3°C until they settle into a balanced pattern.
- Ensure adequate airflow near the top of the brooder to allow heat and humidity to escape, being careful not to create strong floor-level cold drafts.
- Replenish drinkers with clean, cool water. Heat-stressed chicks drink significantly more water to stay cool, so ensure drinkers are full and easy to reach.
- Move surrounding brooder guards or walls outwards to give the chicks more floor space so they aren't crowded against outer walls.
- Check the wattage of your heat lamps, and possibly switch to a lower wattage bulb to prevent rapid overheating.

If chicks are comfortable, they will display the following behaviour:

- Spread evenly across the entire brooder floor rather than crowding beneath the heat source or piling against the outer walls;
- Make soft, gentle, continuous cheeping noises;
- Move freely and frequently between the heat source, food troughs, and drinkers without hesitation;
- When sleeping or resting, lie down individually or in small scattered groups in relaxed positions; and
- Display normal developmental behaviours like scratching at the bedding, preening their down, exploring their surroundings, and running or hopping.

CROP FILL ASSESSMENT

A crop is a specialised, expandable muscular pouch along a chicken's digestive tract. It is located at the base of the chick's neck, slightly to the right side of the central breastbone. It acts as a temporary storage organ where food is held and softened by digestive juices before moving further down into the stomach and gizzard.

When a chick has eaten, you can easily feel or see a soft, rounded bulge on the right side of its chest. When the chick hasn't eaten or has digested its food overnight, the crop will feel flat and soft.

You should inspect chicks' crops to check if any newly-arrived ones have successfully found the food troughs and drinkers in the brooder and to ensure they are eating and drinking enough.

As **Table 2** shows, the state of the crop indicates whether the chick has a digestive obstruction, a fungal or yeast infection, is having trouble feeding or drinking. It also evaluates your broader set-up and management.

How to check the crop:

- Check crops eight hours, 12 hours, and 24 hours after placing chicks in the brooder.
- Gently pick up the chick. Place your thumb and index finger on the right side of its chest, at the base of its neck.
- Feel for a full, soft, and pliable crop. It should feel like a small, soft beanbag (a mix of feed and water). This indicates a healthy, well-fed chick.

Should the crop assessment reveal a blockage or infection, it's always best to consult a veterinarian.

You should aim for full crops in 90% to 95% of your chicks after the first 24 hours. This indicates that your set-up and management are effective.

If you have a large number of chicks, it's not possible to check all of their crops. Aim instead to check a sample group. Pick chicks from three to four different zones across the brooder area, and avoid sampling chicks only from right around the feeders. Adjust your sample size as you deem necessary.

TABLE 2: WHAT THE CROP INDICATES

Feel	Smell	Meaning	Action
Full, soft, and pliable	None	Normal and healthy	Maintain conditions
Hard, dry, and firm	None	Lack of water (dehydration)	Check water temperature and/or access
Squishy, soft, and fluid-filled	Sour, foul, or fermenting	A yeast or fungal infection in the crop	Get diagnosis and treat infection
Hard, dense, and tightly packed	Musty or sour	Blocked with indigestible material	Remove all food and grit for 12 to 24 hours
Flat, thin, and completely empty	None	Lack of food; chick not feeding	Check access to food and look for illness
Distended and balloon-like (air-filled)	Stale, but there also might not be any smell	Air or other gas trapped in the crop	Gently massage crop and provide clean water

EARLY HEALTH CHECKS

Daily monitoring of chicks in a brooder is essential because young chicks are extremely fragile and fully dependent on a controlled environment for survival. By monitoring your chicks every day, you'll be able to detect disease and health risks early, and make the necessary changes to the house and the management of your chicks.

During your daily checks, look for:

- Activity levels;
- Feed and water intake;
- Mortality; and
- Signs of disease or illness.

Common early health problems you may detect include dehydration, weakness, respiratory distress, and infection.

Should you pick up that one (or more) of your chicks is sick, isolate it from the rest of the flock, as many illnesses and diseases can spread quickly.

Next, check the environment. Is the house too hot or too cold? Do all the chicks have access to water and feed? Are any other chicks showing similar symptoms of illness?

Adjust your management of the house immediately to correct any environmental concerns.

DAILY BROODING ROUTINE CHECKLIST

Poultry management & brooder health logbook

Farmer name: _____

Operation name: _____

Number of chicks: _____

Age of chicks: _____

1. Daily tasks (check off completed tasks each day)

Status	Task	Description & instructions
[ ]	**Check temperature**	Verify that the brooder temperature is at the correct target level for the chicks' age.
[ ]	**Observe chick behaviour**	Monitor spatial distribution (checking for huddling, spreading away, or even dispersion).
[ ]	**Refill feed and water**	Ensure all feeders and drinkers are continuously stocked with clean feed and fresh water.
[ ]	**Clean drinkers**	Wash and sanitise drinkers thoroughly to prevent bacteria build-up and contamination.
[ ]	**Remove wet litter**	Spot-clean and replace damp or soiled bedding to maintain dry litter and prevent ammonia build-up.
[ ]	**Monitor health**	Inspect chicks for signs of lethargy, abnormal droppings, crop issues, or physical weakness.

2. Weekly adjustments (review and perform every seven days)

Status	Task	Description & instructions
[ ]	**Expand brooder space**	Move brooder guards outwards to give growing chicks adequate floor space.
[ ]	**Reduce temperature**	Gradually lower the heating element/ target temperature as the chicks mature.
[ ]	**Increase equipment space**	Add or upgrade feeders and drinkers to match the growing chicks' capacity needs.

3. Common mistakes quality check (inspect daily to prevent issues)

Status	Task	Description & instructions
[ ]	**Preheating check**	Confirm brooder area was fully heated prior to chick arrival.
[ ]	**Temperature check**	Verify brooder is neither overheating nor chilling the chicks.
[ ]	**Ventilation check**	Ensure fresh air circulates properly without creating cold draughts at floor level.
[ ]	**Density check**	Confirm floor space is sufficient to prevent overcrowding.
[ ]	**Hygiene check**	Ensure all feeders, drinkers, and equipment remain clean, sanitary, and functional.

Reducing heat stress in chickens

When a chicken faces extreme conditions such as excessive heat, its body's defence mechanisms kick in, resulting in stress. Other stressors include a very low ambient temperature, a high ammonia level in the poultry house, dehydration, infection, overcrowding, and rough handling.

REACTIONS TO HEAT STRESS

In South Africa, high environmental temperature has been noted as the most common cause of stress in poultry.

Heat stress has a severe impact on the health of the bird, affecting its production and, as a result, the profit of the enterprise.

When a chicken becomes very hot, it spreads its feathers or wings and attempts to stay close to a cool surface.

To cope with heat stress, the bird has evolved the following adaptations that it uses in combination: behavioural, biochemical, and physiological.

- **Behavioural adaptation:** the bird pants or hyperventilates, spreads its wings or feathers, and tries to keep its body as close as possible to a cool surface.
- **Biochemical adaptation:** the bird uses more oxygen, and the level of carbon dioxide in its blood decreases. In addition, a change in the level of potassium disrupts cellular function.
- **Physiological adaptation:** heat stress stimulates the bird's adrenal cortex, causing an increase in corticosteroid secretion. This leads to suppression of the immune system.

VITAMIN C

Poultry experience heat stress when they are exposed to ambient temperatures higher than 30°C. While you may not be able to reduce the ambient temperature, especially in summer, you can alleviate the effects through supplements.

Vitamin C (ascorbic acid) is crucial in reducing the effects of heat stress in poultry. It is synthesised in the kidneys, but when the chicken is exposed to excessive heat, the amount produced by its body is insufficient, and you will then need to supply the vitamin as a supplement.

Vitamin C is essential for converting vitamin D3 into its active, metabolic form. Vitamin D3, in turn, is required for calcium metabolism and egg and bone calcification. It also plays a vital role in other processes, including the functioning of white blood cells, which help fight infection.

Vitamin C supplementation helps with the mobilisation of minerals from the bones and increases plasma calcium levels for improved eggshell formation.

Using a vitamin and electrolyte supplement can increase body weight, improve energy levels, and help alleviate the effects of heat stress in poultry.

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Chicken house ventilation: ensuring proper airflow and climate control

Proper ventilation is essential for regulating temperature, controlling moisture, removing harmful gases, and maintaining air quality inside a poultry house. Without adequate airflow, chickens can suffer from respiratory diseases, and their productivity can decline.

Ventilation in a chicken house is essential as chickens easily suffer from heat stress. Ventilation also helps keep the house dry. PHOTOS: FW ARCHIVE

TYPES OF POULTRY HOUSE VENTILATION

Natural ventilation relies entirely on natural forces, specifically ambient wind pressure and thermal buoyancy (the chimney effect), to circulate fresh air and remove heat, moisture, carbon dioxide, and harmful ammonia gas without mechanical exhaust fans.

It requires well-placed air inlets to maintain airflow. Side curtains, for example, can be adjusted to control temperature and airflow based on weather conditions.

Natural ventilation tends to be more cost effective than mechanical ventilation.

Mechanical ventilation uses electric fans and air inlets to regulate airflow and temperature. It is most suitable for large-scale farms that require precise environmental control.

In South Africa (and other countries, regions, or areas), where electricity supply may be unreliable, backup

TABLE 1: LETHAL AND PRACTICAL LIMITS OF GASES IN A CHICKEN HOUSE			
Gas	Lethal limit (%)	Practical limit	
		%	ppm
Carbon dioxide	Above 30	Below 1	Below 10 000
Methane	Above 5	Below 5	Below 50 000
Hydrogen sulphide	Above 0,05	Below 0,004	Below 40
Ammonia	Above 0,05	Below 0,0025	Below 25
Oxygen	Below 6		

power (generators) is essential. While mechanical ventilation offers better climate control than natural ventilation, the capital and operational costs are higher.

HUMIDITY AND AMMONIA

High humidity inside a poultry house can lead to wet litter, increasing the risk of respiratory diseases and bacterial growth. The ideal relative humidity (RH) range in a house is between 30% and 75%, with the optimal RH being 60%.

You should also be on the lookout for ammonia build-up. Ammonia from wet litter and manure can cause eye and respiratory issues. The maximum safe ammonia level is 25 parts per million (ppm).

Make sure to replace bedding on a regular basis to keep litter dry and reduce ammonia build-up.

(*See Table 1 for limits on gas levels in a poultry house.*)

VENTILATION STRATEGIES

If you're using natural ventilation, keep the following in mind:

- **House orientation:** align the house east to west to minimise direct sunlight and maximise wind use.
- **Side openings:** use adjustable curtains to help control airflow.
- **Stack effect:** warm air exits through roof vents, drawing in cooler air from below.

When using mechanical ventilation, consider that there are five types of systems to consider:

- **Negative pressure ventilation:** extraction fans remove stale air, creating a vacuum that pulls in fresh air.
- **Positive pressure ventilation:** fans push fresh air into the house, forcing stale air out.
- **Tunnel ventilation:** fans at one end draw air through inlets at the opposite end for maximum cooling.
- **Cross ventilation:** fans and inlets on opposite walls improve airflow.
- **Ridge ventilation:** it extracts air through roof-mounted fans and is particularly useful in colder climates.

KEY FACTORS FOR EFFECTIVE VENTILATION

Effective ventilation is essential for maintaining bird health, maximising growth, and protecting equipment in a poultry house. To ensure your ventilation system is working properly, consider the following:

Airflow management

- Air should enter at a low level and exit at a high level for efficient circulation.
- During hot weather, increase ventilation rates to prevent heat build-up.
- Avoid creating strong draughts that stress birds.

MAINTENANCE

Proper maintenance keeps your ventilation system efficient, safe, and long-lasting.

Neglecting it leads to higher energy costs, poor indoor air quality, and premature equipment failure. Ensure that you regularly clean fans, inlets, and vents to ensure proper airflow. Cleaning fans

will reduce motor strain, and also help keep electricity consumption down.

Constantly monitor temperature and humidity levels in the house with thermometers and hygrometers.

Check for obstructions like dust build-up or nesting birds, and ensure backup power sources are functional if you have a mechanical system.

ADAPTIONS

The type of ventilation system depends on the type of operation you're running. For example, if you have a deep-litter system (broilers or layers), use solid walls for the house to maintain a stable internal environment. This kind of house requires an insulated roof and ventilation openings for airflow.

If you are running a free-range system, ensure additional openings in the walls to allow birds to move between the indoors and outdoors. (Openings must be secured with mesh to prevent predator entry.)

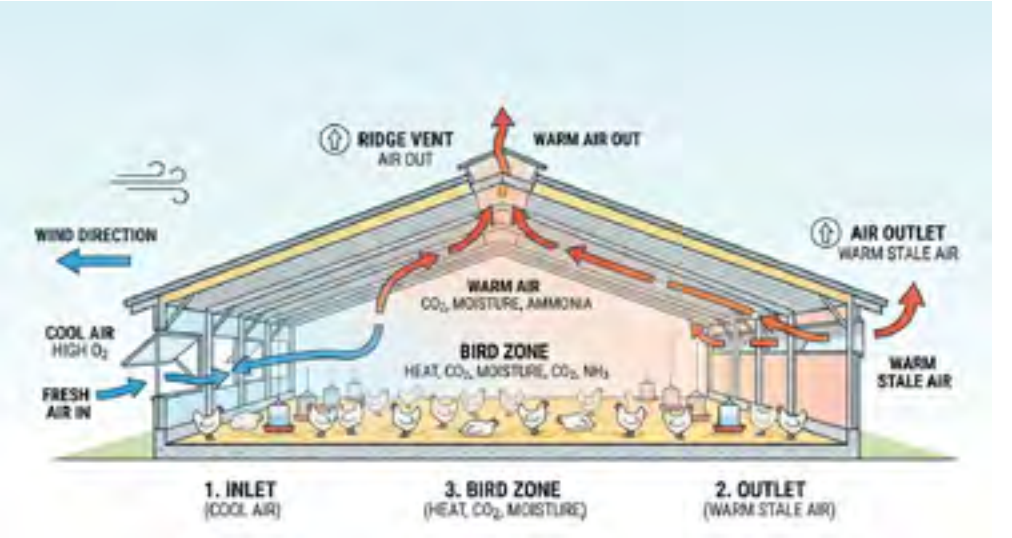
If you have a battery cage system (layers), you most likely require high- and ground-level ventilation openings. Walls should be fully insulated to prevent heat stress.

SMELLS TO LOOK OUT FOR

Specific odours in a poultry house serve as direct indicators of dangerous gas accumulations and poor ventilation performance. If you notice any of the following smells, take immediate action:

INADEQUATE AIRFLOW CAN LEAD TO A DECLINE IN CHICKENS' PRODUCTIVITY

- Pungent, sharp ammonia smell: Indicates high levels of ammonia (NH_3). It causes eye irritation, coughing, or a burning sensation in the throat, typically arising from wet litter breaking down uric acid.
- Rotten egg smell: Signals the presence of hydrogen sulfide (H_2O_2). This gas is created by anaerobic decomposition in stagnant manure pits, slurry, or clogged drainage lines.
- Musty or moldy odour: Suggests



An AI-generated diagram of how natural ventilation in a chicken house works.

The side curtains of this naturally ventilated chicken house are open to allow air to circulate in the house.

high humidity and damp litter, which accelerates the production of toxic organic dust, spores, and microbial gases.

- Odourless danger: Carbon monoxide (CO) and carbon dioxide (CO_2) have no smell. Thus, relying on odour alone will not detect them; CO usually accompanies combustion fumes from faulty gas heaters, while CO_2 spikes alongside stuffy, oxygen-depleted air.

Should you encounter any of these smells, take immediate action.

- Immediately increase ventilation. Open side inlets, drop curtains, or run additional exhaust fans to flush the toxic air out. (Never point fans directly at the birds, however).
- Scrape and remove heavy, wet patches of manure or water-logged bedding. If you cannot remove all damp litter immediately, spread a fresh, dry layer of absorbent bedding or shavings on top to temporarily block gassing.
- Inspect all drinkers for leaks. Adjust water lines so the trough or nipple height sits level with the birds' backs to prevent splash and spillage.
- Avoid spreading garden lime (hydrated/quicklime) on wet litter while birds are inside. Lime increases litter pH and actually triggers a sudden spike in ammonia gas, while creating caustic dust that burns bird footpads.
- The US Department of Agriculture recommends spreading a commercial acidifying agent like sodium bisulfate (PLT) or alum. These chemically lower the litter pH below 7, binding the nitrogen as ammonium so it cannot vaporise into ammonia gas.

4

Feed and water

Good nutrition is the engine of poultry production. In this section, we break down what birds need at different stages of growth, how feeding schedules work, and why clean water is just as important as good-quality feed. When birds eat and drink correctly, they grow efficiently and remain productive.

OVERVIEW

- Poultry nutrition basics
- Making your own feed
- Feeding schedules for broilers
- Feeding schedules for layers
- Water quality and management

SOURCES

- Choosing the right feed for your chickens – *Farmer's Weekly*, 14 June 2022
- Poultry broiler and layer production – *Farmer's Weekly*, 27 May 2022 (reviewed)
- Poultry housing parts 1 to 3 – *Farmer's Weekly*, June 2018 (reviewed)
- Poultry hygiene (health) – *Farmer's Weekly*, 27 May 2022 (reviewed).

Feeding your chickens

The best-quality meat and eggs demand the best-quality feed, and it's impossible for your chickens to be productive and efficient producers if they don't receive adequate nutrition.

Proper nutrition is crucial for raising chickens because it directly impacts their growth, health, and overall performance. It provides the essential nutrients, including proteins, vitamins, minerals, carbohydrates, and fats, that chickens need for optimal development.

For egg-laying hens, a well-balanced diet ensures consistent egg production, strong eggshell quality, and good reproductive health.

In broilers, proper nutrition promotes rapid growth, muscle development, and a healthy immune system, allowing them to reach market weight efficiently.

Poor nutrition can lead to weakened immune systems, increased susceptibility to diseases, lower egg production, and slower growth rates, ultimately affecting the productivity and profitability of a poultry operation.

By providing a balanced diet tailored to the specific needs of chickens at different life stages, you can ensure your flock remains healthy and productive.

Brett Roosendaal, nutrition executive at RCL Foods, says that because chickens are sensitive to changes in temperature and light, access to water and feed, housing type, and stocking density (or other conditions that could cause stress), they need adequate nutrition. "The cornerstone of chicken nutrition is attaining high voluntary feed intake of a diet that provides the prerequisite quantities of nutrients and energy daily," he explains.

In terms of what this nutrition may look like, Dr Elsje Pieterse, senior lecturer in the Department of Animal Sciences at Stellenbosch University, says that, unlike ruminants, the chicken is a single-stomach animal. Thus, high-fibre diets aren't digested and can reduce performance.

Experts say that a proper diet plays a fundamental role in helping to mitigate and prevent sickness and infection in poultry. PHOTOS: FW ARCHIVE

"The chicken is not a grazer, and although it will feed on young growth on grazing, this cannot be the primary source of nutrients. [Instead], a chicken requires highly digestible, well-balanced feed with the correct balance

of vitamins, minerals, energy, and amino acids [proteins]," she says.

Premade feed contains all the minerals, protein, and vitamins chickens need to remain productive.

DISEASES AND NUTRITION

Chickens are susceptible to respiratory infections, digestive upsets, and inflammation associated with injuries, but a proper diet can help prevent infection by boosting the birds' immune systems and speeding up the healing process.

"A well-fed chicken kept in a proper environment will have a healthy immune system and won't get sick as easily as a malnourished, poorly managed bird," says Pieterse.

Roosendaal adds that diet is fundamental to managing the majority of these diseases, either through the addition of functional ingredients to target a specific disease status, or through the basic construction of the diet formulation to help mitigate many of the disease conditions encountered. "Many diseases lead to a reduction in feed intake, which results in underperformance. Diagnosing a health problem accurately, together with providing good nutrition, is imperative for sustainable poultry production," he says.

POOR NUTRITION LEADS TO WEAKENED IMMUNE SYSTEMS AND LOWER PRODUCTION

GROWTH HORMONES AND ANTIBIOTICS IN CHICKEN FEED

There's often a misconception that chicken feed contains growth hormones and antibiotics. However, according to Pieterse, this only partly true.

"Growth hormones aren't necessary, as chickens have the genetics to grow extremely fast, and a farmer needs to manage the environment and feed to optimise this," she explains.

Antibiotics are still being used in chicken feed, however, but alternatives are being researched and steadily being implemented.

"It should be kept in mind that the antibiotics used in animal feeds are not similar to the ones used for humans, and that the industry is very sensitive to the possibility of resistant bacteria.

"Antibiotics may only be prescribed by a qualified veterinarian," says Pieterse.

Roosendaal says growth hormones have never been used in chicken feed in South Africa. He adds that the development of prebiotics, probiotics, and phytogenics (natural growth promoters), and the increased use of organic acids in poultry feed over the past 10 to 15 years has offered nutritionists alternatives to improve gut health without the use of subtherapeutic antibiotics.

Pieterse says that a well-fed chicken has a stronger immune system to withstand disease pressure.

"However, the addition of some antioxidants, vitamins, microminerals, and organic compounds can add value," she adds.

CLEAN WATER

Clean water is important for overall chicken health, but Pieterse says it should also be cool.

"A bird needs to consume around 2ℓ of water for every 1kg of feed. If the water is hot, polluted, or insufficient, the birds won't drink and will therefore not feed.

"Insufficient water can cause crop compaction, dehydration, and death.

Chickens need energy, protein, vitamins, and minerals to remain healthy and productive.

"Contaminated water is also a source of pathogens that can lead to the spread of diseases," she explains.

However, care must be taken when increasing your chickens' water in hot conditions, adds Roosendaal.

"High water intake under heat-stress conditions can lead to wet litter and should be managed accordingly.

"Diet composition and the use of functional raw ingredients can mitigate these conditions," he explains.

THE BEST WAY TO FEED CHICKENS

Chickens should always have access to clean food and water. According to Pieterse, the best feeder is one that a chicken cannot climb, defecate in, or scratch the feed out of.

"The feed should be replenished whenever it runs out, and drinkers should be cleaned and filled at least twice a day and whenever they are dirty," she says.

Roosendaal adds that feeding practices differ between broilers and layers. Broilers, for example, are fed continuously, while layers normally receive a set amount of feed, usually early in the morning.

"Broilers are usually fed in pans that are height-adjusted depending on their age, whereas laying stock are fed in tracks with chain conveyors.

"The feed form for broilers is crumbles or pellets, while layers receive a mash diet," he says.

MIXING FEED

On the topic of farmers mixing their own chicken feed, Pieterse says ready-made feed is perfectly balanced with the required nutrients a chicken needs to be as productive as possible.

She adds that while you may be able to access the main ingredients in feed, mixing your own could easily become more expensive than simply buying premade feed, as prices of raw ingredients fluctuate.

"Chickens need energy, protein, vitamins, and minerals. The proteins should have a certain amino acid composition, and the feed should be highly digestible and not contain any antinutrients or toxins."

Roosendaal recommends that for broilers in particular, you should buy commercially manufactured crumbles and pellets.

In most cases, layers generally receive a set amount of feed on a daily basis.

"[This will allow you to] achieve higher feed intakes and faster growth, making this type of feeding economically viable.

"For laying hens, some feed factories produce concentrates or macro packs of ingredients, where a farmer only needs to add maize."

If you're going to mix your own feed, it's important to include all the necessary raw ingredients to provide your chickens with a well-balanced diet.

'MIXING YOUR OWN FEED CAN BECOME VERY EXPENSIVE'

"Poultry feed comprises grains, grain by-products, proteinaceous raw materials, oil, vitamins, macro and micro trace elements, and medication. The ratios of these ingredients differ from one type of feed to another," says Roosendaal.

Also ensure that you never include mouldy or wet ingredients, or those contaminated with herbicides, pesticides, urine, or faecal matter, says Pieterse.

"Raw soya bean meal and cottonseed meal contain toxins, while raw meat and food scraps can be sources of microbial pathogens."

Quality control of the raw ingredients is also essential to prevent contaminants such as mycotoxins, heavy metals, pesticides, dioxins, or biogenic amines coming into contact with the feed, adds Roosendaal.

If you're buying ready-made feed, make sure to use it as is, says Pieterse, as it is already properly balanced. It should never be diluted, she warns.

"Commercially manufactured feed is well balanced and complete, and it shouldn't require any additional raw ingredients or additives.

"Most feed companies will add additional products to their rations if requested by a farmer," says Pieterse.

Essentials of producing feed on your farm

Mixing your own poultry feed can be extremely rewarding, if done correctly.

Access to proper mixing equipment, good-quality raw materials, and the advice of a trusted poultry nutritionist are the gateway to becoming a successful home mixer.

The advantage of mixing your own poultry feed is that you can control exactly what you feed your birds, thereby eliminating the risk of cheap fillers being used to bulk up complete feeds. It also gives you the opportunity to cherry-pick preferred additives and medication.

Seize the opportunity to use your own or locally produced grains and oilcakes, especially if raw material prices are low. This will also reduce the cost of transporting feed to your farm.

EQUIPMENT AND MIXING PROCESS

The basic equipment required to produce your own feed is a scale, a hammermill, and a concentrate mixer. An optional extra is a pellet machine.

With a small 300kg/h mixing unit, you can produce enough feed to meet a day's intake requirement for 3 200 broilers or 2 600 layers.

Start by carefully weighing the different raw materials to be mixed. All grains should be milled before mixing. Feed particle size is important in both broiler and layer feeds, as it has a direct influence on feed intake, which will affect production. Consult the relevant broiler and layer management guides for detailed explanations on good-quality sieve crumbs and pellets.

Add the raw materials into the mixer in order of most to least abundant. Feedstuffs that make up less than 0,5% of the total feed ratio should be hand mixed with about 2% of the energy grain source before adding them to the mixer. Bulking up this small amount will ensure a more uniform distribution throughout the final mixture.

A mixing time of 20 to 30 minutes is recommended to ensure consistent feedstuff distribution.

UNDERSTANDING FEED INGREDIENTS

Grain serves as the main energy source in poultry diets, with yellow maize as the most important and available grain source in Southern Africa.

Other grain sources like barley, oats, sorghum, triticale, and wheat vary in relation to maximum inclusion levels in the different poultry feeds. These grains must be correctly formulated into a feed by a nutritionist. Soya bean oilcake meal is the most

BASIC GUIDE TO PARTICLE SIZE FOR BROILER AND LAYER MASH FEEDS (AS INDICATED IN THE ROSS 308 POCKET GUIDE AND HY-LINE SILVER BROWN COMMERCIAL GUIDE)

Particle size	% of mash content (broilers)	% of mash content (producing layers)
More than 3mm	25%	10 to 15%
2 to 3mm	25%	30 to 40%
1 to 2mm	25%	20 to 30%
Less than 1mm	25%	15%

Well-formulated feed provides the nutrients needed for healthy poultry and optimal performance. SUPPLIED

widely used source of protein in poultry feeds. Raw soya beans cannot be used, as they contain trypsin inhibitors, which interfere with and impede the ability to digest protein.

Other available protein sources, such as sunflower oilcake meal and canola oilcake meal, can be formulated into feeds by a nutritionist. Cottonseed oilcake meal is not used in poultry feeds due to the presence of gossypol, which is poisonous to poultry.

Sufficient fibre inclusion in poultry diets is important to maintain gut health. Wheat bran is a popular fibre source in poultry feeds. Other by-products like hominy chop, maize gluten, and lucerne meal can also be used with success.

Vitamins and minerals are of the utmost importance, not only for maintaining normal body functions but also for enhancing production performance and unlocking the full potential of the feed ingredients used in the ration.

The quality of ingredients is always crucial to the success of any poultry operation. Conduct at least a sensory evaluation of all the materials intended for poultry feed.

TEAM UP WITH A POULTRY NUTRITIONIST

Make sure that all feedstuffs are mixed in the correct proportions to meet your production goals. Basic feed recipes are widely available online. Working with a poultry nutritionist is recommended to refine those formulations and advise on the necessary feed additives to be considered.

Written by Ronel Joubert, animal nutritionist at Feedtek. For more information on home-mixed poultry feed, email her at ronel@feedtek.co.za.

Feeder management during broiler growth phases

STANDARD FEEDING PHASES		
Phase	Age (days)	Purpose
Starter	0–14	Early growth and organ development
Grower	15–28	Muscle development
Finisher	29–slaughter	Weight gain and finishing
Each phase has a different nutrient requirement and feed formulation.		

A structured feeding programme ensures broilers grow efficiently, uniformly, and reach market weight on time.

In broiler production, feeder mismanagement directly impacts profitability, flock welfare, and bird health.

Because feed accounts for the majority of total production costs, even minor errors in feeder height, space, maintenance, or feed level can lead to significant financial loss. There are a number of common mistakes you should avoid and which can be very costly. These include:

- Delayed feeding after placement;
- Poor-quality feed;
- Too few feeders;
- Inconsistent feeding; and
- Dirty feeding equipment.

Feeders must be evenly distributed throughout the house. PHOTOS: FW ARCHIVE

BROILER FEEDING PHASES

Broilers are fed in phases, each one designed to match a specific growth stage.

- **Starter phase (days 0–14)**

This is the most critical feeding stage. The key focus during this time should be on rapid growth, as well as developing a strong and capable immune system and gut in the broiler.

When feeding broilers, keep the following in mind:

- Provide feed immediately after placement;
- Use crumble feed for easy intake; and
- Ensure feed is always available.

Poor feeding during this stage can lead to permanent growth setbacks.

- **Grower phase (days 15–28)**

During this phase, birds transition to rapid muscle development. This is a key production period, and it should focus on increased feed uptake and supporting the broiler's growth.

Keep the following in mind when feeding broilers during this phase:

- Increase feeder space to allow chickens easy access to feed;
- Maintain consistent feed supply; and
- Monitor bird uniformity.

- **Finisher phase (days 29–market)**

This is the final growth stage before the broiler is sent to slaughter. It focuses on efficient weight gain and optimal feed conversion.

Follow these practical guidelines when feeding during this phase:

- Avoid feed interruptions, as this can reduce growth and increase competition;
- Maintain clean feeders; and
- Monitor bird weight.

FEEDING FREQUENCY, ACCESS, AND MANAGEMENT

It is essential that broilers have access to feed at all times. When feeders are empty, they should be filled. Ensure that all birds have access to feeders at the same time to prevent competition among the flock.

Make sure to adjust feeder height to the level of the broilers' backs for easy access, and ensure that feeders are distributed evenly.

Feeder management may seem simple, but it's critical for a productive broiler.

Broilers, regardless of the phase of production they are in, must have access to feed at all times.

Poor feeder management can lead to feed wastage, uneven growth among the flock, and, ultimately, increased production costs.

GENERAL FEED INTAKE GUIDELINES	
Age (weeks)	**Feed Intake Trend**
1	Low, but frequent
2–3	Rapid increase
4-plus	High intake

Also remember that feed intake increases as birds grow, so make sure to plan their supply accordingly.

A proper feeding schedule for layers

Egg size and quality are largely dependent on layers' feed quality and access to water. PHOTOS: FW ARCHIVE

A structured feeding programme is essential for maintaining healthy layers and achieving consistent egg production.

Unlike broilers, which are fed for rapid growth, layers require balanced nutrition throughout their lives to support egg production, eggshell quality, bird health, and longevity.

Feed accounts for the largest portion of production costs in layer farming. Providing the correct feed at the correct stage helps maximise egg output while maintaining bird welfare and profitability.

LAYER FEEDING PHASES

Layers are fed according to their age and production stage. Each phase has specific nutritional requirements (*see table above right*).

PHASE	AGE	PURPOSE
Chick starter	Day 0 to 6 weeks	Early growth and development
Grower	7 to 14 weeks	Skeletal and body development
Developer	15 to 18 weeks	Preparing for egg production
Layer feed	19 weeks-plus	Egg production and shell quality

Each feeding phase supports a different stage of development and should not be changed prematurely.

- **Chick starter phase (days 0–6)**

This phase focuses on establishing a strong foundation for future performance. The key focus is on rapid growth, immune system development,

and organ and bone development. When feeding layers during this phase, keep the following in mind:

- Provide feed immediately after placement;
- Ensure feed is easily accessible;
- Use high-quality starter feed; and
- Monitor chick activity and feed intake daily.

Poor nutrition during the first six weeks can negatively affect future laying performance.

- **Grower phase (7–14 weeks)**

During this phase, birds continue growing and developing their skeletal structure. When feeding layers during this phase, the focus is on frame development, muscle growth, and achieving uniform body weights across the flock (uniform growth is critical for achieving uniform egg production later in life).

Follow these practical guidelines when feeding layers during this phase:

- Ensure all birds have access to feed;
- Avoid sudden feed changes; and
- Weigh sample birds regularly.

- **Developer phase (15–18 weeks)**

This phase prepares pullets (young female chickens under a year old) for the transition into egg production. It sees reproductive system development, the achievement of target body weight, and the preparation of the pullets for laying.

When feeding during this phase:

- Avoid overfeeding;
- Monitor body condition;
- Prepare birds for transition to layer feed; and
- Ensure adequate feeder space.

Proper development before laying improves production consistency throughout the laying cycle.

- **Layer phase (19-plus weeks)**

Once birds begin laying eggs, their nutritional requirements change significantly. In this phase, the focus is on egg production, egg size and shell quality, and maintaining bird health. Keep in mind that a sudden reduction in feed intake often results in lower egg production.

During this phase, make sure you:

- Provide feed consistently every day;
- Ensure adequate calcium intake;
- Supply clean drinking water at all times;
- Monitor egg production records; and
- Monitor shell quality regularly.

FEEDING FREQUENCY AND ACCESS

Like broilers, layers should have continuous access to feed throughout the day. Irregular feeding can negatively affect egg production and bird performance.

Be sure to avoid empty feeders, feed at consistent times daily, and minimise competition around feeders. All birds should be able to eat comfortably at all times.

THE ROLE OF CALCIUM IN EGGSHELL QUALITY

Calcium is one of the most important nutrients for layers. The following signs indicate calcium deficiency in these birds:

- Thin shells;
- Soft-shelled eggs;
- Cracked eggs; and
- Reduced production.

Good calcium nutrition improves eggshell quality and reduces losses due to breakages.

Commercial layer feeds, limestone, and oyster-shell products are all good sources of calcium.

WATER INTAKE

Water intake directly controls egg production, as water makes up roughly 65% of a whole egg (and 85% of the egg white/albumen). If water intake drops, a hen's body prioritises survival over reproduction, leading to an immediate drop in lay rate, smaller egg sizes, or a complete shutdown of production. To avoid dehydration in your layers:

- Provide clean water at all times;
- Clean drinkers regularly;
- Prevent water contamination; and
- Monitor daily water consumption.

Feed consumption should be monitored regularly to identify health or management problems.

As a general rule, layers consume approximately twice as much water as feed. Even short periods without water can reduce egg production.

GENERAL FEED INTAKE GUIDELINES	
Age/production stage	**Feed intake trend**
Chick starter	Low, but frequent
Grower	Increasing steadily
Developer	Moderate intake
Laying period	Highest intake

Feed consumption should be monitored regularly to identify potential health or management problems.

COMMON MISTAKES

There are a number of common mistakes that farmers make when it comes to feeding layers.

To keep your birds happy, healthy, and laying, avoid:

- Feeding the wrong ration to the wrong age group;
- Inconsistent feeding times;
- Insufficient feeder space;
- Poor-quality feed;
- Inadequate calcium supplementation;
- Allowing feeders to remain empty; and
- Poor water management.

These mistakes often result in reduced egg production, poor shell quality, and lower profitability.

Consistent feeding, access to clean water, and maintaining the correct body weight before laying are among the most important factors influencing long-term egg production success.

Optimising the power of water

Water is the most important nutrient in poultry production. Chickens require continuous access to fresh, clean water to aid feed intake, digestion, body temperature regulation, and overall health.

Poor water quality or supply leads to:

- Reduced feed intake;
- Slow growth;
- Poor egg production; and
- Increased disease risk.

Birds can survive without feed for short periods, but not without water.

WATER REQUIREMENTS

A chicken's water intake varies according to their age, production stage, and the ambient temperature.

The rule of thumb is that chickens drink between 1,5 and two times more water relative to the amount of feed they consume.

In hot conditions, water intake increases significantly, thus water supply must match demand.

WATER DEMAND TRENDS	
Stage/condition	**Water demand**
Chicks	Low, but frequent
Growing birds	Increasing steadily
Layers	High and consistent
Hot weather	Very high

Clean water is essential for preventing disease, as dirty water can carry

Nipple drinkers release water on demand when birds peck at a pin valve. PHOTOS: FW ARCHIVE

Manual drinkers are more cost effective than the other options, but require frequent cleaning.

pathogens and quickly spread disease throughout the flock.

Good-quality water should be:

- Clear (no dirt or particles);
- Odourless;
- Cool; and
- Free from contamination.

Signs of poor-quality water include:

- Slimy drinkers;
- Bad smell;
- Reduced water intake; and
- Increased illness.

TYPES OF WATER SYSTEMS

Chickens must be provided water through drinkers. There are several options to choose from, and the type of system you run will determine the type of drinker you use:

- Manual drinkers are inexpensive but require frequent cleaning. This type of drinker is best suited for small-scale, backyard, free-range, and brooding production systems.
- Bell (automatic hanging) drinkers balance continuous water flow with relatively simple gravity- or pressure-fed ballast mechanisms, making them a popular mid-tier option in poultry farming.
- Nipple systems are more hygienic and reduce water wastage, as they release

Bell drinkers are automatic and popular for mid-tier production.

water on demand when birds peck at a pin valve. While they are expensive to install, they are largely considered the gold standard for modern floor-raised chickens and cage systems.

CLEANING ROUTINE	
Task	Frequency
Rinse drinkers	Daily
Scrub drinkers	2 to 3 times per week
Disinfect system	Weekly

PLACEMENT AND ACCESS

Drinker placement dictates whether every bird gets adequate clean water without stressing their bodies or destroying the house environment.

Even the highest-grade watering set-up will fail if birds struggle to reach it. Follow these guidelines when placing drinkers:

- Distribute drinkers evenly;
- Adjust drinker height relative to bird size;
- Avoid overcrowding around drinkers;
- Increase the number of drinkers as the birds grow.

Poor access can lead to increased competition, uneven growth across the flocks and stress, which may lead to a drop in production and growth.

WATER AND BODY TEMPERATURE

Water plays a key role in regulating body temperature. Keep in mind that birds drink more in hot conditions, warm water reduces intake, and a lack of water leads to heat stress.

During particularly hot weather, the following should be kept in mind:

- Increase water points;
- Check supply more often; and
- Ensure water remains cool.

COMMON MISTAKES

Dehydrated chickens are at risk of disease, reduced production, and death. Avoid these common mistakes:

- Placing too few drinkers;
- Providing dirty water;
- Poor drinker placement;
- No cleaning routine; and
- Water supply interruptions.

WATER MANAGEMENT CHECKLIST	
Requirement	Yes/No
Clean water available at all times	
Enough drinkers for flock size	
Even distribution of drinkers	
Daily cleaning done	
Water easily accessible	

Make sure to frequently check water supply multiple times a day, observe bird behaviour around drinkers, fix leaks or blockages as soon as they're detected, and keep a backup supply if possible.

5

Health management

Healthy birds are profitable birds. In this section, farmers will find practical guidance on vaccination, biosecurity, parasite control and recognising early warning signs of disease. Prevention remains one of the most important tools in successful poultry management.

OVERVIEW

- How to vaccinate your chickens
- First-aid kit
- Combating e.coli
- Micro-organisms for health
- Biosecurity in practice
- Common diseases and first response
- Lice and mites

SOURCES

- *First-aid basics for small scale poultry farmers*
- *5 ways poultry producers can combat e-coli*
- *About chicken lice*
- *How to win the battle to control poultry mites*
- *Using micro organisms to improve profitability in poultry production*

How to vaccinate your chickens

There are a number of common diseases that you must vaccinate your chickens against. PHOTOS: FW ARCHIVE

It is essential that you vaccinate your chickens to ensure they remain healthy. Healthy animals are more likely to remain productive, while unhealthy ones may become less productive or die, thus negatively impacting your income stream. Ensuring your chickens are healthy is also your obligation, as illnesses and diseases will diminish their overall welfare.

Vaccines help prevent the spread of infectious diseases, some of which can devastate entire flocks. By immunising

chickens against these illnesses, you reduce the risk of outbreaks that could result in high mortality rates and significant financial losses.

Vaccines trigger a chicken's immune system to fight the disease by means of antibodies. As vaccines are administered before the possibility of a chicken contracting a disease, it would already have developed antibodies for the disease, thus making it easier for the chicken to fight off the offending pathogen.

You should vaccinate your chickens against the following diseases in South Africa:

- Marek's disease;
- Gumboro (infectious bursal disease);
- Newcastle disease;
- Infectious bronchitis;
- Fowl pox;
- Infectious laryngotracheitis.

• *(Turn to page 110 for more information on these diseases.)*

METHODS

Choosing the right method of vaccination is essential, so it's important to take note of the manufacturer's instructions on how the vaccine must be administered.

There are several different ways to administer these vaccines to chickens.

In spray form, the vaccine is delivered via aerosol, and it is particularly useful if you have a large flock of chickens to vaccinate. The vaccine is mixed with clean water (ensure the water is free from soap, residue, or disinfectant) to create a fine mist. It is then sprayed into the air using a spray apparatus, with the droplets falling on the chickens. The birds either inhale the aerosolised vaccine, which enters their respiratory system and stimulates an immune response, or they peck at the droplets on other birds, thereby ingesting the vaccine.

To ensure effective immunisation of the entire flock, the spray must reach as many birds as possible. Therefore, the size of the droplets and the spraying distance must be carefully considered and controlled to achieve uniform coverage. Using a finer spray nozzle, for example, may be more efficient than using a bigger one.

During spray vaccination, it is essential to maintain proper environmental conditions, such as good ventilation and temperature control, to reduce stress on the chickens and ensure the vaccine remains effective. Proper

The most common site for intramuscular injections in chickens is the breast muscle.

handling and storage of the vaccine before use are also crucial to prevent degradation. This method of vaccination is commonly used for respiratory diseases like Newcastle disease and infectious bronchitis.

VACCINES TRIGGER THE IMMUNE SYSTEM TO FIGHT DISEASE BY MEANS OF ANTIBODIES

You can also vaccinate your chickens through their drinking water. This vaccine comes in a freeze-dried form and must be reconstituted by adding it to clean, non-chlorinated water, as chlorine may inactivate the vaccine, rendering it ineffective. The water used must also be free from any disinfectants or additives.

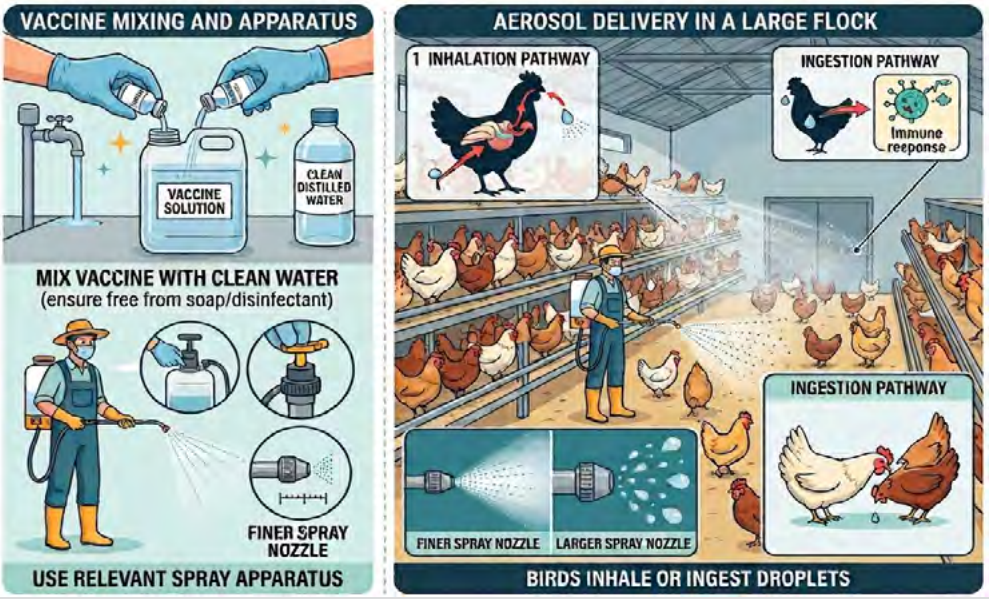
The reconstituted vaccine is then mixed into the chickens' drinking water in drinkers or containers. Calculate the volume of water needed based on the number of chickens that must be vaccinated, as well as their age and the ambient temperature. As chicks will consume less water than mature chickens, separate them according to age ,if possible, when administering the vaccine.

The medicated water should be consumed within one to two hours to ensure maximum effectiveness, as the vaccine's potency can degrade over time.

To ensure good coverage, it's important that all your chickens drink a sufficient amount of water. To achieve this, chickens are often deprived of water for two to four hours (depending on their age and the weather) before the vaccine is administered. This will ensure they're thirsty enough to consume adequate amounts of the medicated water quickly.

Make sure there's enough space for every chicken to access the drinker.

Chickens drink the water as normal, and the vaccine is absorbed through the mucous membranes in their digestive and respiratory systems, stimulating an immune response.



This AI-generated image illustrates the mechanisms involved in spray vaccination.

Some vaccines can be administered via the chickens' drinking water.

Once they've consumed the medicated water, fill the chickens' drinkers or containers with clean water, to which they should have immediate access.

Like with spray vaccination, this method is particularly useful when immunising large flocks. However, correct mixing and proper management of the process is essential to ensure complete coverage.

Eye-drop vaccinations allow you to accurately deliver a vaccine to all your chickens, but they're far more labour-intensive, as chickens need to be rounded up and caught before you

SUBCUTANEOUS INJECTIONS

This is a simple guide on how to inject a chicken subcutaneously. If you've never done this before, consult an animal health technician or officer, or ask for help from a seasoned farmer who's experienced in injecting chickens. This is to ensure that the injections are done properly without hurting the birds.

The following steps are typically taken:

- Each chicken must be handled individually.
- As always, be gentle when handling the chicken. This will reduce their stress and help you avoid injuring them.
- Hold the chicken upright or slightly leaning forward, with its neck accessible for the injection. A good way to do this is to tuck the bird under your arm, ensuring the head is supported but exposed.
- Locate the loose skin at the back of the neck, between the neck and the shoulder blades. Because this area has a good amount of loose skin, it's easier to lift for the injection.
- Gently lift a fold of skin between your thumb and fingers to create a small 'tent'. This separates the skin from the underlying muscle and ensures that you're injecting into the subcutaneous space rather than into the muscle.
- Hold the syringe with your dominant hand, and insert the needle at a shallow angle (approximately 30 to 45 degrees) into the base of the skin fold you've lifted. The needle should be inserted just under the skin, not into the muscle. The needle should go in easily. If you encounter resistance, you may have gone too deep, and you will need to reposition the needle.
- Slowly press the plunger to release the vaccine into the subcutaneous space. Ensure the full dose is delivered, and then carefully withdraw the needle from the skin. After removing the needle, check to ensure no vaccine leaks out of the injection site. If it does, hold the skin gently to help absorption.

can vaccinate them. This method of vaccination also ensures that each chicken receives the precise dosage required.

The vaccine comes in a liquid or freeze-dried form that must be reconstituted with a specific diluent provided by the manufacturer. The reconstituted vaccine is loaded into a dropper bottle or a syringe fitted with a dropper nozzle.

Chickens are handled individually. To reduce their stress be gentle when handling the bird, but make sure to hold it securely and stabilise its head.

A single drop of the vaccine is applied directly into one of the chicken's eyes. The bird will blink, ensuring the vaccine is absorbed into the mucous membrane of the eye, from where it enters the respiratory system and bloodstream, thus stimulating the immune response. Make sure the drop has been absorbed before releasing the chicken.

Injectable vaccines can be administered either intramuscularly (into the muscle, usually the breast) or subcutaneously (under the skin, usually at the back of the neck) using a hypodermic needle.

It takes some practice to inject a chicken correctly, so it's important that you either use the services of an animal health technician when first attempting this method, or get help from a seasoned chicken farmer.

When injecting the bird, it's essential that you don't allow the needle to pass into an organ or inject the fluff or feathers.

It's also important that you use sterile equipment (needles and syringes) to prevent contamination, which could lead to infection, as you're breaking the chicken's skin when injecting the vaccine. If pathogens are present on the needle, for example, you could inject

the pathogen directly into the chicken's system, which could lead to infection.

Before injecting the bird, make sure you have the correct equipment. For example, a 22- to 25-gauge needle is typically used, depending on the size of the chicken. If the vaccine is in a freeze-dried form, you'll need to reconstitute it with the provided sterile diluent, following the manufacturer's instructions.

Load the syringe with the correct dosage, as per the manufacturer's specifications. Ensure there are no air bubbles in the syringe by gently tapping it to expel any trapped air before administering.

Inject the vaccine into the chicken's muscle or under its skin, depending on where the vaccine needs to be administered (*see boxes for more specific information on this*). Push in the syringe's plunger, and gently remove the needle from the bird's body once the full dosage has been injected, then release the bird.

TIPS FOR VACCINATING

Epol offers the following tips for vaccinating your chickens:

- Only vaccinate healthy chickens. Sick birds shouldn't be vaccinated, as their immune systems are already under stress.
- Make sure the workers handling your chickens are properly informed on the vaccination process.
- Make sure you strictly follow the manufacturer's instructions on how to administer the vaccine.
- Store the vaccines according to the manufacturer's instructions. Be aware that some require refrigeration.
- Don't use expired vaccines, as they may no longer be effective.

Visit epol.co.za.

INTRAMUSCULAR INJECTIONS

This is a brief guide on how to inject a chicken subcutaneously. If you've never done this before, consult an animal health technician, or ask for help from a seasoned farmer who has experience in injecting chickens. This is to ensure that the injections are done properly without hurting the birds.

The following steps are typically taken:

- Each chicken must be handled individually.
- Gently hold the chicken under your arm or in your lap, making sure the wings and legs are secure. If needed, have an assistant help restrain the bird, especially if it is large or active.
- Expose the injection site. The most common site for intramuscular injections in chickens is the breast muscle. This is located on both sides of the keel (the central ridge of the bird's breastbone). It's a large and well-defined muscle, ideal for injections. Be sure to inject into the muscle on either side of the keel and not too close to the bone itself, as this could cause the chicken pain or injury.
- Hold the syringe at a 90-degree angle to ensure the needle goes straight into the muscle. Quickly and smoothly insert the needle into the thickest part of the breast muscle. Avoid going too deep. Slowly depress the plunger of the syringe. The speed at which you inject the chicken is important; going too fast could cause tissue damage or pain to the chicken, so ensure that you inject the chicken slowly.
- Withdraw the needle from the muscle in a smooth motion. Do not jerk or twist the needle, as this can cause pain or tissue damage.
- Apply gentle pressure to the injection site for a few seconds to help distribute the vaccine and prevent bleeding.
- Monitor the bird for a few minutes after the injection to ensure there are no immediate reactions or signs of distress.

First-aid basics for chickens

The term 'small-scale poultry farmer' covers micro-, small- and medium-sized broiler and egg production units. The South African Poultry Association classifies a small-scale broiler unit as one that delivers fewer than 4 000 birds per cycle.

In contrast, small-scale egg production, according to South African agriculturalist Dr Gavin MacGregor, can start with nine point-of-lay pullets. Many semi-intensive free-range poultry operations are also classified as small scale.

If your enterprise falls into one of these categories, you're more likely to be working with your local state veterinarian or animal health technician than a private practitioner. Veterinarians have an in-depth understanding of the chemistry, usage, dosage and withdrawal times of scheduled medications. It's therefore advisable to include them in the planning of a first-aid kit for your animals.

When putting together a first-aid kit, consider the diseases, conditions and injuries likely to affect your birds specifically. PHOTOS: FW ARCHIVE

PLANNING

The nature of your enterprise and the likelihood of specific diseases occurring will dictate what you include in your first-aid kit.

For example, the withdrawal time for certain antibiotics is far longer for eggs than it is for poultry meat, and discarding eggs intended for human consumption is not financially viable. Conversely, a few decorative roosters, hens and chicks around a farmyard restaurant are likely to be around until they die of old age, so they can be given as many antibiotics as they require!

Planning a first-aid kit should also include a decision on who should have access to it. Training is essential, too, as most poultry medications come with detailed instructions and must be administered at specific dilutions.

Next, you need to consider the diseases, conditions or injuries that are likely to affect your birds. With most poultry diseases, prevention is better than cure, and management is a crucial part of prevention.

In many cases, humane euthanasia is a more practical approach to maintaining the welfare of small-scale commercial poultry farms, as the treatment of individual birds may not be affordable or even feasible.

COMPONENTS OF A FIRST-AID KIT

Firstly, you will need a large plastic box for vaccines and any other routine or

The withdrawal time for certain antibiotics is longer for eggs than it is for meat, and this needs to be considered when medicating chickens.

emergency medications that need to be refrigerated. Secondly, a portable chiller bag is necessary for transporting medications that must be kept cool and dry.

These include eye ointments, wound sprays, iodine and gentian violet, Vaseline, homeopathic drops, probiotics, rehydration fluids, supplements and scheduled medications to be added to feed or water.

A third container should hold wipes or swabs, soap, disposable towels, hand and boot disinfectants, instruments, gloves and sampling bottles. Include 1ml and 3ml syringes, as well as 23-gauge needles in case you need to inject a fowl. The intramuscular injection site in a fowl is the large muscle found on each side of the breastbone.

Include a few bin-liner-type plastic bags in your kit so that you can collect one or more dead fowls for autopsy. You can also keep a few plastic freezer bags in your deep freeze to keep the carcasses cool.

WOUND TREATMENT

Injuries can be caused by rat bites and predation by dogs or jackals. However, the most common injuries are caused by bird-on-bird pecking. Injured birds need to be moved to a separate cage and sometimes kept individually, as they will also peck each other. It is absolutely essential to find the cause.

Pecking in layer hens is usually caused by a lack of calcium in their diets.

An epidemic of peck injuries is usually brought on by imbalanced feed or too few feeding stations. The major deficiency in breeding hens and high-production layers that leads to pecking is a lack of calcium. Generally, diatomaceous earth added to backyard and small-scale

layer rations offers calcium in a more natural form and reduces pecking.

Roosters sometimes fight each other when they run with hens, although this is less common in modern poultry breeds.

Once an injured bird is removed, wrap it gently in a blanket and clean its wounds well with saline. Feathers can be plucked away to show the edges of the wound, and irradiated honey or pure cane sugar granules can be put in to stop the bleeding.

Once the bleeding has abated, examine the bird well and decide whether you want to euthanise it. If it is humanely slaughtered at this point, it can be boiled up as dog food, as it did not receive antibiotics. If you decide to treat it further, it must be kept in a cage until healed.

Small peck marks can be treated with a cotton bud dipped in gentian violet. Large wounds can be rinsed off with saline after sugar is applied, as this will remove any dirt. They can then be sprinkled lightly with a tetracycline eye powder. The wounds will heal quickly if cleaned daily with saline and treated with honey and a bit of antibiotic powder.

If you take the bird to a vet, he or she may decide to inject an antibiotic instead, and it's possible to stitch a large wound in a fowl after local or general anaesthetic. Again, the bird must be caged separately until it has recuperated. Move the cage into the flock once the bird has healed so that it can safely interact with the others for a few days, before being released.

Leg fractures are not uncommon in roosters and can heal well. Clean and treat any open wound, as described above, dress the wound, bandage the leg and then splint it.

Treating wounds timeously is crucial for ensuring your chickens remain healthy. PHOTO: SCREENSHOT FROM THE LITTLE GREEN FARMSTEAD. VISIT BIT.LY/Y6POGGY

VACCINATION IS BEST

There are two reasons to vaccinate your poultry: first, when an outbreak takes place, the whole flock needs to be treated; and second, the most serious avian diseases are caused by viruses for which there is no treatment.

For small-scale intensive broiler production where good biosecurity is practised, vaccination against Newcastle disease in the first week of life is often all that's needed. However, for household poultry, pet poultry and layers, the vaccination regime must, at the very least, cover Newcastle disease, Marek's disease, coryza and infectious bronchitis.

Avian influenza is a controlled disease and there is always a risk if poultry are exposed to wild birds.

Backyard fowls seem to be more resistant than commercial poultry to avian influenza and appear to be relatively unaffected in areas where there are severe outbreaks in commercial poultry.

However, if you do have a sudden and severe loss of chickens, please notify your local animal health officer or state veterinarian urgently.

INFECTIOUS AND CONTAGIOUS DISEASES
Several of the infectious and contagious diseases of poultry are on the list of controlled diseases published on the Department of Agriculture's website. These include bird flu, Newcastle disease and salmonellosis.

PUT A FRESHLY DEAD BIRD IN A PLASTIC BAG FOR A NECROPSY

You are legally obliged to notify your nearest state veterinary office if there's an outbreak of such a disease on your farm.

The best way to prevent and control infectious diseases is by having good on-farm biosecurity measures, and providing your chickens with balanced rations, sufficient clean water, and shelter and protection from severe temperatures.

Often, the first time an owner notices the disease is when the number of dead chickens starts to rise.

Your vet can perform a necropsy on a freshly dead bird. Put it in a plastic bag and keep it cool with ice packs until you can get it to the vet. You'll receive a rapid diagnosis and advice on how to treat the rest of your flock. Both private and state vets can refer you to a poultry expert if needed.

Vaccination is essential to protect chickens against viral diseases. PHOTO: SCREENSHOT FROM BOCK BOCK BOUQUET. VIEW THE VIDEO AT BIT.LY/4XBTDNX TO SEE HOW TO PROPERLY INJECT A CHICKEN.

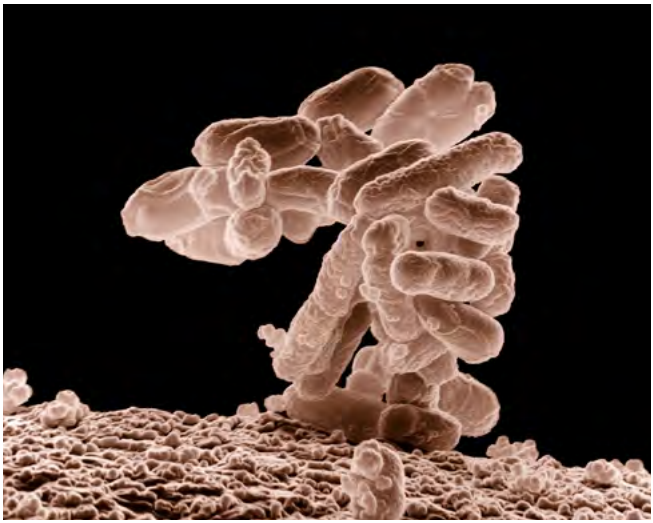
How poultry producers can combat *E. coli*

Layers of 56 weeks or older are the most susceptible to *E. coli* infections. FW ARCHIVE

Commonly found in the gut of warm-blooded animals, *Escherichia coli* (*E. Coli*) comprises rod-shaped bacteria and can be both a primary and a secondary pathogen, but you're likely to deal with *E. coli* as a primary pathogen 90% of the time.

Most strains are harmless. Those that aren't are known as 'avian pathogenic *E. coli*' (APEC). These pathogens can survive outside of the intestine and so is easily transmitted from bird to bird. One of the clinical manifestations of APEC is *E. coli*

peritonitis, which can lead to life-threatening sepsis. These pathogens also follow a cyclical pattern. Proactive control measures, such as vaccinations and antibiotic use, should be timed with this in mind.



Escherichia coli comprises rod-shaped bacteria and can cause serious illness in chickens. WIKIMEDIA COMMONS

KNOW THE SIGNS

Primary pathogen symptoms in layer hens can be difficult to identify. If you can't find the cause of death during a post-mortem examination, take a close look at the ova to see if you can find small, yellow strings of fibrin (pus). These are exuded from the bloodstream following the body's attempts to isolate the bacterium.

Secondary pathogen symptoms include significant quantities of fibrin in the spaces around the major internal organs, such as the lungs and liver.

SUSCEPTIBILITY

The most susceptible chickens are 18- to 30-week old hens, when egg production begins to peak, as their bodies are still developing and under stress.

Layer hens 56 weeks or older are also susceptible, as well as pullets, as this is the period during which they begin producing the hormones needed for egg production. This is very stressful and their immune systems can be compromised.

CONTROL MEASURES

Early diagnosis is crucial. During periods when APEC appears to be the cause of increased mortality, conduct daily post-mortem examinations. If 50% or more of the dead birds examined show APEC-related lesions, act immediately to control the problem. The following may also help prevent infection:

- Effective air quality control systems in the house/s.
- Test drinking water regularly. If necessary, treat with a chlorine-based product to kill any APEC bacteria.
- Vaccinate. The latest, most effective vaccine is Zoetis's Poulvac *E. coli.* It's normally applied by spraying twice over the pullets during the rearing period. There's no significant vaccine reaction and it can even be given to birds in lay.

TREATMENT

Antibiotics may be useful in treating APEC-related health issues, provided treatment starts early.

Although antibiotics are generally not helpful in older layers, they can be used in case they do have a positive effect.

Feed the birds probiotics and treat layer feed with organic acids or formaldehyde to kill any APEC in it.

Spray dusty pullet and hen houses with appropriate disinfectants.

Using microorganisms to improve profitability in poultry production

Effective microorganisms can effectively be used in a chicken system to the benefit of your birds. NEEDPIX

As more and more producers realise the benefits of using large populations of microorganisms on their farms, so the number of different ways to apply these microorganisms grows. With the development of effective microorganisms (EM) in the form of inoculants, these organisms are moving beyond crop farms and are used in livestock concerns, where they aid animal health and sanitation, improve nutrition, and reduce pests such as flies.

EM inoculants function as biological control measures in that they introduce beneficial microorganisms into the environment that suppress or control pests and pathogens through natural processes.

Numerous studies conducted worldwide have proved the efficacy of EM in boosting poultry health and production. In White River, Mpumalanga, poultry farmer and nursery owner Frikkie Roux conducted his own studies under local conditions to test the capabilities of EM.

Roux found that when used in rearing sheds, EM reduced the incidence of respiratory diseases and eliminated or controlled the smell of the ammonia produced when chicken manure breaks down. They also helped to repel flies.

Roux even found that the overall quality of his poultry meat improved, increasing profit between R0,50 and R1 per bird.

APPLICATION

EM work by balancing microflora in the

TABLE 1: EFFECTS OF EM BOKASHI ON EGG WEIGHT AND QUALITY

	Control group	EM bokashi feed	EM-treated water
Ratio of egg production	100%	102,2%	104%
Average weight of eggs/day	54,3g	55,7g	56g
Percentage of broken eggs	4,8%	0,6%	1,6%
Egg yolk colour measured on DSM Yolk Colour Fan	10,11	10,19	10,15

chickens' intestines and improving their immune systems. Roux advises farmers to dilute EM in drinking water at a ratio of one part EM to 1 000 parts water (1:1 000).

"Where dripper systems are used for drinking water, the yeast in EM should be filtered out, as it can lead to blockages in the system. [As an added precaution], the system should be rinsed out with clean water every week," he says.

When including EM in chicken diets, an EM bokashi mixture should be used in the feed, applied at a rate of 1% for layer hens and 3% for broilers. The latter should be given a 1% ration in the first week, building up to 3% over the following two weeks.

Roux explains that EM bokashi should be strewn over the cleaned floor of the chicken coop to prevent the birds from rushing towards the feeding trays, where they are often trampled.

"Spreading the bokashi across the floor also forces the chickens to move around in order to pick at it, thereby reducing the incidence of heart attacks."

As mentioned, adding EM to the chickens' diet significantly lessens the odour of their droppings. To reduce the smell even further, the coops, bedding and surrounding areas should be sprayed with an EM-water mixture at a ratio of 1:100.

"This will suppress any harmful microorganisms that can cause disease among the chickens. Since EM feed on fly larvae, applying this mixture will also greatly reduce pest populations," says Roux.

LOCAL TESTS

Bokashi, which was developed in Japan, holds benefits for virtually every type of farming activity. When researchers first started testing the effects of EM bokashi on poultry, they found that it increased the profitability of egg production by reducing the mortality rate, and increasing egg weight and quality. Broiler production, too, benefitted from lower mortality rates and better average daily weight gains.

Roux confirmed these studies by using one control group of layers, one group that

TABLE 2: FEED SUPPLIED TO CHICKS IN SECOND STUDY

	Week 1 to 2	Week 3	Week 4	Week 5 to 6
Group 1	Conventional* chick starter feed	Conventional chick grower feed	Conventional chick grower feed	Conventional chick finisher feed
Group 2	Organic chick starter feed with 5% EM bokashi	Organic chick starter feed with 5% EM bokashi	Organic chick finisher feed with 5% EM bokashi	Organic chick finisher feed with 5% EM bokashi
Group 3	Organic chick starter feed with 10% EM bokashi	Organic chick starter feed with 10% EM bokashi	Organic chick finisher feed with 10% EM bokashi	Organic chick finisher feed with 10% EM bokashi

*Including the antibiotics coccidiostat and zink bacitracin (15%)

TABLE 3: EFFECTS OF EM BOKASHI ON MORALITY RATE, FEED CONVERSION RATIO, GROWTH, CARCASS WEIGHT, AND PROFIT GAIN PER BROILER			
	Group 1	Group 2	Group 3
Mortality rate (%)	6,67	3,33	9,6
Total weight gain (kg)	2,36	2,4	2,3
Average daily gain (g/day)	56,46	57,1	54,58
Total feed intake (kg)	4,47	4,62	4,72
Feed conversion ratio values	1,77	1,78	1,88
Carcass weight (kg)	1,6	1,71	1,64
Increase in profit	R1,57	R2,01	R0,89

received feed of 1% EM bokashi, and a third group that received drinking water treated with an EM ceramic ball. The ball is made by fermenting clay with effective microorganisms for several months.

The clay is then formed into a ball and fired in an oven. Finally, it is placed in the drinking water tank, where it gradually releases EM into the water (*see Table 1).*

Roux conducted a second study of another farmer's chickens to determine the effects of EM bokashi on feed conversion ratio, growth, and carcass weight in broilers. Chicken coops were cleaned with a concentrate of 2% EM bokashi.

Before the arrival of the chickens, a concentrate of 0,5ℓ/m² was sprayed onto the roof and walls, and a concentrate of 3ℓ/m² was sprayed on the floors. Wood shavings were used as bedding and sprayed with 2% EM bokashi before the chicks arrived. These treatments were repeated every Wednesday and Sunday throughout the cycle.

The 90-day-old chicks were placed in three groups at a density of 30 chicks per 6m² (*see Table 2 for details on feed*).

The chicks in Group 1 were given normal drinking water without EM bokashi additives, while EM bokashi was added at a ratio of 1:1 000 to the drinking water of chicks in Group 2 and Group 3.

Profit was calculated based on all the costs required to produce and slaughter the broilers, the respective EM bokashi additions (or lack thereof, in the case of Group 1), and the income received from the broilers.

RESULTS

The most expensive chicks to produce were those in Group 3, as the feed costs were higher due to the greater percentage of EM bokashi. However, the 'organic' chickens of Group 1, which received no EM bokashi, could be sold at a higher price, which resulted in a higher profit than that realised for Group 3.

"Group 2, which received the added 5% concentration of EM bokashi, showed the highest profit, best average daily gain, and lowest mortality rate. The mortality rate indicates that EM contribute to building stronger immune systems in the birds (*see Table 3).*

"Although the 10% EM bokashi concentration [group …] scored the lowest in terms of profitability, its profitability still increased. This shows that organic broiler production can be done profitably, and even more so than conventional broiler production with antibiotics," says Roux.

After the chickens were slaughtered, their intestines were tested for internal parasites. Of all the chickens, only one from Group 2 tested positive for an internal parasite.

Roux notes that the trials conducted showed that EM play a significant role in reducing the stench from chicken manure, urine, and the coops in general. "The smell of ammonia and presence of flies were reduced dramatically."

Biosecurity: the first line of defence on a farm

Biosecurity includes all measures used to prevent disease entering and spreading within a poultry operation. It is one of the most effective tools for maintaining flock health and reducing losses.

Without proper biosecurity:

- Diseases spread rapidly;
- Mortality increases;
- Production drops;
- Costs increase.

Biosecurity must be applied every day, not only during outbreaks!

When it comes to biosecurity, capital expense is a consideration. However, implementing some biosecurity is always better than implementing no biosecurity. While you may not be able to install boundary fences to keep wild bird away from your chickens, you can keep record of the people visit your farm or chicken house.

In this article, we'll provide some cost-effective biosecurity measures.

HOW DISEASES ENTER A FARM

First and foremost, it's important to understand that diseases are usually introduced onto the farm or into the house through movement.

The main risk pathways include people (workers, visitors); equipment and vehicles; new birds; wild birds and rodents; and contaminated feed and water.

Most outbreaks are linked to poor control of these entry points.

FARM ACCESS CONTROL

Controlling movement onto the farm is the first barrier against the introduction of disease into your flock. Follow these practical guidelines when it comes to restricting access:

- Limit visitors to essential personnel;
- Keep a visitor logbook;
- Use one controlled entrance;
- Install biosecurity signage.

ENTRY POINT SET-UP

Another primary defence barrier is the entry point set-up. This refers to the physical structures, designated transition zones, and hygienic controls established at access points to prevent pathogens from being carried onto a farm or into poultry houses. It may include:

- Footbath with disinfectant;
- A handwashing station;
- Dedicated boots and clothing.

CLOTHING AND HYGIENE

As many pathogens can be spread via contaminated clothing, you or your workers can carry disease between flocks. Stick to the following guidelines:

- Use farm-specific clothing. You and your workers should always wear dedicated farm overalls. After wear, the clothing should undergo strict handling, cleaning, and decontamination procedures. Make sure that clothing and footwear be removed inside designated transition areas and placed in covered, washable hampers. *Never wear the farm-specific clothing off the farm!* Make sure that 'used' or 'dirty' overalls never come in contact with the clean and disinfected overalls.
- Wash hands before handling birds;
- Avoid visiting multiple farms.

EQUIPMENT AND VEHICLE CONTROL

Equipment can also carry pathogens between farms. Keep these guidelines in mind:

- Do not share equipment;
- Clean and disinfect before use;
- Restrict vehicle access near poultry houses.

QUARANTINE OF NEW BIRDS

New birds are one of the highest risks when it comes to introducing diseases into the house. New birds should be isolated from the flock for 10 to 14 days. Monitor them daily, and only introduce them to the flock after the quarantine period has ended and they are healthy.

PEST AND WILDLIFE CONTROL

Pests, like rodents, and wildlife can also spread disease. It is thus recommended to separate them from your chickens where possible.

Follow these guidelines:

- Install netting;
- Control rodents (traps/bait);
- Store feed securely;
- Remove spills.

CLEANING AND LITTER MANAGEMENT

The frequency of cleaning a chicken house depends on whether you are conducting routine maintenance during an active flock cycle or a full teardown between batches.

After every single batch or harvest of birds, implement a thorough cleaning protocol. All birds and litter should be removed. Clean the

This AI-generated image shows the farm-specific clothing you require for bulletproof biosecurity.

You should implement routine cleaning practices in the house or coop to prevent pathogens from spreading. PXHERE

house using high-pressure washing systems and detergents. Clean the ceilings, floors and walls of the house or coop; both sides of side-curtains, ventilation louvers, and air intake vents; the feeding systems (empty, scrape, wash, and sanitise feed hoppers, pans, auger lines, and feed storage bins); drinking systems (flush water lines internally with a descalin solution to remove biofilm, and scrub the outsides of nipples, cups, or bell drinkers); brooders and eaters (clean and dust off heating units, brooder canopies, and temperature sensors); and nests and cages (scrub down lay boxes, perches, slats, or wire cages if handling layer or breeder flocks).

- **Routine cleaning**

Clean the house every day and every week during the flock cycle.

Daily:

Clean and sanitise drinkers or water lines to prevent biofilm build-up.

- Remove culls, dead birds, and wet or caked litter around waterers to limit ammonia generation and bacterial growth.
- Sweep and disinfect entryways, changing rooms, and footbaths.

Weekly:

- Scrub and sanitise feed hoppers, pans, and feed storage areas.
- Clear dust from fans, air inlets, mesh screens, and light fixtures (dust build-up reduces ventilation efficiency and carries airborne pathogens).
- Replenish footbath disinfectant solution.

DEAD BIRD MANAGEMENT

If you come across a dead bird in the house or coop, remove it immediately to prevent disease transmission, pest attraction, and flock pecking. Always assume the bird could carry a contagious pathogen.

Follow these guidelines:

- Protect yourself. Prevent pathogen spread to skin or clothing. Wear disposable gloves (or inverted heavy-duty plastic bags) and a face mask before touching the carcass. Avoid handling wild birds or domestic poultry

with bare hands.

- Remove and double-bag the carcass, as it may contain potential pathogens. Place the dead bird into a heavy-duty plastic bag, seal it tightly, and place it inside a second sealed plastic bag to prevent leakage or the scent from attracting scavengers.
- Carry out an inspection. Check for signs of illness amongst the other birds in your flock.
- Dispose of the carcass. Bury it at least 60cm deep, well away from water sources, and cover with lime to deter scavengers. You can also burn the carcass.
- Sanitise the area and equipment. Disinfect all touchpoints, as well as the spot where the bird was found using an approved poultry-safe disinfectant.

Keep visitors to a minimum in your chicken houses.

Clean your boots, wash hands thoroughly with soap and water, and change clothing before visiting other house areas.

WHEN TO CONTACT A VETERINARIAN OR AGRICULTURE AUTHORITY

Report the incident immediately if you notice multiple dead birds in a short period; birds display neurological symptoms (twisted necks, paralysis) or severe respiratory distress; or sudden mortality occurs with no prior symptoms (a hallmark sign of avian influenza).

Common diseases of chickens in South Africa

There are a number of significant chicken diseases in South Africa. Some of these you can vaccinate against; others are controlled by the state and as such so is the vaccination process, and others can't be vaccinated against. As prevention is always better than cure when it comes to disease management, it is essential that you recognise the early signs and symptoms of some of these diseases.

MAREK'S DISEASE – *VACCINE AVAILABLE*

Marek's disease is a common disease in South Africa and abroad. It is caused by the contagious herpesvirus. It usually first presents in chickens between eight and 20 weeks old.

Key symptoms to look out for:

- Paralysis. As the virus attacks the nerves, progressive paralysis may be observed. Look for chickens that are laying on the ground with one leg stretched forward and the other stretched backwards. Infected chickens may also have droopy wings.
- Tumours. Tumours grow on vital organs like the liver, spleen, kidneys and heart.
- 'Grey eye'. The iris changes shape, turns a cloudy grey colour, and the pupil becomes irregular, leading to blindness.
- Wasting. Birds lose weight very quickly, even if they are still eating.

Why it's a nightmare:

- It can stay in the environment for years.
- There is no cure. Once a bird shows clinical symptoms of Marek's disease, it will not recover and will eventually die or need to be humanely culled.
- Infected birds are carriers for life. Even birds that survive will shed the virus continuously into the house.

Prevention and treatment:

- Implement strict biosecurity, as the virus spreads primarily through airborne dust and feather dander inside the chicken house.
- Vaccinate day-old chicks.
- If you keep a backyard flock, always ask your supplier if the day-old chicks have been vaccinated against Marek's.
- Keep houses well-ventilated and vacuum or clean out accumulated dust regularly to keep the viral load down.

GUMBORO – *VACCINE AVAILABLE*

Gumboro disease (infectious bursal disease, or IBD) is a highly contagious viral infection that poses a massive threat to young chickens. It is caused by a birnavirus that specifically targets a young bird's bursa of Fabricius, which is an essential organ located near the cloaca that controls the development of the chicken's immune system. It mostly strikes chickens between the ages of three and six weeks.

Key symptoms to look out for:

- Drop in feed consumption.
- Listlessness. Birds may sit huddled together with ruffled feathers and closed eyes.
- Diarrhoea. The faeces may appear watery, and white-to-yellowish in colour.
- Chicks may nervously peck at themselves due to inflammation.

Why it's a nightmare:

- It destroys the chicken's immune system permanently.
- The virus has no lipid envelope, making it highly resistant to heat, light, and many standard farm disinfectants. Once it gets into a chicken house, it can easily survive in the structure, soil, and dust for months or even years, even if the house is empty.

When infected with Marek's disease, birds may be losing weight even if they're still feeding. FW ARCHIVE

- Chicks that survive Gumboro often suffer from stunted growth and poor weight gain.
- The virus is aggressive.
- Death rates spike quickly over three to five days, ranging anywhere from 5% to over 50% depending on how aggressive the strain is.

Prevention and treatment:

- Adhere to a strict vaccination timeline as per manufacturer guidelines. Vaccination usually occurs on days 12 to 14 (first dose) and days 16 to 19 (second dose).
- There is no cure, so if your birds become infected, care is supportive. Give a vitamin and electrolyte solution in their water, and use targeted poultry antibiotics under a veterinarian's guidance to stop secondary bacterial infections.
- Implement strict biosecurity, and keep visitors to the house to a minimum.

NEWCASTLE DISEASE – *VACCINE AVAILABLE*

Newcastle disease is a highly contagious viral infection that affects all types of

birds. It is arguably the most feared poultry disease globally due to how rapidly it kills entire flocks.

It is caused by avian paramyxovirus serotype 1 (APMV-1). The virus targets multiple systems in the body simultaneously: the respiratory tract, the digestive tract, and the central nervous system. Depending on the virulence of the specific strain, mortality rates can approach 100% in unprotected flocks.

It is transmitted via direct contact with the bodily secretions, saliva, nasal discharge, and droppings of infected birds; airborne droplets; wild birds, which act as natural reservoirs; and fomites (contaminated footwear, clothing, hands, vehicle tyres, and shared equipment).

It is classified as a controlled animal disease, meaning outbreaks must, by law, be reported to the local state veterinarian.

Key symptoms to look out for:

- Sneezing, coughing, gasping for air, rattling breathing sounds, and nasal discharge.
- Profuse, bright green or yellowish-watery diarrhoea.
- Birds develop twisted necks (torticollis), star-gazing (looking straight up at the sky), paralysis of the wings or legs, tremors, and walking in circles.
- Egg production drops to zero almost overnight, and the few eggs laid are soft-shelled or misshapen.

Why it's a nightmare:

- Aggressive strains can strike with remarkable speed, leaving no time for intervention. You could have a perfectly healthy flock on Monday, and lose the entire flock by Wednesday.
- As a controlled disease, if a flock tests positive, state veterinarians may step in and quarantine the entire farm. All surviving birds must be culled.
- Even in birds that survive milder strains, egg production could drop to zero.

Prevention and treatment:

- Vaccinate your chicks and chickens according to a strict timeline as per manufacturer guidelines. There are multiple doses given between day 1 and week 16.
- There is no cure. It is usually recommended to humanely cull infected birds.
- Implement bulletproof biosecurity. Keep visitors and wild birds out of the chicken houses where possible.

AVIAN INFLUENZA – *VACCINE AVAILABLE BUT RESTRICTED*

Avian influenza, most commonly known as bird flu, is a highly contagious, devastating viral infection that affects all types of birds, including chickens, ducks, and wild waterfowl. It is caused by an Orthomyxovirus that exists in two forms: low pathogenic (LPAI), which causes mild symptoms, and highly pathogenic (HPAI), which spreads rapidly and attacks multiple internal organs. It can strike chickens of any age, causing severe disruptions to both commercial and backyard poultry systems.

Key symptoms to look out for:

- Sudden drop in feed and water consumption.
- Severe respiratory distress, including coughing, sneezing, and gurgling sounds.
- Swelling of the head, eyelids, comb, and wattles, often accompanied by a purplish discolouration (cyanosis).
- Greenish-watery diarrhoea.
- Nervous signs like tremors, twisted necks, or lack of coordination.

Why it's a nightmare:

- It causes catastrophic mortality rates, often wiping out up to 100% of an infected flock within 24 to 48 hours.
- The HPAI strains are classified as a controlled disease in South Africa, meaning an outbreak triggers a mandatory, state-enforced quarantine.
- Farmers are legally required to cull entire surviving flocks immediately to stop the spread, leading to massive financial losses with no standard government compensation.
- Wild migratory birds act as natural

reservoirs, spreading the virus invisibly across huge distances and making environmental exposure unpredictable.

Prevention and treatment:

- Implement bulletproof biosecurity, including total exclusion of wild birds using wire mesh, strict vehicle decontamination, and mandatory footbaths.
- Vaccination is not standard; it is highly restricted and requires explicit, official permission and monitoring by the South African Department of Agriculture.
- There is absolutely no cure or treatment for infected birds; all confirmed cases must be humanely culled and safely destroyed.

INFECTIOUS BRONCHITIS – *VACCINE AVAILABLE*

Infectious bronchitis is a highly contagious viral respiratory infection that affects chickens of all ages. It is caused by an avian coronavirus that primarily targets the respiratory tract, but can also severely damage the kidneys and the reproductive systems of laying hens. It spreads rapidly through flocks, causing significant economic losses in both broiler and layer operations.

Key symptoms to look out for:

- Respiratory distress, including gasping, coughing, sneezing, and tracheal rattling.
- Watery discharge from the eyes and nostrils, sometimes accompanied by facial swelling.
- Sudden, severe drop in egg production in laying flocks.
- Production of misshapen, rough, thin-shelled, or wrinkled eggs with watery whites.
- Increased water consumption, wet litter, and depression (if nephropathogenic strains attack the kidneys).

Why it's a nightmare:

- The virus spreads with extreme speed, often infecting 100% of a flock within a few days via airborne droplets.
- It causes permanent damage to the oviducts of young chicks if they are infected early in life, turning them into 'false layers' that consume feed but will never be able to lay eggs.
- It frequently triggers severe secondary bacterial infections (like *E. coli*), drastically increasing mortality rates in what would otherwise be a mild viral illness.
- The virus mutates rapidly, producing new variants and strains that can occasionally bypass existing vaccine protocols.
- It severely degrades feed conversion efficiency, leading to stunted growth, uneven flock weights, and prolonged cycles for meat birds.

Prevention and treatment:

- Adhere to a strict vaccination timeline using a combination of live and inactivated vaccines. Vaccination typically starts at the hatchery on day 1 (spray), with live boosters around weeks 2 to 4, and an inactivated injection for layers before egg production begins.
- There is no cure or specific antiviral treatment, so if your birds become infected, care is supportive.
- Keep the house warm, reduce draughts, offer electrolytes in the water, and use veterinary-prescribed antibiotics to manage secondary infections.
- Implement strict biosecurity measures, including thorough house sanitation between cycles, strict visitor bans, and effective quarantine of any new birds.

FIRST RESPONSE TO DISEASE

If you suspect a bird may be sick with any of the above (or any other disease, of which there are many), implement the following:

- Isolate sick birds;
- Limit movement on farm;
- Check water and feed;
- Contact a veterinarian.

Do not!

- Ignore symptoms;
- Move birds between houses;
- Delay the response.

Managing lice and mites in your chickens

Of the many parasites that afflict chickens, one of the most common is chicken lice (*Menacanthus* spp). This genus has approximately 100 species of chewing lice that feed on the blood or feathers of their host.

Lice are small, flat parasites with mouthparts designed for chewing or sucking. Essentially, they attack the bird by chewing away at the quills of the feathers where they emerge from the skin; then they gnaw on the skin itself.

Poultry lice are host-specific and cannot be transferred to humans. Their life cycle varies according to the species. A host may be infected by several species at a time. The entire life cycle occurs on the host. In the adult form, a louse will live for no more than two weeks.

The most visible sign that a chicken is infested with lice is a bedraggled and dull appearance.

- **Effective control**

One of the problems with lice is the way the birds are farmed. To produce more eggs at a cheaper rate for the end-user, chickens are kept in large numbers in confined spaces. This inevitably leads to the rapid spread of any infection or parasite outbreak, and can make treatment more difficult.

Cleanliness is important for lice control, and includes thoroughly cleaning and disinfecting the chicken house/roost/nesting boxes and equipment.

New birds should undergo a two-week quarantine and treatment with a proprietary medication.

MITES

Mites are a persistent challenge in poultry farming, with significant implications for animal health, productivity, and overall farm economics. Among the various mites that affect poultry, the poultry red mite (*Dermanyssus gallinae*) and the scaly leg mite (*Knemidokoptes mutans*) are particularly common in South Africa.

According to Dr Njabulo Lekhuleni, a poultry veterinarian, the red mite is arguably the most notorious in South Africa.

"It is followed closely by the scaly leg mite, which is mostly seen on backyard hard-bodied birds. Other mites include the northern fowl mite, *Ornithonyssus sylviarum*, and the tropical fowl mite, *O. bursa*."

He says understanding how mites spread is crucial for effective management.

"Mites typically spread through mite dispersion or contact with infested birds, other animals, or fomites [inanimate substances or objects, such as tools, which can transfer the mites to hosts].

"In integrated poultry systems, mites are most frequently dispersed via inanimate objects, such as egg trays and crates, or even by personnel moving from house to house. Management practices like spiking can also contribute to their spread," says Lekhuleni.

(Spiking is the addition of young broiler breeder males into an older flock to compensate for the decline in fertility.)

- **Symptoms of mite infestation**

Identifying mite infestations early can save poultry farmers from severe economic losses. Lekhuleni outlined the primary symptoms:

- Constant pecking at feathers or self-grooming;
- Visible black or brown/red mites;
- Feather loss and sores around the eyes and beak;
- Weight loss and anaemia.

Mortality can occur in severe infestations. Early detection is thus key to managing mite infestations effectively.

"Good stockmanship always wins. Constantly observing your birds' behaviour will alert you to changes like abnormal pecking, head shaking, or restlessness.

The red mite is arguably the most notorious of the poultry mites. WIKIMEDIA COMMONS

"Red mites are very small, so you must look closely, especially at night.

"Check nest box crevices, chain feeder legs, and even use white fallen feathers to pick in between crevices. Early morning observations can reveal mite trails on top of the nest boxes if the infestation is severe."

- **Effective treatment**

Treating mite infestations requires a multifaceted approach.

"Treat both the birds and their environment, considering the mite's life cycle.

"Normally, two treatments are required to kill recently hatched mites. Dusting and spraying acaricides can be effective, but ensure they reach the skin, not just the feathers.

"Products containing fluralaner, an acaricide and insecticide, are also available. For hobby birds, 0,5ml of ivermectin per kilogram of body weight can be applied to unfeathered skin areas," he says. Inspect the birds during the day, when the lice are active.

- **Preventing mite infestations**

Prevention is always better than cure.

- Obtain mite-free birds when buying in point of lay;
- Practise good biosecurity to prevent a build-up of mite populations;
- Control can be achieved by spraying or dusting the birds and litter;
- Target all hiding places for mites; and
- Maintaining cleanliness in poultry housing is critical.

Mite infestation has direct implications for egg production and quality.

"Infested birds are stressed and less productive, leading to more dirty eggs laid on the floor. This affects the overall quality and marketability of the eggs," says Lekhuleni.

Mites can transmit diseases, posing risks beyond poultry health.

Red mites have been implicated as vectors for various poultry viral and bacterial pathogens, as well as zoonotic diseases such as Newcastle disease, equine encephalomyelitis viruses, and bacteria like *Escherichia coli*, *Pasteurella multocida*, and avian influenza A virus. There is also evidence of mites causing pruritic skin eruptions in poultry workers.

Regular cleaning and treatment of poultry housing are essential. Once a flock is depleted, remove the litter, and clean and disinfect the house, says Lekhuleni.

6

Production systems

Daily routines turn knowledge into results. This section outlines practical management for broilers and layers, including stocking density and record keeping. Consistency and attention to detail are what drive reliable performance in any poultry enterprise.

OVERVIEW

- Daily routines for broilers
- Daily routines for layers
- Stocking density
- Record keeping

Daily routine for broilers

Check on your broilers throughout the day to ensure feeders and drinkers are full. FW ARCHIVE

A consistent daily routine is essential for broiler production as it ensures they grow uniformly and efficiently, and reach market weight on time.

Regular checks help identify problems early and prevent losses, and sudden changes could indicate a problem.

All routines are designed to determine the following:

- Feed intake;
- Water consumption;
- Bird activity;
- Mortality.

IN THE MORNING

Start the day with a full-system check. This includes:

- Checking bird activity and behaviour;
- Refilling feeders;
- Refilling and cleaning drinkers;
- Checking water supply and pressure;
- Inspecting litter condition;
- Removing dead birds.

When you inspect your birds, ensure they are active, alert, and evenly distributed throughout the house or coop.

Birds that are lethargic, appear sleepy or are huddled together could be showing early signs of illness.

MIDDAY

In the afternoon, focus on environmental conditions.

- Check the temperature inside the house;
- Adjust ventilation if needed;
- Observe feeding behaviour;
- Check for signs of heat stress.

IN THE LATE AFTERNOON

At this time, prepare your birds for the night.

- Refill feed and water;
- Inspect equipment;
- Remove wet litter;
- Check bird distribution.

WEEKLY TASKS

Throughout the week, and as your birds grow, make sure to:

- Adjust feeder and drinker height;
- Increase space between birds (feeder/drinker distribution);
- Clean equipment thoroughly.

Daily routine for layers

Inspect nesting boxes every day and ensure that they are clean and comfortable. WIKIMEDIA COMMONS

Like broilers, layers require consistent daily management. This ensures that you maintain egg production, egg quality, and bird health.

MORNING ROUTINE

Like with a broiler system, start the day with a full-system check. This includes:

- Checking bird behaviour;
- Refilling feed and water;
- Cleaning drinkers;
- Removing dead birds.

You should also collect eggs at this time. Egg collection should be done early to prevent damage.

MIDDAY

In the early afternoon, ensure that your layers are producing well and are able to continue laying. This includes:

- Checking egg production levels;
- Inspecting nesting boxes;
- Monitoring temperature and ventilation;
- Observing bird activity.

IN THE AFTERNOON

Continue to check in on your birds and collect eggs throughout the day. If the eggs are not collected, they may become damaged and unmarketable. Also ensure that you:

- Refill feed and water;
- Clean nesting areas if needed.

EGG HANDLING

Damaged eggs cannot be sold to market, and it is thus essential that they are always handled carefully. Store them in a cool, clean place. Remove dirty or damaged eggs that cannot be sold to market.

DAILY-TASK CHECKLIST

Every day you should ensure that nesting boxes are clean; equipment is functional; and the house or coop is facilitating, rather than hampering, production. By monitoring your layers' production on a daily basis, you'll be able to quickly identify production problems and early signs of illness, and act appropriately.

Better bird health through proper stocking density

Overcrowding of chickens can cause severe respiratory issues and rapid disease transmission. CHUBBYCHICKS

Stocking density refers to the mass of live weight (kg) or the number of birds housed per square metre (m^2) of floor space. It is one of the most critical operational metrics in chicken farming.

WHY STOCKING DENSITY MATTERS

Overcrowding creates immense stress on chickens by restricting their access to feed and water, which slows their growth and leads to uneven flock sizes. It also restricts airflow and traps moisture in the litter, creating high ammonia levels that cause severe respiratory issues and rapid disease transmission.

Ultimately, the spiked mortality rates and reduced meat or egg quality far outweigh any financial gain from housing extra birds.

Overcrowding leads to:

- Heat stress;
- Disease spread;
- Poor growth;
- Aggression.

While **low stocking density** is excellent for bird welfare, a sparse flock generates less body heat, forcing heaters to work harder in cold weather and driving up energy bills.

The low bird activity can also leave litter overly dry and dusty, causing respiratory issues from airborne dust, while expensive feeding and watering equipment sits underutilised.

Low density results in:

- Underutilised space;
- Temperature control issues;
- Higher costs (fewer birds mean less profits);
- Litter moisture imbalance (with too few birds to kick up and aerate the bedding, litter can become overly dry and dusty, causing respiratory irritation from airborne particles).

For broilers, the general rule of thumb is to keep eight to 12 birds per square metre. For layers, the general rule of thumb is four to six birds per square metre.

Records improve decisions

Record-keeping helps you track performance, identify problems, and improve decision-making. The common adage, 'you cannot improve what you cannot measure', is as true for chicken farming as it is for any other concern.

KEY RECORDS TO KEEP

There are a number of record types you should keep. The first of these include **production records**. For this, record:

- The number of birds you're farming;
- Their feed consumption;
- Water usage;
- Egg production.

Health records

You should also keep records of your birds' health. This will help you identify patterns of illness, and help you determine if you're managing your flock efficiently and effectively. Keep records of:

- Mortality;
- Disease incidents;
- Administered treatments.

Financial records

Keeping records of your finances is the only way to determine if your business is profitable or operating at a loss. This can also help you determine where to trim costs if necessary. Keep record of:

- Feed costs;
- Equipment costs;
- Labour costs (where applicable);
- Sales.

PRACTICAL TIPS

When keeping records, keep it as simple as possible (you don't want to have to decipher your own records further down the line).

Update your records on a daily basis, and review all records weekly. Make sure to keep complete data.

This AI-generated infographic highlights the importance of keeping records, and what records to keep.

7

Business and marketing

Poultry farming is both a production system and a business. Through the insights shared in this guide, farmers explore planning, costing, marketing channels and collaborative approaches such as cluster farming. Understanding your numbers and your market supports long-term sustainability.

OVERVIEW

- How to start your business
- Business plan
- How to become successful
- Basic costing and profitability
- Marketing channels
- Working in clusters

SOURCES

- How to start your own poultry business – *Farmer's Weekly*, 8 July 2013
- How to become a successful poultry farmer – *Farmer's Weekly*, 24 July 2015
- The importance of a business plan – *Farmer's Weekly*, 25 January 2024

How to start your own poultry business

In South Africa, more than one billion broilers are slaughtered every year, and average per capita consumption of chicken meat is currently more than 33kg.

These figures help explain why there are so many opportunities in the country's poultry industry today. And the really good news for small- and medium-scale producers is that they can also profit from this burgeoning demand by starting their own poultry business and earning a sustainable and growing income.

When it comes to broiler production, there are several routes you can take to generate an income. PHOTOS: FW ARCHIVE

Although, at first glance, the industry might seem to be dominated by large-scale producers, as much as 25% of all broiler chickens supplied to the market are produced by small- and medium-scale growers. This means these suppliers have a market share currently worth more than R6 billion a year.

HOW TO GET GOING

If you're a small-scale farmer and you're interested in starting a poultry business, you need to decide which part of the industry you want to serve. This will determine how you go about setting up your business and making money.

One option is hatching and sell day-old chicks to commercial producers. This means you'll only be involved in the first stage of production and not with growing the chicks at all.

Another option is to buy day-old chicks yourself and grow them to sell as fully grown chickens.

A third option is to become involved in the entire process, from hatching to slaughtering.

QUICK RETURNS

Many new businesses require a large capital outlay, which is out of reach for most people. It also takes a long time for a typical business to see a return on investment.

By contrast, a small-scale poultry business has relatively low start-up costs and rapid returns. You can begin with as little as R20 000 and get a 100% return on your capital investment within six months.

And because it only takes 21 days from laying to hatching, you can begin generating an income just three weeks.

More than a billion broilers are slaughtered every year in South Africa.

after starting your business. No other business can provide such a quick turnaround.

Just remember that if you intend to produce day-old chicks, you'll need incubators to start a hatchery. New technology has enabled small-scale producers to hatch chicks relatively easily.

YOU CAN START WITH AS LITTLE AS R20 000 AND GET A 100% RETURN ON INVESTMENT WITHIN SIX MONTHS

Selling day-old chicks is the quickest way to generate an income, as you'll be supplying chicks every week. You'll also be able to get a good profit margin, because there's no need to feed the chicks, as they're off your hands when they're only a day old.

GROWING CHICKS

An alternative is to buy day-old chicks, grow them to six weeks, and then sell them either as live or slaughtered birds.

With this model, you'll need to take into account factors such as feed, medicine, and the infrastructure required. You'll also have to find a suitable market for your chickens; in fact, you should do this even before you start.

Most entrepreneurs prefer to produce day-old chicks and sell them to growers, as this option is easier and carries less risk.

The choice, however, is up to you. At the heart of these opportunities is new technology that allows small-scale farmers to produce day-old chicks or fully grown chickens competitively.

A profitable chicken business is no longer limited to big companies.

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The importance of a business plan

A business plan is a comprehensive written document that outlines a business's goals and its strategy for achieving them. It serves as a road map, providing a detailed overview of various aspects of the business, including its mission, vision, products or services, market analysis, competition, financial projections, and operational plans.

A well-prepared business plan helps guide decision-making and secure financing. It also communicates the business's objectives and strategies to stakeholders.

ELEMENTS OF A BUSINESS PLAN

The following points detail the key components of a business plan:

- **An executive summary:** this is a concise summary of the entire business plan, highlighting the most critical points, including the

A business plan carefully sets out the goals you have for your business. PHOTOS: FW ARCHIVE

business's mission, main objectives, and summarised financial projections.

- **A business description:** this offers an overview of the business, including its location, history, ownership, legal structure, and a description of its products or services.
- **A market analysis:** this is a detailed breakdown of the industry and market in which the business operates.

For example, if you're farming sheep for wool production, you need to include a thorough analysis of the wool market in South Africa and abroad. This section includes market size, growth trends, target audience, customer needs, and the competitive landscape.

- **Competitive analysis:** this offers an examination of competitors, their strengths and weaknesses, market share, and strategies. It should also outline your business's unique selling points and competitive advantages.
- **Value proposition:** this explains what makes the business unique and why customers should choose your products or services over alternatives. In other words, what makes your farming business unique?
- **Business strategy:** this section describes your overall strategy for achieving your business goals. It may include information on marketing, sales, distribution, pricing, and branding strategies.

BEFORE OFFERING FUNDING, FINANCIAL INSTITUTIONS MUST DETERMINE IF YOUR BUSINESS HAS A CHANCE OF SUCCESS

- **Products and services:** this is a detailed explanation of the products or services offered by the business, including their features, benefits, and any intellectual property considerations.
- **Operational plan:** this includes information about how the business's day-to-day operations, including production processes, supply chain management, staffing, and facility requirements.
- **Management team:** in this section, you need to profile key team members, their qualifications, roles, and responsibilities within your business.
- **Financial projections:** here, you need to offer detailed financial forecasts, including income statements, balance sheets, cash flow statements, and break-even analysis. This section often includes assumptions used in the projections.
- **Funding request:** this is particularly relevant when asking for funding. Here, you need to provide the potential lender with information about the amount of funding needed, how it will be used, and the expected return on investment for potential investors or lenders.
- **Exit strategy:** this section is only applicable if you have investors or stakeholders. It details how they can expect to realise a return on their investment should the business fail, such through a sale of the business, public offering, or other means.
- **Appendices:** finally, you need to include supporting documents, such as market research data, CVs of key team members, legal documents, patents, and any additional information that supports the business plan.

WHY DO YOU NEED A BUSINESS PLAN?

A business plan serves multiple purposes. First, it provides a framework for setting and achieving business goals, helping the management team stay focused on key objectives.
Second, if you need funding or investors, a business plan is a crucial first step to securing such funding.
Third, a good business plan demonstrates the business's potential for success and its ability to generate returns, which is critical

for enticing financial institutions or other investors to put money into your business.

It's important to remember that a business plan isn't only useful for applying for finance; it also serves an essential purpose for the management of your business.

A business plan, for example, can be used to track progress and hold the management team accountable for meeting financial and operational targets. Essentially, it serves as a blueprint for the business's goals and aids in making informed decisions by providing a comprehensive view of the business's current status and future prospects.

WHY DO FINANCIAL INSTITUTIONS REQUIRE YOUR BUSINESS PLAN?

Investors and financial institutions will most likely require a business plan before offering you a finance solution. A well-prepared business plan provides important information to lenders, investors, and other stakeholders, helping them assess the viability of your business and the risks associated with it.

These institutions will use the business plan when conducting a risk assessment of your business. A risk assessment allows lenders to assess the level of risk associated with providing financing to your business.

As the business plan outlines your business model, market analysis, competitive landscape, and financial projections, it allows them to more speedily evaluate the potential risks and rewards.

Before offering funding, financial institutions need to determine if your business concept is viable and has a realistic chance of success.

A business plan provides details about your product or service, target market, and growth potential, helping lenders gauge the feasibility of your business.

Lenders also need to understand how your business intends to generate revenue and cash flow to repay the loan or meet other financial obligations. Your business plan should include financial projections, including income statements, balance sheets, and cash flow statements to demonstrate your ability to service debt.

Finally, a business plan clarifies the purpose of the loan or financing. Whether you need funds for start-up costs, expansion, working capital, or a specific project, the plan outlines how the funds will be used and how they will benefit the business.

DEVELOPING A BUSINESS PLAN

Developing a business plan for consideration by a financial institution requires a structured approach.

- **Step 1: Executive summary**

Begin with a concise executive summary that provides an overview of your farming business. Include its name, location, mission statement, and a brief summary of the plan's key highlights.

- **Step 2: Business description**

You now need to offer a detailed description of your farming operation. Explain the type of farming system you're embarking on or currently running, and the specific products you intend to produce.

- **Step 3: Market and competitor analysis**

As mentioned earlier, you need to include a thorough market analysis. For this section, you can include surveys and other datasets that show your understanding of the market and that there is a gap to be exploited. You also need to include a competitor analysis detailing who your competitors are and what you'll do differently to attract customers or offtake agreements.

- **Step 4: Value proposition**

Here, clearly articulate what sets your farm apart from others. Explain your unique

Regardless of the type of system you're running, a business plan is essential to secure funding.

selling points, such as sustainable practices, product quality, or niche markets you serve.

- **Step 5: Business strategy**

Describe your overall strategy for running your farm. Discuss your production methods, pricing strategy, distribution channels, and marketing efforts.

- **Step 6: Operational plan**

In this section, provide details about the day-to-day operations of your farm, including land management, crop or livestock care, equipment and machinery use, and labour requirements. Also describe your supply chain and any partnerships with suppliers or distributors.

- **Step 7: Financial projections**

Present detailed financial projections, including income statements, balance sheets, and cash flow statements. Use realistic assumptions, including production yields, pricing, and expense estimates. Include a break-even analysis and a capital expenditure plan, where applicable.

- **Step 8: Resource management**

Explain how you plan to manage key resources, including land, water, energy, and labour. Discuss sustainability practices and conservation efforts, and outline pest and disease management strategies, where applicable

- **Step 9: Marketing and sales strategy**

Describe your marketing and sales plan. Include details on how you'll promote your products, your pricing strategies, and your sales channels, such as farmers' markets, local retailers, and online sales. Highlight any branding efforts and customer engagement initiatives.

- **Step 10: Risk assessment and mitigation**

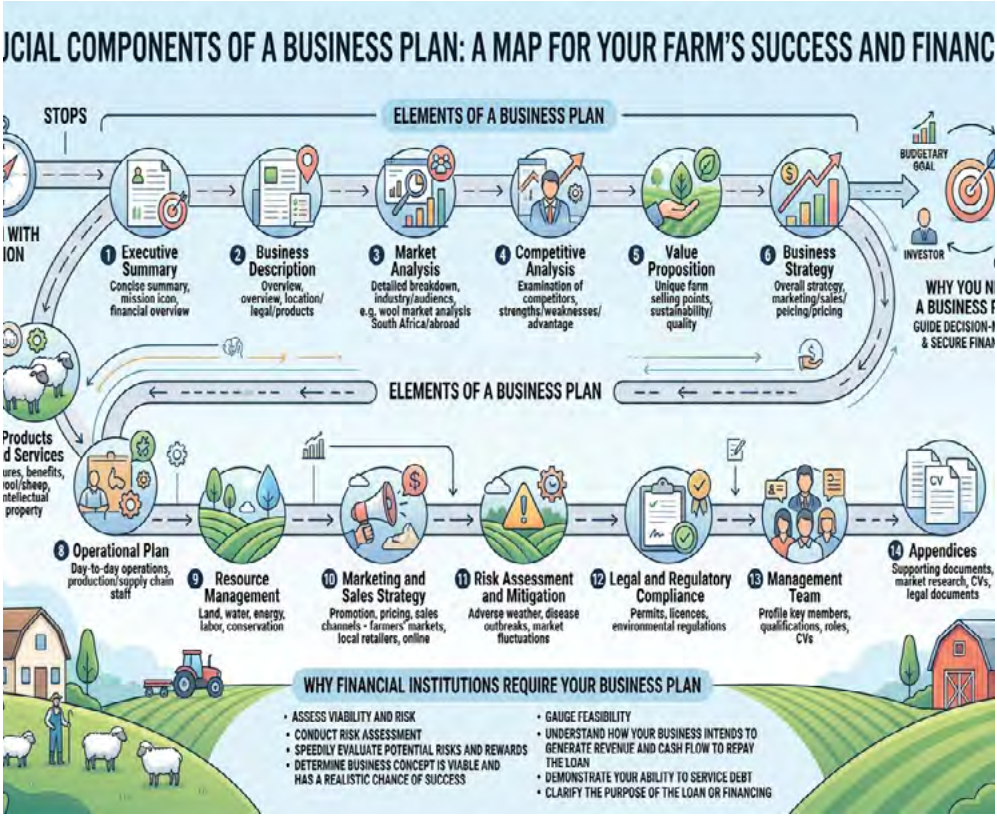
Identify potential risks and challenges that could impact your farming business, and explain how you plan to mitigate these risks.

All staff must be familiar with the goals of your business. Include their details in any application you make to financial institutions.

Consider factors such as adverse weather conditions, disease outbreaks, market fluctuations, and regulatory changes.

- **Step 11: Legal and regulatory compliance**

Ensure that your business plan addresses all legal and regulatory requirements specific to farming, including permits, licences, and environmental regulations.



This AI-generated infographic shows the criticial components and importance of a business plan.

- **Step 12: Environmental and sustainability practices**

This may not be applicable to all operations, but considering the global push towards a greener future, it may be worth your while to detail your commitment to environmental stewardship and sustainable farming practices. Explain how you plan to minimise environmental impact and promote sustainability.

- **Step 13: Management team**

Introduce key members of your management team, including their roles, qualifications and responsibilities. Include their CVs as needed. Also explain how they'll drive your business towards reaching its goals.

- **Step 14: Appendices**

Finally, include any supplementary materials – such as market research data, soil test results, crop rotation plans, photographs, and additional financial details – in appendices.

FINAL ADVICE

Don't forget to regularly review and update your business plan to reflect changing conditions, market dynamics, and strategic shifts in your farming business.

If you feel unable to put together a well-developed business plan, you can always rely on the services of an external company.

How to become a successful poultry farmer

While many small-scale poultry farmers have no choice but to sell their fully grown chickens in single batches, this model isn't conducive to an efficient or sustainable poultry operation.

The South African Poultry Association's Developing Poultry Farmers Organisation (DPFO) encourages the formation of cluster groups to overcome these and other challenges, such as access to feed and vaccines.

"Producers need to stop working in silos," says Ajallon Zondi, hatchery owner and DPFO Committee member.

"Farmers living in the same area are growing 500 chicks at the same time and then fighting for the same market. But if they operate as a cluster, and coordinate and stagger production, they could go to a local market with a steady supply of 500 chickens a week.

"Transport and abattoir clusters can also be formed. Clusters working together can become a business unit," he explains.

SECURE A MARKET FIRST

Dr Shelley Johnston, a facilitator and board member at the KwaZulu-Natal Poultry Institute, agrees.

"Too often, we see farmers producing chickens and eggs and then trying to find a market for their goods. That's the wrong way to go about things.

"If you don't have customers, you don't have a business. Ask your neighbours and local shops where they source eggs and chickens from. Find out what they pay, what quantity they buy, and whether or not they're happy with their current supplier," she says.

The next step to becoming a successful poultry farmer is scouting for a suitable area to farm.

"If there are too many poultry farmers in an area, the price of poultry products drops. But if there's a shortage, the price goes up. So find an area where there's a broad range of farming activities on the go," explains Johnston.

Another reason to find land far from other poultry farms is to prevent the spread of airborne diseases.

"You also need to find a site in close proximity to markets, with clean water, electricity, good roads, and a moderate climate," she adds.

START SMALL

"The aspiring poultry farmer should find a niche market, go through the process of learning and expanding, and mustn't expect overnight success," advises Johnston.

While large agribusinesses benefit from economies of scale, a small-scale poultry farmer can make more money per unit because they often sell directly to customers.

"They may sell small volumes, but their margins will be higher," she says.

She adds that marketing is an ongoing process: "Go and look for customers. Don't wait for them to find you."

MANAGE YOUR MONEY CAREFULLY

Once you start making money from selling eggs and broilers, it's crucial to manage your finances well.

"Always have cash in the bank," says Johnston.

"The money you earn is not your profit, so don't blow it. Rather put it in the bank and draw a small salary from it."

A 3 000-bird broiler operation costs around R123 000 per cycle. FLICKR

She estimates that the costs associated with running a 3 000-bird broiler farm amount to around R123 000/cycle. Including the cost of the chicks, vaccines, feed, shavings, a salary, and so on, this works out to about R41/bird.

If the birds are sold for R60 each, the farmer will earn R180 000. This will leave them with enough cash to fund the next broiler cycle, plus a R57 000 surplus that could be used to expand the business.

"In this way, your business will grow, you'll be able to employ people to help, and your salary can increase," says Johnston.

"The first rule for new businesses is simple: stay in business. Then you can a profit!"

The importance of costing for your operation

Costing is simply the process in which a farming (or any other) business figures out how much it actually costs to produce a product. Proper costing helps you understand whether your operation is profitable and sustainable. Without proper costing, it is difficult to manage expenses or improve income. Always remember that profit must be calculated, and not assumed.

UNDERSTANDING COSTS

There are two types of primary costs. These include indirect (fixed) and direct (variable) costs.

- **Indirect (fixed) costs**

Indirect or fixed costs are expenses a business must pay no matter how much or how little it sells or produces. For example, even if your business doesn't sell any eggs or broilers in a month, the fixed costs of the operation remain the same. These include, amongst others:

- Rent;
- Water and electricity;
- Salaries (paid monthly);
- Insurance.

- **Direct (variable) costs**

These are costs tied directly to your production. The more you chickens you run, the higher your variable costs will go. These costs include, amongst others:

- Feed (60% to 70% of total production cost);
- Chicks or pullets;
- Medication and vaccines;
- Seasonal labour;
- Wages (paid hourly).

SALARIES VS WAGES

A major confusion when it comes to business accounting is the difference between wages and salaries, and why one is considered a direct cost, while the other is considered an indirect cost. In terms of salaries, employees receive a fixed annual amount, regardless of how many eggs or broilers a business sells in a year. These employees' pay doesn't change when production goes up or down, and it is thus treated as a direct (fixed and unchanging) cost.

However, wages are generally tied directly to hours worked or units produced (for example, number of eggs collected). If production ramps up, you pay for more hours; if production stops, those hours drop. This is a thus a direct (variable) cost.

HOW TO CALCULATE COSTING

To calculate the cost of production for a broiler operation, for example, you need to combine all the expenses incurred during a specific grow-out cycle and divide that total by the total weight or number of birds produced. The following formula can be used to determine total production cost:

Total Production Cost = Direct Costs + Indirect Costs

For example, to determine how much it costs you to raise your broilers over a complete production period (around 35 to 42 days), add all the expenses occurred related to production over that period.

(The amounts provided are averages and only meant to be used as an example. They are not necessarily representative of real-world costing, which will vary significantly depending on what province you stay in, whether you're renting or have a mortgage, how many people you employ, and how many chicks you are raising.)

It is important to know how much each bird costs to produce. PHOTOS: FW ARCHIVE

Typical Cost Breakdown	
Cost Item	**Example Cost**
Chicks (100 units)	R1 200
Feed	R3 500
Medication	R500
Water and electricity	R450
Rent	R3 000
Wages	R1 600
Salaries	R5 000
Total Cost	**R15 250**

In order to remain profitable, you need to sell your broilers for more than it costs you to produce them.

Cost Price Per Bird = Total Cost/Birds Raised

Using the above example, raising one broiler to slaughter weight will cost:

R15 250/100 = R152,50

So, in order to break even, you would have to sell every broiler for R152,50. In order to make a profit, you would have to sell your broilers for more than R152,50.

To determine profit, you must subtract your total costs from your total sales revenue.

As such, you first need to determine your total sales revenue. Use this formula:

Total Revenue = Number of Birds Sold *x* Selling Price per Bird

Total Sales Revenue	
Item	**Value**
Selling price/bird	R180
Birds sold (units)	100
Total Sales Revenue	R18 000

Your profit is calculated by subtracting the total costs (direct and indirect) from your total sales revenue.

Total Profit = Total Sales Revenue – Total Costs

In the above example, your total profit will therefore be calculated as follows:

R18 000 – R15 250 = R2 750

It is also important to get a general idea of how much profit you make per bird. This is because you may not always

Broilers generate once-off costs and income: you buy them, raise them and sell them, ending their production life span.

sell all your broilers, which will then limit the amount of profit you make. By calculating profit per bird, you can also calculate a fair profit margin. (The profit margin is simply the percentage of your selling price that you actually get to keep as profit after paying your expenses.)

Profit Per Bird =
Total Profit/Number of Birds Sold

From the above example, your profit per bird is calculated thus:

R2 750/100 = R27,50 per bird

THE DIFFERENCE BETWEEN COSTING LAYERS AND BROILERS

Broiler systems generate once-off income. You pay chicks, raise them to slaughter weight, and sell them. Those broilers' production costs and possible income thus come to an end when they are sold as carcasses or live birds to clients and abattoirs.

Layer systems, however, generate continuous income over a much longer period of time, as hens can produce eggs over as long as a few years.

Costs and profits for a layer system should thus be calculated on a monthly basis, rather than according to the layers' production cycle.

However, the same formulas used for calculating total costs and revenue for the broiler operation system still applies to the layer system.

Of course, in a layer system, your profit will come from eggs. It is thus useful to determine how much revenue you make per hen from the eggs that she produces to determine if she is profitable.

Most commercial layer hens lay 0,8 to 0,9 eggs per day on average.

(It takes 24 to 26 hours for a chicken's body to completely form a single egg, and as such, even commercial layers cannot produce more than one egg a day.)

To determine the monthly profit of each hen, determine how much one particular hen produced.

Eggs Produced Per Month =
Eggs Produced Per Day *x* 30

Income from Eggs	
Item	**Value**
Eggs per hen/day	0,9
Eggs per month	27
Price per egg	R3
Monthly income per bird	R81

Profit is calculated as per the same formula as given above for broilers. Let's say the cost per layer per month is R50; you have then made a R31 profit on one hen.

(As mentioned above, these figures are not based on real-world scenarios, and are simply used as examples.)

When it comes to profit, economies of scale are also important in chicken production, and cannot be discounted.

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8

Insurance

From disease outbreaks and natural disasters to market fluctuations, poultry farmers face risks that can threaten their livelihoods. Understanding these challenges is the first step towards managing them. This chapter explores the basics of risk management and insurance, and offers practical advice on protecting your flock, safeguarding your investment and building a more resilient poultry business.

OVERVIEW

- Understanding risk management in a poultry farming business
- A guide to managing risks to your poultry operation

Understanding risk management in a poultry farming business

When you invest in poultry farming, you are running a business. You spend money on chicks or point-of-lay pullets, feed, housing, equipment, water systems, and labour. These are real costs and need to be protected.

No matter how well you manage your farm, unexpected events can still happen. A sudden storm, a disease outbreak, an electrical fault, or a break-in can wipe out weeks or months of income, sometimes overnight.

Some diseases, like Newcastle disease and bird flu, can rapidly spread through a flock. PHOTOS: FW ARCHIVE

The question is not whether something will go wrong, but how prepared you will be when it does.

Risk management simply means identifying what could go wrong and taking steps to reduce the chance of it happening, or to limit the damage if it does. This includes good farming practices, sound planning, and where appropriate, financial protection tools such as insurance. It is about planning rather than reacting after a problem has occurred. Farmers who actively manage risks are better prepared to recover from setbacks and continue operating successfully.

COMMON RISKS

Poultry farmers face a wide range of potential risks. Understanding these risks is the first step towards managing risk effectively. Here is a closer look at some of these risks:

Disease outbreaks

Infectious diseases such as Newcastle disease, avian influenza, and Marek's disease can spread rapidly through a flock. A serious outbreak can result in the loss of hundreds or thousands of birds and often requires costly veterinary intervention and biosecurity clean-ups.

Fire

Poultry houses contain heating equipment, electrical wiring, and dry bedding material, all of which create fire risk. A fire can destroy an entire house and its occupants within minutes.

Storm and weather damage

High winds, hail, and heavy rain can

POULTRY FARMER'S RISK MANAGEMENT PYRAMID

A step-by-step approach to a stronger, more resilient poultry business

LEVEL 1 — PREVENT

Good farming practices

- Biosecurity protocols
- Vaccination programmes
- Equipment maintenance
- Record keeping
- Physical security

PREVENT

Reduce the likelihood of risks occurring through good management practices.

LEVEL 2 — PREPARE

Be ready for emergencies

- Backup generators
- Water storage
- Emergency response plans
- Storm preparation
- Disease response protocols

PREPARE

Be ready to act quickly when unexpected events occur.

LEVEL 3 — PROTECT

Insurance helps your business recover

- Poultry houses
- Farm buildings
- Equipment
- Generators
- Loss of income
- Liability risks
- Personal accident cover

PROTECT

Transfer the financial impact of major losses with the right insurance cover.

Insurance is a financial safety net, not a substitute for good management.

THE GOAL: Reduce risk. Minimise losses. Protect your livelihood. Grow your business.

damage or destroy poultry housing, feeding systems, and infrastructure. Even partial damage can expose birds to extreme temperatures or predators, leading to losses.

Theft
Theft of live birds, feed, and equipment is a serious concern for many South African farmers. Feed and backup generators are particularly targeted.

Equipment failure
Feeders, drinkers, ventilation fans, and heating systems are critical to bird welfare. When they fail unexpectedly, the impact on production and mortality can be significant.

Power outages
Load-shedding and grid failures can affect ventilation, heating, lighting, and feeding systems. Broiler chicks are highly vulnerable to temperature changes during the first weeks of life.

Water supply interruptions
Chickens require constant access to clean water. Even a few hours without water, especially in hot weather, can cause production losses, stress, and mortality.

Production interruptions
Any of the above events can result in a complete halt to production, with income stopping while fixed costs such as loan repayments, feed bills, and wages continue.

WHEN SHOULD YOU CONSIDER INSURANCE?

Not every poultry producer needs the same level of cover. But as your business grows, so does your exposure to financial loss.

You should consider insurance when:
- you have invested in permanent housing and equipment;
- poultry income has become your main or a significant source of household income;
- you are expanding your operation – more birds, more houses, more staff;
- you employ workers who depend on your farm for their livelihood;
- a major loss would be difficult or impossible to recover from without outside help.

If you answered yes to any of the above, it is worth exploring what insurance options are available to you. Even basic cover can make a significant difference when things go wrong.

INSURANCE AS PART OF A RISK MANAGEMENT PLAN

Insurance is not a substitute for good farm management. It is a financial safety net that supports your business when unexpected losses occur. Think of insurance as an important element in a broader risk management plan that should include:
- Biosecurity protocols to prevent disease entry and spread;
- A suitable vaccination programme developed with your vet or animal health technician;
- Accurate and up-to-date record-keeping (mortality, feed intake, egg production);
- Regular maintenance of equipment, ventilation, and water systems;
- Physical security measures such as fencing, lighting, and locks;
- Emergency planning for power failures, disease outbreaks, and extreme weather;
- Insurance cover appropriate to your scale and level of investment.

KEY MESSAGE

Insurance is one tool within a broader risk-management strategy. It helps the farmer recover from certain losses after an unexpected event, but it cannot replace good farming practices. The key principle is simple: insurance does not replace good management. It supports it.

Layer hens and other poultry covered under contract grower arrangements can be insured.

QUESTIONS YOU SHOULD ASK

It is best that you discuss the different types of risks with an accredited insurance provider or broker who can assist you with putting together a risk management plan. Before meeting with an insurance provider or broker, it helps to think through your own situation. Ask yourself:

QUESTIONS YOU SHOULD ASK	
	What are my biggest risks? Disease, fire, theft, weather damage, power outages?
	What assets need protection? Housing, equipment, feed storage, vehicles, birds?
	Could my business survive a major loss? Do I have savings or access to credit as a fallback?
	What would it cost to rebuild? Consider the replacement cost of your infrastructure and equipment.
	Am I complying with regulations? Some cover may require compliance with animal welfare or biosecurity regulations.

Understanding what types of insurance exist, and what each one does, helps you to have a more informed conversation with a broker. This section explains briefly some of the key products available to poultry farmers. There are three or four insurers in South Africa that specifically provide insurance for poultry farmers, with Hollard (Hollard Agri Policy) being one of the leading insurers.

POULTRY AND FARM ASSET COVER (FIRE SECTION)

Covers physical loss of or damage to:

- Poultry houses and other farm buildings;
- Machinery, equipment, feed storage facilities, and production infrastructure;
- Packing and cooling plants;
- Poultry covered under contract grower arrangements.

For layer hen producers, the hens themselves can be insured under this section alongside the buildings and structures. Importantly, a claim for bird losses will generally only be paid if there

is accompanying physical damage to the buildings or structures, for example, if a fire destroys the house and kills the birds inside.

LIVESTOCK COVER

Livestock section covering the death of animals due to fire, lightning, violent accident, freezing, transit, or attack by a wild animal. For poultry farmers, this is most relevant to breeders or those keeping valuable genetic stock. Standard livestock cover can be extended on a case-by-case basis to include specific illnesses, transit risks, and other perils.

FARM BUILDINGS AND INFRASTRUCTURE

Poultry houses, feed storage facilities, water systems, generators, and other infrastructure are among a farm's most significant capital investments. Insurance could cover loss or damage to these assets, including loss caused by fire, lightning, storm, wind, hail, water damage, and impact.

BUSINESS INTERRUPTION COVER

If your farm operation is forced to stop due to an insured event, such as a fire that destroys a house, business interruption cover helps replace lost income and cover fixed costs (such as loan repayments, wages, and feed costs) while you rebuild and restock. For broiler farmers, this is particularly important because the entire revenue of a production cycle can be lost if birds are destroyed in the early weeks of a batch.

MACHINERY BREAKDOWN

Ventilation fans, feeding systems, drinkers, incubators, and generators are critical to the welfare and productivity of your flock.

Insurance can include a machinery breakdown section, which covers the cost of repairing or replacing equipment that fails mechanically, not just due to a fire or storm, but because of mechanical or electrical breakdown.

PUBLIC AND GENERAL LIABILITY

If a visitor, delivery driver, or contractor is injured on your property, or if your birds cause damage to a neighbouring property (for example, during a disease spread), you could face a legal claim. Insurance could include general liability cover for accidental death or injury of a third party caused by your farming operations. This is especially important for farmers who employ workers or receive regular visitors.

PERSONAL COVER FOR THE FARMER

Insurance could also cover personal insurance requirements, including residential buildings, household contents, personal effects, computers, and cell phones. For many smallholder farmers, the farm is also the home, so protecting both under one policy simplifies administration.

REAL-WORLD EXAMPLE: WHEN EQUIPMENT FAILS AT THE WRONG TIME

A layer farmer in Mpumalanga had 5 000 hens in production. Her generator, used as backup power during load-shedding, broke down during a long outage. The ventilation fans stopped working and the house temperature spiked. She lost 300 hens and production dropped significantly for the following four weeks.

The financial impact:

- Cost of replacing generator parts;
- Loss of egg income for four weeks;
- Cost of replacing dead birds and managing the flock recovery.

What could have helped: Regular generator maintenance, a service contract, and insurance cover that included equipment breakdown and loss of production income.

PERSONAL ACCIDENT AND INCOME PROTECTION

Life assurance products can provide cover for the farmer as an individual, including personal accident cover if you are injured and unable to work, and life cover that protects your family and the business if you pass away unexpectedly. As the farmer, you are one of the most important assets of your business. Your broker can advise on combining short-term and life products for complete protection.

WORKERS' COMPENSATION

If you employ workers on your poultry farm, even part-time or seasonal workers, registration with the Compensation Fund under the Compensation for Occupational Injuries and Diseases Act (COIDA) is a legal requirement.

THE QUESTION IS NOT WHETHER SOMETHING WILL GO WRONG, BUT HOW PREPARED YOU WILL BE WHEN IT DOES

This is not optional insurance; it is an obligation under South African law.

COIDA provides compensation to employees who are injured at work, contract a disease related to their work, or die because of a work-related cause.

Once registered and in good standing, you are generally protected from direct civil lawsuits by injured employees.

LOOKING AHEAD

Successful poultry farming requires more than producing healthy birds. It also requires careful planning for unexpected challenges.

Every poultry enterprise faces risks, but farmers who understand those risks and prepare for them are better positioned to protect their investment, maintain production and build a sustainable business. Good management remains the first line of defence. Risk management, emergency planning and appropriate insurance can provide additional support when unexpected events occur, helping poultry farmers recover and continue growing their businesses.

This chapter is intended for general information and educational purposes only and should not be regarded as financial, insurance or professional advice.

The insurance options mentioned are examples of cover that may be available, depending on the farmer's circumstances, the nature of the poultry enterprise and the specific terms and conditions of the policy.

Farmers should discuss their own risks, assets and insurance needs with a qualified broker or insurance adviser before making any final decisions or purchasing cover.

REAL-WORLD EXAMPLE: A STORM HITS WITHOUT WARNING

A smallholder broiler farmer in Limpopo had 2 000 birds in his fifth week of production. One afternoon, a severe hailstorm damaged the roof of two of his houses. By the time repairs could be made, overnight temperatures had dropped and he lost 400 birds to cold stress.

The financial impact:

- Lost income from unsold birds;
- Cost of emergency roof repairs;
- Additional heating costs for surviving birds.

What could have helped: A structural inspection before the rainy season, an emergency response plan, and insurance cover that included storm damage to infrastructure.

A guide to managing risks to your poultry operation

You can insure your poultry – not against everything, but most of those things that will ruin your business.

There are trade risks that you cannot insure – you can only try and manage it. Chickens die in the normal flow of things, or somebody leaves the coop open. Systemic risks are those that are too big and you cannot insure, such as bird flu.

There are also risks that you do not need to insure because you can fix things yourself or afford to replace it. Then there are the risks that will ruin your business, such as a chicken house burning down. These are the risks you need to insure against.

By making sure your poultry has good housing, feed and fresh water, you are already managing the risk. Ensuring these things are in place can cost a lot of money, and you want to protect that.

Some risks, like a fire burning down your poultry house, can ruin your business. Insurance is vital in cases like these. RAWPIXEL

WHAT AND HOW SHOULD YOU INSURE?

- Make a list of all your assets with their values.
- Decide which you can replace yourself and which ones you cannot.
- Get a broker to help you with the ones you cannot replace.
- Think of what can happen to your assets, such as fire, theft, lightning, flood. Those are the risks you want to insure against.
- Let the broker get quotes and then you decide which is best. Remember cheapest is not always the right decision. The most expensive is also not always the best!

Insurance will not cover everything. You also need to manage your own risk, and then use insurance to help you with the big things that can ruin your business and farm. It is a tool in your toolbox, and a very important way to make sure you can carry on farming even when bad things happen.

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9

Processing and compliance

Producing safe, quality products requires responsible handling and compliance with regulations. *Farmer's Weekly* outlines the basics of poultry abattoirs, food safety principles and regulatory requirements. Good processing practices protect consumers and strengthen your reputation.

OVERVIEW

- Poultry abattoirs
- Food safety and handling
- Packaging
- Getting the product to the customer

SOURCES

- Chicken Abattoirs – 21 June 2024 (reviewed)
- Poultry Business – 12 July 2024
- Poultry Hygiene (Health) – 27 May 2022 (reviewed)

6
ASIAN ZING™
BBQ MARINATED
CHICKEN THIGH
KEBABS
650 g
UNCOOKED
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Understanding the basics of chicken abattoirs and related legislation

A chicken abattoir, also known as a poultry slaughterhouse, is a facility where chickens are slaughtered and processed for meat production. These facilities are designed to handle large numbers of birds, ensuring that the process is carried out efficiently, hygienically, and in compliance with animal welfare standards.

Chicken pieces ready for packaging. CHUBBY CHICKS

In South Africa, there are various laws and regulations in place to regulate abattoirs to ensure food health and safety.

THE SLAUGHTERING PROCESS

There are a range of processes involved in humanely slaughtering a chicken or other poultry. Once a bird has been selected for slaughter, it is sent to an abattoir. Upon receiving slaughter birds, the abattoir keeps them in the reception and holding area, which includes a live bird receiving area. This area is designated for receiving and unloading chickens from transport vehicles. It also includes ventilated holding pens where chickens are held before processing. These pens must have adequate space, water, and sometimes food to ensure animal welfare according to regulations.

The slaughtering and processing area is where the process of slaughtering begins, and includes a stunning and slaughter area, a bleeding area, a scalding tank, and plucking machines.

The stunning and slaughter area has facilities for the humane stunning and slaughtering of chickens. Some of the equipment used here include electrical stunners or controlled atmosphere stunning systems. The bleeding area is where birds are bled out after slaughter. The scalding tanks are filled with boiling water to loosen feathers for easier plucking. Following the scalding tanks, the birds are sent to the plucking machines, which remove feathers efficiently.

Once the birds have gone through the slaughtering process, the carcasses are sent to the evisceration and inspection area. Here, birds are eviscerated on a conveyor system, with proper waste management for offal and other by-products. Once this process is complete, the carcasses are sent to an inspection station. This is an area where

KEY PROVISIONS OF THE MEAT SAFETY ACT (NO. 40 OF 2000)

All abattoir owners must adhere to the regulations as set out by the Meat Safety Act (No. 40 of 2000). The purpose of the act is to provide measures to promote meat safety and the safety of animal products, and to establish and maintain essential national standards for abattoirs. The Act applies to all abattoirs, meat processing facilities, and related operations involved in the production and handling of meat intended for human and animal consumption.

In terms of registration and classification of abattoirs, all abattoirs must be registered with the relevant provincial authority. Operating an unregistered abattoir is prohibited. Abattoirs are classified based on the type of animals they process and their processing capacity. Each class has specific requirements regarding facilities and equipment.

STANDARDS FOR CONSTRUCTION AND HYGIENE

The Act mandates the construction standards for abattoirs, ensuring they are designed to facilitate hygiene and prevent contamination. Specific standards are set for the equipment used in abattoirs, focusing on materials that are easy to clean and sanitise. Strict guidelines are provided for maintaining hygiene during the slaughter and processing of animals. This includes measures for cleaning and disinfecting facilities and equipment.

INSPECTION AND COMPLIANCE

All animals and meat products must undergo inspection by authorised inspectors to ensure they are free from disease and safe for consumption.

Regular inspections and audits of abattoirs are conducted to ensure ongoing compliance with the Act's provisions and standards. The Act outlines penalties for non-compliance, including fines and possible closure of facilities that do not meet the required standards.

ANIMAL WELFARE

The Act requires that animals are treated humanely during handling, transport, and slaughter. Specific regulations are provided to minimise stress and suffering.

The use of humane stunning methods prior to slaughter is mandated to ensure animals are unconscious before slaughtering.

RECORD-KEEPING AND TRACEABILITY

Abattoirs must maintain detailed records of all animals processed, including their origin, health status, and inspection results. Systems must be in place to trace meat products back to their source to ensure food safety and facilitate recalls if necessary.

PUBLIC HEALTH AND SAFETY

The Act includes provisions for controlling diseases that can be transmitted from animals to humans through meat consumption.

Guidelines for the processing, packaging, and storage of meat products are provided to ensure they remain safe for consumption throughout the supply chain.

ENVIRONMENTAL CONSIDERATIONS

Regulations are included for the proper disposal of animal waste and by-products to minimise environmental impact and prevent pollution.

Abattoirs must have systems in place to treat wastewater and effluent before discharge, ensuring it meets environmental standards.

ENFORCEMENT AND AUTHORITY

The Act designates specific authorities at the national and provincial levels to oversee the implementation and enforcement of the regulations.

Authorised inspectors have the power to enter abattoirs, conduct inspections, and enforce compliance with the Act.

Chicken carcasses ready for deboning and cutting.

authorised inspectors, government officials or animal health technicians examine the carcasses for disease and contamination.

If the carcasses are cleared through the inspection area, they are sent to the chilling and processing area, where they are placed in chilling tanks. These tanks or systems are used to rapidly cool carcasses to prevent bacterial growth or contamination with other pathogens. Following this, the carcasses may be sent to the cutting and deboning rooms, which are hygienic rooms where carcasses are cut into parts and deboned if necessary. (Of course, not all carcasses are deboned or cut into pieces.)

Finally, the chicken pieces (or whole chickens) are sent to the packaging area for packaging, which include vacuum sealing.

WHAT HAPPENS NEXT?

Once the chicken pieces and whole chickens have been packaged, they need to be stored in cold storage facilities before they can be transported to retailers. For this, an abattoir requires refrigerators or freezers. Blast freezers can be used to rapidly freeze poultry products.

But the process doesn't end once the product has been frozen and transported to buyers and retailers. The abattoir also has a responsibility to get rid of waste and inedible by-products. For this reason, an abattoir also requires rendering and by-product processing facilities for processing inedible by-products into usable materials like animal feed or biofuel. It also requires waste management systems for handling

THESE FACILITIES ARE DESIGNED TO HANDLE LARGE NUMBERS OF BIRDS

and disposing of waste products, which include blood, feathers, and offal.

An abattoir also requires adequate water supply and treatment facilities to ensure clean water for processing and hygiene, as well as an effluent treatment plant, which are systems to treat wastewater before discharge to comply with environmental regulations. Reliable electrical supply and backup generators are also essential to ensure continuous operation. (The latter is particularly important in South Africa, where electricity supply is unstable.)

Further, employee facilities are essential. Changing rooms for men and women, showers and toilets are non-negotiable. Break rooms are also required, as well as administrative and support areas, which include office space.

BIOSECURITY

As abattoirs are processing animals that will eventually be sold to consumers, biosecurity for the sake of food safety is essential. For this reason, perimeter fencing and controlled access is critical to prevent unauthorised entry and potential contamination. Abattoirs should also have disinfection stations for vehicles, equipment, and personnel entering and leaving the facility.

LAWS AND REGULATIONS

If you are thinking about starting a commercial chicken abattoir, there are various legal, environmental, and health regulations with which you have to comply.

Besides the general business registration processes, you need to consider zoning and land use regulations. For this, you will need to consult with the local municipality where you wish to establish a commercial chicken abattoir.

In terms of a commercial abattoir, an Environmental Impact Assessment will have to be conducted as per the National Environmental Management Act. This assessment is necessary to evaluate the potential environmental effects of the abattoir and to develop measures to mitigate any adverse impacts.

You will also have to apply for various licensing documents and permits, which may include an abattoir licence (from the Department of Agriculture), and a waste management licence (from the Department of Environmental Affairs). A commercial abattoir uses a significant amount of water, and so a water-use licence from the Department of Water and Sanitation may also be required. Once you have applied for the relevant licences and your abattoir is ready to begin operations, the abattoir will need to be inspected and certified by the relevant authorities. Regular inspections should also be conducted.

Once operational, you need to adhere to the Animal Protection Act and Meat Safety Act to ensure the humane treatment of chickens and proper hygiene standards in the processing and slaughtering operations.

You will also have to adhere to the regulations set forth by the National Regulator for Compulsory Specifications (NRCS) and the South African Bureau of Standards (SABS). This includes ensuring the facility meets hygiene standards, and that there is proper handling, storage, and transportation of poultry products.

- *Read the full Meat Safety Act No. 40 of 2000 at faolex.fao.org/docs/pdf/saf22420.pdf.*

A poultry processing plant line.

Farm to fork food safety

Food safety ensures that poultry products are safe for human consumption. Compliance protects both the consumer and the farmer. The key principles of food safety include:

- A clean processing environment;
- Safe handling practices;
- Proper storage of food stuffs.

HYGIENE REQUIREMENTS

One of the most important principles of food safety is hygiene. Good hygiene prevents the transmission of pathogens and eliminates cross-contamination. The basics of hygiene include:

- Washing hands regularly;
- Cleaning equipment;
- Using clean water.

CONTAMINATION RISKS

Contamination becomes a risk when good hygiene practices are not followed. Contamination risks are elevated by the following, amongst others:

- Using unclean equipment;
- Poor handling;
- Inadequate chilling.

TEMPERATURE CONTROL

Temperature control is critical to food safety because bacteria require specific thermal conditions to multiply. Ensure that you:

- Keep meat cold after processing;
- Maintain the cold chain;
- Avoid exposure to heat.

Logistics that deliver

Logistics is the process of planning, implementing, and managing the movement and storage of goods, services, and information from their point of origin to their final destination.

TRANSPORTING LIVE BIRDS AND MEAT

There are a number of regulations when it comes to transporting live animals, but here is a quick overview of what is required.

- Ensure you use proper crates;
- Avoid overcrowding the truck;
- Minimise transport time, as the process will inevitably cause the chickens stress;
- Protect the chickens from heat and cold.

There are a number of regulations to consider when transporting meat or carcasses. Below is a quick guideline.

- Maintain a cold temperature. Bacteria proliferate in temperatures that are warm;
- Use clean vehicles to prevent contamination;
- Carcasses or meat should be packaged.

COLD CHAIN

The cold chain is a temperature-controlled supply chain that maintains perishable products within a strict, continuous temperature range from the point of origin through production, transportation, storage, and final delivery. If the temperature rises above or drops below the required threshold at any point, the product can spoil, lose efficacy, or become unsafe to consume or use. Cold chain management is essential when processing meat. Some key principles include:

- Start cooling immediately after slaughter;
- Maintain temperature during transport;
- Avoid breaks in the cold chain.

Modern practical packaging solutions

Packaging protects the product, improves shelf life, and makes it easier to sell. It is also a good way in which to establish your brand; consumers take note of outstanding packaging.

TYPES OF PACKAGING

When it comes to packaging poultry products, there are a number of options available. Some examples are:

Fresh poultry:

- Plastic bags;
- Vacuum packaging;
- Trays with wrap.

Eggs:

- Egg trays;
- Cartons.

PACKAGING REQUIREMENTS

When packaging your products, ensure that you use clean and food-safe materials. Ensure that the packaging is properly sealed, and that labelling is clear.

LABELLING

Labels give the consumer information about the product. Include the following information on your labels:

- Product type;
- Date of processing;
- Expiry date;
- Producer details.

VALUE ADDITION

Good and creative packaging can increase product value. For example, consider the following:

- Use branded packaging;
- Include pre-cut portions;
- Ensure clean presentation.

Eggs can be sold in trays or cartons. FW ARCHIVE

When producing for the formal market, ensure that your packaging adheres to regulations. FW ARCHIVE

Preparing poultry products for the formal market

The 'formal market' refers to businesses and economic activities that operate within official legal, regulatory, and tax frameworks. While there are many regulations and laws that govern the formal market, it provides the producer with some security. For example, contracts are binding, offering the farmer a certain level of protection. The formal market also offers significantly higher potential for long-term income, wealth creation, and financial security than the informal market. When producing for the formal market, you need to ensure that you:

- Produce quality birds;
- Process products hygienically, and within compliance regulations;
- Maintain the cold chain, within compliance regulations;
- Package correctly, and include labelling.

Final Checklist	
Step	Completed
Birds processed hygienically	
Product chilled properly	
Packaging done correctly	
Transport arranged	
Product delivered on time	

10

Success stories

Every successful poultry enterprise starts somewhere. In this final section, How-to Poultry shares real production stories that demonstrate what is possible with sound management and careful planning. Let these examples inspire your own journey in poultry farming.

OVERVIEW

- Young poultry farmer thrives despite setbacks
- Tips for small-scale poultry producers
- Teenage poultry farmer proves age is no barrier
- Young farmer's passion for rare poultry takes flight

SOURCES

- Young poultry farmer thrives despite setbacks
- Gladys Towbola shares tips for small-scale poultry producers

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Asiphe Pentu keeps a few chickens for consumption by his own family.

Young poultry farmer thrives despite setbacks

Asiphe Pentu runs a poultry farming operation from his home in Beshwana village in Mount Ayliff near Kokstad, in the Eastern Cape.

One of six siblings, Pentu started his business, Khawulela Poultry Farming, in 2014, when he was just 17 and still in Grade 9, due to poverty faced by his family.

His father lives and works in Johannesburg while the rest of the family remains in Mount Ayliff. Most families in the area make a living out of crop farming, but Pentu thought poultry would be a more viable option, as it required less money to get started and he would see returns more quickly.

He also knew that chicken was a popular meat product in the community.

AN ENTREPRENEURIAL SPIRIT FROM THE START

To raise the money he needed to launch his operation, he started selling sweets, peanuts and other snacks at one of the busiest intersections in Mount Ayliff and at sporting events.

As soon as he had managed to save up

R2 000, he bought 50 day-old broiler chicks from a supplier in Matatiele.

In the meantime, he continued attending school at Jojo Senior Secondary, but unfortunately dropped out in Grade 11 in 2018 as he had struggled with mathematics, business studies and accounting.

Despite this setback, he continued to run his broiler chicken operation. And the more he learned about rearing chickens, the more he developed a passion for the business, which has the capacity to rear about 100 chickens at a time.

Pentu's customers are members of his community and the surrounding area.

"When I started the poultry business, my friends used to tease me that I was doing a woman's job, because poultry farming is commonly done by women in my community," he recalls.

Asiphe Pentu's customers are members of his community and the surrounding area.

VACCINATIONS

Pentu's journey to succeed has not been plain sailing. In the beginning, he didn't use any medication on the birds and, as a result, some of his stock died.

He approached a fellow poultry farmer for assistance, and was advised to ask EG Agri Supplies in Kokstad for help with vaccinations. This proved to be a breakthrough.

"EG Agri Supplies has been very helpful to me in running my business," says Pentu.

"When I arrived there, the people were more than willing to assist. They explained everything from how to feed the chicks to which vaccinations to use. I follow their vaccination programme and haven't lost any chickens since. "Now I buy all of my inputs from them." Pentu restocks with another batch of 50 chicks at roughly four-week intervals.

"When the chicks arrive at the farm, I give them a stress pack for three days to help with the stress of travelling to the farm and being in a new environment. Then I administer vaccines according to a set programme."

The chickens are vaccinated against Newcastle disease (NCD) when they are 10 days old, against infectious bronchitis at 14 days old, and against infectious bursal disease at 18 days.

At the age of 21 days, they receive a booster for the NCD vaccination, which is effective for three weeks.

According to Nathan Mhlanga of EG Agri Supplies, the vaccination programme is used by all of their broiler farmers.

"The farmers vaccinate the chickens themselves," he says.

"We explain to them how to use the vaccines and the importance of vaccines in reducing the risk of disease.

"We also try to bridge the gap for farmers who depend mostly on state vets, who at times don't have some of the vaccines the farmers need, by working with private vets to advise our clients."

PRODUCTION ASSISTANCE

Pentu also received assistance from Zandisile Waphi, new business manager at RCS Foods in Berlin, Eastern Cape.

"He taught me that when chickens feed, their necks and heads need to be upward, otherwise they choke

on the food," says Pentu.
RCS Foods provided him with a broiler manual in Xhosa. Waphi recalls that when he arrived on the first visit, Pentu had "a lot of chickens in a small space because he had more clients than he could supply".

"He also didn't have enough drinking and feeding troughs. I assisted him with information on how to use the space he had more effectively."

Due to lack of space at home, Pentu can accommodate only 100 chickens. To make the best use of the area he has, and ensure that he has a consistent supply, he buys only 50 day-old chicks at a time.

In 2016, seeking to expand his business, Pentu asked his local municipality for help.

Through the local economic development programme, which funds projects for job creation and poverty eradication in Alfred Nzo District Municipality, he was given 300 day-old chicks. Unfortunately, because he did not vaccinate them, they died just before they were ready for market.

The municipality also gave him twenty-five 50kg-bags of feed, which he says was useful, as feed is expensive.

The chickens are fed De Heus starter feed from day one to day 14, then they are given a grower feed from day 15 to day 28. From day 29 to day 42, they receive finisher feed. It takes six weeks to grow the chickens until they are ready for market.

"To feed 100 chickens, I use 10 bags of feed: one starter, three bags of grower feed and six bags of finisher feed," says Pentu.

Asiphe Pentu restocks with another batch of 50 chicks at roughly four-week intervals.

THE CREDIT TRAP

Pentu sells the chickens at R45 each, and can sometimes sell up 10 to 15 a day. He keeps careful records in order to manage and assess the growth of his business.

Unfortunately, however, he operates mainly on credit sales, and this affects his cash flow.

"My current challenge in growing my business is that I've established my customer base on credit sales. This can be a problem when it comes to restocking in order to meet demand. But my customers are used to the system and I worry that switching to cash sales might mean losing some customers."

Having to wait for customers to pay is an issue, he says, as some go three months without paying and this delays him from restocking, especially during peak seasons such as Christmas and Easter holidays when he receives big orders from stokvels.

Nonetheless, he does his best to ensure that he has working capital in the bank for stock.

Pentu hopes to expand his business to include layer hens, so that he can employ some of his community members.

Phone Asiphe Pentu on 078 682 9991.

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Tips for small-scale poultry producers

Gladys 'Nana' Towbola of Peezel Farms in Gauteng started her chicken enterprise in 2009.

The littered, potholed municipal road leading to Gladys 'Nana' Towbola's farm near Irene, Gauteng, could not be in sharper contrast to the smoothly run small-scale poultry operation and its dynamic owner.

Towbola was born in Nigeria 44 years ago, but has called South Africa home for the past 32 years. For the past 13 of those she has been running her poultry business, Peezel Farms, where she sells day-old chicks, broilers and eggs. She has also trained over 500 small-scale farmers.

"In the 1980s, my father, who's a gynaecologist, was invited to open a practice in South Africa, and the family moved here," she explains.

After matriculating, Towbola obtained a degree in Animal Science at Canterbury University in Christchurch, New Zealand, and also completed a few courses in business

management. An entrepreneur by nature, she went on to run several small businesses such as a hair salon and an Internet café, while simultaneously starting a family.

Her passion for agriculture never left her, however, and in 2009, she finally received her chance to begin farming when her husband, Prosper Momabahgan, bought the land near Irene for her.

"I received no government support and I believe this was one of the reasons I succeeded. I had to work hard for everything I have today."

She does, however, enjoy excellent support from her husband, who is lecturer of electrical engineering at the Vaal University of Technology and oversees many of the farming activities for her.

"This helps free me up to host workshops for other small-scale growers every two to three weeks."

Though poultry production is Peezel Farms' main focus, the couple also run a few cattle and goats.

SIMILARITIES BETWEEN BROILERS AND LAYERS

Towbola stresses that there are a number of differences between farming broilers and layers. However, there are also similarities, and it is these that a poultry producer needs to understand first.

"The first thing that's needed for both types of chicken is fertile eggs and it's important to obtain these from a reputable producer. It takes about 21 days for a chick to hatch, so it's important to have the right equipment to [incubate the eggs]," she says.

Towbola makes use of Poltek for her equipment needs. "They've been very supportive of my business and truly are one of the only companies I've found that really caters for small growers' specific needs."

All the chicks have to be vaccinated within a day of hatching. Broilers and layers are vaccinated for Gumboro and infectious bronchitis, while layers are also vaccinated for Marek's disease.

"Last year, South Africa was hit very hard by avian influenza. This showed the importance of vaccinations," says Towbola.

Once the chicks have hatched, they are placed in brooders. "It's a good idea to have separate, smaller brooders, as this makes it easier to manage the birds," she says.

The temperature in the brooding area has to be regulated and the floor covered with wood shavings.

'A LAYER IS ABLE TO PRODUCE EGGS FOR 72 WEEKS, SO IT'S REALLY WORTH THE EXTRA EFFORT'

There should also be enough feed in the feeders and ample water (as well as any medicine that is required) at the drinking stations.

Broilers and layers require a comfortable temperature, but the former are more demanding in this respect.

"Over the years, people have bred broilers to gain weight in the shortest possible time. Unfortunately, the downside of this is that they're unable to regulate their own body heat during the first two weeks. Heat helps improve the chickens' overall well-being, which includes skeletal development," says Towbola.

Broilers are market-ready at six weeks. Small-scale producers tend to sell live chickens, whereas commercial farmers usually send their birds to abattoirs.

The first difference between these two poultry types that farmers need to focus on is feed. Broilers and layers each require a diet specifically formulated for how the birds are utilised. The former, for example, needs to grow rapidly.

"Within six weeks, a broiler should be ready for slaughter," says Towbola, adding that this can be achieved by following a simple formula. "Give the chicks starter feed for two weeks, then grower feed for two weeks, and finally finisher feed for two weeks. There are other ways or formulas that can be used, but I work with this tried-and-trusted, standard way of feeding."

Layers, on the other hand, start laying eggs at 16 to 18 weeks, and the goal of their

feeding regime is to keep them in optimal health and ensure strong eggshells.

Towbola advises small-scale farmers to buy appropriate commercial feeds and not try to make their own, without the required expertise.

"Feed is expensive and I know farmers can be tempted to mix their own feed. However, it's very difficult to get this right and it's also [a lot of work]. Therefore, I wouldn't recommend going this route."

BROILERS

A farmer needs to check his or her broilers and their housing daily, as these birds are highly susceptible to disease.

"Biosecurity is the number one thing to pay attention to […] If you don't follow biosecurity measures, the birds can become sick."

The correct vaccines should also be given in a timely manner.

Broilers are market-ready at six weeks. Small-scale producers tend to sell live chickens, whereas commercial farmers usually send their birds to abattoirs.

"Most diseases are always there, so it's important to manage them. Vaccinate the birds correctly to keep the flock healthy."

Correct ventilation and general cleanliness are important for the health of the birds.

"Wood shavings should always be clean," Towbola stresses.

She adds that many new small-scale poultry producers fail to realise how important the placement of their broiler houses is.

"Firstly, you need to ensure that the house is the correct size for the number of birds you have. Then it's important to ensure that it's exposed to enough sunlight.

"You can use a corrugated iron or a brick house, but remember that a structure that gets too hot will be detrimental to the chickens' health."

Towbola cautions that wild birds can introduce diseases and predators can be a threat. The farmer should therefore ensure that nothing is able to enter the chicken house. "No birds, snakes or rats. All of these animals can bring real harm to your farm."

As mentioned, broilers should reach their ideal weight in six weeks. On a large broiler farm, this would be the time that a broiler is sent to the abattoir for slaughter, while a small-scale producer is more likely to sell the birds live.

"Alternatively, many small-scale growers slaughter the chickens themselves." Towbola prefers selling live chickens, as few of her

customers have the luxury of cold storage. "I used to sell the majority of my chickens in Tembisa. People quickly came to know the chicken lady in the white bakkie!" Today, she targets shisa nyamas, households, taxi ranks and pensioners, and advises other small-scale poultry farmers to do the same. Farmers should be realistic about the selling price, she stresses.

When considering all the costs, it's very expensive for a small grower to raise a broiler. Last year, it cost me R40 to grow a chicken. Currently, it costs between R45 and R50."

Inputs include feed, vaccines, fuel, labour, electricity, and water costs.

"When purchasing vaccines, you'll have to buy enough for at least 1 000 birds. If you only have 500, the rest of the doses will have to be thrown away. Misuse of a vaccine renders it ineffective."

She warns farmers not to underestimate the electricity they will use. "I was shocked when I raised my first batch of broilers. It cost me R2 500 to keep them warm for two weeks."

Towbola says customers are bound to question the selling price of a chicken, but the farmer should keep his or her own profits in mind.

LAYERS

One of the first actions that a layer producer has to take is to sex the birds. Unfortunately, warns Towbola, male chicks have little commercial value. While farmers can dispose of these chicks, Towbola has a piece of land where she rears her male chicks as naturally as possible.

They are allowed to roam freely and, rather than being given bought-in feed, forage on whatever they manage to find.

They are also given no medication, apart from the vaccines administered on the first day. They are sold live for consumption to the same set of customers as the broilers, but marketed as naturally raised, free-range chickens.

"It's a very niche market, however, so I wouldn't recommend this as common practice. I'm fortunate to be able to do it."

As layers can live for more than two years, they require many more doses of vaccine than broilers do.

"A layer can produce eggs for 72 weeks, so it's really worth the extra effort," says Towbola.

However, as mentioned, it takes up to 18 weeks for a layer to start producing eggs.

"This is a long time and a farmer might decide not to vaccinate due to the cost. It can easily cost you R1 600 to vaccinate 1 000 birds against *Mycoplasma*.

'BIOSECURITY IS THE NUMBER ONE THING TO PAY ATTENTION TO OR ELSE BIRDS CAN BECOME SICK'

"And remember, there are no smaller quantities of vaccination doses available: a 1 000-bird supply is the minimum order.

"If you wish to farm layers in a conventional way, you will also need to invest in a conventional caging system. Alternatively, you could opt for either a free-range or a semi-free-range nesting system, which enable the birds to wander around outside. "However, [you] should then not give your layers genetically modified feeds or vaccines [to maintain the free-range standard]."

Towbola says there is a niche market that is willing to pay a premium for these eggs, but admits that it is not a cheap farming operation to start.

Email Nana Towbola at glamomu@hotmail.com.

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Teenage poultry farmer proves age is no barrier

Izabella Otto, from KwaZulu-Natal, with some of her Orpington chickens. PHOTOS: SUPPLIED

At just 15 years old, many teenagers are focused on school, sports or social media. For one young girl in KwaZulu-Natal, spare time is spent caring for a flock of elegant Orpington chickens, proving that passion, dedication and hard work, know no age.

What started as an interest in poultry has grown into a rewarding farming venture for Izabella Otto, from the farm Mansfield, in Paddock, KwaZulu-Natal. Every hatch, show and breeding decision offers a valuable lesson in responsibility, patience, and entrepreneurship.

Her journey is an inspiring reminder that the future of agriculture is already taking shape in the hands of young farmers willing to dream big and work hard.

PASSION BEGAN AT FOUR

Izabella's interest in the Orpington breed began when she was only four years old. She raised chickens by hand that were brought home by her father, and she used to carry them around. People would usually notice the chickens because of the size of the Buff Orpington breed.

There is a fine balance between schoolwork and farming, and afternoons are spent checking on the Orpingtons and collecting eggs to place in the incubator.

"One of the biggest advantages of the breed is its temperament. They are naturally calm and tame. They have excellent maternal instincts and are very good at hatching eggs. They adapt easily

A majestic Orpington cock.

to almost any environment and are not a high maintenance breed," says Otto.

STORY BEHIND THE ORPINGTON

The Orpington breed originated in England, and was developed by William Cook, who is widely regarded as the 'Father of the Breed'. Some of the best available breeds were combined, including the Black Minorca, old Asiatic Langshan, and the Black Plymouth Rock. By crossing these breeds, the Black Orpington was first exhibited in 1886, where it became an overnight sensation.

Joseph Partington came along, admiring Cook's birds, and crossed Cook's black Orpingtons with Black Cochins and Black Langshans, producing birds with softer feathering that exhibition breeders preferred.

Partington exhibited these improved birds at the Dairy Show in 1891 and his version of the Orpington became hugely popular, attracting buyers from around the world and commanding premium prices.

The Buff Orpington also traces its origins to William Cook's breeding programme. Cook created the Buff Orpington by crossing Golden Spangled Hamburgs with Buff Cochins. The resulting cockerels were then crossed with Dark Dorking hens, and the female offspring were bred back to Buff Cochin males. This produced predominantly buff-coloured birds with the soft feathering of the Cochin.

Although these early crosses may have looked like mixed-breed birds, Cook had a clear breeding plan. He carefully selected Orpingtons with the desired blocky body shape, rich buff colouring, and large frame.

He unveiled the new variety at the Dairy Show in 1894, at a time when the public eagerly embraced new poultry breeds. Buff-coloured birds were especially fashionable, and Cook's decision to name the variety, the Buff Orpington, captured widespread attention and helped establish the breed's lasting popularity.

CHOOSING QUALITY BREEDING STOCK

According to Otto, there are several important points to consider when selecting breeding-quality Orpingtons.

An Orpington hen, showing perfect breeding traits.

- Type and shape: An Orpington should have a broad, rounded appearance with a full, well-balanced body and tail;
- Beak, legs and feet: The correct leg and beak colour depends on the variety, but birds should never have feathers on their legs or feet;
- Wings and tail: Carefully check for faults such as split wings or a wry tail, both of which are immediate disqualifications according to the breed standard;
- Eye colour: Eye colour also depends on the variety. For example, Buff Orpingtons should have orange to reddish-orange eyes, while Lavender Orpingtons should have dark brown eyes;

The Lavender Orpington of Izabella Otto, a highly sought-after chicken breed.

- Colour: Make sure Buff Orpingtons have no white feather leakage or excessive white flecking, known as 'peppering'. Always compare the bird with the official breed standard before making a purchase.

According to Otto, the biggest and most expensive lesson farming has taught her is to buy breeding stock from reputable breeders.

"Buy from breeders who are known for producing quality birds with strong bloodlines. Know your breeding standards, breeders, and make sure everything is 100% correct. Stay determined, and be patient. Success takes time, passion, and perseverance," says Otto.

LOOKING TO THE FUTURE

Otto also hopes that in five years she will have developed her Orpington bloodlines further. Currently, Otto owns a Buff Orpington rooster that she bought at the Orpington Club of South Africa (OCSA).

This rooster originates from the Nelmarie Neethling bloodlines. It won Best in Breed, Best Soft Feather, and Best Chicken on Show at the 2026 OCSA Show.

The aim is to keep the bloodlines as pure as possible using the two hens Otto bought with the rooster. The big goal is to breed successful show-standard Buff Orpingtons that can compete at any show.

"My advice to other young people who want to farm is that your best teacher is trial and error. If one year's chicks are not what you hoped for, invest in better genetics and improve your standard bit by bit. Even if it takes time, don't give up and always do your best," she says.

"Focus on the positive and keep going. Turn to experienced breeders for advice, and enjoy what you are doing. What makes me the proudest is seeing how far I have come."

Otto joined the South African Show Poultry Organisation, started competing at club shows, and had all her Orpingtons ringed.

Another great source of pride to her is her large Buff Orpington rooster, nicknamed Big Boy because of his impressive size. "Every morning I call him, and he comes running for a mealworm," she says.

Otto is clearly laying the foundation for a promising future in agriculture.

Journalist: Isabel van Tonder

Young farmer's passion for rare poultry takes flight

The unmistakable crow of roosters and the gentle clucking of hens signal the start of another busy day for 15-year-old Seth Biggs from Frankfort Farm in Cedarville, Eastern Cape.

What began as a fascination with unusual birds, has grown into a serious farming venture.

As a young boy of six-years-old, Biggs became interested in chickens when his dad brought home 10 Zulu chickens one day.

He fed and gave them water and watered them each day, put them away at night, and after a few years his mom decided to purchase a small flock of Easter Eggers – a breed of chicken that lay different-coloured eggs (predominantly blue and green).

Seth Biggs and his Barnevelder chickens. PHOTOS: SUPPLIED

INTEREST IN RARE BREEDS

He took over the small flock to start his own business and became interested in rare breeds.

"I became very interested in especially Wyandottes. I saved up for a few months by selling the eggs of my chickens so that I could purchase my first few Wyandottes. Ever since then, my love and passion for chickens has grown exponentially," says Biggs.

Being homeschooled makes juggling animal care and schoolwork much easier. As soon as he can get away from schoolwork, he is back in the coops spending time with the chickens,

doing coop maintenance, building dust baths, and trimming the grass and hedges in the free-range areas. His chosen breeds for his unusual chicken farming are Polish Bantams, Double Silver Laced Barnevelders, Wyandottes, and a Sanjak Longcrower.

CHOOSING DISTINCTIVE BREEDS

"Polish Bantams are very valuable, extremely docile (good for pets), and have a unique appearance due to their large prominent crests on top of their heads. They are hardy, making them suitable for colder areas. They are quite rare, so there is a good market for them and they sell very quickly.

"Double Silver Laced Barnevelders lay large, dark-brown and speckled eggs. They are one of the most breathtaking breeds due to their stunning double-laced plumage. This also makes them very valuable. Because they were originally bred in the Netherlands, they are very hardy and can handle any weather conditions," he adds.

"Wyandottes are one of my favourite breeds because it is a large dual-purpose breed that is great for egg production, and amazing, laced plumage that makes it sand out from other chicken breeds.

"They are great mothers, making them good for farm set-ups when you don't have access to an incubator, and they are very protective of their chicks. Because it is a rose-comb breed, it is less susceptible to frostbite, unlike most single-comb breeds.

"The Sanjak Longcrower is currently the rarest breed in the world. To this day, it has not been acknowledged as a recognised breed anywhere in the world due to its scarcity," says Biggs.

"I have submitted a standard to the SASPO [South African Show Poultry Organisation] that is awaiting approval in the hope of getting the breed recognised so that it can be seen on show benches in the 2027 season."

The breed originated in Serbia and has has one of the longest crows of any chicken breed,

1. The Double Silver Laced Barnevelder cockerel belonging to Seth Biggs.
2. A Chamois Polish Bantam cockerel, a scarce breed.
3. The Jubilee Orpington Bantam hen that won Best in Breed at two shows.

lasting up to about 30 seconds. It is a very large breed, with cocks weighing up to 5kg.

The Wyandotte is a large bird, with cocks weighing about 4kg and hens 3kg. It is a great layer and sitter.

It has striking plumage that makes it stand out amongst other breeds. It is docile and very cold-hardy, and because it is a rose-combed breed, it is less susceptible to frostbite.

Rhode Island Reds are a popular breed because they are one of the best layer breeds on the market. It has a deep, rich mahogany plumage and is also a very large breed. It comes in single- and rose-comb varieties, but the rose-comb variety is very rare and is hardly ever seen. It has clean, yellow shanks.

"Indian Game is a popular choice for meat breeding [what I plan to do with mine], but it is not the best layer. It is medium-framed, but packs a lot of meat on its carcass. Cocks sometimes weigh up to 4kg. It is a very 'beefy' bird. I plan to breed mine for slaughter but might start selecting them for show purposes.

"Easter Eggers are probably my most common breed. They lay a wide variety of egg colours: pink, blue, green, olive, khaki, plum, and even grey. I have a fairly large flock of about 50 hens, and I have started selecting them to be laced. So far, I have had a few successful laced birds hatch out, so in the near future I will be releasing my laced Easter Egger line," says Biggs. According to him, the biggest lessons farming has taught him is that you need patience, proper planning and research.

The colourful eggs of the Easter Egger hen.

BUILDING A FUTURE

"Without doing comprehensive research, you can make costly decisions, and without patience you often make irrational decisions that can be detrimental to your business. The plan is to study animal science in the future and major in genetics."

He also hopes to have grown his small poultry business into a much larger-scale farm, with other animals such as sheep, goats and cattle. By following his dream to be a farmer, Biggs will follow in the footsteps of his father and his grandfather.

He is very proud of the show results he has achieved so far. "I attended the Fred Keen Show at Tweedle Hall in April 2026 and received seven first places, one second place, one third place, two Best in Breed awards, two Reserve Best in Breeds, three Best in Variety, and one Reserve Best in Variety." His advice to other teenagers who want to start farming is to do research, ensure that you start off with the best quality that you can, and start with a breed that suits your needs and goals.

"Remember the wise words of my good friend, Aunty Isabelle Tillet: 'Do what you love, and what you love will grow'."

Journalist: Isabel van Tonder

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