

THE farmer's weekly

HOW TO GUIDE: POULTRY

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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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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

SOURCES

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- Current status and intervention of South Africa chicken production-A review - Article in World's Poultry Science Journal - January 2021
- Introduction to the South African Poultry Farming Industry
- Tips for small-scale poultry producers – *Farmer's Weekly*, 27 May 2022
- Profitable free-range chicken production in the Swartland – *Farmer's Weekly*, 12 August 2024
- Raising stress-free broilers – *Farmer's Weekly*, 29 October 2019
- The critical role of proper nutrition in pig and poultry production – *Farmer's Weekly*, 4 December 2024
- How to succeed with small-scale chicken farming – *Farmer's Weekly*, 16 September 2017



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



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

fertile eggs that hatch into either broilers (for meat production) or pullets (young hens that will later become commercial layers).

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.



Semi-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 chickens 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.



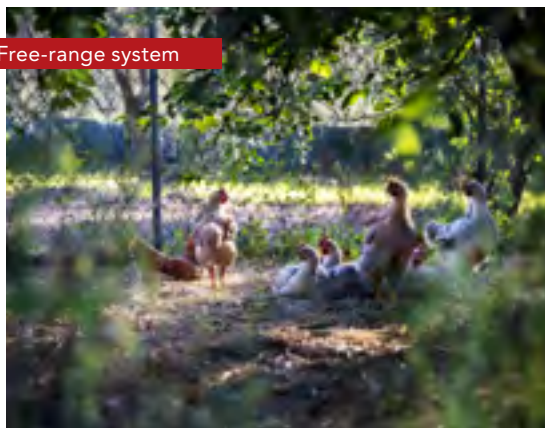
Free-range system

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.



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.

• 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



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

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 it 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.

• **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



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

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.

MyLife 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 MyLife and 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.

THE SERIES COVERS THE FOLLOWING:

- **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.

- Study online
- Learn at your own pace
- Practical farming knowledge
- Mobile-friendly learning
- Industry-relevant content

farmer's weekly
How to Guide



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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.

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

Fact or fiction?



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 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**
POULTRY MANAGEMENT TRAINING CENTRE

**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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POULTRY MANAGEMENT TRAINING CENTRE

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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
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- 2024 AFGRI-AF-Broiler-Manual
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- FIT- How to start a chicken farm
- Production guidelines for small-scale broiler
- Broiler vs Layers 31 October 2025
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- 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.

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.



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

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.

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



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

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



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

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



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 materials 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

BEFORE YOU START Bedding

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 lottershoffice@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

- Raising day-old chickens – *Farmer's Weekly*, 19 November 1999
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Boosting chicks' early development

CHICKEN HOUSE LAYOUT

OVERALL HOUSE LAYOUT

VENTILATION

Provide fresh air without draughts.
Remove moisture and gases.
Maintain oxygen levels.

GOOD HOUSE CONDITIONS

- Warm
- Dry
- Free of draughts
- Clean and disinfected
- Fresh, dry bedding

EVEN DISTRIBUTION

Place feeders and drinkers evenly in the ring so all chicks can easily access feed, water and warmth.

BEDDING

Keep bedding dry, clean and fluffy.
Moist bedding leads to chicks and disease.



EQUIPMENT CHECK

Check feeders, drinkers and heaters before chicks arrive.

PRE-HEAT THE HOUSE

Pre-heat for 24-48 hours before chicks arrive.
Temperatures must be correct and stable.

THE BROODER RING (ENLARGED VIEW)

HEAT SOURCE

Central heat source (e.g., brooding lamp) provides extra warmth.

BROODER RING DESIGN

Use cardboard, metal or plastic for construction.

REMOVE CORNERS

Make it circular (no corners) to prevent crowding and piling.

RIGHT RING SIZE

Adjust ring size daily as chicks grow.
Give them enough space to move.
But keep them close to the heat.

MONITOR MULTIPLE POINTS

Check temperature at chick level in several places to avoid hot and cold spots.



KEY POINT

The brooder ring creates a controlled environment where chicks stay warm, have easy access to feed and water, and are protected from draughts.

Good brooding in the first 7-14 days sets the foundation for a healthy, productive flock.

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.

BROODING Brooding Management

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.

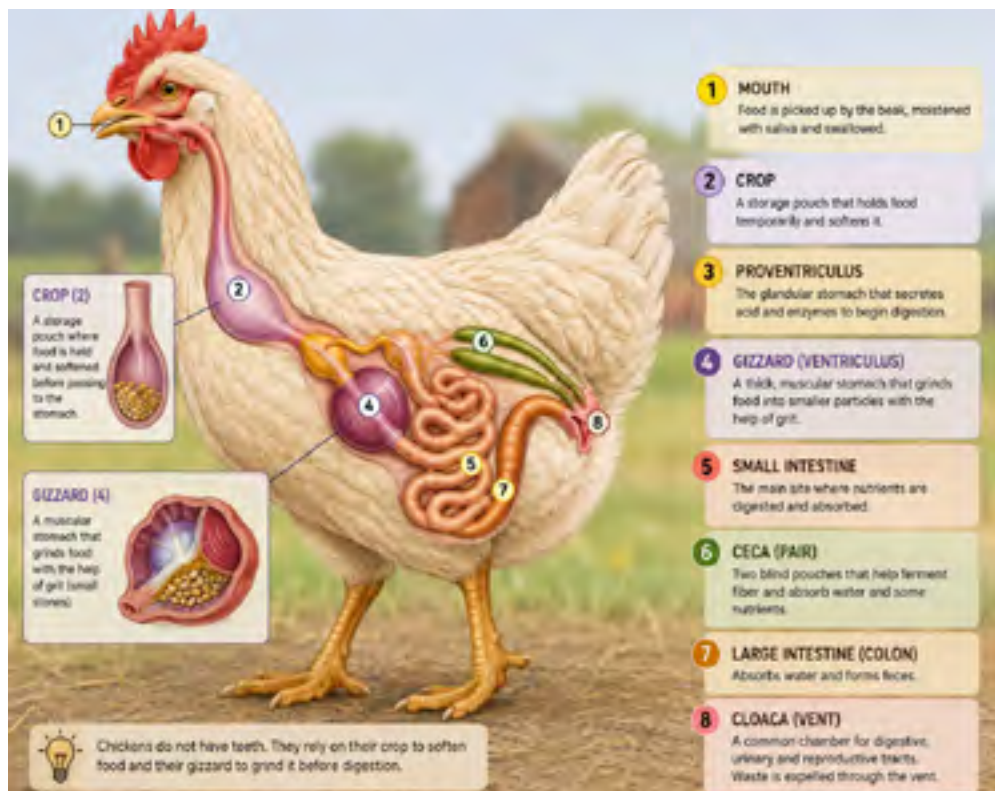
VENTILATION DURING BROODING

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.

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.

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

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.

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



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

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

BROODING Ventilation

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-

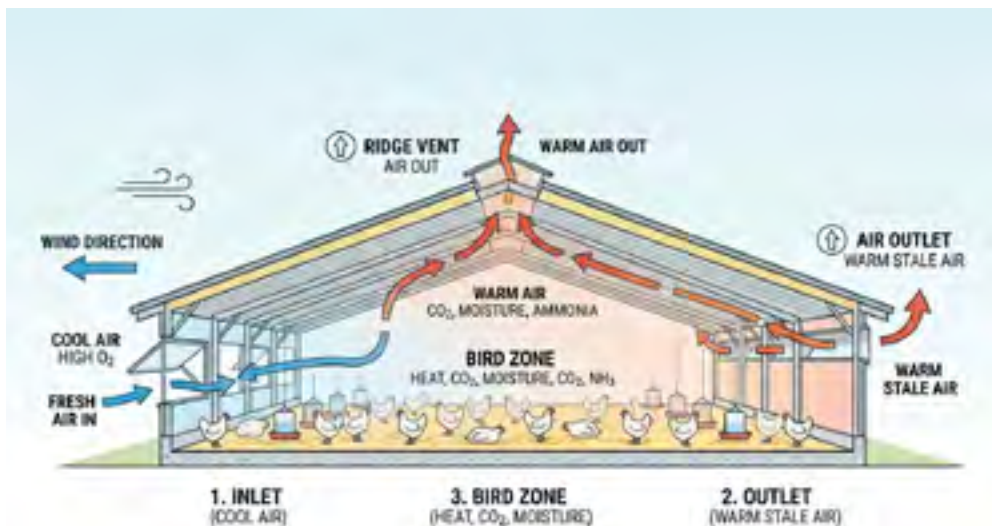
level ventilation openings. Walls should be fully insulated to prevent heat stress.

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_2S). 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 (CO₂) have no smell. Thus, relying on odour alone will not detect them; CO usually accompanies combustion fumes from faulty gas heaters, while CO₂ 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.



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