Small Scale Meat Chicken Production Guide



Written and compiled by Michael and Kathryn Sommerlad during their time of producing Sommerlad meat chickens at Tenterfield NSW.

DISCLAIMER

This document has been prepared by Michael and Kathryn Sommerlad, in good faith, to provide a basic production guide for small scale meat chicken production. While the information contained in this document has been formulated with all due care, the users of the document must also obtain their own advice and conduct their own investigations and assessments of any proposals they are considering, relevant to their own individual circumstances. Whilst the information is considered true and correct at the date of publication, changes in circumstances after the time of publication may impact on the accuracy of the information.

This production guide is complementary and additional to Australian health, agricultural, environmental, food and production regulatory requirements related to chicken meat production, including:

Food Standards Australia New Zealand (FSANZ) Model Code of Practice for the Welfare of Animals Domestic Poultry National Farm Biosecurity Manual Poultry Production Model Code of Practice for the Welfare of Animals Land Transport of Animals Model Code of Practice for the Welfare of Animals Livestock at Slaughtering Establishments Primary Production and Processing Standards (egg and poultry standard)

ABOUT THE AUTHORS

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Cover photo credit @ Mel Arnott

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Disease Prevention and Farm Bio-Security

A farm bio-security plan is a poultry producer's best line of defence against disease and can mean the difference between success and failure. Farm bio-security planning should come second only to processing, marketing, and distribution planning. As this is a production guide, the author presumes the farmer has already thoroughly researched these topics before commencing.

Australia has a national farm biosecurity website <u>www.farmbiosecurity.com.au</u> with resources for various industries, including poultry. The National Farm Biosecurity Manual for Chicken Growers is mainly focused on large-scale intensive production; however, it also covers free range production. As well as familiarising yourself with this website, please refer to the article 'Diseases Prevention and Poultry Farm Bio-Security' which can be found on Michael's Blog <u>https://poultryworks.blog/</u>

Also see Appendix A - a sample form to help manage visitors and farm biosecurity

100 Day Old Chicks

As meat chicks are often freighted in boxes of 100 this guide refers to brooding areas, shelters and forage areas that can accommodate 100 birds. Farmers can scale up or multiply according to their own requirements.

A Good Start

The first 24 hours and subsequent 7 days of the chick's life are the most important to set it up for a life of optimal health and welfare. Chicks must reach their brooder and have access to food and water as quickly as possible after hatch. Whilst transporting the chicks in your own vehicle, care must be taken to give them warmth, but also good ventilation, and keep them out of direct sunlight. Care should also be taken to avoid unnecessary handling and stress.

Record Keeping

Recording keeping gives a farmer the ability to measure, and therefore effectively manage production. Please see Appendix B 'Flock Records' for suggestions of some of the most relevant information a farmer can collect.

Choosing a Brooding Facility

Some farm out-buildings are suitable to be retrofitted for poultry brooding. The old shed pictured below has a bonus cement floor which allows a thorough clean and hosing out of the brooding area when required. Stable type doors have been added at either end, to allow cross ventilation and plenty of natural light.



Pictured below is a retrofitted shearing shed. The louver windows on the northern side are perfect for assisting with airflow, ventilation, and temperature control.



Depending on the building, the inside will most likely need to be reinforced all the way around the bottom with materials such as tin, ply wood and thick shade cloth to contain the litter, and the chickens, and prevent draughts and predators.

It would also be beneficial to add netting in any openings (e.g. stable door openings) to prevent the entry of predators and wild birds.



Farmers may also choose to build a custom-made facility, or brood inside their outdoor shelters.

Pictured below is the brooding set-up inside a portable shelter. Note that the internal walls have temporary lining to prevent draughts, and the solid floor is ready to receive a fresh layer of untreated softwood shavings.

Care must be taken in this sort of environment to ensure that there is sufficient ventilation, otherwise asphyxiation can occur due to the gas brooder consuming all the available oxygen.



Brooding Space

Over-crowding must be avoided at all costs. Chickens can quadruple their weight within their first two weeks of life, and allowance must be made to accommodate them for the whole brood.

With winter brooding, chickens should be provided with about 140 square cm of floor space, and for summer about 223 square cm for the first two weeks of brooding. Thereafter, allow about 450 square cm of floor space per chicken to four weeks of age. (2.2m x 2.2m for 100 chicks)

Age (weeks)	Feeder space (mm per bird)	Drinking space (mm per bird)
1-4	20	10
5-8	30	20
9 +	50	30

Circular feeders and drinkers: the length of space available to the chickens can be found by multiplying the diameter of the feeder or drinker by three.

Apart from feeders and drinkers, there should be no obstructions or debris left within the surround that will impede the chicks' freedom of movement to reach a comfortable zone of correct warmth.

Preparing the Brooding Facility

Thoroughly clean the brooding facility and equipment some days before the chickens arrive, so there is time for it to dry (and preferably receive sunlight for natural sanitisation). If a farmer wishes to apply sanitisation products, it must be remembered that thorough cleaning is absolutely essential prior to the application of these products, as it is not possible to sanitise organic material.

Cover the floor with clean, dry, non-dusty and absorbent litter material, e.g. untreated wood shavings, to a depth of approx. 75 mm. Rice hulls are also a suitable bedding material.

Two of the most important considerations are to provide the right temperature and prevent draughts.

Ventilation

Adequate ventilation (without draughts) is essential. Draughts are the scourge of baby chicks, and every effort should be made to prevent the entry of draughts into the brooding area. The brooding facility should not be air tight. Cross ventilation provides fresh air and regulates house temperature. It ensures the supply of sufficient oxygen and the removal of carbon dioxide, ammonia, and the accumulation of harmful carbon monoxide from gas heathers, moisture, dust, and odour. It also prevents and reduces the incidence of disease.

Setting up the Brooding Surround

The chickens must be enclosed in a round corner-less surround within a brooding facility. Surrounds should be wind-proof, easily moved, stable and chick proof. This is important to prevent chicks from smothering in corners and offers extra temperature and air-flow control inside the brooding facility. Brooder surrounds of around 50cm in height can be made from materials like pre-fabricated metal raised garden beds or AGbelt (also referred to as Poly Belt) pictured below.

Michael is pictured below setting up a brooding enclosure inside an insulated section of and old shearing shed.



Heating the brooding environment

We prefer to use gas hover brooders - the heat source is local, so chicks can move away to cooler areas and thus select for themselves a preferred temperature. They are efficient, and reduce the risk of power failure, but ventilation needs to be good, because of the output of carbon dioxide added to that given off by the chickens. Gas is the most efficient and economical for 200 or more chicks, particularly if a thermostat is fitted.

Optimal body temperature must be maintained by providing optimal environmental temperature. Remember, baby chicks cannot regulate their own body temperature until they are fully feathered – around 4 weeks of age. Floor temperature at chick placement is as important as air temperature, so pre-heating of the house is essential. Depending upon the outside temperature, light the brooder at least eight hours before the chicks arrive, so the necessary adjustments to temperature can be made.

Cycle of Air-Flow Created by Brooding

Diagrams below shows the cycle of warm air rising and cool air flowing down into the brooder area. In uninsulated buildings, particularly iron, cold air flows down the walls and fills the void created by the rising hot air from the brooder.



When cold fresh air enters the shed it drops. By having a gap between the brooder surround and the outer shed wall the air will have to warm slightly before coming into contact with chicks rather than be drawn directly across them.



Brooding Temperature

Day old chicks should have a brooding temperature of about 31^{0C} . The only true gauge of temperature is an accurate thermometer with the bulb at chick height. It should be placed next to the thermostat, in the area where feed and water are positioned.

This temperature can be reduced gradually by approximately 3^{0C} per week until the birds reach 3 to 5 weeks of age. The actual brooding period depends on when the birds are fully feathered and the season. Quite frequently, insufficient attention is paid to correct temperature reduction. Ideally the temperature should be reduced gradually, with a one-degree reduction daily, but most thermostats are marked in graduations of two degrees, and it may be necessary to reduce the temperature by two degrees every third day, until the desired 21^{0C} is obtained.

It is important to provide chickens with a cool area, so they can get away from the brooder. With hover-type brooders a warm area is provided under the actual brooder as well as a cool area outside the brooding area. Differences in temperature may be as great as 10^{0C} between the temperature directly under the centre of the hover and in an area away from the brooder. The brooder must be high enough that all the chicks can fit inside the circle of heat.

Brooder temperature is as important in the daytime as at night. Chickens need warmth periodically when they are running about, particularly during cold spells, to prevent them from packing together, as well as the cooler zone to retreat to when necessary.

The brooder must be able to maintain sufficient temperature, even in the coldest weather and insulated brooding areas provide a greater control of temperature.

'Sweating'

Chickens cannot sweat like a person, as they do not possess sweat glands on their skin. However, a condition known as "sweating "occurs when chicks have huddled together to maintain warmth, and moist air from the environment is trapped around the birds. Very quickly the birds become wet, from which stems the very real threat of chilling. Deaths from this cause may not occur for several days and may be continued over a long period, so that the real cause of losses is frequently not recognised. Those chicks which do survive are usually stunted, poorly feathered, or, at best, much slower in development.

Relative Humidity (RH)

Equipment such as spot brooders produce moisture as a by-product of combustion, and bell drinkers, which have open water surfaces, help to provide a RH usually over 50%. RH levels in the first three weeks should be 60-70%. Humidity measuring devices should also be sited at chick level. If it falls below 50% in the first week, the environment will be dry and dusty. The chicks will be beginning to dehydrate and be predisposed to respiratory problems. RH can be increased by carefully spraying the walls with a very fine mist, using a backpack portable sprayer or hand-held spray bottle. High RH (above 70%) from 18 days onwards can cause wet litter and its associated problems. As the chickens grow, ventilation and heating can control RH levels.

Interaction between Temperature and Relative Humidity

All animals lose heat to the environment by evaporation of water from the respiratory tract and through the skin. In higher RH environments, less evaporative loss occurs, increasing the animal's apparent temperature.

Observation

Observation of the chicks will always provide the best management tool. Illustrations 1 to 4 (Appendix C) show the chickens under different brooding conditions, and they can be used as a guide to the brooding management of the chicks.

Spend time with your birds, sitting or standing quietly, so that they forget you are there. By doing this, they will settle into normal behavioural activities, and, so long as you remain inconspicuous, they will show you their private world. The other advantage of this practice is that the birds soon get used to your presence, become quieter and more settled, and thus much easier to manage.

Prevention of Smothering

It is a good idea to provide baby chicks with constant, 24-hour lighting for the first day or two to encourage feeding and ensure a good start. After this time take care to ensure that the chicks are not drawn to a particular corner of their brood environment due to other light sources as this may lead to smothering. If this is unavoidable, try using a low output light in the brood area during the night. Use the two globes or new globes principal, to save a disaster when an old globe burns out. Bright light is important when they birds are very young to ensure they can find the feed and water, however, great care should be taken beyond this age to ensure that artificial lighting does not breach the certification guidelines of the property. Another risk of bright lighting is the potential to start feather pecking, which can lead to cannibalism.

Feathering

Fast and slow feathering is largely related to genetics. However, 'poor' feathering can sometimes be the result of poor brooding, as well as a poor amino acid profile in chick feed.

Humane Euthanasia of Chicks

There may be times when you will need to cull a chick who has a congenital or developmental malformation, or is generally unthrifty, or to alleviate the suffering of a sick or injured bird. The Australian poultry industry recognises cervical dislocation (breaking of the neck) as the most humane method of culling all classes and ages of chickens.

Litter Management

The two most important considerations for litter quality are stocking density and ventilation.

It is not necessary to remove bedding material after each batch of chicks. Aerate the bedding by stirring with a fork or rotary hoe and add a thin, fresh layer of wooding shaving on top. Resting the area for as long as possible with as much natural sunlight and air-flow as possible is always recommended. I have used a product called "Stalosan" in my litter to assist in maintaining litter quality and integrity. To date it has proved effective, however it should be used correctly as it is not a cheap product.

Litter management is very important and can have a number of benefits to the birds. Of greatest significance is the moisture content of the litter. Wet litter causes anaerobic fermentation to occur, producing ammonia. This in turn affects the respiratory tract of the fowl. Wet litter can also aid in the spread and perpetuation of the protozoan disease coccidiosis. Wet litter can also cause various diseases of the feet and skin and is certainly unpleasant for the birds. One the other hand, if the litter is powdery and dry the air in the brooding area will be filled with dust, once again affect the respiratory tract. This dust can also carry many air-borne diseases, aiding their spread. Well managed litter should be healthy, and this can generally be gauged by the smell. The litter should have an acceptable 'earthy' or 'compost' smell, and when squeezed into a ball in the hand, almost hold together. If it does hold together to form a ball it's too wet, if it won't even form a ball in your hand, it's too dry.

A point to remember, healthy litter can provide certain nutrients and beneficial microbes to the birds, and the birds should be encouraged to 'work' the litter by spreading small quantities of wholegrain on the litter at various times. This will encourage the birds to scratch through the litter, providing a

means of mechanical aeration and harvesting the beneficial agents described. Occasionally the farmer may also need to manually aerate the litter using a tool such as a garden fork, taking care to move gently through the flock. Mechanical devices such as rotary hoes can also be used in larger structures.

Feed and water during brooding

The following photo shows a brooding enclosure holding approximately 100-day-old chicks and shows how the extra feed is spread out on newspaper, so the chicks can literally "fall over it", this also helps prevent ingestion of litter. Small flat pans or trays can also be used for feed for the first week. Paper, like butchers' paper can be too slippery, and negatively affect the development of their soft legs.



Place feeders and mini-drinkers near the heat source and dip each chicken's beak in the water as it is placed in the brooder, to encourage it to drink. With large numbers, it will not be possible to do this with all of the chickens, but it is generally worthwhile dipping the beaks of 10% of the flock.

Feed and water should be presented like this for approximately 4 days until the chickens are big enough to eat from larger hanging feeders.

Large hanging feeders and waterers can be used for young chickens by placing them directly on the litter (or on top of a small block of timber to keep them slightly up out of the litter).

Check a sample of birds 8 and 24 hours after arrival on the farm to make sure they have found feed and water. Each chick's crop should be felt gently, in chicks that have found food and water the crop will be full, soft, and rounded. If the crop is full, but the original texture of the chick starter feed is still apparent, the bird has not yet consumed enough water. Target crop fill at 8 hours after delivery is 80% and at 24 hours 95-100%.

Keep fresh food and water in front of the chickens at all times, and clean and refill the feeders and drinkers regularly. When cleaning waterers be careful not to wet the litter (use a bucket to tip water into during the cleaning process and remove from the shed). Fresh wood shavings can be added to water spillages, as dry litter ensures droppings continue to dehydrate and impede the growth of

pathogens. Cleaning should be carried out at least twice daily until the chicks have grown sufficiently and the feeders and drinkers can be raised above the litter.

After three days, the newspaper can be removed, the feeders and drinkers moved further away from the heat source, and the surround gradually expanded, until it can be removed completely at around 7 days.

After the first week, the larger feeders and drinkers should be hung to reduce feed wastage and water dirtying and should be gradually raised as the birds grow. They should be checked for height daily and adjusted so that their base is level with the smallest chickens' back from 18 days onwards.

If you choose not to use the larger feeders and drinkers from the start, then they should be hung and introduced by slightly overflowing them to assist recognition and transition. The same colours would also assist instant recognition.

Thoroughly clean feeders and waterers after every batch and place in sunlight for natural sanitisation.

Feeding Protocol Throughout Lifetime of Birds

There are many types of feeding programmes, two of the most practical for the small producer are:

- Conventional (or phase feeding)
- Free-choice

In a conventional system, the birds are fed on a range of rations that change over the life of the bird. These are normally described as 'starter' (around 22% protein), 'grower' (around 18-20% protein) and 'finisher' (around 16-18% protein). These should be fed to the birds according to the manufacturer's recommendations. Chicks need to be transitioned to grower feed (i.e. offered a mixture of 'starter' and 'grower') at least one week prior to moving them outdoors.

With free-choice, the birds are given the opportunity to balance their nutrient intake according to their specific needs. There are many ways this can be achieved, but a simple process that I recommend is the following:

- Day old to 14 days: ad-lib access to 'chick starter' ration (good quality, 22% crude protein). Particle size should be no bigger than 2mm for first 3-4 days.
- 14 28 days: introduce whole grains to the birds. To begin with, start with a ratio of 3 starter hoppers to 1 grain hopper, and adjust as the birds feed intake changes. Whole grains must be cracked for the first 14 days of the chicks' life to ensure that the birds can effectively ingest the grain, which may prove to be too big in its whole form.
- 28 days onwards: provide starter and grain at a 1:1 ratio

Regardless of the system chosen, it is highly recommended that the chicks be provided with insoluble grit from day 4 to aid in digestion. My personal preference is "crusher dust" as it provides a range of grit sizes and includes some fine dust that can supply some minerals.

A mixture of whole grains is highly recommended to increase variety in the birds' diet. Barley and oats should not exceed 5% of the whole grain mix. Avoid legumes such as soy beans, as many of these require heat treatment prior to feeding to birds.



It is also advisable to introduce short pieces (less than 20mm in length) of fresh green grass to the chicks from day 4 so they are accustomed to grass when they are moved outdoors. This is particularly important if chicks are brooded indoors for extended periods in high country winters or extreme weather conditions. If green grass is a problem, try cabbages (whole cabbages are perfect; leaves are fine).



Inside or Outside?

Large outside feeders on skids are a good labour-saving option for the farmer. However, even when a farmer chooses to use them, it is still important to design shelters with enough room for some

hanging feeders, for times when the birds are awake but still locked in the shelter without access to the outside.



Picture of mobile paddock shelter set-up with hanging feeders and bell drinkers ready to receive chicks from brooding facility.

Outside feeders should be designed to protect the feed, and the chickens, from the weather, and to not attract wild bird usage. Large outside feeders are also a good anchorage point for shade cloth covered extensions that would help deter wild bird usage, and at the same time provide useful shade for the chickens (as well as aerial predator protection for chicks that are given access to outdoors very early).



Ad-Lib Feeding

Food should be made continually available to the birds, so they can remain on an upward plane of nutrition, resulting in a quality carcass at processing. Adequate feeding space should be provided to minimise competition (see table in the brooder space section of this guide). If birds have been allowed to run out of feed for a prolonged period they will be at risk of back scratching and carcass damage when the feed receptacles are re-filled. It would be better in this situation to run the feed out in a long line along the ground first and then proceed to fill the feed receptacles.



Feed Storage

Be sure to use fresh feed, do not accept feed that is older than 3 months. Small-scale family farmers who don't use enough feed to justify a silo should store feed in weather proof containers with secure lids. This will keep feed fresh, and avoid mice, rat, and wild bird infestation. Take measures against feed wastage in brooding and growing areas, and always maintain rodent bait stations (in dark, out-of-the-way places).





Example of a home-made rodent poison station that is safer for children and pet animals

RANGE REARING

Moving Outdoors

After approximately 3 weeks of age (depending on weather conditions), birds can be transferred from brooding facility to outdoor shelters to forage in areas safe from predators. Chicks that are brooded in outdoor shelters may be given access to forage areas earlier than 3 weeks, but this must be approached with caution. An appropriately sized area of the shelter must continue to provide a warmed brooding environment, free from draughts, with food and water, that chicks can return to, free from obstruction, at all times.



When the shelter provides a draught-free brooding environment, the brooder can be turned off during the warmth of the day. When the chicks are given access to the outdoors, and the shelter is opened only at one end, it is important to leave openings on both the north and south sides. This prevents birds finding themselves on a fully closed southern side, and not knowing how to get back in to the warm area.

Predation on the Range

Young chicks are very attractive to aerial predators during the day, particularly if the farmer allows them access to the outdoors prior to 3 weeks of age. One solution may be to strategically place a number of simple, low-to-the-ground shelters covered in shade cloth out on the range. The chicks can take cover under them quickly, without having to return all the way to the shelter.

Persistent Predation

Free range poultry producers commonly use electric fencing, guard animals and fox lights for securing their poultry against predators. If a farmer has used every means of protection he can, and predation cannot be resolved, then methods of predator control should specifically target the individual animal(s) causing the problem and should cause immediate unconsciousness and death. Poisons, leg-hold traps, or other methods that cause animals to suffer are not recommended and are largely prohibited by law.

Training newly transferred birds

Pictured below are birds being transferred into a small range shelter.



Newly transferred birds will benefit from being locked into their shelter for the first 12 to 24 hours, so they will become familiar with their new source of water, shelter, and feed, and return on the evening of their first day out without confusion. The shelter pictured above has a raised plastic slatting floor (see information on flooring systems) and removable skirts have been attached around the outside to prevent young birds from forming the habit of camping underneath. It also adds protection from draughts during winter.

PORTABLE SHELTERS

Design Principles

Rather than prescribing an exact shelter design, we have provided design principles. Each farmer has different environmental and climatic conditions, and different local resources. Coupled with the ingenuity of Aussie family farmers, and the plethora of low cost and ready-made materials available on the market, the options are numerous.

Compliance

All shelters, including portable shelters, must comply with **The Model Code of Practice for the Welfare of Animals - Domestic Poultry** clause 6.3 which states:

"The housing facilities must be designed to ensure adequate air-flow and temperature control at maximum stocking densities when birds cluster at night or during extreme weather conditions."

Engineering

Portable shelters must be strong enough to withstand extreme weather conditions, but they have the added complexity of needing to withstand the torsional stresses of being continually moved.



Security

Shelters with securable doors and flooring systems offer the farmer peace-of-mind regarding predator protection overnight. Even with electric fences and guard dogs in place, we still recommend locking birds into their shelter on dusk each evening and opening the doors first thing in the morning. When a farmer chooses to lock birds into their shelters at night, it's even more important to provide adequate space and ventilation.

Floor Space

Floor space is largely dependent on certification and welfare standards, we have always designed shelters with a floor space that will accommodate 10 birds per metre square at processing age (i.e. 25kg per metre square). Therefore, 100 birds would ultimately require a shelter with a $10m^2$ floor area (e.g. 2.5×4 metres). Farmers may choose to have a higher stocking density while the birds are small, with the intention of moving part of the flock onto an extra shelter when they are older and larger.

Flooring Systems

A birds' natural instinct is to get off the ground, i.e. 'roost' at night. Perches are not suitable for growing table birds though, and therefore, we recommend a flooring or bedding system that offers the bird raised roosting comfort and protects their growing keel bone and finished carcass quality.

Plastic Slatting

Plastic slatting can provide roosting comfort, as well as extra air-flow during hot weather. It keeps birds drier during wet weather and enables the excrement to fall through and the house to remain in the one place for longer. This system is particularly useful when, for example, a farmer needs to place the shelter in hilly terrain. There are ready-made modular slats specifically designed for heavy strains of poultry, or the farmer may want to make their own slatted flooring system using hard plastic materials.



Litter

Litter is a good flooring option but does add another tier of complexity to the design of a portable shelter. Picture below shows inside a portable shelter containing litter. An additional timber perimeter has been included to hold in the litter. This system only works well on reasonably level ground.



Litter provides comfort and carcass protection, so long as the litter is kept dry and friable, and this is greatly influenced by ventilation, stocking density and management. Please refer to the information on litter management in the brooding section.

Temperature control and protection from the elements

Shelters must be designed to maximize ventilation and air-movement, without exposing the birds to the negative effects of rain, sun, and draughts. The height and cross-ventilation of a shelter greatly improves temperature control during summer. It is the farmer's responsibility to ensure their shelters can withstand and protect birds during extreme weather conditions. Farmers who lives in cyclone and flood prone regions should consider a housing 'back-up plan' for when these extremes are predicted. All animal shelters should be oriented with openings facing to the north, with the ability to be closed and provide protection from the west, south and east, particularly in winter.

When extreme weather conditions are predicted, the farmer must carefully consider the positioning of the shelters on the farm, to avoid potential damage to the shelter, and subsequent harm to the birds. The farmer will also need to consider shelter positioning with regards to areas of their farm that become water-logged after rain events: whether they will be able to continue to access the birds, and how long it may be before the shelter can be moved again.

Even if the ground does become water-logged, it is never acceptable for birds to be left on wet flooring or litter. If this is coupled with wind exposure, mortalities are inevitable, and birds that do survive will have their health, and subsequent growth compromised.

Shape and Width

In very broad terms, a length to width ratio of 4:1 in a growing shelter allows optimal air-flow and ventilation management. This a guide only, and farmers should consider other factors including portability, material sizes and existing farm infrastructure.



The portable shelter pictured above has shutters that are fully adjustable for varying weather conditions. Netted frames on a winch system allow us to give the birds' instant access to outdoors and protect them from predators at night. They also allow us to keep the shutters open for air-flow on hot summer nights. The height allows comfort for the farmer, and when combined with cross-ventilation it provides improved temperature control during hot weather. It measures 9 x 3m and accommodates approx. 250 birds at processing age.

RANGE MANAGEMENT

A whole-farm plan

For many farmers, meat chickens are raised as an integral part of a regenerative 'whole-farm' plan. This includes carefully planning how many chickens, and other livestock, can be sustainably pastureraised on their farm, throughout seasonal variations common to the farmer's local environment. The farmer must continually observe, and respond, to the biological changes of their land. However, on very small holdings, nutrient levels have the potential to build to unacceptable levels, and the farmer may need to practice 'nutrient mining', also known as the principle of 'cut-and-carry'.

Fencing

Electric netting gives the producer the ability to change their fence to maximise the utilisation of pastures, by increasing stocking densities during times of vigorous pasture growth, and then decreasing the density in dry or cold times. It is a good choice as it is completely flexible and can be changed to suit the needs of the operation. The forage area stocking rate will also vary according to the type of country, and the grower's management practises; whether the flock is moved regularly or left in one area until processing age. As a guide, and working within the constraints of readily available materials, 2 x 50 metre rolls of ElectranetTM is enough to create a forage area for 100 chickens at a stocking density of $6.25m^2$ per bird or 1600 birds per hectare. We recommend working in straight lines, and using steel star posts at the corners, covered in poly pipe. When planning for

successive batches of chickens, efficiencies can be achieved through sharing electric netting boundaries, but some mathematical gymnastics is required.

Electric netting can act as a second line of defence; however, it is not recommended that a farmer use it as a primary defence against predators. If the farmer has the resources, it is well worth considering the time-saving benefits of permanently fencing forage areas, that can be used on a rotational basis.

Resting Forage Areas

If a shelter is left in one area until the flock reaches processing age it should be moved after depopulation, so the range area can rest, recover, and naturally sanitise. This respite from chickens allows the forage area to grass-over and allows some disease organisms to be killed by the action of the sun. Every new flock of birds should be given access to a fresh forage area with vegetation cover.

Access to shade

Shade is essential for the birds' welfare in the summer. Shelters should be designed to provide as much as possible, as well as being situated near trees wherever possible or shade structures.



Foraging Environments

Chickens will be drawn out away from shelters by the shade, protection, and forage environment shrubs provide. Newly planted trees and shrubs must be protected from foraging poultry and other livestock until they become established.



Photinia Robusta (pictured above) are a robust and relatively fast-growing shrub.

Timbered or forest environments provide an excellent forage environment for chickens, particularly during summer, and can provide nutrients and beneficial microbes to the birds. However, extra precautions may have to be taken against predators that can harbour in these areas.

Anti-Nutritionals

There are a number of possible food sources that can be either deliterious or even deadly to poultry. Included among these are certain plants, plant seeds and invertebrate animals. Growers should familiarise themselves with potential risk species in their local area.

Pasture Species for Poultry

The subject of appropriate pasture species is often contentious and always broad ranging, given that there are so many different farm types, particularly in regard to geography, soil type and climate. Every pastured poultry farmer should seek to provide their birds with as broad a range of grasses, legumes, and herbs as is possible, not only for the benefit of the birds, but also for the farm ecosystem in general. Key elements to consider when preparing pasture mixes include seasonality, habit, root type and depth (deep rooted perennials are very important) and palatability to other species.



PROCESSING

Selecting Birds for Processing

Weighing will always be the most accurate - work on a dressing percentage of 68%, for example a 2.5kg live weight is 2.5 x .68 = 1.7 kg dressed weight. It is important to handle a representative sample of birds and feel their breast and keel bone to ensure appropriate fleshing. Growers will find that they will become quite good at predicting the weight and confirmation of their birds over time.

Meat chickens may be grown to the particular dressed weight required by the customer/farmer, (however welfare should always be the producers' priority, and those strains of commercial broilers that gain weight quickly may suffer problems, such as walking difficulty, if grown beyond approx. 6 weeks of age).

Catching and Transportation Considerations

To ensure optimal animal welfare and carcass quality, it is very important to conduct catching and transportation of birds in a careful manner. Try to time catching so the birds are already in their shelter in dim light of dusk or dawn.

Remove or raise obstructions such as drinkers before beginning (feeders will have already been removed and wherever possible this should be no longer than 12 hours prior to slaughter).

Always move through the birds very slowly and try to catch them with a minimum of noise and activity, taking hold of both legs and minimising wing flapping. Birds that have been locked in their shelter to aid catching must be provided with adequate ventilation, and it is highly advisable to regularly stop catching, and carefully walk through the birds to prevent them packing-up and smothering.

Birds should be placed gently into the crates, not thrown in. Adjust bird numbers in crates to allow for differences in sizes and ambient temperature (approximately 7 to 9 birds per standard crate pictured below).



Manual whole-body catching is recommended where birds are carried upright in pairs. This method causes lower levels of stress hormones.

Try to avoid the use of box trailers if possible, as these tend to be very "bouncy", and can damage the birds. Remember that the birds can heat up very quickly when confined to a crate, so be careful to ensure that they are never left in the sunlight.

A barrier that provides protection from the wind should always be inserted at the front of the load, regardless of the weather conditions (e.g. plywood). During rainy weather, the load should be covered on top, but do not prevent ventilation on the sides. It is highly recommended that birds are not transported for more than 2 hours.

Quality Control at Processing

Many farmers rely heavily on contract processing facilities to take care of the last step – slaughter and packaging, and they don't always have the opportunity to influence animal welfare and carcass quality control, but this is greatly encouraged wherever possible.

Air-chilling will achieve the highest quality end product, but any extra time in a temperature reduction environment, where the birds can drain and rest before packaging, is beneficial. We recommend allowing a minimum 24 hours setting time before further processing, cooking, or freezing.



Carcass Assessment

The following Carcass Assessment form (see Appendix D), provides a guide to assessing carcass quality, and gaining a greater understanding of any carcass downgrades: whether they are the result of production practices, live transportation, or processing plant operation. It is a tool best used in conjunction with photographs and professional advice.

When the farmer believes their first flock of chickens has reached processing age, we recommend they process a small number of birds at home (approx. 3 birds in total, representative of small, medium, and large birds). It is also important to assess offal and feet.

We also recommend assessing the first batch of table birds after they have gone through the processing facility, and before packaging. However, if the farmer uses a processing facility that does not allow them access to birds at this point, they should open a sample of packaged birds and conduct the assessment before proceeding to distribute them.

Packaging and Distribution Regulations

Legal guidelines for packaging, labelling, and transporting processed chickens for sale are regulated by Food Safety Australia and New Zealand (FSANZ).

APPENDIX A

Insert name of farm Farm Biosecurity Protocols for Visitors

People can unintentionally carry diseases, pests, and weeds without even realising. Some poultry disease organisms can live on or in humans for up to a week – on our clothes, in our hair, ears, nasal passages etc. To limit the risk of visitors carrying new pests and diseases onto our property the following bio-security protocols apply:

- All visitors to the property should wear clean clothing and shoes that have not been in contact with any avian species and pigs or their housing and range areas.
- After entering property all vehicles should keep to main tracks and park near the homestead and report to management.
- All movement on the farm and contact with livestock is under management guidance.
- Only visitors who have had NO CONTACT with any avian species or pigs for a minimum of one week may enter poultry production areas and may only do so under management guidance.

Thank you for your understanding and co-operation. Upon arrival to our property you may be asked to acknowledge your understanding of these protocols and sign our visitor log.

Insert farmer's name and contact details

APPENDIX B

FLOCK RECORD

The following is a suggestion of relevant information the farmer can collect.

Farm/Business name:

Date:

Number of live chicks received:

Number of D.O.A:

BROODING

Mortality recording Feed recording (record when a new batch of feed of known weight is presented to the birds) Daily temperature and humidity recording Comments

RANGE REARING

Mortality recording Feed recording (record when a new batch of feed of known weight is presented to the birds) Weight recording (a representative sample at for example 4 and 7 weeks) Weather Comments

PROCESSING

Date of 1st processing: Number of chickens processed: Age in weeks: Dressed weight range: e.g. 1.4 to 2.0 Comments:

Information regarding 2nd processing (if applicable):

APPENDIX C

Illustration No. 1

Correct dispersion of chickens throughout brooding area when brooding temperature is appropriate



 \bigcirc

brooder

• brooding area



Illustration No. 2 The effect on chickens when the brooder is too cold



brooder

• brooding area

chickens



Illustration No. 3

The effect on chickens when the brooder is too hot



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chickens



brooding area



Illustration No. 4

The effect of draught on brooding chickens



chickens



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brooder

brooding area



APPENDIX D

Carcass Assessment

Date:

Age of bird

Live Weight:

Processed (dressed) weight:

Conformation: Does the carcass appear 'full in flesh' as opposed to emaciated with protruding bones?

Fat: Does the carcass have a deposit of fat inside the cavity opening?

Damage:	YES/NO	Cause:	RATING
Does the carcass have any of the following, and if so		Live production	1 to 10
please rate from 1 to 10 (with 1 being barely		Transportation	
noticeable to 10 being extremely noticeable):		Plant operation	
		Unknown	
Breast blister			
Bruises and haemorrhages			
Broken or dislocated wing/s			
Broken and/or dislocated legs			
Scabby hips and back scratches			
Torn skin			
Bruised wing tip/s			
Incomplete evisceration			
Excessive feathering left on carcass			
Foot pad lesions			
Offal discolouration or abnormalities			

Comments: