Introduction

Keeping chickens dates back over 5,000 years and they are one of the most common domesticated animals in the world. Chickens are kept for a variety of reasons including for their meat and eggs, for showing and sometimes as family pets. Regardless of the reasons that chicken are kept their health and production is important. When properly cared for with suitable housing, disease management and feed, free range hens on a lifestyle block can have higher egg production, therefore producing more eggs during their lifetime. This means more eggs for your money. This booklet will explain best management practices and how to get the most out of your of your flock.

For further information on flock management or Reliance poultry feeds please contact the CRT nutrition team on 0800 278 583.
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Egg</td>
<td>4–7</td>
</tr>
<tr>
<td>Egg Quality, Shell Quality</td>
<td>5</td>
</tr>
<tr>
<td>Yolk Colour</td>
<td>6</td>
</tr>
<tr>
<td>The Hen</td>
<td>8–9</td>
</tr>
<tr>
<td>Rearing Chicks and Pullets</td>
<td>8</td>
</tr>
<tr>
<td>When to replace the flock</td>
<td>9</td>
</tr>
<tr>
<td>Housing</td>
<td>10–11</td>
</tr>
<tr>
<td>Perches, Nests</td>
<td>10</td>
</tr>
<tr>
<td>Health</td>
<td>12–13</td>
</tr>
<tr>
<td>Coccidiosis, Worms, External Parasites</td>
<td>12</td>
</tr>
<tr>
<td>Vices</td>
<td>14</td>
</tr>
<tr>
<td>Egg Eating</td>
<td>14</td>
</tr>
<tr>
<td>Feather Pecking and Cannibalism</td>
<td>14</td>
</tr>
<tr>
<td>Broodiness</td>
<td>14</td>
</tr>
<tr>
<td>Feeding Hens</td>
<td>15</td>
</tr>
<tr>
<td>Poultry Nutrition</td>
<td>17–19</td>
</tr>
<tr>
<td>Energy and Protein</td>
<td>17</td>
</tr>
<tr>
<td>Vitamins and Minerals, Water</td>
<td>17</td>
</tr>
<tr>
<td>Grit, Green Feed and Scraps</td>
<td>18</td>
</tr>
<tr>
<td>Fixing Common Production Issues</td>
<td>20–21</td>
</tr>
<tr>
<td>Not Laying</td>
<td>20</td>
</tr>
<tr>
<td>Thin Shells and Cracked Eggs, Pale Yolks</td>
<td>21</td>
</tr>
<tr>
<td>Further Information</td>
<td>22</td>
</tr>
<tr>
<td>Reliance Poultry Feeds</td>
<td>23</td>
</tr>
<tr>
<td>Feed Specification Sheets</td>
<td>24–28</td>
</tr>
<tr>
<td>Chick Starter Crumbles</td>
<td>24</td>
</tr>
<tr>
<td>Pullet Grower Mash</td>
<td>25</td>
</tr>
<tr>
<td>Free Range Layer Mash / Layer Pellets</td>
<td>26</td>
</tr>
<tr>
<td>High Energy Layer Mash / Layer Pellets</td>
<td>27</td>
</tr>
<tr>
<td>Commercial Layer Pellets</td>
<td>28</td>
</tr>
<tr>
<td>CRT Directory</td>
<td>31</td>
</tr>
</tbody>
</table>
The Egg

The egg is one of the most complete, versatile foods available. It contains a wide range of essential amino acids, minerals and vitamins.

One egg has been estimated to provide the nutrients listed in Table 1.

Table 1: Nutrient levels that one egg of different sizes supplies (Source: Plant and Food Research)

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>One Standard Egg (size 6; 53g)</th>
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<tr>
<td>Energy (kJ)</td>
<td>300</td>
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<tr>
<td>Protein (g)</td>
<td>6.4</td>
</tr>
<tr>
<td>Fat (g)</td>
<td>5</td>
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<tr>
<td>Saturated Fat (g)</td>
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<tr>
<td>Cholesterol (mg)</td>
<td>209</td>
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<tr>
<td>Calcium (mg)</td>
<td>28</td>
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<tr>
<td>Phosphorus (mg)</td>
<td>101</td>
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<tr>
<td>Sodium (mg)</td>
<td>74</td>
</tr>
<tr>
<td>Potassium (mg)</td>
<td>74</td>
</tr>
<tr>
<td>Iodine (µg)</td>
<td>24.4</td>
</tr>
<tr>
<td>Selenium (µg)</td>
<td>12.2</td>
</tr>
<tr>
<td>Vitamin A (µg)</td>
<td>54</td>
</tr>
<tr>
<td>Vitamin B12 (µg)</td>
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</table>

The egg as illustrated below is made up of five main sections.

1. The shell – this consists mostly of calcium carbonate and contains 8000 minute holes through which gases and water vapour can pass.
2. The shell membrane – this is a barrier against bacteria
3. The albumen or egg white – this includes the chalazae which hold the yolk in place
4. Yolk – provides nutrients for the young chick
5. Germinal disc – this is a very small spot in the centre of the yolk surface where the chick develops in an egg fertilised for hatching

The egg is formed gradually over a period of about 25 hours so hens will produce only one egg per day.
**Egg Quality**

High quality eggs can be defined as those that are well formed with clean, un-cracked shells and yolk colour over 10 on the DSM yolk colour fan.

As soon as the egg is laid it starts to lose quality internally and the longer the storage time, the more the inside of an egg will deteriorate. A fresh egg will have a nice high albumen (egg white) when fried rather than spread across the pan like an older, stale egg. To maintain the freshness and internal quality of eggs they should be collected frequently and stored in the refrigerator. This is particularly important in the hot summer months. A well stored, refrigerated egg that is a week old can be as fresh as a day old egg stored at room temperature. A good test for freshness is to put the egg into a bowl or glass of water. If the egg sinks and lies on its side it is fresh but if it floats with the rounded end on the surface it is old and stale.

Care should be taken with how eggs are stored as they are porous and are prone to take on odours of food around them; store eggs away from strong smelling food.

**Shell Quality**

An egg has approximately 2.3g of calcium in the shell and a hen needs to consume around 4g of calcium per day to maintain good shell quality and replenish calcium lost from their bones. Providing a good quality feed with high levels of calcium (as well as phosphorus and vitamin D) is important for shell quality. Oyster shell grit provides additional calcium and can be fed for improved shell quality.

The egg shell should be dry, clean and free of any cracks. Egg size is related to shell quality; smaller eggs have stronger shells and larger eggs weaker shells. As hens get older their eggs get larger and as a result egg shell quality can decline. Weaker-shelled eggs will be more prone to cracking. Bacteria can also penetrate the shell and reduce egg quality, particularly when there are cracks.

The colour of the shell is determined by the genetics of chicken and does not affect the quality of the egg. As a general rule of thumb, white feathered hens lay white eggs and brown feathered hens lay brown eggs. This means that commercial hybrid breeds of hens in New Zealand can lay white, creamy coloured or brown coloured eggs. Other colours can occur such as blue-green which is laid by hens with Araucana genetics.
Yolk Colour

The colour of the yolk is due to substances called carotenoids which are found in a variety of ingredients. Carotenoids can be found in varying levels in a range of ingredients including:

- Maize
- Lucerne
- Green grass, clover or grass meal
- Carrots, tomatoes and capsicum
- Marigold petals

Yolk colour is dependent on the amount of carotenoids that the hen consumes so is influenced by type and amount of feed that the hen is given and eats. A high level of carotenoids will mean that yolks are a deep orange colour, while low levels of carotenoids will mean that yolks are pale yellow. Egg yolk colour can be measured on a fan that has a scale from one (pale yellow) to 15 (deep orange). Most people prefer their eggs to be higher than 10 on this scale.

Free ranging hens consuming a variety of ingredients can have variation in the colour of their yolks. Although orange yolks look good the nutritional value of the egg is not affected by the colour of the yolk, therefore a pale yolk is not nutritionally any different to a golden orange yolk.
For good production choose a breed that is a proven high egg producer. Both the Hyline and Shaver hybrid breeds are used for commercial egg production, and have been bred for this purpose. Kept under ideal conditions these breeds can produce over 300 eggs between 20 weeks to 80 weeks of age. These breeds also adapt well to free range systems, although their egg production will not be as high as intensively housed hens.

Rearing Chicks and Pullets

A chick is a young bird between hatching and six weeks. Young chicks need to be cared for in a suitable manner that will decrease mortality, as well as increase growth.

The following can be used as a guide for young chicks:

- **Buy chicks from a reputable source such as a commercial hatchery or recognised breeder.**
- **Before chicks arrive ensure the enclosure is clean and all litter is removed from any previous batch. Clean with a detergent and spray with a sanitiser approved for use with poultry. The goal is to minimise contamination of the environment by viruses, bacteria and parasites.**
- **Light the enclosure well so that chicks can easily find food and water when they first arrive.**
- **Provide a heat lamp suspended over the enclosure. Between day one and three keep chicks at around 35 to 36°C and gradually decrease down to 30°C by one week of age. At three weeks of age the temperature should be around 25°C. By five weeks of age when chicks are fully feathered they can handle lower temperatures.**
• Always provide enough room so chicks can move further away or closer to the heat source as needed. This will allow them to regulate their body temperature. Panting and drowsiness indicates overheating while huddling and loud chirping indicates chilling.
• Avoid large fluctuations in temperature and extremely high temperatures.
• Ensure that the enclosure is dry and draught free.
• Use clean, dry litter (for example untreated wood shavings).
• Provide a good quality chick starter feed with high levels of energy and protein, as well as balanced amino acids and vitamins and minerals. This is important for good growth and bone and feather development. Feed should be crumbled for easy intake and replaced regularly to maintain freshness.
• Monitor growth rates and compare these against recommended growth rates for the breed. This will ensure that good growth is maintained and pullets are the correct weight at point of lay.
• Provide an unlimited source of clean water. This should be at the correct height for chicks to access the water. Ensure that water does not spill onto the litter.

If it is not feasible to rear chicks then point of lay pullets can be purchased. For maximum egg production purchase these in spring.

At six to eight weeks the chick technically becomes a pullet. They should be provided with a suitable feed to continue frame development and ensure that they do not become overweight. Pullets should not be fed a layer feed as this can cause kidney issues and gout due to the high levels of calcium in these feeds. If desired a pre-lay diet can be fed from 16 weeks of age until around 18 weeks of age when pullets can be changed onto layer feed.

Providing the pullet has reached the proper body weight, then at 18 to 20 weeks they will reach point of lay and become a layer. At this stage hens need to be fed a layer diet for maximum production and good shell quality.

Egg production increases after 18 to 20 weeks until production peaks at around 28 weeks (depending on breed of hen). At this stage production can be as high as 85 to 90% provided the hens have proper nutrition, housing and disease management. This means that 85 to 90% of hens will produce an egg a day. Egg production occurs in clutches, with breaks in between clutches, so a hen's production will never be 100%. Production will decrease in winter as day length decreases.

**When to Replace the Flock**

To get the highest production from the flock it is best if the hens are replaced on a yearly basis. Hens in their second laying year will produce around 15 to 20% less than the first year. This will depend on the breed used.
Housing

It is important that the poultry housing provides protection against rain, direct sunlight and predators. Housing should be well ventilated to remove ammonia and gases, but free from wind and draughts.

To determine the required floor space of a hen house allocate around one square meter per three birds. This means that for 15 birds around 5m² of floor space is needed.

Birds require at least 16 hours of light to achieve maximum production. To continue higher production in the autumn and winter months where there are less daylight hours, it may be necessary to use lights in the poultry house. These should be installed so they are safe for birds and humans.

Perches

Hens have a natural tendency to perch at night and if perches are not provided hens will perch on feeders, drinkers or nests. It is important to provide perches as this helps to reduce stress and crowding on the floor. If no perches are provided then hens will crowd into a corner at night and after a while a cake of manure will form on the floor. This can cause the hen’s claws and feathers to get dirty and manure to be transferred to nest boxes and eggs. Providing perches will keep eggs cleaner and hens less stressed.

A mature hen will need 14cm of perch space and the perches positioned at a comfortable jumping height. This is around 60cm from the floor.

Nests

The amount of nesting space will depend on flock size. Provide one square meter of nesting space for six laying hens. Nest boxes should be approximately 30cm x 30cm x 35cm. Place straw, saw dust or another clean, soft material in the nest boxes at least 10cm deep.

Hens should be trained not to sleep in the nests as they excrete most of their manure at night and will dirty nest boxes. Training can be done by providing perches and closing the nest boxes at night. Reopen once birds are asleep and after a couple of weeks they should have formed a perching habit for sleeping. This will reduce the amount of manure in nests.
Health

Coccidiosis

This parasitic infection can lead to gut damage and in severe cases it can cause death in young birds. In most cases a sub-clinical infection will mean that birds do not get as much out of feed and growth rates are affected. Such flocks may have uneven weight gain and be underweight at point of lay meaning production can be affected. Beyond point of lay, hens will have generally developed immunity to coccidiosis.

Most chick starter and some pullet feed will contain a coccidiostat to reduce the risk of coccidiosis challenge to birds. If it doesn’t, or there is a greater than normal challenge to the flock, then additional coccidiostat may need to be provided. In this case please consult your local veterinarian as to which is the best product to use, the correct dosage rate and how best to treat the flock.

A feed with a coccidiostat should not be given to laying hens, particularly if they are laying eggs for human consumption.

Worms

Birds become infected with worms by picking up their eggs from litter, soil or faeces. Worms can cause reduced weight gain and a reduction in yolk colour, depending on how severe the infection is. Effective control is aimed at breaking the life cycle of the worm by limiting the stocking density on the land, using an anti-parasitic drug and removing contaminated soil and litter before chicks or pullets arrive. Worm burden can be identified by a veterinarian by examination of manure and they should be able to advise a suitable de-wormer for the flock.

External Parasites

Red mites can irritate birds leading to poor performance, reduced feed intake and lower production. Heavy infestations will make birds anaemic due to loss of blood. Treat housing with an approved insecticide before the birds arrive, paying careful attention to perches and nest boxes, particularly if they are made of wood. If red mites develop while birds are in the poultry house then talk to your local veterinarian about an insecticide that is safe to use with hens.
Vices

Egg Eating

Hens will naturally eat any broken egg shells but sometimes this can develop into a vice where hens peck and eat unbroken eggs. This is an issue as it can result in large losses of production, and reduce annual egg production of the flock.

Egg eating is not caused by a nutrient deficiency and it can be prevented by removing any broken shells regularly, placing decoy eggs in nests and collecting eggs regularly.

Feather Pecking and Cannibalism

Feather pecking is where feathers are pulled from one hen by another hen, and it is caused by overcrowding and boredom. To help stop feather pecking the birds should be kept occupied. This can be done by providing extra space for the hens to free range or scattering some wheat and pellets for hens to scratch around.

Once feather pecking has started it is difficult to stop and can develop into cannibalism if the problem is ignored. If not too traumatised or injured, the victim should be removed from the flock and cared for separately. Any hens showing signs of severe cannibalism, feather pecking or poor health should be culled humanely.

Broodiness

This is a natural maternal instinct of hens and is needed to incubate eggs, but it will also cause a reduction in production as the broody hen occupies a nest but does not produce eggs. If hens are allowed to sit on their entire clutch of eggs then they are more likely to go off the lay so collect eggs frequently to prevent this. Broody hens should be moved to a separate wire coop without a nest box and given feed and water. Without physical comfort the hen should stop being broody and in a couple of days can be returned to the flock.

Signs of broody hens are:
- Refusing to leave the nest box even at night
- Aggressiveness when approached
- Ruffling of feathers
- Making a clucking noise
Feeding Hens

Hens should be fed using proper poultry feeders. This will help ensure that hens do not spill and waste feed. Ensure that the feeder is big enough for the flock and there is enough feed for the flock every day. The average consumption of the free range flock is around 130g per bird, so for a 15 bird flock the total requirement would be around 2kg of feed per day.
Feed is one of the most important factors in the success of a laying flock. The essential nutrients that they need from feed are energy, protein (amino acids), minerals and vitamins. This should be formulated in the correct ratios to provide hens with their daily needs and to maximise egg production.

**Energy and Protein**

Hens eat to meet their energy requirements so it is important that energy and protein are balanced. In particular, it is important that the amino acids from protein are balanced to meet the hen’s requirements. Grains such as wheat contain high levels of energy, but are low in protein and important amino acids that are need for egg production and size. Flock production will not be as high on an un-balanced feed such as wheat, and birds may stop laying if a poor quality feed is fed for a long time.

**Vitamins and Minerals**

Vitamins and minerals are important for bird health, egg production and shell quality. In particular calcium, phosphorus and vitamin D are needed for shell and bone strength. Other vitamins and trace minerals are needed to maintain the health of the flock and help birds cope with stress. Reliance layer feeds contain quality ingredients formulated to provide sufficient energy and balanced amino acids, as well as vitamins and minerals for egg production and quality and bird health.

**Water**

Water is an essential nutrient for poultry. Birds should always have access to fresh, clean water as water intake and feed intake are directly related. When water intake is restricted then feed intake will drop and this will cause a reduction in egg production.

Water consumption depends on bird weight, level of production, diet, environmental temperature and the type of drinker used. On average, a healthy hen will consume twice as much water as feed, but this will increase as environmental temperatures increase. Always make sure that there is an unlimited supply of clean water available.
**Water continued**

If possible use suitable poultry drinkers as this will reduce water contamination, however, a water trough can be used as long as it is cleaned regularly and water is topped up daily. If the water trough is in an area where wild birds can access it then water may need to be sanitised to reduce the spread of disease. Water should be provided in containers that are stable and unable to be tipped over. Birds should never run out of water so in larger flocks make sure there are enough drinkers for the number of birds.

### Table 2:  Guide to minimum daily water intake of healthy birds
(Source: Hyline Performance Standards Manual)

<table>
<thead>
<tr>
<th>Age (weeks)</th>
<th>Minimum Litres/day (10 birds)</th>
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<tbody>
<tr>
<td>1</td>
<td>0.11</td>
</tr>
<tr>
<td>5</td>
<td>0.5</td>
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<tr>
<td>10-15*</td>
<td>1</td>
</tr>
<tr>
<td>16-20*</td>
<td>1.5</td>
</tr>
<tr>
<td>21-25*</td>
<td>2</td>
</tr>
<tr>
<td>over 25*</td>
<td>2</td>
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</tbody>
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*Higher environmental temperatures will increase water intake

**Grit**

Oyster shell grit can be fed as an extra source of calcium. Providing this in self feeders will allow the hens to choose if they need additional calcium. Reliance layer feeds contain enough calcium to meet hens’ requirements.

**Green Feed and Scraps**

Green feed and scraps can be a good source of vitamins and carotenoids, however, they can also be low in nutrients. If too much poor quality scraps and forage is fed then egg production is likely to suffer. Make sure that it only makes up a small percentage of the diet.
Fixing Common Production Issues

Below are common production issues that are experienced by free range flocks, and some ways to remedy them.

**Not Laying**

Check:

- **Water intake** – ensure that hens have sufficient water and it is fresh and palatable. Water intake will affect feed intake and therefore egg production.
- **Feed type and intake** – giving a poor quality feed that is low in energy and protein, and that contains unbalanced amino acids can cause hens to stop laying. Always provide a good quality layer feed and ensure that hens do not run out.
- **Stress level of hens** – stressing hens with loud noises, close proximity to dogs, rats and mice or overcrowding in the poultry house can cause them to go off the lay.
- **Hen weight** – overweight or thin hens can stop producing eggs, or have a delay in production at point of lay. Ensure pullets are fed the correct feed so they are at the right weight at point of lay, and make sure that layers have a quality layer feed while they are laying so they do not become thin.
- **Parasites** – lice, mites or worms can stress hens meaning they stop laying. Check for these parasites and treat accordingly.
- **Weather** – extreme cold weather can stress birds. Provide a balanced feed that is higher in nutrients, in particular energy, under cold conditions and ensure that hens have suitable housing to keep them warm.
**Thin Shells and Cracked Eggs**

Check:

- **Calcium and phosphorus levels in feed** – ensure that feed contains enough calcium, phosphorus and vitamin D to meet the daily nutritional requirements of the laying hen. In particular the calcium and phosphorus should be in the correct ratio for proper absorption. Calcium, phosphorus and vitamin D are needed for shell strength and quality as these minerals are essential for shell formation.

- **Environmental temperatures** – high temperatures can reduce feed intake so that the flock does not get their daily requirements of calcium and phosphorus for shell formation. Ensure that birds have access to cool water and shade. It is important that they are kept below 25°C and are not heat stressed.

- **Disease status of the flock** – disease such as Infectious Bronchitis (IB) can affect shell formation and cause eggs to be laid with thin shells that are more prone to cracking, or with no shell at all. This disease can also cause reduction in egg production, watery albumens and pale shells. Infectious Bronchitis is not a threat to human health, but contact a veterinarian about diagnosing and treating IB in the flock to minimise negative effects to production.

- **Egg size** – the hen will deposit the same amount of shell for a small egg as a large egg. This means that there is less shell to go around a larger egg and thin shells can result. Older birds will naturally lay larger eggs and have thinner shelled eggs, so an older flock with large, thin-shelled eggs may need to be replaced or moulted. Certain nutrients in the diet can cause large eggs - changing the diet should be the first place to start when eggs get too large.

- **Handling** – take care with collection that the eggs are not handled roughly.

**Pale Yolks**

Check:

- **Carotenoid levels in the diet** – ensure that hens are receiving green feed and there is yolk colourant in the layer feed. Low levels of carotenoids will cause pale yolks.

- **Feed intake** – ensure that birds are eating sufficient quantities of high quality layer feed and limit intake of forage. Forage is high in fibre so will reduce feed intake if fed in large quantities.

- **Internal parasites** – worms can cause a reduction in yolk colour so ensure that the flock is de-wormed before they start laying, and regularly thereafter.
Further Information

**Egg Producers Federation of New Zealand**
– www.eggfarmers.org.nz

**Hen Welfare**
– ‘Animal Welfare (layer hens) code of Welfare 2011’

**Information and management guide for the hyline breed**
– www.hyline.com

**Information and management guide for the shaver breed**
– www.isapoultry.com

**Commercial hatcheries supplying day old chicks and point of lay pullets**
*Golden Coast Commercial* – 0800 244 253 or (06) 366 1031
*Bromley Park Hatcheries* – (09) 236 7011
Reliance Poultry Feeds

What’s in Reliance Poultry Feeds?

1. **Quality ingredients** – Reliance poultry feeds contain quality ingredients that have been selected to provide a complete and balanced diet to hens. On-going testing and monitoring of these ingredients ensures that Reliance poultry feeds are consistent, high quality and meet their stated specifications.

2. **Quality protein sources** - Reliance poultry feeds contain quality protein sources such as soya bean meal and peas for high digestibility and to provide essential amino acids. Low quality protein sources such as palm kernel meal are not included in any Reliance poultry feed.

3. **Balanced amino acids** – Essential amino acids are needed as the building blocks of the egg. Reliance poultry feeds contain balanced amino acids for growth, weight maintenance and egg production.

4. **Yolk colourant** – Reliance poultry feeds contain a yolk colourant to maintain yolk colour when grass is limiting.

5. **Vitamins and Minerals** – Reliance poultry feed contains high levels of calcium, phosphorus and vitamin D to support good shell quality. High levels of additional vitamins and trace minerals are included for bird health, growth and flock production.
Feed Specification Sheets

Chick Starter Crumbles

RELIANCE CHICK STARTER CRUMBLES is specifically designed for chicks being reared as replacements for the layer flock.

RELIANCE CHICK STARTER CRUMBLES CONTAIN:
- High energy, protein and essential amino acids for good early growth
- Balanced amino acids for good weight gain
- Balanced calcium and phosphorus with added vitamin D for bone development and strength
- A wide range of vitamins, minerals and trace elements for chick health and development
- The coccidiostat, Avatec, to prevent coccidiosis
- Quality grain and protein sources

Feeding Recommendations

Provide an unlimited source of CHICK STARTER CRUMBLES to chicks in self-feeders and replace on a daily basis to ensure that feed remains fresh. After hatching, the crumbles can be scattered around the self-feeders on newspaper to encourage chicks to start consuming the feed.

Chicks should always be provided with an unlimited supply of clean, fresh water.

RELIANCE CHICK STARTER CRUMBLES contain the coccidiostat, Avatec, which is for the control and treatment of coccidiosis in young birds. Do not feed to hens laying eggs for human consumption. If feed is ingested by hens, eggs must be discarded for 14 days after last ingestion of feed.

Ingredients selected from


Typical Analysis (As fed basis)

<table>
<thead>
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<th>Amount</th>
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<tbody>
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<td>Salt (minimum)</td>
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CHICK STARTER CRUMBLES
Hatching to 8 weeks of age

HATCHING 2 4 6 8 10 12 14 16 18 POINT OF LAY
WEEKS
**Pullet Grower Mash**

RELIANCE PULLET GROWER MASH has been specifically designed for growing pullets.

**RELIANCE PULLET GROWER MASH CONTAINS:**
- Balanced energy, protein and amino acids for good growth, and to help prevent overweight pullets
- Balanced calcium and phosphorus with added vitamin D for bone development and strength
- A wide range of vitamins, minerals and trace elements for pullet health, and development
- Quality grain and protein sources

**Feeding Recommendations**

Provide an unlimited source of PULLET GROWER MASH to pullets in self-feeders and replace on a daily basis to ensure that feed remains fresh.

RELIANCE PULLET GROWER MASH should be kept fresh and mould free to ensure maximum benefits to pullets.

Pullets should be provided with an unlimited supply of clean, fresh water on a daily basis.

**Ingredients selected from**


**Typical Analysis (As fed basis)**

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<tr>
<td>Salt (minimum)</td>
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![Graph showing growth stages of pullets from hatching to point of lay](image-url)
**Free Range Layer Mash / Free Range Layer Pellets**

RELIANCE FREE RANGE LAYER PELLETS/MASH are complete feeds for free ranging hens.

RELIANCE FREE RANGE LAYER PELLETS/MASH CONTAIN:
- Balanced energy, protein and amino acids for good egg size and production.
- Balanced calcium and phosphorus for good egg shell quality and bone strength
- A wide range of vitamins, minerals and trace elements for flock health, and to support production
- Yolk colourant for golden yolks
- Quality grain and protein sources

**Feeding Recommendations**

Ensure hens have continuous access to FREE RANGE LAYER PELLETS/MASH on a daily basis and do not restrict feed consumption. Provide in self-feeders designed for poultry, rather than on the ground, to ensure that feed is continuously available.

Appropriate consumption of FREE RANGE LAYER PELLETS/MASH is 130 to 140 grams per bird per day for a mature, fully grown hen.

To ensure a balanced diet, FREE RANGE LAYER PELLETS/MASH should make up a large proportion of the hen’s daily diet. Other feed sources such as vegetable scraps, grains, pasture or hay may be fed, but only in small amounts.

Hens should have an unlimited source of clean, fresh water available at all times.

**Ingredients selected from**


**Typical Analysis (As fed basis)**

<table>
<thead>
<tr>
<th></th>
<th>FREE RANGE LAYER PELLETS</th>
<th>FREE RANGE LAYER PELLETS/MASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Fat (minimum)</td>
<td>1.5%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Fibre (maximum)</td>
<td>3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Salt (minimum)</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

FREE RANGE LAYER MASH AND PELLETS,
From point of lay
High Energy Layer Pellets / High Energy Layer Mash

RELANCE HIGH ENERGY LAYER PELLETS/MASH have been specifically designed for lifestylers that want more production from their hens.

RELANCE HIGH ENERGY LAYER PELLETS/MASH CONTAINS:
- Higher energy and protein than the Reliance Free Range Pellets or Mash
- Balanced energy, protein and amino acids for good egg size and production
- Balanced calcium and phosphorus for good egg shell quality and bone strength
- A wide range of vitamins, minerals and trace elements for flock health and to support production
- Yolk colourant for golden yolks
- Quality grain and protein sources

Feeding Recommendations

Ensure hens have continuous access to HIGH ENERGY LAYER PELLETS/MASH on a daily basis and do not restrict feed consumption. Provide in self-feeders designed for poultry, rather than on the ground, to ensure that feed is continuously available.

Appropriate consumption of HIGH ENERGY LAYER PELLETS/MASH is 125 to 130 grams per bird per day for a mature, fully grown hen.

To ensure a balanced diet, HIGH ENERGY LAYER PELLETS/MASH should make up a large proportion of the hen’s daily diet. Other feed sources such as vegetable scraps, grains, pasture or hay may be fed, but only in small amounts.

Hens should have an unlimited source of clean, fresh water available at all times.

Ingredients selected from

Barley, Canola, Copra, Grassmeal, Linseed, Lysine, Maize, Methionine, Minerals (including Dicalcium Phosphate and Limestone), Oats, Peas, Salt, Sodium Bicarbonate, Soyabean Meal, Soya Oil, Threonine, Vitamins, Wheat, Wheat by-products, Yolk colourant.

Typical Analysis (As fed basis)

<table>
<thead>
<tr>
<th>HIGH ENERGY LAYER PELLETS</th>
<th>HIGH ENERGY LAYER MASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>17%</td>
</tr>
<tr>
<td>Fat (minimum)</td>
<td>1.5%</td>
</tr>
<tr>
<td>Fibre (maximum)</td>
<td>3%</td>
</tr>
<tr>
<td>Salt (minimum)</td>
<td>0.2%</td>
</tr>
<tr>
<td>Protein</td>
<td>17%</td>
</tr>
<tr>
<td>Fat (minimum)</td>
<td>1.5%</td>
</tr>
<tr>
<td>Fibre (maximum)</td>
<td>3.5%</td>
</tr>
<tr>
<td>Salt (minimum)</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

HIGH ENERGY MASH AND PELLETS AND From point of lay

HATCHING 2 4 6 8 10 12 14 16 18 POINT OF LAY WEEKS
Commercial Layer Pellets

RELIANCE COMMERCIAL LAYER PELLETS are specially designed for free range commercial layer flocks.

RELIANCE COMMERCIAL LAYER PELLETS CONTAIN:

- Energy, protein and amino acids suited for free range commercial egg production
- Balanced amino acids for good egg size and production
- Balanced calcium and phosphorus for good shell quality and bone strength
- A wide range of vitamins, minerals and trace elements for flock health, and to support production
- Yolk colourant for golden yolk colour
- Quality grain and protein sources

Feeding Recommendations

Ensure hens have continuous access to RELIANCE COMMERCIAL LAYER PELLETS on a daily basis and do not restrict feed consumption. Provide in self feeders designed for poultry, rather than on the ground, to ensure that feed is continuously available.

Appropriate consumption of RELIANCE COMMERCIAL LAYER PELLETS is 120 to 125 grams per bird per day for a mature, fully grown hen.

RELIANCE COMMERCIAL LAYER PELLETS are a complete feed, which means they contain sufficient energy, protein and amino acids, as well as vitamins, minerals and trace elements to supply the hen’s daily nutrient requirements. Other feed sources such as vegetable scraps, grains, pasture or hay may be fed, but only in small amounts as this can reduce production.

For further support with feeding and managing free range commercial layer flocks please call CRT’s nutrition team on 0800 278 583.

Ingredients selected from

Barley, Canola, Copra, Grassmeal, Linseed, Lysine, Maize, Methionine, Minerals (including Dicalcium Phosphate and Limestone), Oats, Peas, Salt, Sodium Bicarbonate, Soyabean Meal, Soya Oil, Threonine, Vitamins, Wheat, Wheat by-products, Yolk Colourant.

Typical Analysis (As fed basis)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Fat (minimum)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>18%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Fibre (maximum)</td>
<td>3.5%</td>
<td>Salt (minimum)</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

COMMERCIAL LAYER PELLETS
From point of lay
Notes
# CRT Directory

## CRT Feed Mills
- CRT Feed Mill Rolleston, 9 Link Drive, Rolleston 03 347 3670
- CRT Feed Mill Winton, 339 Great North Road 03 236 6014

## CRT FeedBarn
- CRT FeedBarn, 144 West Coast Road, Christchurch 03 342 9245

## CRT FarmCentres
- MOTUEKA, 393 High Street 03 528 1100
- RICHMOND, 32 Main Road, Hope 03 543 9450
- BLENHEIM, Cnr Kinross & Redwood Streets 03 579 3150
- KAIKOURA, 70 Beach Road 03 319 5448
- WESTPORT, Cnr Fonblanque Street & The Esplanade 03 788 8340
- GREYMOUTH, 25 Herbert Street 03 768 5743
- HOKITIKA, 51 Fitzherbert Street 03 756 9069
- WHATAROA, 69 Scally Road 03 756 1040
- CULVERDEN, 70 Mountain View Road 03 315 8692
- AMBERLEY, 86 Carters Road 03 314 8340
- RANGIORA, 269 Flaxton Road 03 313 2299
- CHRISTCHURCH, 156 Waterloo Road, Hornby 03 344 4045
- DARFIELD, 40 South Terrace 03 318 7610
- LEESTON, 14 Station Street 03 324 8022
- ASHBURTON, 418 West Street 03 307 9140
- TEMUKA, 41 King Street 03 688 6655
- TIMARU, 32 North Street 03 687 9459
- FAIRLIE, Talbot Road 03 685 8586
- WAIMATE, 23 Shearman Street 03 689 8862
- KUROW, 34 Bledisloe Street 03 436 0917
- OAMARU, 33 Thames Street 03 433 1030
- RANFURLY, Charlemont Street East 03 444 1060
- ALEXANDRA, 1 Ngapara Street 03 440 2030
- DUNEDIN, 84 Cumberland Street 03 477 9040
- BALCLUTHA, Baxter Street 03 418 3322
- TAPANUI, 2 Station Road 03 203 0130
- GORE, Lyne Street 03 203 9510
- MOSSBURN, 31 Devon Street 03 248 4040
- OTAUTAU, 175 Main Street 03 225 8398
- WINTON, 15 Springford Street 03 236 6166
- INVERCARGILL, 97 Leet Street 03 211 1955

**CRT FarmCentres are open to everyone and we welcome you to shop at any of our stores South Island wide**