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Pig Nutrition Guide

Nutrition advice?
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Pigs – versatile, productive omnivores

Many small farmers will keep cattle or sheep but are wary of pigs, which in many ways are actually better suited to a small farm because they need less access to pasture and respond well to care and attention.

Pigs are considered intelligent, normally gentle animals that appeal to many people as pets, whilst being a highly productive meat producer and one of the most popular farmed species throughout the world. Pigs are thought to have been widely domesticated in China as early as about 5000 B.C. and in Europe by 1500 B.C.

Fun fact – the pig is the last of the 12 animals in the Chinese zodiac and is seen to represent fortune, honesty, happiness and virility.

The choice of heritage breeds is more limited in New Zealand than elsewhere, simply because only some breeds were imported before import restrictions were enforced – so they really need the support of small farmers to maintain genetic diversity. They are well suited to free ranging, less intensive situations and the meat products they produce are just reward for the effort devoted to them.

As opportunistic omnivores (they have evolved to eat meat and vegetables), pigs are flexible by nature and are amenable to changes in their circumstances – whether they are kept in intensive commercial units, free range commercial or extensive farming systems that allow freedom to wander and dig. Anyone who enjoys keeping animals and has the opportunity to keep pigs should consider these four-legged monogastric marvels.

The three prerequisites for successful pig ownership are:

- Keeping pigs well fed on a balanced diet.
- Providing shelter from the weather.
- Paying attention to their health and welfare.

Pig keeping options

Growing and then maintaining a pig as a pet is possibly the easiest route to pig keeping – better still, start with two from the same litter so they keep each other company (pigs grow better with a pen mate).

Kunekunes are popular as pets because of their size, temperament and appearance – albeit that beauty is in the eye of the beholder and they are not everybody's cup of tea.

Buying weaned piglets from a breeder and taking them through from weaning to finishing or market weights offers some commercial gain without the complexity of breeding. If starting out with two, one can be butchered slightly earlier for ham and pork and the other 6-8 weeks later for bacon. Much of the pig can be used to make food including sausages, bacon, gammon, ham, skin into pork scratchings and the blood into black pudding. Commercial producers may have biosecurity arrangements, which should be accommodated when choosing and collecting stock.

Farrow-to-wean operations focus on breeding and farrowing sows to produce weaners (young pigs that have been weaned and no longer require milk), which are sold to other breeders or finishers. This system can be attractive if you lack the facilities to finish a larger number of stock, or if conditions on your property limit the number of pigs you can keep. Sows are very responsive to good care and attention, especially at farrowing time, so this system will reward those with time, energy and natural (if not learnt) stock skills. A sow can produce more than 20 piglets in a litter but commercial breeders average 12-14 with a birth weight of 1-1.5kg, which demonstrates how amazingly productive pigs can be. Heritage breeds may be less prolific and well suited to the less experienced breeder. Whilst sows can be artificially inseminated, natural mating is typically favoured, which necessitates keeping or borrowing a boar. Boars can be aggressive and may require higher stock handling skills, especially if assisting during coupling.

Farrow-to-finish operations do not sell weaners but take them through to finish or sale at 6 or 7 months of age. More pigs are fed over a longer period, so this system requires more commitment and management but avoids the risk of having to sell weaners into a possibly over-supplied market when prices might be depressed.

Nutritional requirements

Good nutrition is fundamental to a pig's growth rate, reproductive success, health and longevity.

Pigs are opportunistic omnivores that have evolved to eat a wide range of feeds. They are classed as monogastric animals, which means that they have one stomach compartment – this is compared to ruminant animals that have four stomach compartments. Pigs digest feed very similarly to humans, with limited ability to extract nutrients from high fibre feeds such as pasture. Pigs can be competitive for feed when group housed and because concentrated feed can be eaten quickly, it is important that they are all given equal opportunity to eat their fair share.

Even though modern pig genotypes are considerably leaner than the genotypes of 20 years ago, the fundamental building blocks of nutrition remain unchanged. These are energy, protein (amino acids), vitamins and minerals and for optimum growth of any pig, it is important to ensure these are provided in balanced amounts. The fibre content of feed can be an important indicator to feed value and intake potential – fibrous feeds are filling and may be less digestible – and in addition, palatability can help to drive or deter intakes. The old adage of "eating like a pig" is no longer entirely true, since pigs are actually quite fussy. To provide some perspective, a modern (weaned) pig of 25kg is able to grow to 100kg in about 6 months and it takes a (large) human at least 20 years to get to that weight. Intensive producers are able to achieve a very efficient feed conversion of 3kg of feed to produce 1kg of liveweight.

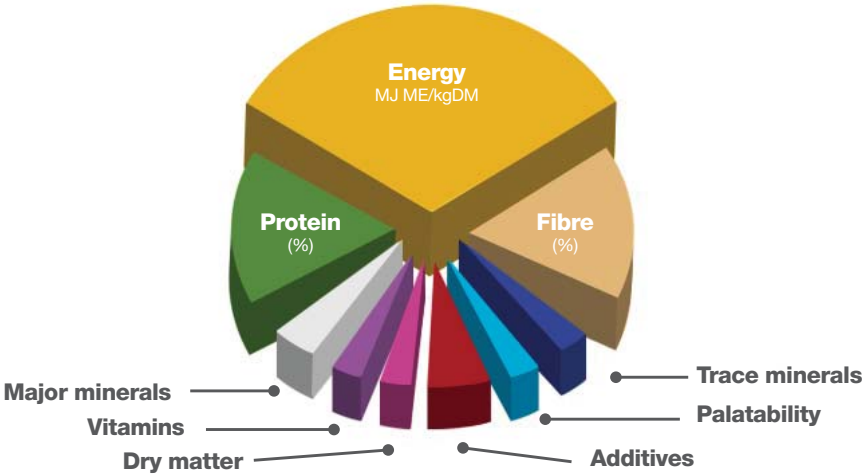
Nutritional requirements

The nutritional demands of the pig are therefore enormous compared to humans and this poses unique challenges during growth from weaning to slaughter.

Personal preference for different breeds of pigs and difference in objective when choosing pigs for your property means that across New Zealand there is considerable variation in pig genetics. As genetics play an important role in how a pig uses the nutrients contained in the feed it consumes, it is important to know what stock you have and how they should be fed.

Animals require energy for maintenance, which includes the needs of all body functions and moderate activity associated with living. Energy is the fuel that drives all biochemical processes in the body. When there is an abundance of energy, growth accelerates to the rate permitted by the availability of the other limiting nutrients and the genetic potential of the animal. Any energy consumed above these needs will be stored in the body as fat. In cold conditions pigs will increase heat production to keep warm and require more feed. Pigs do not enjoy the same quality of coat enjoyed by cattle and sheep and respond well to bedding, group housing and freedom from draughts, which reduces the need to increase heat production to keep warm. Conversely, feed intake will reduce if pigs are too warm and expend energy trying to keep cool and may benefit from a wallow in cool mud.

Key components of the diet



Often there is no profit in simply maintaining animals. Energy intake is typically the first limiting factor for the growth of animals or the level of milk production for lactating sows. The energy required for maintenance is like a tax that has to be paid every day – generally with growing animals, the faster they grow the more cost effective the gains become, so commercial pig producers aim for high liveweight gains close to the biological limit of the animals.

Within physiological limits, growing and finishing pigs will compensate for decreases or increases in the energy density of the diet by increasing or decreasing their feed intake. For sows, feed intake is restricted during gestation and increases during lactation with each farrowing, number of piglets nursed and the lactation length. Sows can have large litters rather than just one or two young at a time and will milk off their backs – they will lose weight to support milk production for their offspring but excessive loss of weight when piglets are still on the sow will affect fertility. If they are to get back into pig it is preferable they do not lose too much condition when lactating, which they will have to try to recover whilst pregnant.

A sow's intake when lactating can be reduced by too much weight gain during pregnancy. Energy intake is determined by the digestible energy density of the feed and the level of intake. The digestible energy of a feed is the total amount of energy it contains less the amount that is not digested and excreted in the faeces. The amount of carbohydrate (especially starch and sugar), protein and fat can help to lift the digestible energy levels in the pig's diet, whereas fibre tends to reduce the energy available to pigs. High fibre feeds, e.g. soy hulls and forages, will decrease the energy a pig can absorb and

Key components of the diet

may depress intake because of excessive bulk or reduced palatability. A lack of fibre can cause constipation, e.g. if feeding too much white bread. NRM pig feeds contain enzymes that help improve the digestibility of key fractions, which help feed conversion and growth rates.

Protein and in particular lysine is typically the second limiting factor for the growth of animals or the level of milk production in lactating sows. A balanced intake of amino acids is required for the growth of muscles and organs and the production of enzymes and hormones. For animal feeds we normally refer to crude protein, which is determined by a laboratory test to measure the nitrogen content multiplied by 6.25. For pigs, whilst the level of protein in their diet is important, the composition of that protein in terms of essential amino acids (the building blocks from which protein is made) for maintenance, growth and milk production is critical. The amino acid requirements of growing-finishing pigs is influenced by their genetic capacity to deposit body protein, i.e. muscle. Modern, lean breeds of pigs have a greater predisposition to keep accumulating muscle than heritage breeds of pigs that will tend to deposit fat sooner. Within the heritage breeds, some were favoured more for finishing lighter for pork and some taken to bigger weights as bacon pigs.

Lactating sows with large litters tend to produce more milk and lose less weight when fed higher dietary levels of lysine and other essential amino acids. Boars benefit from adequate protein during their development but when working do not have a high amino acid requirement and daily feed intake may need to be limited to avoid excess weight gain as they get older. NRM is able to make pig feeds that

consistently provide a balanced supply of the amino acids required by pigs.

Protein consists of combinations of amino acids and, for the growing pig, the most important function of these is their role in lean meat gain. Cereal grains are a good source of energy and contain some protein but are typically too low in protein to be used alone. Protein is a comparatively expensive component in a diet but it can be false economy to feed too little. If a diet that is deficient in protein or a specific amino acid is fed to growing pigs, these animals will eat extra feed to try and eat sufficient amounts of protein or the deficient amino acid to support weight gain. This means the pig will in all likelihood eat too much energy and consequently, become very fat.

An overfat pig can be easy to produce if feeding high fat feed such as waste milk. In contrast, if the diet is low in energy, the pig may not have sufficient energy to grow at its optimum rate. In such circumstances, feeding what appears to be a relatively cheap diet can turn out to be costly, as the amount of feed required per unit of body weight gain increases. Younger piglets require a higher protein diet (16-17%), whereas finishing pigs and maintenance diets for sows can be lower (13-14%). The faster a pig grows and reaches its required slaughter weight, the less money and time is needed to feed and care for it. Giving weaners a ready-made ration will help get them off to a good start and they will be less susceptible to diarrhoea during the first weeks after weaning. If cheaper feeds are to be introduced, it should be after 3-4 weeks.

Collecting, preparing and feeding waste feeds can be time consuming and less rewarding than expected if they impact on feed conversion efficiency. Spoilage organisms do not flourish on dry feeds, which should be stored in dry, vermin-free conditions. Extra care may be necessary when feeding and storing moist feeds as they can support mould growth, which can produce mycotoxins that can be detrimental to both the health and performance of pigs.

Feeding a balanced diet to growing pigs from weaning through to slaughter not only ensures that pigs grow rapidly but helps to ensure that the carcass composition and meat quality is desirable, while the added vitamins and minerals contained in a balanced feed help to ensure that animals remain healthy throughout the growing phase. Sudden changes in the diet, too much undiluted milk or too much fat in the diet can cause diarrhoea. The killing out percentage for commercial pigs is about 72-74%, with the percentage of usable meat around 64% of the animal's liveweight, with prime cuts about 48% of the liveweight.

Pigs have a dietary requirement for major minerals that are required in grams per animal per day – including calcium, magnesium, phosphorus, potassium, sodium. More is not always better and excessive intake of one mineral can affect the availability of another. Minor or trace minerals required at mg per day rates include cobalt, copper, iodine, iron, manganese, selenium and zinc.

Mineral and trace elements for pigs

Mineral	Function	Symptom if deficient	Comments
Calcium	Found in bones and teeth but also enables nerves and muscles to function.	Rickets in young animals and osteomalacia (softening of bones) in adults. Growth retardation and reduced fertility.	Young growing animals and sows in late gestation and lactation are most susceptible to a deficiency. Cereal grains contain little calcium relative to the needs of growing and lactating pigs.
Magnesium	In enzymes and nervous system (transmits nerve impulses) throughout the body.	Hyperirritability, muscular twitching, reluctance to stand, weak pasterns, loss of equilibrium and tetany (muscular spasms) followed by death.	Efficient recycling means that a magnesium deficiency in pigs is rare. Young suckling pigs can suffer as the milk may not supply all their needs.
Phosphorous	Essential in the formation of bones, found in red blood cells, muscle and nerve tissues.	Unthrifty, bone structure abnormalities, fractures, enlargement of joints and stilted gait. Reproductive failure.	Phosphorus concentration in forages declines with maturity.
Sodium	Maintains fluid and ion balance in body.	Reduced water consumption, reduced feed conversion and weight gain. Poor coat.	Pigs can tolerate high intakes of salt provided they have access to non-saline drinking water.
Iron	A key component of proteins involved in oxygen transport and enzymes.	Rough coat, wrinkled skin when chronically deficient. If acutely lacking, laboured breathing and low resistance to disease.	Deficiency is common in piglets because sow's milk is low in iron, newborns have low stores and high growth rates and are often given an iron injection within several days of birth.
Manganese	Essential for the functioning of the brain and nervous system.	Reduced fat and carbohydrate metabolism, lameness, crooked and shortened legs and enlarged hocks. Poor milk production.	Least toxic of the trace elements.

Mineral	Function	Symptom if deficient	Comments
Sulphur	A key component of amino acids and found in every cell of the body.	Reduced performance and reproductive performance may be affected.	Slow growth as there are not enough sulphur amino acids for the requirement for protein synthesis.
Copper	Involved in many different enzyme systems as a catalyst.	Anaemia and abnormal appetite, bowing legs and spontaneous fractures, ataxia (abnormal gait due to lack of muscle control) in young pigs.	Dietary copper can have growth-stimulating effects for pigs but has been associated with high fecal copper excretions.
Iodine	Essential for thyroxin production, which controls metabolism.	Reproductive failure, enlarged thyroid gland, weak, dead or hairless newborns.	>800ppm depresses growth rate, feed intake and haemoglobin level.
Selenium	Anti-oxidant system in all active body tissues.	Weak muscles (Mulberry heart disease), liver necrosis, low sperm motility and low litter size.	Excess selenium is toxic (associated with appetite loss and hair loss), so avoid supplementing by several routes at the same time.
Zinc	Needed in enzyme and immune systems throughout the body and keratinous tissues.	Dry skin, coarse hair, reduced conception rates, increased incidence of small and abnormal pigs in litters.	Excess zinc in the diet has been associated with feed refusal rather than toxic effects.

Vitamins

Vitamins are organic compounds that are distinct from amino acids, carbohydrates and lipids and are required in minute amounts for normal growth and reproduction.

Vitamins are often ignored and yet can be critical to the wellbeing and performance of every animal. To help meet the known deficiencies of vitamins in pig diets, vitamin pre-mixes have been developed for addition to compound feeds.

Vitamin	Function	Comments
Fat soluble vitamins		
A	Vision, reproduction, mucous secretions and possibly gene expression.	Vitamin A deficiency results in reduced weight gains, incoordination and blindness.
D	Essential in calcium and phosphorus metabolism – known as the “sunshine” vitamin or the “anti-rickets” vitamin.	Housed animals have a higher dietary requirement because sunlight may be inadequate. Effective UV sunlight levels are variable with the time of year, geographical location, skin/coat colour and coat density.
E	It is critical as an anti-oxidant with a key function in fertility and disease resistance. Newborns are highly susceptible to a deficiency, which may appear as heart failure, stiff or weak piglets and stillborns.	Works closely with selenium. Stress, exercise, infection and tissue trauma increase requirements.
K	Essential for the formation of a blood clot, required for bone calcification and mineralisation.	Increased litter size and rate of gain can increase need. Some mycotoxins can induce deficiency.
Biotin	Involved in energy release, bone development and reproduction. A key vitamin for healthy skin and the production of hair and hooves.	Scaly skin, sole lesions and lameness, poor reproduction and fertility linked to deficiency.
Choline	A component of most cells and essential for building and maintaining cell structure.	Poor growth rate, fatty liver, poor fertility and spraddled hind legs associated with a deficiency.
Folic acid	Has a role in the break down and building up of some amino acids and the formation of haem in red blood cells.	A deficiency can be associated with diarrhoea, reduced growth rates and fertility problems in terms of embryo survival.

Vitamin	Function	Comments
Water soluble vitamins		
Pantothenic acid	Essential role in energy metabolism and stimulates the synthesis of antibodies and maintenance of normal blood sugar.	Piglets may have decreased sucking reflex in the early days of life if deficient. Poor skin condition, scurf and thin hair particularly around the shoulders and behind the ears may appear in adults.
Riboflavin (B2)	Promotes growth, food conversion, fertility and improves skin and coat condition. Contributes to improved eyesight.	A deficiency may cause cataracts, light sensitivity and eye lens opacity. Piglets may die at birth or within 48 hours.
Thiamin (B1)	Primarily involved in releasing energy from carbohydrates and fat but also involved in the activity of the nervous system.	Anorexia and weight loss can be triggered by a deficiency.
B6	Essential for energy production and immune system integrity.	Milk yield and offspring viability can be reduced if deficient.
B12	Considered the largest, most potent and most complex of all vitamins, which is essential to basic metabolic functions.	Deficiency associated with uncoordinated hind leg movement and increased excitability. Litter size and pig survival rates may be reduced.

Drinking water

Pigs must be provided at all times with an adequate daily supply of drinking water that is palatable, not harmful to their health and at a temperature that does not inhibit drinking (Animal Welfare – Pigs – Code of Welfare 2010 minimum standards). Pig meat contains approximately 75% water and pigs usually consume 2 to 3kg of water for every kg of dry feed consumed. If water is not readily available to pigs, feed intake and subsequent gains will be reduced. Pigs can tolerate high dietary intakes of salt provided they have access to ample non-saline water but if water is not freely available toxicity can result, which can be deadly. Nipple drinkers are preferable to troughs as the water will always be clean.

Approximate guide to the daily water requirements for various classes of pigs at normal ambient temperature:

Class of pig	Daily water requirements (litres)
Pigs up to 10kg	1.2 – 1.5
Pigs from 11 – 25kg	2.3 – 2.5
Pigs from 26 – 50kg	3 – 5
Pigs from 51 – 120kg	6 – 8
Boars	5 – 10
Replacement gilts	5 – 8
Pregnant sow or gilt	5 – 10
Lactating sow	15 – 50

Feeding recommendations for compound feeds

Compound feeds should be formulated by a nutritionist who understands the specific nutritional requirements of pigs to ensure a balanced diet that supports health and productivity. The NRM pig range comprises Big Pig Nuts (which are larger than a typical pellet and designed for slow growing or mature pigs) and Little Pig Tucker Pellets (which have higher protein for rapidly growing young pigs and high producing lactating sows).

NRM Little Pig Tucker Pellets

NRM Little Pig Tucker Pellets are formulated with high quality ingredients to provide balanced protein and energy for lean growth in young pigs and milk production in lactating sows.

As NRM Little Pig Tucker Pellets are a complete feed, the provision of other supplements should be limited as this may reduce growth rates.

BALANCED HIGH QUALITY NUTRIENT DENSE

Feeding recommendation

Piglets: Creep feed with NRM Little Pig Tucker Pellets while providing sows milk or milk replacer until 7-8 weeks of age.

Growing pigs: Feed ad-lib for maximum growth. Some feed restriction may be necessary at older ages to minimise fat deposition.

Lactating sows: Feed from 5kg at farrowing building up to 8-9kg per sow per day depending on body weight, litter size and environmental temperature.

Kunekune pigs

Lactating sows: Feed 1.5 to 2kg plus 0.25kg per piglet per day while allowing access to pasture or other fibre.

For growing pigs up to 4 months of age: Feed up to 0.5kg per pig per day depending on required weight gain and pasture quality and availability.

Ensure access to fresh, clean water at all times.

Ingredients

Grain and grain by-products, plant proteins, vegetable oils, enzymes, amino acids, limestone, mono or di-calcium phosphate, salt, mould inhibitor, vitamins and trace minerals, animal fats and organic acids.

Typical analysis

Crude Protein	17%

(Approximate on an as fed basis)

NRM Big Pig Nuts

NRM Big Pig Nuts are formulated to meet the nutritional needs of growing pigs from 65kg or 15 weeks of age. They are also suitable for feeding to dry sows and boars where limited weight gain is required.

NRM Big Pig Nuts are formulated with high quality ingredients to provide balanced protein and energy for slow growing or mature pigs. Because NRM Big Pig Nuts are a complete feed, the provision of other supplements should be limited.

BALANCED HIGH QUALITY 14% PROTEIN

Feeding recommendation

Growing pigs: Feed 2-3kg per day depending on age, genetics, body weight and environmental temperature.

Dry sows: Feed 2-2.5kg per sow per day depending on body weight and condition. Take care not to overfeed dry sows as excessive weight gain can result in overfat sows with low feed intake and poor milk production post-farrowing.

Boars: Feed approximately 2kg per boar per day depending on age, genetics, body condition and environmental temperature.

Kunekune pigs

Dry sows and boars: Feed 1 to 1.5kg per day while allowing access to pasture or other fibre.

Growing pigs from 4 months: Feed up to 1kg per pig per day depending on required weight gain and pasture quality and availability.

Ensure access to fresh, clean water at all times.

Ingredients

Grain and grain by-products, plant proteins, grass seed meal, vegetable oils, enzymes, amino acids, limestone, mono or di-calcium phosphate, salt, mould inhibitor, vitamins and trace minerals, animal fats and organic acids.

Typical analysis

Crude Protein	14%

(Approximate on an as fed basis)

Feeding piglets

Piglets can be offered special creep feed (feed that they start to eat whilst still taking milk from their dam) from a few days of age.

Demand for specialist creep feeds in New Zealand is small and they can deteriorate with storage, so adding dry pig milk replacer to NRM Little Pig Tucker Pellets can be a useful way to transition piglets away from milk. Litter size and the milk production of the sow may determine the level of interest in creep feed, which must be kept as fresh and appealing as possible. It is not recommended to wean piglets under 4 weeks of age, unless the piglets can be well cared for and kept in a warm environment. Even under highly efficient commercial environments piglets are not normally weaned under 4 weeks of age, by which time they should be a minimum 5.5kg. Heritage breeds are often weaned gradually at 7 to 8 weeks of age. Milk replacers that are made up into a liquid are available for rearing orphan piglets, which need to be kept warm in a draught-free environment.

Fun fact – piglets respond to their name at 20 days of age.

How do I introduce feed to young piglets?

Start slowly by feeding small amounts mixed with other quality protein and energy sources such as quality milk, milk powder etc.

Part of the experience of raising pigs is watching and learning. Because the intake of a pig increases as they get bigger, it is important to find the level of feeding that satisfies the pigs without excess, which may be spoiled by spillage, fouling, rain or vermin.

Fun fact – studies have shown that, much like humans, pigs can dream.

Feeding pigs

Feeding growing pigs

Growing pigs that are being grown for slaughter should have an unlimited intake of feed to maximise their growing potential. Feed intake should be between 0.5 to 3kg depending on age, weight and environmental temperature.

Little Pig Tucker Pellets are a balanced feed designed for the young, growing pig – feed until about 65kg or 15 to 17 weeks of age then transition onto a NRM Big Pig Nuts until slaughter. For fast growing, lean genetics, Little Pig Tucker Pellets can be fed until slaughter.

Feeding sows and boars

Milking sows should be fed as much as they can eat, which will typically be up to 8-9kg/day fed ad-lib to encourage intake.

NRM Little Pig Tucker Pellets are a good option for lactating sows because the 17% crude protein they contain helps to support milk production. Sows should be continued to be fed well between weaning and mating to help increase the number of piglets produced in the next litter. Sows are normally pregnant for around 114 days and can give birth on average more than twice per year. Dry pregnant sows need to be fed to meet the needs of their growing foetuses without getting too fat, so feeding will normally have to be controlled rather than ad-lib. The feed intake of pellets by dry sows ranges from 1.8-2.3kg/head/day depending on the need to gain condition. NRM Big Pig Nuts are a good option for dry sows because they do not need a high protein diet to meet the needs of their developing foetuses.

When feeding pregnant sows take care not to overfeed, as excessive weight gain causes overfat sows, which have a lower feed intake and therefore reduced milk production after farrowing.

The recommended feeding rates for compounded quality pig feed are as follows:

- Non-pregnant sows – 2kg/sow/day depending on body weight and environmental temperature.

Feeding pigs

- Pregnant sows and boars – 2.5kg/sow/day and 2kg/boar/day depending on body weight and environmental temperature.
- Lactating sows – start at 5kg after farrowing and gradually build up to 8-9kg, depending on body size and environmental temperature.

Speciality breeds

Kunekune and pigs kept as pets should be fed NRM Big Pig Nuts and have a restricted intake to ensure that they do not become overweight. This will depend on the age and weight of the pig. Due to size and the fact the Kunekune will also graze pasture, the feeding rates will be less than the above for growing pigs, sows and boars. For growing Kunekune pigs from 4 months of age, this will be up to 0.5kg per pig per day depending on age and weight. Care needs to be taken that pigs don't become overweight.

Can I feed my pigs too much?

Yes, if a pig is allowed to over-consume it may get dietary problems such as scours or become over-fat. The risk of over-feeding is less with growing pigs and modern genetic types, which are leaner.

Alternative feeds for pigs

Balanced compound feeds contain all the vitamins and trace minerals required to support the growth of fattening pigs. Feeding cheaper feeds such as straight grains and by-products can be a false economy because the animal takes longer to reach target weight and uses more feed to do so.

If essential nutrient requirements are not met, the pigs may show signs of poor health. Kitchen scraps and waste may be well received by the growing pig with great enthusiasm and, whilst they may be adequate for slow growing humans, they are generally woefully inadequate in supporting growth of the fattening pig.

Any scraps fed should be regarded as equivalent to “lollies” for a young child – they are a treat and should not be regarded as “balanced” feed. Potatoes, carrots, apple pomace and citrus pulp are bulky and filling. Potatoes must be cooked and only fed to pigs over 12 weeks of age – they are low in protein, calcium and phosphorus. Cereals need to be ground or boiled to improve digestion and cereal based products such as biscuits, bread and breakfast cereals can be put through a garden shredder to produce a meal type feed.

Milk is a good source of quality protein but needs to be introduced gradually and is normally fed diluted 50% with water. Many dairy farmers direct waste milk into pigs but ease back at the finishing stage, because too much is associated with soft fat in the carcass. Skim milk is a good source of protein but contains less energy, whey is an energy source and should be fed to older pigs (>14 weeks) as bloat is a common side effect.

Alternative feeds that may be useful in moderation:

Feed	Pros	Cons
Bakery waste	Very palatable when fresh. Normally has high energy content due to a high level of sugar, starch and oil.	Nutritional values can vary dramatically, may not store well and can go rancid and mouldy – absorbs moisture. Care has to be taken to avoid plastic bags. Low protein typically. Feeding bread can cause constipation due to low fibre content.
Barley	High energy grain.	Low in vitamins A, D, E and calcium. Protein is of average quality, being particularly deficient in lysine. Feeding on its own can result in excessive weight gain.
Pasture	Enjoyed by Kunekune pigs, which can cope with a higher fibre diet. Provides exercise.	The feed value of pasture declines rapidly with crop maturity.

Feed	Pros	Cons
Food waste	Utilises a waste product to fill pig bellies rather than bins.	Must be heated to 100ºC if it has come into contact with meat. Pigs are more prone to salt poisoning than other animals, so must always have access to clean drinking water.
Potatoes	Low fibre content, so suitable for feeding to older pigs but need to be cooked.	Spouted potatoes are dangerous to livestock, avoid green potatoes and soil contamination. Poor source of minerals.
Maize grain	The highest energy cereal grain.	Lower and poorer in protein quality than wheat, low mineral status requires careful supplementation.
Milk	Good protein source for young pigs.	Low in iron and vitamins A, D and E. Milk fed pork can be soft and fatty.
Wheat	High energy grain with average protein.	Tends to be low in vitamins and minerals and amino acids.

Alternative feeds for pigs

There is a perception that pasture is natural and holistic but in reality the plants competing to grow in a sward give no thought to their nutritional value relative to the animal that might eat them. Unlike cattle and sheep, pigs other than slow growing Kunekunes cannot be raised solely on pasture, because they have a single stomach that does not cope well with bulky, fibrous food.

Pasture can help to complement their diet and provide natural foraging behaviour, which is considered beneficial for their mental and physical welfare.

Even good quality pasture delivers much less digestible energy to pigs than it does metabolisable energy to ruminants. Grazing is normally restricted to non-lactating dry stock.

Pigs can be used to break in scrub ground and are considered natural ploughs by some who use them as part of a rotation process. Pigs will turn over land whilst rooting for food, which may be useful if intending to develop land.

Feeding table scraps to pigs

Adding quality scraps to a pig's diet can stimulate appetite and can be a legitimate way to put a waste product to good use.

The 2001 foot and mouth outbreak in the UK, during which more than 10 million sheep and cattle were killed to halt the disease, was thought to have originated on a pig farm where untreated, contaminated waste food had been fed to pigs.

Feeding table scraps along with pelleted feed can be a cheap and economical way to raise pigs on a small scale. However, it's important to be aware of the regulations that come with this practice, which is generally termed as swill feeding.

Under the 2005 biosecurity regulations, it is a requirement that all meat (or food waste that has come into contact with meat, or where it is unclear whether it has or hasn't come into contact with meat) must be heated to 100ºC for 1 hour to destroy any bacteria or viruses present. Failure to comply with this regulation can mean that an individual can be fined – but more importantly, the wider New Zealand livestock industry can be at great risk.

Scraps must be stored securely and away from birds and animals.

Fun fact – pigs have a vast field of vision but can't look up.

Mycotoxins and pigs

Mycotoxins are biological poisons produced by fungi when they experience stressful conditions to try to reduce the challenge from competing microbes.

The presence of fungi on feeds does not necessarily mean that mycotoxins are present (because the conditions had not been right to stimulate the production of mycotoxins) and the absence of visible fungi on feeds does not mean they are free from mycotoxins (because the fungi could have been stressed to the point of elimination but the mycotoxins remain). Generally, pigs and horses are more sensitive to mycotoxins than ruminants because the microbial population in the rumen has a neutralising effect on many of the mycotoxins they consume.

It can be difficullt to identify the mycotoxin present because they are unevenly distributed and laboratories have to know which toxin they are testing for.

Accredited feed compounders give a lot of attention to the quality of the raw materials – grains and proteins. Careful storage of ingredients, complex formulations that spread the risk of a single ingredient dominating a diet and manufacturing protocols further reduce the risk that compound feeds might contain mycotoxins when fed, provided it has been stored as recommended. In the event that mycotoxins are believed to be affecting pigs, the suspected feeds should be removed from the diet. Mycotoxin binders are available, which can be mixed with feeds if they really have to be fed.

Some mycotoxins in feeds associated with mild to severe disease in pigs:

Fungus	Toxins	Clinical Signs
Aspergillus sp	Aflatoxins	Poor growth, liver damage, jaundice, immunosuppression.
Aspergillus sp and Penicillum sp	Ochratroxin and Citrinin	Reduced growth rate, thirst, kidney damage.
Fusarium sp	T2, DAS, DON (Vomitoxin)	Reduced feed intake, immunosuppression, vomiting.
Fusarium sp	Zearalenone (F2 toxin)	Infertility, anoestrus, rectal prolapse, pseudo pregnancy, early embryo mortality, delayed repeat matings.
Fusarium sp	Fumonisin	Reduced feed intake, respiratory symptoms, fluid in lungs, abortion.
Ergot	Ergotoxin	Reduced feed intake, gangrene of the extremities, agalactia due to mammary gland failure.

Always store feed in dry, clean conditions free from possible contamination from vermin and ideally out of direct sunlight, which can degrade some vitamins. Do not store feed in metal drums, which can sweat and cause moulding.

Housing

Pigs are very clean and if given the opportunity, keep their toilet area away from where they lie down and eat.

Pigs are intelligent and grow to be strong animals, so when building or purchasing housing it should be strong and escape proof.

Pigs benefit more than ruminants to shelter, which preferably should be warm, dry and draught-free. Ruminants like sheep and cattle have thicker coats but also they effectively have a central heating system in the form of their rumen, which generates heat. Pigs are susceptible to disease related to overcrowding and can produce smells that may offend neighbours.

Galvanised tin is a versatile cladding material but to some, tin clad shelters can look a bit untidy against some well-manicured lifestyle sections, so your neighbourhood and local covenants with respect to pig keeping may need to be considered. Housing is particularly important for younger animals with piglets (0-12 weeks) requiring a temperature range of 25-30ºC in order to thrive. Older pigs (12-24 weeks) are happy in a temperature range of 20-25ºC and for breeding stock a temperature of 10-25ºC is suitable. Draughts, cold and overstocking create stress, which will contribute to poor pig health and feed conversion.

Adequate airflow must be created to ensure that the air is as fresh as possible without creating a draught on the pigs. Deep bedding can make a significant difference to how warm pigs are during cold conditions. Signs that pigs are too cold include huddling together, pulling legs and feet under themselves, increased activity, eating more and growing slower (until they eventually get sick and eat less).

Signs that pigs are too hot include laying on their side, decreased activity, drinking more water (unless it is warm), an increase in respiration rates, seeking out a moist area, an increase in rectal temperature and possibly death.

The common phrase “sweating like a pig” is a misconception, as pigs have limited sweat glands and benefit from shade in the summer and even wallowing in wet mud during hot weather to keep cool. Pigs that are given access to the outdoors are best suited to free-draining soils, which do not get too wet and muddy in the winter and dry and dusty in the summer.

Fun fact – pigs are good swimmers and prefer water to mud if you want to build your pigs a swimming pool rather than a wallow.

It can be beneficial to keep group sizes to 20 or less and maintain stocking densities to the recommendations below:

Weight and age	m^2 (per pig)
Weaners to 20kg	0.22
20-45kg	0.35
45-60kg	0.50
60-85kg	0.70
Sows and boars	1.20

Pregnant sows can be kept in groups but when they farrow they should be provided with individual huts that are warm, dry and draught-free. Most outdoor pigs are controlled by an electric fence, about 30cm off the ground but a second wire at 15cm may be necessary to control piglets as they approach weaning and become more adventurous. Groups of pigs form a hierarchical social order, so if litters can be kept together from weaning through to finishing it will help to reduce stress and negative impacts on performance associated with establishing a new order after mixing animals. An interesting environment with more space provides greater opportunity for shy pigs to avoid aggression.

Hygiene

Hygiene is particularly important during the period from birth to 12 weeks of age and all areas should be thoroughly cleaned and disinfected with product like Virkon S. After 12 weeks of age housing should be kept as clean and dry as possible.

Fun fact – a pig’s squeal can be as loud as 115 decibels – about 3 decibels higher than a supersonic airliner.

Animal health

Pigs should be free from pain, injury and disease – by prevention or rapid diagnosis and treatment.

A healthy pig grows well and reproduces well at the appropriate age. It is important to keep an eye on the general appearance and behaviour of your pigs. Diarrhoea can be caused by dietary upsets or infections.

There are a range of viruses and bacteria that can cause pneumonia, bronchitis and nasal cavity infections. Rapid or laboured breathing usually means a serious illness and needs immediate attention. Coughing may be caused by bronchitis or pneumonia but may also be due to lungworm infection.

There are four types of worms in pigs – intestinal roundworms, stomach worms, lungworms and kidney worms. The most common problem with worms for pigs is usually intestinal roundworms in young pigs. A range of injectable and oral wormers are available. Vaccinations may be necessary, especially if you have a large number of pigs.

Lice mainly occur over the winter time as they breed more in cold weather. The lice lay their eggs on the hair on the sides of the lower neck and the back of the hind legs – the eggs look like cream coloured spots stuck on the hair. Mange occurs more commonly in the summer – it presents itself like crusty reddened areas especially around the head and legs and may be difficult to distinguish from ringworm sometimes.

Pigs in New Zealand are free from many diseases that are present in other countries. Good farm biosecurity helps to reduce the risks associated with contact with people, vehicles or other animals.

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Nobody is closer to your animals than you – and nobody understands their unique nutrition needs more than our qualified NRM nutritionists. It's their expertise that make our range of feeds some of the most scientifically advanced in the market. Plus having nationwide access to their in-depth knowledge will support your understanding of animal nutrition to improve the productivity and profitability of your farming operation.

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