



RABBIT

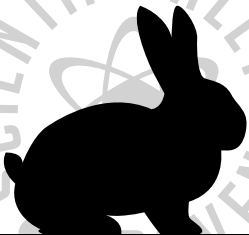


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RABBIT FEEDING

Rabbits kept as pets or for meat or fur production should be fed a nutritious daily diet of hay, fresh vegetables, and pellets. Observation shows that they prefer pelleted feed rather than one in a meal form. Their diet should not contain high levels of carbohydrates including sugar from fruit. Feed costs can account for as much as 80% of total production expenses so it is important to use a sound feeding program. Rabbits are hindgut fermenters with complex digestive systems to efficiently process food. It starts with their teeth mechanically breaking feed down whilst enzymes in their saliva assist in breaking down starch. The chemicals and enzymes in their stomachs break down carbohydrates, protein and fats and further digestion and absorption of nutrients occurs in the small intestine. Finally, fibre digestion and absorption of water takes place in the large intestine. Care should be taken not to disrupt the delicate balance of intestinal flora by introducing new foods too quickly or by giving them unsuitable foods as this can cause the rabbit to become very ill.

WATER REQUIREMENTS

Water intake should be around 100 ml per kg of body weight increasing to around 200 ml – 250 ml per kg during peak lactation. If water is not provided and the only feed available is dry with a moisture content of less than 14%, feed intake drops to nil within 24 hours. Any reduction in the water intake will cause a proportional reduction in feed intake and result in a drop in performance so ensure fresh clean water is always available in bowls or nipple drinkers. It is important to have water tested before setting up a facility as rabbits are intolerant of microorganisms in their water. Even municipal water should be tested, as chlorine levels may be harmful to the rabbit's intestinal flora.

VENTILATION REQUIREMENTS

Rabbits produce enough ammonia to cause the air to become toxic very quickly so it is essential to control air flow to ensure that there is adequate fresh air, but no drafts. Toxic air can cause stress in rabbits leading to a variety of health problems (like respiratory irritation that leads to snuffles) which will affect production if not rectified immediately.

TEMPERATURE

Summer temperatures may be a problem for a breeding herd, as fertility, especially among males, drops off very rapidly above 30 °C and it can take 4 to 6 weeks for fertility levels to be restored if males are exposed to high temperatures for several days in a row. Minimum housing requirements for summer include a sunshade and some type of cooling. Cooling can be provided by placing blocks of ice or bottles of frozen water in the cages for the rabbits to sit on or by cooling the air with an evaporative cooler. Although feed efficiency remains fairly high until heat exhaustion occurs, high temperatures result in a decreased growth rate because the rabbits reduce their feed intake. Relative humidity should be between 30% and 40%, resulting in a dry manure pack. Lower relative humidity levels increase the risk of respiratory infections and higher levels increase ammonia levels.

Angora rabbits handle cold much better than hot weather as their wool provides high levels of insulation. Heatstroke will kill an Angora quickly, so it is important to closely monitor for signs of heat stress including heavy breathing, panting and slobbering. In the summer it is best to keep your Angora clipped back in a cool, breezy area, or have a fan aimed towards it when

kept in an outside cage in hot climates. Ice blocks or bottles filled with frozen water should also be used. In the winter, rabbits should be kept out of direct wind. Check on the rabbits several times a day and give them room temperature water to drink.

FEEDING BABY RABBITS

The dam imposes the feeding pattern on her kittens, typically only feeding once every 24 hours, though some will nurse twice, with suckling lasting 2 to 3 minutes. If there is not enough milk, the young try to feed every time the dam enters the nest box. From week 3, the young rabbits begin to move about, taking a few grams of mother's milk and if available, a little drinking water, and within a few days, solid feed and water will exceed milk intake. Feeding behavior changes are remarkable during this period. The young rabbit goes from a single milk feed a day to many alternating solid and liquid feeds distributed irregularly throughout the day. The number of solid meals are stable up to 12 weeks decreasing slightly thereafter. The total time spent on feeding every 24 hours exceeds 3 hours at the age of 6 weeks dropping rapidly to less than 2 hours per day. At any age, feed containing over 70% water (e.g. green forage) provides rabbits with ample water at temperatures under 20 °C. Fruit and vegetables must be fed to kittens with caution under the age of 6 months, and especially to kittens under the age of 3 months. During the period when the kittens transition from milk to rabbit food, the natural flora/fauna balance in their guts are delicate and diarrhoea is not uncommon.

MEAT RABBITS

The main breeds of meat rabbits are all descended from the wild European rabbit. These include the New Zealand White (4 – 5 kg), Californian (3.5 – 4.5 kg), Chinchilla Gigantica (4 – 5 kg), British and Flemish Giant (5 – 5.5 kg). When purchasing stock, look for clean, healthy surroundings and animals with shiny coats, bright eyes, and clean ears and noses. Their behaviour should be neither timid nor aggressive, as their temperament could be passed on to their offspring.

MEAT RABBIT FEEDING RECOMMENDATIONS

Feed and water intake depends on the kind of feed, type of rabbit, its age and stage of production. If an animal is fed ad lib (e.g. 140 – 150 g of dry matter per day for a 4 kg New Zealand White adult, for example), the following feeding patterns are evident during the course of the animal's development.

- At 4 weeks, a young rabbit eats a ¼ of the amount an adult eats but its live weight is only 14% of the adult's.
- At 8 weeks, the relative proportions are 62 and 42%.
- At 16 weeks, the relative proportions are 100 to 110 and 87%.
- A doe's ad lib feeding during the reproduction cycle varies greatly. Intake during her final days of pregnancy drops off markedly. Some does refuse solid food just before kindling, water intake, however, never stops completely. After kindling, feed intake increases rapidly and can exceed 100 g dry matter per kg live weight a day. Water intake is also high at between around 200 ml – 250 ml a day per kg of live weight. When a doe is both pregnant and lactating, she will eat the same amount as a doe that is only lactating, up to 3 times her normal ration. Rabbits have small stomachs, which are emptied into very long intestines only as new food enters. This is why rabbits consume small quantities at a time and must be fed regularly to avoid digestive upsets. The doe gestates for 28 to 31 days.

One of the most common mistakes rabbit breeders make is overfeeding. A fat animal does not reproduce efficiently. Be very careful of the amount of feed you provide to breeding rabbits. Here is a list of the amount of feed you should give your rabbit. Remember though, each rabbit is an individual, and these are guidelines only. Adjust feed according to the needs of individual rabbits.

FEED REQUIREMENTS OF VARIOUS CLASSES OF RABBITS		
	WEIGHT (KG)	FEED/DAY (G)
Normal growth (does or bucks)	1.8 – 4	140 – 170
Maintenance (does or bucks)	2.2	85
	4.5	113 – 170
	6.8	200
Pregnant does	2.2	113
	4.5	113 – 170
	6.8	255
Lactating does (6 – 8 young, one week old)	4.5	285
	6.8	340
Lactating does (6 – 8 young, one month old)	4.5	510
	6.8	680
Lactating does (6 – 8 young, 6 – 8 weeks old)	4.5	795
	6.8	1 020

This is just a recommendation: it needs to be adjusted according to the condition of the animal.

PET RABBITS

Providing high quality feed is an integral part of keeping rabbits as pets. Although rabbits can consume many different types of feed the best option is primarily commercial pellets and good quality timothy/alfalfa hay. Avoid feeding your pet cabbage and lettuce, as this will upset the balance of good bacteria in their stomach and may cause diarrhoea. The rabbit should have ad lid access to the pellets at all time. A few fresh vegetables can be offered once a day. Dark leafy and root vegetables are especially healthy whereas Iceberg lettuce has no nutritional value. Rabbits must have roughage for good health, therefore provide hay which will assist in eliminating hairballs and other blockages. Small amounts of alfalfa hay can also be offered. Unlimited amounts of oat and grass hay should be available throughout the day and remove soiled hay daily. If you overfeed your rabbit, it will become fat and may have problems breeding and if a doe becomes too fat, she will likely have trouble when kindling. If you underfeed them, they will become too skinny and be more prone to diseases. The best way to tell if your rabbit is getting enough feed is to stroke its backbone regularly. If the bumps of your rabbit's backbone feel sharp and pointed, increase its feed; if you can feel the bumps, but they feel rounded, you are giving the right amount; if you feel no bumps at all, decrease feed supplied. Check weekly, to make sure that you are providing the correct quantity of feed. Young rabbits can be weaned at any time between 4 – 8 weeks, but the longer they stay with their mother the better.

FUR AND WOOL RABBITS

Main breeds include American Fuzzy Lop, English Angora, French Angora, Giant Angora, Jersey Woolly, and Satin Angora.

Feeding Angora rabbits involve several peculiarities compared to meat rabbits. The Angora is at peak production when it is an adult rabbit being optimally maintained. Its growth is complete, and reproduction is limited to a few animals. It must, however, produce over 2 kg of dry proteins a year – more than 1 kg in the form of keratin (hair), and the same amount in the form of the internal sheath of the hair follicle. This is the equivalent of 7 or 8 kg of muscle. The keratin in the hair is rich in sulphur amino acids, exporting 35 g of sulphur a year, the proper intake of these amino acids must therefore be ensured. The high productivity of modern Angora strains (up to 1 400 g per year) makes full productivity difficult using traditional feeds such as hay, alfalfa, oats, barley, etc. The quantities needed would be excessive and deficits in sulphur amino acids would be inevitable. Almost all breeders use only pelleted feeds for Angoras, which are easy to administer. In this case, an average of 180 to 190 g should be fed to each rabbit daily.

The Angora rabbit's feed requirements follow the cycle of collection and hair regrowth (every three months). Requirements increase after depilation, as the animal is then hairless and energy is lost via radiation. By the second month, the animal is again well covered, but this is when the hair grows fastest so the ration must remain adequate. In the third month, requirements decrease because the hair grows slower and starts to fall. Daily rations need to be adjusted carefully to these variable requirements.

Normal feeding practice allows for the allocation of 200 to 225 g of dry matter per day during the first month, 180 to 190 g during the second month, and 148 to 160 g during the third month. It is recommended that the rabbits not be fed one day a week so the stomach can empty, preventing, or at least diminishing, the risk of hairballs that can form from self-grooming. Angoras are prone to very hard hairballs called trichobezoars that obstruct the pylorus (opening from the stomach into the duodenum or the first part of the small intestine) and may result in death.

Most losses of adult Angoras occur during the days following hair collection as the animals may experience difficulty maintaining body temperature and become particularly sensitive to respiratory diseases during this time. The breeder must therefore be constantly aware of the general hygiene of their rabbits (frequent litter renewal, cleaning and disinfecting). Having to replace working females with young does lower average production levels because first-year Angora output is appreciably lower: 650 g compared to 1 kg. The usual yearly rate of renewal is 25 to 35 percent.

TIPS AND GUIDELINES

- Feed 50% of the daily feed requirement in the morning and 50% in the evening.
- Provide roughage like tef or eragrostis ad lib at all times.
- Never make sudden, nutritional changes or disturb the normal feeding hours.
- Feed pellets at the same time every day.
- Water consumption should be twice the amount of feed intake.
- Bucks can become sterile for up to three months if temperatures rise above 32 °C.
- Mate 5 days after kindling (birth).

- Do three matings with three different bucks within 1 – 6 hours. Do not continue with mating 8 hours after the first mating.
- Bring the doe to the buck's hutch for breeding. One buck for every 10 does. The gestation period is 28 – 31 days.
- Provide nest boxes at 28 days for pregnant does.
- Keep to a 19-hour light programme to maximize fertility.
- Recommended temperature is 15 – 24 °C and 30% – 40% humidity.

RABBIT FARMING TERMINOLOGY

- Buck – male rabbit
- Doe – female rabbit
- Dam – rabbit who has kindled
- Kit – baby rabbit
- Kindle – giving birth

EPOL'S RABBIT FEED

Epol offers a single rabbit feed ration which is suitable for all rabbits. It is available with and without coccidiostats.

COMPOSITION TABLE		PRODUCT	COMPLETE RABBIT PELLETS
		ACT 36/1947 REG. NO.	V1789
INGREDIENT	MIN/MAX	UNIT	QUANTITY
PROTEIN	min	g/kg	160
MOISTURE	min	g/kg	120
FAT	min	g/kg	25
FIBRE	min/max	g/kg	120 / 170
CALCIUM	max	g/kg	15
PHOSPHORUS	min	g/kg	7

RECOMMENDED FEED INTAKE
Feed ad lib.

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