Rabbits Nutrition

Feed Requirements Of Rabbit

The nutritional requirement of rabbits, as is in the case of other mammals, varies according to age and productive performance. To obtain effective feeding efficiency, diets should be formulated to meet the needs of animals of a particular age or stage of production. Most rabbit farms are not large enough to justify the use of several different feeds, so it is a common practice to use just one diet for the entire herd. Since rabbit farming is becoming more intensive, it is suggested that rabbit producers should use at least two diets, a grower diet for fryers and a lactation diet for does.

It is important that hay be available at all times. Rabbits tend to eat small amounts of food frequently throughout the day and withholding hay for long periods of time can lead to intestinal upsets or GI Stasis

They need to receive nutrients in specific amounts to grow and perform at their best. Some examples of important nutrients you should provide for your rabbit include proteins, carbohydrates, lipids (or fats), minerals and vitamins.

Digestion in Rabbit

Rabbits are small herbivores that have an enlarged hindgut (caecum and colon), facilitating their utilization of forages and other fibrous feeds. Their digestive strategy is to separate and rapidly excrete fibre and to retain non-fibre material in the caecum, where it is subjected to microbial digestion. Selective excretion of fibre and retention of non-fibre components are accomplished by muscular activities of the colon. At regular daily intervals, the caecum is evacuated and the animal consumes the caecal contents (caecotropes, soft faeces, night faeces) directly from the anus (caecotrophy). The

nutritional benefits of caecotrophy are mainly that microbially synthesized water-soluble vitamins (B-complex) are obtained independently of a dietary source. A secondary benefit is the utilization of caecally synthesized microbial protein.

Although there is some microbial protein synthesis in the caecum, the rabbit has a very limited ability to utilize dietary sources of non-protein nitrogen such as urea. Because of the selective and rapid excretion of fibre as a major component of the hard faeces, the digestibility of crude fibre in the rabbit is much lower than in horses and ruminants.

The microbiology of the rabbit caecum is unique. The dominant organisms are Bacteroides spp. Lactobacilli and Escherichia coli are generally absent from the rabbit digestive tract. The major volatile fatty acids (VFAs) produced in caecal fermentation are acetic and butyric acids.

Calcium is absorbed very efficiently in the rabbit, in contrast to other animals in which calcium absorption is regulated according to need by vitamin D. High dietary calcium levels result in elevated plasma calcium and the excretion of excess calcium in the urine. The urine often contains high levels of calcium carbonate as a white precipitate. Urolithiasis is common in older rabbits (especially pets) that are chronically exposed to high calcium intakes.
Rabbits are susceptible to both deficiencies and toxicities of vitamin A. Because most rabbit diets contain lucerne or other forages, there is generally an adequate quantity of -carotene in the diet. Addition of synthetic vitamin A to diets rich in carotene may cause vitamin A toxicity. Levels in excess of 40,000 IU vitamin A kg————————————1 may cause severe reproductive effects, including fetal resorption, abortion, small litters, hydrocephalus and low neonatal viability. Vitamin A deficiency produces similar signs. A dietary level of 10,000 IU vitamin A kg————————————1 diet will prevent both deficiencies and toxicities. Little information is available on vitamin E requirements of the rabbit. Deficiency causes muscular dystrophy, paralysis of hindlegs and reproductive failure. Vitamin D toxicity has been observed in rabbits, due to errors in diet formulation.
Signs include progressive emaciation and weakness, anorexia, diarrhoea, intense thirst, ataxia, and paralysis leading to death. Extensive soft tissue (liver, kidney, artery walls, muscle) calcification occurs.
Compared with other animals, rabbits have a high water requirement. Water intake is about 120 ml kg————————————1 body weight per day. Rabbit urine is usually alkaline, is often pigmented red or yellow, and may be turbid because of precipitates of calcium carbonate. (PC)

Rabbit feeding

Appropriate feeding of rabbits necessitates appreciation of some unique features of their digestive tract physiology. Having evolved as a herbivore, the rabbit has a feeding strategy of consuming feeds high in fibre but also has ileo-caecal-colonic mechanisms

for separation and rapid excretion of fibre. It requires a fibrous diet for maintaining health of the digestive tract but also ample concentrations of high-quality sources of energy and protein. The crude protein requirement for growth is lower than the requirement for optimal reproductive performance. A dietary concentration of 16% crude protein is adequate for maximum growth, while for lactating females 18–19% dietary protein is optimal. Precise values for amino acid requirements have not been established. Provisional requirements of growing rabbits are 0.75% lysine, 0.65% sulphur amino acids and 0.64% threonine.

Feeding excess dietary protein may increase caecal ammonia and pH, leading to increased incidence of enteritis. Excretion of excess nitrogen in the faeces and urine results in elevated environmental ammonia concentrations, which may provoke increased respiratory disease. The highest energy requirements of rabbits are for lactation: does in early lactation are typically in negative energy balance. High-energy diets containing added fat may be beneficial during lactation.

Major feedstuffs for rabbit production include dried forages such as lucerne meal, cereal grain by-products such as wheat bran, and plant protein supplements (e.g. soybean meal). Molasses and fats are used as energy supplements.

Ideally, a series of different diets (e.g. starter, grower, finisher and lactation diets) would be used. However, under most practical conditions of rabbit production, only one diet is used. Allowances for differences in requirements can be made to some extent by adjusting the amount of feed offered. Gestating females and the males are usually fed restricted amounts of feed, while lactating females and growing-finishing rabbits are fed ad libitum. There is little information on breed differences in nutritional requirements. Dwarf breeds require higher-energy diets, while giant breeds have the greatest ability to utilize highfibre diets.

Hay: Hay makes up most of the daily diet. It is essential for optimal and efficient gut function and movement as well as keeping the length of their teeth in check. Rabbits who are not given any kind of hay will eventually suffer from painful abscesses due to long teeth.

- When a rabbit's gastrointestinal tract motility is diminished or stops operating normally altogether, the result is *gastrointestinal stasis*, considered a "silent killer" of rabbits because it means a hardening or buildup of food in the gut causing a blockage that may lead to their death.
- Timothy and other grass hays are preferred for adults, but young rabbits can have a little alfalfa mixed in. Alfalfa is high in calcium and protein, both of which are important at early stages of rabbit development but much less important for adult rabbits. Lower quality grass hay can be used for the rabbit's litter box.
- Fresh hay should be available to an adult rabbit 24 hours a day. It is said that a rabbit needs to eat "his size" (not his weight) in hay every day to stay healthy.

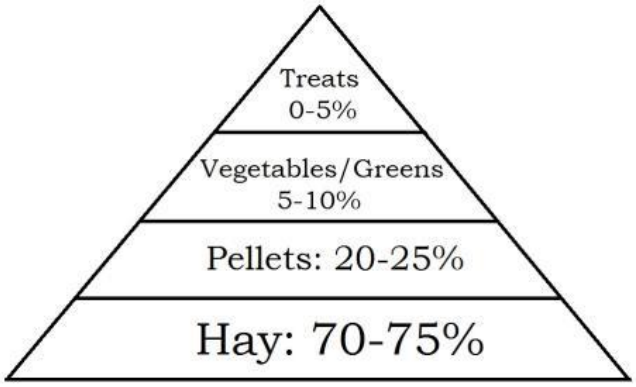
Pellets: Rabbit food pellets are highly concentrated in nutrients that help with weight gain. Pellets are more important for young rabbits that are still growing. Make sure what you are buying is high in fiber (18% - 20%) and nutritionally balanced. Higher

quantities of hay and vegetables should replace pellets in a mature adult rabbit. Feeding an adult rabbit a large amount of pellets can cause obesity.

Treats: Treats high in calories such as oats, barley and fruits should be given sparingly. Too many carbohydrates can lead to enteritis or other conditions/illnesses in rabbits

Water: Water is very important for rabbits and should be fresh and available at all times. Water bottles are best used for rabbits instead of water bowls. The water should be changed every day and the bottle cleaned with dish soap 1x per week.

Vegetables: Vegetables provide valuable roughage, as well as essential vitamins. As early as 3 months of age, you can begin to offer vegetables. Introduce new vegetables one at a time. This way, if a digestive upset occurs, you will know which food may be the culprit. Eliminate those that cause soft stools or diarrhea. Continue to add new varieties, including both dark leafy vegetables and root vegetables, and serve vegetables of different colors. Once your rabbit is used to several vegetables, feed him or her at least three different kinds daily for a mix of nutrients. Under no circumstances should you feed a rabbit iceberg lettuce as it is void of nutrients, mostly water and will fill a rabbit up unnecessarily.



Note: Kale, mustard greens, and spinach contain high levels of oxalates (the salts of oxalic acid), which can accumulate in the system and cause toxicity over time. Rather than eliminating these veggies from your list (because they are highly nutritious and loved by most rabbits), limit your use of them to 1 or 2 meals per week.