

## **What are the basics of a good house rabbit diet?**

A rabbit's diet should be made up of good quality pellets, fresh hay (alfalfa, timothy or oat), water and fresh vegetables. Anything beyond that is a "treat" and should be given in limited quantities.

## **What makes a good pellet?**

Pellets should be fresh, and should be relatively high in fiber (18% minimum fiber). Do not purchase more than 6 weeks worth of feed at a time, as it will become spoiled. Pellets should make up less of a rabbit's diet as he or she grows older, and hay should be available 24 hours a day.

## **What kinds of veggies should I feed my rabbit?**

When shopping for vegetables, look for a selection of different veggies--look for both dark leafy veggies and root vegetables, and try to get different colors. Stay away from beans and rhubarb. Here's a [suggested veggie list](#).

## **Is feeding hay important?**

Hay is essential to a rabbit's good health, providing roughage which reduces the danger of hairballs and other blockages. Apple tree twigs also provide good roughage.

## **What quantities of food should I feed babies and "teenagers"?**

- Birth to 3 weeks--mother's milk
- 3 to 4 weeks--mother's milk, nibbles of alfalfa and pellets
- 4 to 7 weeks--mother's milk, access to alfalfa and pellets
- 7 weeks to 7 months--unlimited pellets, unlimited hay (plus see 12 weeks below)
- 12 weeks--introduce [vegetables](#) (one at a time, quantities under 1/2 oz.)

## **What quantities of food should I feed young adults? (7 months to 1 year)**

- introduce timothy hay, grass hay, and oat hays, decrease alfalfa
- decrease pellets to 1/2 cup per 6 lbs. body weight
- increase daily vegetables gradually
- [fruit](#) daily ration no more than 1 oz. to 2 oz. per 6 lbs. body weight (because of calories)

## What quantities of food should I feed mature adults? (1 to 5 years)

- Unlimited timothy, grass hay, oat hay, straw
- 1/4 to 1/2 cup pellets per 6 lbs. body weight (depending on metabolism and/or proportionate to veggies)
- Minimum 2 cups chopped [vegetables](#) per 6 lbs. body weight
- [fruit](#) daily ration no more than 2 oz. (2 TBL) per 6 lbs. body weight.

## What quantities of food should I feed senior rabbits? (Over 6 years)

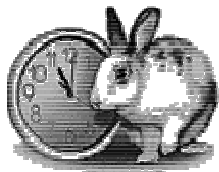
- If sufficient weight is maintained, continue adult diet
- Frail, older rabbits may need unrestricted pellets to keep weight up. Alfalfa can be given to underweight rabbits, only if calcium levels are normal. Annual blood workups are highly recommended for geriatric rabbits.

## If I feed fewer pellets, how do I compensate?

When you feed a lower quantity of pellets, you must replace the nutritional value without the calories, which is done by increasing the vegetables. Also, a variety of hay and straw must be encouraged all day long, we do this by offering fresh hay a couple of times a day.

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Sources: HRH, various articles from the HRJ, RHN



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Select at least three kinds of vegetables daily. A variety is necessary in order to obtain the necessary nutrients, with one each day that contains Vitamin A, indicated by an \*. Add one vegetable to the diet at a time. Eliminate if it causes soft stools or diarrhea.

Alfalfa, radish & clover sprouts  
Basil  
Beet greens (tops)\*  
Bok choy  
Broccoli (mostly leaves/stems)\*  
Brussels sprouts  
Carrot & carrot tops\*  
Celery  
Cilantro  
Clover  
Collard greens\*  
Dandelion greens and flowers (no pesticides)\*  
Endive\*  
Escarole  
Green peppers  
Kale (!)\*  
Mint  
Mustard greens\*  
Parsley\*  
Pea pods (the flat edible kind)\*  
Peppermint leaves  
Raddichio  
Radish tops  
Raspberry leaves  
Romaine lettuce (no iceberg or light colored leaf)\*  
Spinach (!)\*  
Watercress\*  
Wheat grass

(!)=Use sparingly. High in either oxalates or goitrogens and may be toxic in accumulated quantities over a period of time

In the first article in this series, we discussed the need rabbits have for indigestible fiber. But fiber, while important, is only part of the story. Protein and fat and the sources from which they come are also vital pieces in the nutritional puzzle. Because rabbits are still not considered "equal" to dogs and cats by the pet food industry, information about rabbit nutrition and what is best for rabbits is slow in coming.

## **Animal Fat and the Protein Myth**

Humans are now learning that we require a lot less protein than previously believed. Even strict vegetarians may consume more protein than necessary. Rabbits possess neither the need for animal protein nor the capacity to process it, and their fat requirement is also low; 1-2% is plenty for most.

Studies have shown that rabbits, like human beings, develop atherosclerosis-like symptoms when exposed to the cholesterol in animal fat (Cheeke 1987, 325; Beynan 1990, 185-186). Experts in rabbit nutrition have said that "it is well recognized that vegetable oils usually are more digestible and have a higher energy value for swine and poultry than do animal fats. This appears to be true in rabbits also" (Cheeke 1987, 99). Why, then, do we sometimes see animal fat and animal fat derivatives on the ingredients list of rabbit pellets?

Since pellets are manufactured and marketed primarily for breeders, and since most breeder rabbits are subject to more stress than house rabbits, many brands of pellets are labeled as "performance" feeds. These brands contain a high level of protein (16-22%), which is probably necessary to keep alive a rabbit who lives in an environment without climate control, is bred as often as possible, or is nursing most of the time. Physical, environmental, and psychological stresses require high energy levels for survival.

A healthier protein percentage for spayed or neutered house rabbits is approximately 12-14%, a level at which it is possible to find pellet brands that contain no animal fat and list at least some actual ingredients on their labels. People who buy small amounts of "rebagged" pellets in bulk at pet supply stores should be sure to ask to see the bag the food came in and read the label carefully. Purchasing a 25# bag and splitting it with a friend may be safer and more economical. Unfortunately, one well-known manufacturer recently increased the protein in their maintenance diet to 16%. Although the food still contains no animal fat, this is more protein than a house rabbit needs.

## **Not the Best for All Rabbits**

Having said all this, it may still come as a surprise that in recent years many veterinarians and house rabbit caretakers have come to the conclusion that commercial pellets, particularly when fed in large amounts, may not be the best choice for all rabbits. After all, pellets were developed for breeders as a concentrated source of nutrients. They contain all the vitamins and minerals a rabbit requires in a palatable form that keeps for many weeks, is easy to feed, and is (compared to dog or cat food) extremely inexpensive.

The highly concentrated nature of pellets ensures that rabbits gain weight quickly, important for many breeders since those rabbits not bred are often slaughtered for meat by the age of 16 weeks. (UFAW Handbook 1987, 426).

Clearly, when "production" is the goal there is considerable pressure for weight gain and maintenance, and very little concern with geriatric matters. Needless to say, no house rabbit lives under these conditions. Most are spayed or neutered, live indoors with minimal environmental stress, and can expect to make it to six to twelve years of age. In these rabbits, the concentrated nature of pellets can lead to obesity and its attendant medical problems.

## **A Better Way**

Because of several potential problems associated with pellets, some veterinarians now recommend that pellets be not only rationed, but rationed quite severely. Instead of giving the rabbit all she can eat in a day, a night, or a few hours, we have been considering the following amounts as maximums (Brown 1994):

5-7 lb of body wt. 1/4 cup daily

8-10 lb body wt. 1/2 cup daily

11-15 lb of body wt. 3/4 cup daily

There is evidence that small breeds (under 2 lbs) may require a diet higher in energy and lower in fiber than the larger breeds (Cheeke 1987, 324). Several foster homes have experienced digestive problems in rabbits under 4 lbs who were put on severely restricted diets.

Once pellets have been reduced, it is equally important to make sure that fresh grass hay is available to the rabbit at all times, and that fresh vegetables be given in larger amounts than has previously been recommended (up to 2-4 cups a day). Actually, because of the problems usually associated with the overfeeding of pellets, some rabbits do better if they receive no pellets at all. Instead, they eat several cups of fresh veggies a day and all the grass hay they want. Other rabbits still eat pellets, but receive significantly less than the above amounts, with a corresponding increase in the amount of vegetables offered. These more extreme measures are particularly helpful for overweight rabbits who need to lose weight safely. Treats should be limited to small (1 tsp.) amounts of fresh fruit. Most starches should be avoided, since too much carbohydrate has been associated with enteritis. Oats and barley in small amounts can be digested by rabbits but can, nonetheless, provide more calories than necessary.

In feeding trials in which pelleted feed was reduced to 50% of normal intake and the diet was supplemented with greens, young rabbits maintained normal growth. When the amount of pellets was reduced to below 50% of "normal," growth rate declined (Pote et al 1980). These studies indicate that even young, unaltered rabbits do well on a reduced pellet diet. Since most of our house rabbits need to lose weight rather than gain, reducing pellets below 50% should not affect spayed or neutered adults adversely.

## **What kinds of vegetables?**

There are different opinions regarding which vegetables are the best for rabbits. Nearly everyone agrees that carrots, carrot tops, broccoli, and parsley are safe, and that beans, potatoes, and some lettuces are potentially problematic. HRS members and fosterers have used many veggies with success, including collard, mustard, dandelion and turnip greens, spinach, kale, endive and Romaine lettuce.

It is best to feed at least 3 types of greens daily (along with carrot, perhaps), because feeding one type only can lead to nutrient imbalances (Brown 1994). However, such imbalances are less likely to occur if at least a small amount of pellets is given each day.

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 1-3 meals a week. One method is to feed kale (with other veggies) for several days until 1-2 bunches are gone, then avoid buying it again for a week or so. The same precautions can be taken with the veggies that are high in calcium if your rabbit is prone to urinary tract stones. Particularly for rabbits who eat no or few pellets, try to include at least one veggie daily that is high in vitamin A (such as carrots, collard or mustard greens, endive, or parsley). If all these instructions seem complicated, simplify things by making sure you vary your rabbit's diet as much as possible to avoid giving too much or too little of any one food. This makes good sense for all of us!

The most important aspect of increasing the amount of vegetables in a rabbit's diet (and the amounts mentioned here represent a radical increase for most rabbits) is to do so gradually. Even if a particular vegetable is safe for your rabbit, giving her a cupful when she is unaccustomed to such riches could wreak havoc on her digestive tract. Instead, begin with something that has been previously successful, such as carrot. Increase the amount slightly, and as long as no diarrhea occurs, add a small portion of a new veggie every few days. This way, you can be sure which food is the culprit if digestive problems are experienced.

The best fresh foods for rabbits are those that have been grown organically, without the use of pesticides; in any case, be sure to wash your rabbit's vegetables thoroughly. Rather than scraping carrots (which removes the nutritious skin), scrub them with a vegetable brush. The key is to remove any dirt or pesticide residue, and to check carefully for rotted areas. Unless you are sure wild dandelions are protected from pesticides, check at your local health food store for organically grown ones.

## **Catching Problems Early**

One potential side effect of this more natural diet, is that it is easier to notice when your rabbit has a decrease in appetite. This may help you to notice some illnesses more quickly. If a rabbit fed in this way backs off her food even slightly, there is probably something wrong (early enteritis, for instance) which can now be treated several days earlier than it would otherwise.

Most rabbit caretakers welcome this peace of mind, and most veterinarians are thrilled to see a rabbit before the problem becomes an emergency.

## **Continuing Research**

Even if you greatly increase the amount of vegetables your rabbit receives, we are reluctant at this time to recommend eliminating pellets from a rabbit's diet entirely unless there is a pressing medical reason to do so. Just as grain has its place in the diet of a horse, pellets have their place in the diet of a rabbit, and giving a small amount every day ensures that the diet remains balanced. Still, our experiences in HRS, and those of veterinarians who see a large number of rabbits, do indicate that the amount of pellets given to most house rabbits is far too high for their nutritional needs. As time goes by and we hear more about the results of diet variations, we will certainly learn even more about using nutrition to keep our rabbits healthy and happy for as long as possible, so let us know about your experiences. As always, we learn more from the rabbits we know than from any other source. o

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