RABBIT DIET GUIDELINES

HAY

Hay is the most important part of the house rabbit diet. A constant supply of good quality grass hay must be available 24 hours a day.

Hay provides healthy indigestible fibre, which keeps the digestive tract working normally. It has been documented that plenty of roughage, especially hay, will reduce problems with hairballs and other blockages, which can be deadly to rabbits. In addition hay contains a variety of other nutrients and calories essential to the good health of your rabbit. The type of hay preferred is GRASS hay, which can include timothy, prairie, brome, meadow, oat (this is the Grass, not the oats you buy in the store to eat for cereal), and Bermuda. Often, grass hay is sold as mixed grass, which contains several of these types.

Alfalfa hay is not preferred due to its higher calorie and calcium content. However, in situations where grass hay is not available, alfalfa may be used temporarily. It is better than no hay at all. We prefer the loose hay as opposed to hay cubes, but for those with allergies to loose hay, the cubes can be an alternative and are better than no hay.

Feeding hay has other health benefits besides keeping the digestive tract in good shape. Because hay is more abrasive and takes longer to break down by chewing than a pellet (which is made of compressed fine particles) there is tremendous benefit to the teeth. The teeth grow throughout a rabbit’s life and overgrown molars and incisors can be a problem if the rabbit does not have enough abrasive material to chew on. In addition, the additional time chewing hay and the "full feeling" to the stomach which hay provides will result in less chewing on other objects in the house (it doesn't stop electric cord chewing!). It also decreases the incidence of rabbits chewing on their own or their companion’s fur.

Mixed grass hay should be available at feed and grain stores, horse barns, or farms. If you have several rabbits or don’t want to commute too often to purchase it, you may want to buy a whole bale. When you do buy hay, make sure it did not come from the top of the stack where it may be contaminated by animal or bird feces. Hay should be stored in a cool, dry place, safe from racoons and birds with good air circulation (don't close it tightly in a plastic bag). Discard wet or damp hay, or any hay that does not have a “fresh” smell.

The House Rabbit Society has discovered that one of the easiest ways to provide a maximum amount of hay to our bunnies is to combine newspaper and hay in the same large box (litter box). Simply put a layer of regular newspapers in the bottom of a large kitty litter box and add a nice, thick, soft bed of hay on top of that. Typically, only a limited area in the box is used by the rabbit(s) for toilet purposes, while the rest is enjoyed as a bed and convenient place to munch hay. Add layers of fresh hay daily between litter box cleanings.

VEGETABLES

Fresh vegetables are the second most important part of the house rabbit diet. These foods should be given daily. Rabbits in the wild eat a lot of tough, fibrous
plants. Their digestive tract functions best when it has a high level of fibre, which helps to maintain the normal intestinal motility.

If your rabbit has never eaten green foods before, then it is best to establish it on hay first. If your rabbit is already eating hay, then there is generally no problem starting right out with fresh green foods no matter what the age of your pet. The danger of feeding green foods to rabbits as stated in many older books on rabbits is not true in rabbits that are also eating hay. The problem in the past has been with rabbits that were on a diet of strictly alfalfa-based pellets, which results in a more sluggish movement of the intestinal tract than is normal.

When greens are suddenly introduced to these rabbits, the result is a soft stool or even diarrhea caused by an increased motility of the intestinal tract due to a higher fibre and fluid content. If your rabbit is already eating hay, the intestine is in good shape and adding greens will not affect your rabbit's health adversely. There are occasionally greens that cause a harmless softer stool (notoriously parsley) and these can be eliminated from the diet if this is the case. When using greens for the first time, start with something like romaine, kale or mustard greens and then add a new green food every couple of days. If you find any food that results in a softer stool the same day it is fed, then temporarily eliminate it from the diet and try again in a month or so.

Feed a minimum of 3 leafy green foods daily. The more variety the better for the rabbit, not only in nutrition, but also in recreational appeal due to different tastes and textures of food. The following are all foods that you can try with your pet. The minimum amount of leafy foods given daily is about 1 tightly packed cup per 4 pounds of body weight. Once your rabbit is established on hay and greens you can feed essentially unlimited amounts of these foods listed. These foods may be offered once or twice a day. As with yourself, make sure to wash all fresh foods carefully before using and when possible either grow your own or use organic. Because fresh vegetables are not as concentrated in nutrients pound per pound as the dry hay, you should not depend on greens only to maintain your rabbit's weight. Rabbits must have hay as well as greens in the diet!

Here are some examples of food items you can feed your pet:

- Carrot tops, beet tops, dandelion greens and flowers (these are excellent, but no pesticides, please)
- Kale, collard greens, escarole, romaine lettuce (Don’t give light colored head lettuce - i.e., iceberg lettuce)
- Chicory, endive, green, red or yellow peppers, Swiss chard, parsley, clover, radicchio
- Broccoli crowns (don't forget the leaves), carrot (limit to a few slices per day because of their sugar content)
- Pea pods (the flat edible kind), Brussels sprouts, basil, wheat grass, mesclun greens mixes
- Peppermint leaves, raspberry leaves, bok choy, frisee, fresh basil, cilantro, watercress
- Sprouts (alfalfa, clover, or radish), mint, fresh dill

Try to feed at least 3 different types of greens daily. The readily available packages of premixed greens for salad are usually not sufficient for the bunny's needs, as they contain a lot of lower nutrient lettuces such as iceberg. You may use these
pre-mixes as no more than a third of the daily amount fed, and only if they contain no preservatives.

**PELLETS**

Rabbit pellets are the least important part of the house rabbit diet. Commercial rabbit pellets are high in calories, low in volume and require little chewing which can be a problem for an animal such as a rabbit that was designed to eat large volumes of tough, high fiber foods in its natural diet. Alfalfa-based rabbit pellets were originally designed for the rapid growth of production or laboratory rabbits that do not usually live out their full life span.

In the spayed/neutered house rabbit who is being kept through his/her full life span, the feeding of pellets, (particularly if they are a large part of the diet) may lead to disease such as obesity, liver disease, chronic soft stools and kidney disease which results from the high concentration of carbohydrates, low fiber, high protein, fat and high calcium levels in the pellets.

In many cases your veterinarian may recommend feeding no pellets at all, particularly to adult rabbits. Do not become alarmed because your pet will be able to receive all the nutrients necessary from the hay and fresh vegetables that you will be instructed to feed. Rabbits are very efficient at making their own vitamin and minerals in the form of cecotropes which they produce from their hind gut and eat and redigest (see section called Night Droppings). Complete removal of pellets from the diet is commonly the treatment suggested for overweight bunnies who need to lose weight or for rabbits with chronic soft stools.

If you choose or are advised to use pellets in the diet, use a good quality rabbit pellet that is at least 18% minimum or higher in fibre, 2.5% or less in fat, 16% or less in protein and 1.0% to or less in calcium. Keep the pellets in an airtight container to prevent contamination with moisture or vermin. If possible, check the mill date (the date the pellets were produced at the factory) on the package and use them within 90 days of this date.

Discard pellets that are old, moist, bug-infested, or don’t smell fresh. Some examples of good quality pellets are: Supa Rabbit and Russell Rabbit. Call around until you find a feed store that will sell small quantities, like 5 or 10 pounds, or share purchases with a friend who has a rabbit. Some people freeze the extra pellets until they need them. Nevertheless, purchasing pellets in 25-lb. bags is less expensive than buying them in smaller packages.

Avoid the packaged pellets containing dried bananas, nuts, seeds, and puffs. This product is too high in sugar and carbohydrates, and can cause obesity, diarrhea, and/or other serious health problems. Limit your rabbit to plain, fresh-looking and smelling, dark green rabbit pellets.

A Timothy hay-based pellet food, which is higher in fibre and lower in calories, protein, fat, and calcium than the alfalfa-based brands, is also available.

The following chart shows maximum daily amounts to be fed to your bunny. Do not refill the bowl even if the pellets are all eaten before the next day. **Overfeeding of pellets is the number one cause of health problems in rabbits.**

Keep your rabbit healthy by not overdoing it!
*Rabbits up to 6 months of age can have access to pellets free choice, because they are still growing rapidly. However, after 6 months of age they should not receive more than 25gr per kg of body weight.

**WATER**

Water should always be available, and changed daily. The container can be either a water bottle or heavy bowl that is weighted or secured to the side of the cage so that it does not tip over. A dirty water container can be a breeding ground for bacteria that can cause disease. If you wouldn’t drink from it, neither should your rabbit! (Bottles and bowls can be soaked for 5 minutes in water and a small quantity of bleach to remove or to prevent "green" tinge, then rinsed well.) Rabbits drink more water from bowls than they do from a bottle because it is an easier (and more natural) way to get it. A bottle might be used more as a backup in case the water from the bowl is spilled.

Avoid the use of water medications or other additives, because your pet may not drink sufficient quantities of water if the taste is altered. Note that rabbits that are getting a large portion of greens in the diet get most of their fluid requirements from these foods and will drink very little other water.

**Feeding Schedule**

It is recommended to feed 2 fresh vegetable meals per day (breakfast & dinner), fresh water at all times, pellets in limited amount, and once a day treats (as explained in the Treats section).

Vegetables such as kale, dandelion greens, mustard greens, spinach, and parsley contain higher levels of calcium and should not be offered in excessive amounts, especially if your rabbit is prone to urinary tract stones or "bladder sludge" (thick, pasty urine).

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!

**Lactobacillus/Acidophilus (Yogurt)**

Lactobacillus or Acidophilus (Yogurt) is often recommended in some texts for the diet of the rabbit, but although it is not harmful, it is not necessary. The touted benefit is that the live bacteria in the yogurt will replace bacteria that may be killed in the intestinal tract of the rabbit by disease or drugs. Lactobacillus is NOT a significant normal part of the rabbit intestinal flora and in addition it will be killed in the stomach before it even reaches the intestine due to the fact that the stomach pH is about 1-2. Therefore, it makes no sense to give this product. The nutrition that may be gained by feeding a dairy product (which contains animal protein, which rabbits don’t really need) could be better provided by a plant source such as a dark green leafy vegetable.
Vitamins

Vitamin supplements are not necessary in the healthy rabbit. Rabbits not only get these nutrients from the hay and fresh foods, but also produce their own vitamins, such as vitamins C, B-complex, and K in their cecotropes which they then re-eat and digest. (See the section called Night Droppings). In fact, the indiscriminate use of vitamins may lead to overdosage and serious disease. In addition vitamins added to the water can cause the rabbit to not drink sufficient amounts of water due to the bad taste and can actually cause more rapid bacterial growth. Use additional vitamins only under the supervision and advice of your veterinarian.

Salt/Mineral Blocks

Salt or Mineral Blocks are not necessary for the house pet on the described diet.

Night Droppings (Cecotropes)

It may seem strange to list this as a part of the diet, but these "special droppings" known as cecotropes, are an essential part of your pet's nutrition. During certain times of the day, usually about 4-6 hours after eating, you may observe your pet licking his or her anal area and actually eating some of the droppings in the process.

Cecotropes are softer, greener, and have a stronger odor than the normal hard, dry, round waste droppings and they come directly from the cecum, which is the part of the digestive system where fermentation of food takes place. The cecum is located at the junction of the small and large intestine. In the cecum the digestible portion of the diet is broken down by bacteria, which then produce fatty acids, amino acids (proteins), vitamins and minerals. Some of these nutrients are absorbed directly through the wall of the cecum, but most of the nutrients are kept inside the bacteria, which are excreted in the cecotropes.

Your rabbit knows when these droppings are being produced and will take care of eating them himself. After eating these nutrition rich droppings your pet will redigest the material and extract all the necessary nutrients. This habit may appear distasteful to us, but it is normal and important for your pet. In fact, in this way, the rabbit can survive in the wild on food that other animals might not be able to thrive on because they could not digest it and extract the vital nutrients. The rabbit actually does an excellent job producing its own nutritional supplements within its body.

Occasionally a rabbit will drop these cecal pellets along with the waste pellets instead of eating them. This often happens when the diet contains excessive amounts of protein or energy. These droppings will be soft, green to brown, appear clumped and are misshapen, but formed and have a strong odor. This is not diarrhea, and if it only occurs occasionally, it is not considered a disease problem. Some rabbits leave excessive amounts of cecotropes in the cage because they can't reach the anal area. Conditions such as obesity, flaps of skin over the anal area, spinal disease, painful abdomen or pain in general can lead to this condition.

A diet that is low in fiber or high in energy may also lead to a chronic and persistent production of cecotropes that are too soft and liquid to be eaten and, thus, are left in little puddles around the environment mixed with normal waste stools. Your rabbit needs to be examined by a veterinarian if you see excessive amounts of cecotropes or abnormal stools.
Sources:
- Dr. Susan Brown, D.V.M. from the Midwest Bird & Exotics Animal Hospital in Westchester, Illinois
- HRS Journal, Winter 1995, Vol. 3 No. 4
- HRS Handout, titled, "Hay Is The Basis Of Healthy Rabbit Diet"

Article adapted from the Massachusetts House Rabbit Society:
http://www.mahouserabbit.org/dietguide.shtml