

Rabbit Nutrition

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Two Nutritional Directions

From the Rabbit's Point of View



From Our Point of View



We'll go with the rabbit's for now.

Rabbit Nutrition Starts with YOU!



YOUR Role with THEIR Nutrition

- Feed and check water daily
- Develop a routine
- Be consistent
- Purchase and properly store quality feeds
- Spend time in the barn
- Be observant
- Keep feeders and watering system clean
- Keep good records

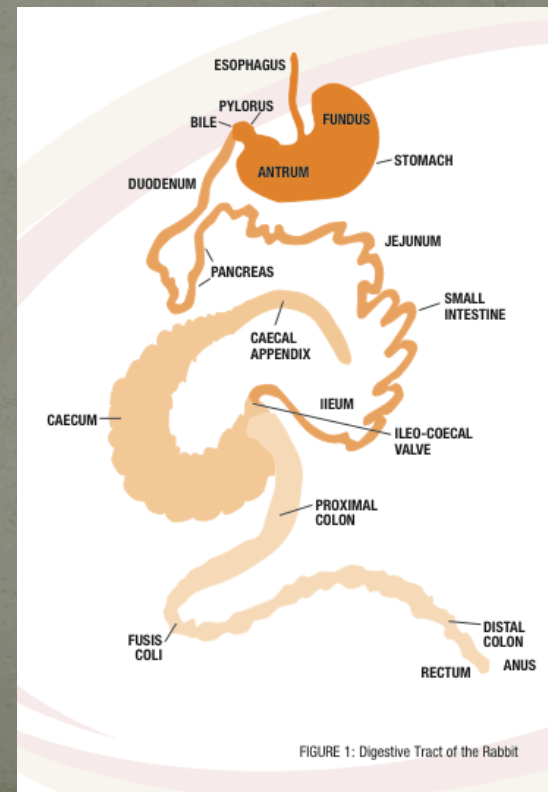


Feeding Domestic Rabbits

- Accounts for 75% of production costs
- Most are fed pelleted rations, grass hay, and water
- Strong influence on breeding, fertility, conception, kindling, nursing, growth, and resistance to disease
- Ideal feed conversion of growing rabbits – 4:1
- If necessary, switch feeds gradually

Rabbit Digestive Anatomy

- Monogastric (single stomach)
- Herbivorous (eat plant material)



Physical Check Points

- Teeth
 - Beginning of nutritional tract
 - Malocclusions (cull animal when found)
- Body fat
 - Over vs. under conditioning
- Signs of illness or injury
 - Will likely eat/drink less

Nutritional Needs of Rabbits

TABLE 1. NUTRIENT REQUIREMENTS OF RABBITS^a

Nutrient	Growth	Maintenance	Gestation	Lactation
Crude protein (%)	16	12	15	17
Digestible energy (kcal)	2500	2100	2500	2500
TDN (%)	65	55	58	70
Crude fiber (%) ^b	10-12	14	10-12	10-12
Fat (%) ^b	2	2	2	2
Calcium (%)	0.4	c	0.45	0.75
Phosphorous (%)	0.22	c	0.37	0.5

^aConsult publication listed at the bottom of Table 2.

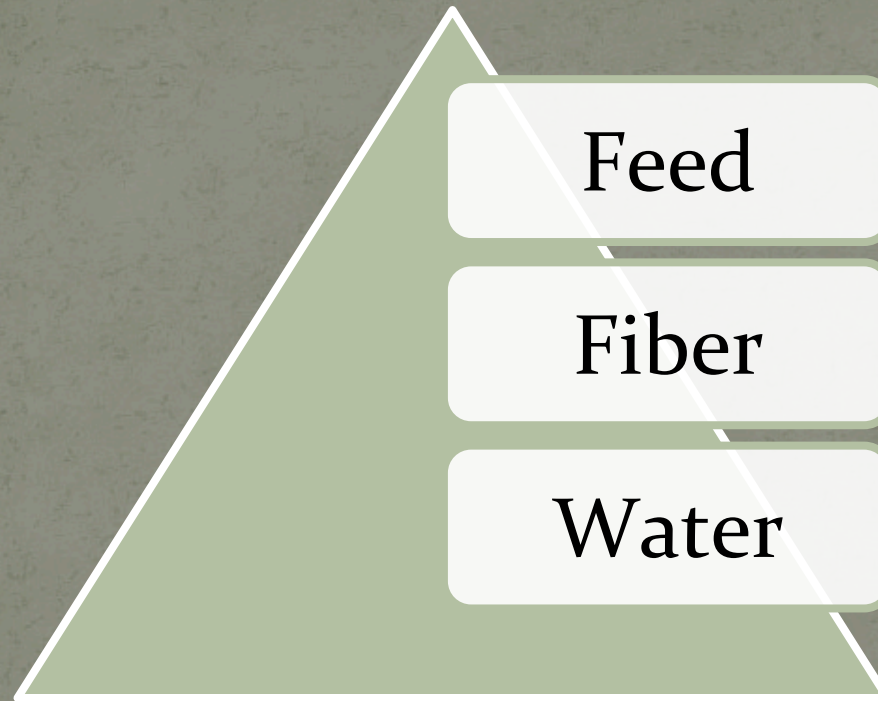
^bMay not be minimum but known to be adequate.

^cQuantitation requirement not determined, but dietary need demonstrated.

You can use a single feed for all rabbits, so long as the minimum protein needs are met. Protein is typically the most expensive ingredient, so feed costs will likely be higher.

During periods of increased performance (breeding season), bucks and does' should be placed on a 15% protein ration.

What to Feed Daily



Fiber found in pelleted feeds may not be of the proper length to promote a healthy gut, so hay is a must. (<http://www.bio.miami.edu/hare/diet.html>)

How Much to Feed

- Water – Unlimited
- Hay – Free choice or hand feed
- Pelleted Feed
 - Small breed – 4 oz.
 - Large breed – 6 oz.
 - Giant breed – 8 oz.
 - Adjust as necessary
 - If feed is left over from the day before, cut back
 - If body condition is lessening, increase feed



Age or Condition

Growing rabbits (After weaning)

Resting Does

Does in Gestation

Nursing Does (until litter is 3 weeks of age)

Does with litter of 7 or 8 (3 to 8 weeks)

Amount to Feed Daily

3 to 4 ounces

2 to 5 ounces

4 to 8 ounces

6 to 8 ounces

1 to 2 pounds

Which one holds 4 ounces of feed?



They all might, but it may depend on the feed. The only way to know for sure is to weigh your feed. Remember the old question, “which weighs more a ton of lead or a ton of feathers?” They both weigh the same, but have far different volumes. The same is true with feeds. One brand of feed may be heavier than another.



The Feed Tag

GUARANTEED ANALYSIS

Crude Protein (Min).....	16.00%
Crude Fat (Min).....	1.50%
Crude Fiber (Min).....	17.00%
Crude Fiber (Max).....	20.00%
Calcium (Ca) (Min).....	0.60%
Calcium (Ca) (Max).....	1.10%
Phosphorus (P) (Min).....	0.40%
Salt (NaCl) (Min).....	0.50%
Salt (NaCl) (Max)	1.00%
Vitamin A (Min).....	4,650 IU/lb

INGREDIENTS

Dehydrated Alfalfa Meal, Wheat Middlings, Ground Soybean Hulls, Dehulled Soybean Meal, Ground Corn, Wheat Flour, Cane Molasses, Ground Oat Hulls, Lignin Sulfonate, Salt, Monocalcium Phosphate, Calcium Carbonate, DL-Methionine, Choline Chloride, Iron Oxide, L-Lysine, Sodium Selenite, Vitamin E Supplement, Niacin Supplement, Riboflavin, Vitamin A Supplement, Dried Aspergillus Niger Fermentation Extract, Vitamin B12 Supplement, Dried Yeast, Dried Enterococcus Faecium Fermentation Product, Dried Lactobacillus Acidophilus Ferment Product, Vitamin D3 Supplement, Cobalt Carbonate, Manganese Sulfate, Ethylenediamine Dihydriodide, Zinc Sulfate, Dried Yucca Shidigera Extract, Copper Chloride, Dicalcium Phosphate, Monocalcium Phosphate.

Keep your feed in a sealed container to prevent exposure to moisture, insects, rodents, and excessive heat.

Seasonal Feeding?

Cold

- Burn energy to stay warm
- Consider increasing feed when heading into winter to provide additional nutrition for hair growth and body condition

Hot

- Burn energy to stay cool
- Consume as much as 4 times as much water as feed
- Provide unlimited water
- Maintain feeding according to body condition

Q&A by Dr. Fairies, DVM –
Professor and Extension Program Leader for Veterinary Medicine

Question: What seasonal modifications should be made to feeding schedules? Does increasing carbs help rabbits in winter as metabolism just kicks up higher, or should fiber instead be increased?

Answer: *Rabbits housed in a cold environment will have an increase in their metabolism to mobilize (burn) stored fat to maintain normal body temperature with the energy (heat) produced from the increased metabolic rate. Increased energy intake by the diet is accomplished by the rabbits eating more in self-feeding or owner hand-feeding the rabbits a commercial pelleted rabbit feed. Sources of energy are fatty acids (fats and oils), carbohydrates, protein, and fibers (with grains being the highest, and fiber plants being the lowest).*

Increasing fiber intake will decrease intake of commercial pelleted feed and cause negative effects.

Do not increase fiber or carbs alone. Increase the amount of feed to match increased metabolism.

Cold, growth, exercise, pregnancy and lactation kicks up metabolism.

Q&A - continued

Question: Is there any real benefit to blending in barley, rolled oats and other such supplements with pelleted feed? Do certain grains and oils make any difference in flesh and fur?

Answer: *Grain supplements added to the diet increases quantity and decreases quality of the commercial pelleted feed by decreasing the protein and fat percentages of the total ration and can cause negative effects. There are no benefits to such supplements.*

Question: What about oil? Many breeders use flaxseed oil or other oils in the feed mix. Is there evidence that this promotes a healthier hair coat?

Answer: *Oil supplements are unnecessary in feeding commercial pelleted feed. The essential quantity of fatty acids is incorporated in good quality pellets. There are no benefits for hair coat; only for laxative effects.*

Closing Advice from Dr. Fairies

People should rely on good quality pelleted feed for rabbits from good reputable feed companies who have balanced the ration. People should not unbalance the ration developed by research. The people add and add to make themselves feel better...but making the rabbits feel bad. The balance ration includes 16% protein, 2-4% fat, and 14-16% fiber. Any added vegetables or fruit must be small treats only, not to affect required intake of pellets.

There are not benefits to change it by increasing these percentages; there are benefits to increase intake of pellets without changing the percentages. The message: "Depend on balanced pellets and don't get the total ration out of balance with supplements."

So what works?

1. Genetics
2. Quality Feed / Hay from reputable suppliers
3. Fresh, Clean Water
4. Consistent feeding program
5. Clean, well-ventilated facility
6. Saving your supplement money to spend on improving genetics

Now, Nutrition from OUR Perspective!

Nutritional Values of Common Meats¹

Meat (edible portion,uncooked)	Percent Protein	Percent Fat	Percent Moisture	Calories per Pound
Rabbit (fryer, with giblets)	20.8	10.2	67.9	795
Chicken (fryer, with giblets)	20.0	11.0	67.6	810
Veal (medium fat)	19.1	12.0	68.0	840
Turkey (medium fat, with giblets)	20.1	20.2	58.3	1190
Lamb (medium fat)	15.7	27.7	55.8	1420
Beef (fat)	16.3	28.0	55.0	1440
Pork (medium fat)	11.9	45.0	42.0	2050

¹Taken from Circular No. 547, U.S. Department of Agriculture, Washington, D.C.



Sources

- <http://web1.msue.msu.edu/4h/anisci/4H1440RabbitTracks-SumRabCare.pdf>
- <http://homepage.mac.com/mattocks/morfz/rabrefs.html>
- http://www.nap.edu/openbook.php?record_id=35&page=1