Feeding of rabbits







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Rabbits are raised for:
Meat and fur
As a lab. Animal
Showing in Exhibition
Common household pets



- •New Zealand and California are
- the major breeds for commercial meat production

Rabbit feed should be pelleted because:

A- Non pelleted feeds are not accepted by rabbit B- It gives low growth rate and high feed wastage.

Economic importance of feed for rabbits:

- Feed conversion of rabbit is 3:1
- Protein efficiency ratio is 6:1,
- Dressing percentage is about 80%.
- Rabbit reach to about more than 2 kg at 8 weeks age.
- Bucks can be used for breeding at age of 8-10 months.
- does are ready for fertilization at 5-7 months
- Productive life of bucks and does is 2-3 years
- Young rabbits are weaned at 3-4 weeks of age.
- Does can be rebred anywhere from 5-30 days after kindle and buck is kept for 10-15 does (better 5-10) and produce more than 500 off-springs annually.

Nutrient requirements

The nutrient requirements of rabbits are influenced by their digestive physiology and microbial fermentation in the cecum.

Coprophagy (cecotrophy)

Rabbits are non-ruminants herbivore, and digestion of fiber occur in large cecum.

- Coprophagy is a process of consumption of cecotropes or soft fececs by rabbit directly from the anus to be digested in the small intestine and provide rabbit with microbial protein, vitamins and Energy from VFA.
- Selective separation of digesta on the basis of particle size occurs in the hindgut proximal colon (fiber particles and non fiber particlues (satch, protein, fluid).
- Peristaltic action moves large particles (fiber particles), lignocellulose through the colon and excrete them as fecal pellets hard feces.

- Antiperistaltic action moves small particles (non fiber particles) and soluble into the cecum and undergo fermentation.
- Cecal content expelled as soft feces or cecotropes covered with mucous to protect them farm stomach acidity which reingested directly by the rabbit from the anus and digested in the small intestine to provide rabbit by:
- Microbial protein,
- Vitamins
- Energy from VFAs.
- Consumption of cecotropes (cecotrophy) is an essential part of the normal digestive processes of rabbit.



Note: Numerical values are those observed in the New Zealand White breed, aged 12 weeks, fed a complete balanced pelleted feed.

Rabbit feces

Cecotropes

Cecotropes

Hard feces





Importance of crude fiber

Generally 12-15% of CF is needed to:

- Promote and maintain normal intestinal motility.
- Minimize intestinal diseases "enteritis"
- Absorb bacterial toxins and eliminate it via hard feces.
- Prevent fur chewing and hair ball formation
- Low fiber diet promote an increased incidence of intestinal problems, e.g enterotoxaemia.
- This may be as a result of the higher starch content of low fiber diets.
- High fiber diet (20%) lead to ceacal impaction and mucoid enteritis

Protein Requirements

- Rabbits need 12 % protein for maintenance,
- 16 % for growth, gestation and 18 % for lactation.
- Consuming cecotropes physiologically regulated by the need from amino acids
- Cecal fermentation and coprophagy result in ability of rabbit to use some NPN.
- The protein quality is important and EAAs profile is very similar to that of the chick.
- Legumes and clovers are excellent sources of protein.
- Protein Req. increase with increasing the dietary fiber level and in high environmental temperature.

Energy requirements

- Energy level in typical rabbit diet is 2400 kcal DE/kg diet
- Higher energy diets tend to promote microbial overgrowth in the cecum lead to enteric disease.
- Rabbit do not digest fiber efficiently, so non fiber components in the cecum retain for fermentation followed by coprophagy.
- Fat included in the rabbit diets at level of 2 5%.

The amount of energy, protein and CF required by rabbit

	Maintenance	Growing & gestation	lactation
DE kcal/kg	2100	2500	2600
CP %	12	16	18
CF%	16	14	12

Mineral requirements

- The most important minerals for rabbit are Ca, P, Na and Cl, specially for growing and lactation.
- Rabbits are very efficient in absorption of Ca and rabbit urine has cloudy appearance which have high content of Ca carbonate.
- Ca/P ratio in rabbit diets is 1.1 to 1.5 : 1.
- Cobalt is required for vitamin B12 formation, also iron and copper to prevent anemia.

Vitamin requirements

Vitamins are essential for healthy rabbits.

- Vitamin A deficiency in rabbits cause resorbed fetuses, abortion, hydrocephalus (enlarged head containing fluid), weak kits at birth.
- Green fodder rich in vitamin A and D.
- Bacterial synthesis and coprophagy supply the needs of vitamin K and water soluble vitamins.

Feeding systems

1- Bulky ration:

- A wide variety of green food with hay and small concentrate feed.
- Rabbits fed 2-3 times/day.
- This system has less cost and rabbit production can not be expected to very high.
- 2- Concentrate ration:
- Rabbits fed on concentrate rations with no bulky feed.
- In order to make full use of concentrates and avoid digestion problems, rabbits should be of good strain and selected for efficient meat production.
- Rations have two types: home-mixed and ready mixed.

3- Concentrate ration and hay:

- Hay are left before rabbit at all time.
- This system is modified so that the roughage is incorporated with the concentrate feed in the same pellet.
- Self feeding system has advantage as less food is required to produce 1 lb weight gain and growth is faster.

Feeding young rabbits

- For the first 2-3 weeks old, baby rabbits fed on milk
- From the third week, young rabbit start to eat grass and concentrates as well as suckling the doe.
- At 5-7 week old, the litter is separated from mother.
- From weaning, the young rabbits depend on green food, vegetables and concentrates.





Practical feeding of rabbits

- Changing ration should be carried out slowly and gradually to avoid digestive disturbances.
- Avoid forced feeding by starving the animal to eat unpalatable feed. Add molasses and other palatable feeds.
- Feeding a variety of feeds is important.
- Regularity of feeding.
- Preparation of feed is not often necessary, except for wet mashes.
- Cleaning of feed is often necessary.
- Mixing of concentrated feeds after grinding must be very important.

Example for rabbit diet

Ingredients	Lactation	Pregnant	Growing
Barseem hay	30	32	30.39
Wheat bran	25.34	40	30
Barley grain	24	15	25
SBOM (44 %)	15	8	10
Bone meal	0.7	-	-
Molasses	3	3	3
Lime stone	1	1.2	1
Premix	0.3	0.3	0.3
salt	0.5	0.4	0.25
DL methionine	0.07	0.06	0.06
СР	18.4	16.54	16.3
CF	12.75	13.3	12.4

General nutritional problems of rabbits

1- Enteritis: (Enterotoxaemia):

- Caused by bacterial toxins elaborated in the gut.
- The major organisms involved are clostridium and pathogenic strain of E-coli.
- Enteritis occur in weaning rabbits and postweaning fed on low fiber diets.

2- Hypo motility:

- Lack of normal good contractions, with low fiber diets is a contributing to enteric problems.
- Adequate dietary fiber helps to prevent cecal impaction

3- Fur chewing:

- Common problem in rabbits, animals pull and consume their own hair or of other animals.
- Fur chewing leads to hair balls in the stomach.
- Inadequate fiber in the diet leads to fur chewing.
- 4- Pregnancy toxemia
- 5- Reproductive problems in rabbits:

As resorption of fetus, weak litter at birth due to energy and vitamin A deficiency.

6- Nutritional effect on fur: Many nutrients effect on fur as fat, copper in melanin synthesis, iron, folic acid, biotin, pantothenic acid and lysine.

Non Nutritional diseases

Pasteurellosis

Parasites

Two main types of Parasites

☐ Mites: cause ear and skin mange

Protozoa: Coccidiosis

Sore Hocks

□ The main disadvantage to wire cages

□ Wear of the fur on the hocks and can create open sores on the hocks.