Backyard Rabbit Raising for Meat Production

Fig. 1. — A satisfactory two-compartment rabbit hutch

EXTENSION SERVICE
Institute of Agricultural Sciences
THE STATE COLLEGE OF WASHINGTON
Pullman, Washington
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BACKYARD RABBIT RAISING FOR MEAT PRODUCTION*

Compiled by F. W. Frasier and John P. Miller, Extension Poultrymen

INTRODUCTION

Consumption of rabbit meat in Washington is increasing, particularly by people raising rabbits for their own meat supply. The home use of this fine grained, pearly white, nutritious meat will add variety to the family diet throughout the year.

Having no objectionable features and taking up little space, rabbits are being raised in every state in the Union. They may be kept in the city backyard as well as on the farm, in fact, wherever poultry raising is permitted. Their hutch~ can be built of scrap lumber, used poultry wire, crates, and similar material that can be had at little or no cost. Clean table scraps, garden waste, lawn clippings, palatable weeds, and small limbs trimmed from fruit trees may be used to supplement their regular rations.

Rabbit meat is quickly produced—only 90 days are required from the time the doe is mated until the young rabbits are ready for the table. It is economical too—only 4½ pounds of feed are needed during this period to produce one pound of live weight. Older and heavier rabbits—those beyond the fryer age—are excellent for a fricassee or a roast.

FAMILY FOOD FROM THE SMALL RABBITRY

Three or four does and a buck of the medium-weight or heavier breed will furnish the average family with all the rabbit meat that it will use. Properly developed and finished fryer rabbits weighing 3¾ to 4½ pounds will yield dressed carcasses of 2 to 2½ pounds, about 77 per cent of which is edible. For variety it will be desirable to develop some of the young rabbits to heavier weights to fricassee and roast. Mature does and bucks that have served their period of usefulness may also be conditioned and used for these purposes. The heavier rabbits weighing 10 pounds will dress 6 to 6½ pounds. By developing junior bucks and does, the herd may be enlarged from time to time to supply meat to neighbors or markets.

* The information in this bulletin is largely taken from publications prepared by George S. Templeton, Director, United States Rabbit Experiment Station, Bureau of Animal Industry, Agricultural Research Administration, U.S.D.A.
CHOOSING A BREED

Practically all breeds of domestic rabbits are satisfactory for producing meat for home use. The medium weight and larger breeds—New Zealand, American, Beveren, French Silver, Chinchilla, and Flemish Giant—are best suited in size and conformation for the production of meat and fur. White skins usually bring higher prices. Choice of white breeds is largely a matter of personal preference.

SELECTING BREEDING STOCK

For foundation stock, the breeder may start with young rabbits just weaned or with mature animals. If young rabbits are selected, the breeder will have a chance to become familiar with the animals and their habits by the time they are ready to go into production. On the other hand, time may be saved by buying mature stock. In this case it might be best to get one or more does, already bred, and then select a nonrelated buck when needed. Reliable breeders will gladly help the beginner in picking good healthy stock. Buying rabbits locally saves transportation costs. Addresses of breeders can be obtained from local, state, and national rabbit breeders associations. The State College of Washington does not sell rabbits.

HUTCHES AND EQUIPMENT

Hutches should be made so that they can be kept clean easily and will give the rabbits comfort and easy feeding. If portable, they can be easily moved under trees for shade and near or in buildings for protection. The standard hutch is 4 feet long, 2½ feet wide, and 2 feet high. Floors of the self-cleaning type may be made of slats, preferably hardwood, 1 to 1½ inches wide, spaced ½ inch apart.

Mangers should be large enough to hold a 24-hour supply of hay. It should be possible to fill them without opening the hutch doors. Feed troughs of the drawer type placed under the hay mangers are convenient for feeding and cleaning and will catch and save any shattered hay leaves. Guards over the feed trough should be spaced three inches apart to keep young rabbits from getting into it and contaminating the feed.

A two-compartment hutch, as shown on the cover, can be built economically by using mainly crating or other scrap material. Following is a bill of material for its construction:

Boards 1 inch thick:
- 4 pieces, 2 by 56 inches—for front corner posts.
- 4 pieces, 2 by 50 inches—for rear corner posts.
- 2 pieces, 2 inches by 8 feet—for top, front, and rear.
2 pieces, 2 inches by 8 feet—for bottom, front, and rear.
2 pieces, 2 by 30 inches—for bottom ends.
2 pieces, 2 by 32 inches—for top ends.
4 pieces, 2 by 40 inches—for front and rear braces.
4 pieces, 2 by 24 inches—for end braces.
2 pieces, 2 by 22 inches—for door jambs.
4 pieces, 2 by 24 inches—for horizontals of doors.
4 pieces, 2 by 22 inches—for verticals of doors.
2 pieces, 1 by 4 inches—for door latches.
2 pieces, 1 inch by 8 feet—for supports under slat floor.
54 pieces, 1 by 30 inches—for floor.
2 pieces, 2 by 28 inches—for sides of base under feed trough.
1 piece, 8 by 28 inches—for top of base under feed trough.
1 piece, 8 by 29 inches—for bottom of feed trough.
1 piece, 2 by 8 inches—for front end of feed trough.
1 piece, 12 by 22 inches—for manger front with V-shaped opening 9 by 14 inches.
1 piece, 12 by 16 inches—for hay manger, rear.
1 piece, 2 by 28 inches—for manger, bottom.
4 pieces, 1 by 18 inches—for strips at end of hay manger, for attaching poultry netting.

Boards ½ inch thick:
2 pieces, 8 by 28 inches—for hay manger, top.
13 pieces, 8 by 36 inches—for roof.
12 pieces, 2 by 36 inches—for roof battens.
2 pieces, 4 by 8 inches—for hutch cards.

Poultry netting:
1 piece, ¼-inch-mesh, 16-gage, 28 by 30 inches—for hay manger.
1 piece, 1-inch-mesh, 18-gage, 24 inches by 13 feet—for front, doors, and ends.
1 piece, 1-inch-mesh, 18-gage, 18 inches by 8 feet—for back.

Miscellaneous:
2 pieces tin, 2½ by 30 inches—for sides of feed trough.
4 twentypenny box nails—for hinges.
18 twentypenny box nails, to be driven into bottom of hay manger and spaced 3 inches—for guards to feed trough.
Sixpenny nails.
Poultry-netting staples.
For water containers, crocks or cans eight inches in diameter and four inches deep (about ½ gallon) are satisfactory.
Inexpensive nest boxes for use during the warm season, in
mild climates and in well-protected rabbitries may be made of nail kegs or apple boxes. Enclosed-box-type nest boxes, 12 inches wide, 16 inches long, and 12 inches high, are good for use during winter and in exposed rabbitries. Plans for larger hutches and for commercial units are given in U.S.D.A. Bulletin 1730, *Rabbit Raising*.

**CAREING FOR THE RABBITS**

Does and bucks of the small breeds may be mated when 5 to 6 months old; medium-weight breeds, when 6 to 7 months; and Giant breeds, when 9 to 12 months. Mating should be made when the does are coming into maturity; if delayed, it may be more difficult to get them to conceive. One buck should be kept for each 10 breeding does.

The doe should always be taken to the buck’s hutch for service, and mating should take place almost immediately. The doe should then be put back in her own hutch and a record made of the date and name or number of both doe and buck. It is well to return the doe to the buck’s hutch on the fifth and eighteenth days after mating; if she runs from the buck and growls, it is pretty good evidence that she has conceived.

Does carry their young 31 to 32 days. Twenty-seven days after mating, a nest box should be placed in the hutch. It should be bedded with straw free of weeds and other foreign material. The doe will usually arrange the nesting material and line the nest with fur from her own body. If she fails to pull enough fur to cover the litter properly, some may be plucked from her sides, hips, or underline—it is easily removed at this time.

The day following kindling, quietly place the hand in the nest box and remove any undersized, deformed or dead young, leaving six to eight young. The number left depends on the suckling ability of the doe. If two or more does kindle about the same time, the litters may be evened up by transferring young from one to another. The does do not object to the transfer if the change is made within the first two or three days after kindling. To distract her attention from the nest box, it is well to give her a small quantity of palatable food immediately following the inspection or the transfer of the young.

The litter should be weaned at about two months of age and the doe rebred. For family use, it may be desirable to select some of the more rapidly developed fryers at a younger age. If the litter is to be used for meat within three or four weeks after weaning, it may be kept together, but bucks and does that are to be retained for breeding purposes should be separated when weaned.
The sex of young rabbits can be determined easily by pressing open with the thumb and forefinger the sexual aperture just below the anal opening. In does, a longitudinal slit is seen; in bucks, the opening is round and the male organ can be made to protrude.

Rabbits should not be lifted by ears or legs. The proper method for carrying them is to grasp a fold of skin over the shoulders with the right hand, support the rump with the left hand, and hold the back of the rabbit against the body.

The animals require special attention during hot and cold weather. After newborn litters are dry and provided with a warm nest and a good covering of fur, they can stand low temperatures, as can mature rabbits if they are kept out of drafts. Young litters and does ready to kindle are the ones most susceptible to heat. Feed sacks, wet down three or four times a day and placed on the hutch floor for the rabbit to lie on, will make it more comfortable. Water should not be placed on their bodies, for wet fur is a predisposing factor for colds and pneumonia. Restlessness of the young in the nest box indicates that the litter is too warm; some of the fur should be removed from the box for the warm part of the day and replaced when it gets cooler. In extremely warm climates it may be desirable during high temperatures to place the litter in a wire-screen basket 6 by 6 by 15 inches hung on the inside of the hutch; when the temperature has moderated, the litter may be returned to the nest box. In sections where high temperatures continue throughout the night, the young must be placed in the nest box for a short time in the evening for suckling. They then should be replaced in the basket for the night and until time for the morning feeding.

SELECTION AND PREPARATION OF RABBIT RATIONS

The cost of feed is the largest item of expense in raising rabbits. In planning for economy, therefore, breeders should give careful thought to home-grown crops, dietary supplements that may have to be purchased, commercially prepared mixtures and pellets, and select rations that are suitable to the needs of the animals. Each herd of rabbits presents a separate feeding problem. The kind of ration to be used will be determined largely by what the rabbits are being kept for: as a hobby; for show purposes; for the family meat supply; for producing meat, pelts, wool, and laboratory animals commercially; for adding to the family income; or for furnishing full-time employment. The amount of time the breeder has available for preparing and feeding the ration also is an important factor in selection of the kind to use.
TYPES OF FEEDS SUITABLE FOR RABBITS

Rabbits eat many kinds of feed, and there is a large number of crops in the different sections of the United States that are suitable for making up satisfactory rations. Feeds have been classified in the following groups to aid the breeder in selecting those to be used in making up rations for his herd. For all practical purposes, any feed in one group may replace another feed in the same group without materially changing the nutritive value of the ration. Only feeds of good quality should be used.

Group 1.—Carbohydrate Feeds

Oats, wheat, barley, the grain sorghums (milo, feterita, hegari, kafir, and sagrain), buckwheat, and rye may be used as whole grain or milled. There will be considerable waste of the harder types of corn unless they are fed in the meal or cracked form.

Milled products—wheat bran, wheat middlings, wheat shorts, and red dog flour—and by-products from manufacturing foods from other grains for human use may be included in mash mixtures and pelleted rations.

Group 2.—Vegetable Protein Supplements

The plant protein supplements—soybean, peanut, or linseed—in the meal, pea-size cake, or pelleted form, are desirable for increasing the protein content of the ration.

Group 3.—Table Scraps

Fresh table scraps (other than greasy or sour foods) can be fed as a supplement to the grain-protein-hay or pelleted ration. Material can thus be utilized that otherwise would be wasted and at the same time the cost of maintaining the animals will be reduced.

Group 4.—Legume Hays

Legume hays—alfalfa, clover, sweet clover, lespedeza, cowpea, vetch, kudzu, soybean, and peanut—when leafy, fine-stemmed, and green-colored, make excellent dry roughage.

Group 5.—Carbonaceous Hays

The carbonaceous hays—timothy, Johnson grass, prairie grass, Sudan, Dallis, Rhodes grass, Bermuda, and carpet grass—while less palatable, are valuable for feeding in areas where legumes cannot be obtained.

These grass hays ordinarily contain only about half the protein that is present in legume hays; consequently, when they are fed, more protein supplements (group 2) must be included in the
ration. If these grass hays are cut before the plants are in bloom and when the stems are fine, with a high proportion of leaf, they will be much more suitable for feeding rabbits, principally because of the higher protein content, but even so they do not contain as much as the legume hays.

**Group 6.—Green Feed and Root Crops**

Rapidly growing plants—grasses, palatable weeds, cereal grains, and leafy garden vegetables—are high in proteins, minerals, and vitamins, and are excellent feeds. They should be used when they can be had at reasonable cost and when their use in the ration will fit into the management program. Root crops—carrots, sweet potatoes, turnips, mangels, beets, and Jerusalem artichokes—are desirable for feeding throughout the year, but they are especially useful during winter when green feeds cannot be had.

Green feeds and root crops are of greatest value when fed fresh as a supplement to a grain-protein-hay or pelleted ration; they should be given once a day in the quantity that will be consumed in four or five minutes. Because of their high water content, such feeds should not take the place of grain feeding if choice carcasses are desired.

**Group 7.—Salt**

White salt is necessary in the ration. In areas where the soil is lacking in certain mineral elements and therefore mineralized salts are used for making up this deficiency in feeding other farm animals, the salts may also be used in rabbit rations.

**Group 8.—Water**

Fresh, clean water should be available to all the rabbits in the herd. During periods of freezing temperatures, water should be given once a day.

**PREPARING AND STORING FEEDS**

Extensive research has shown that whole grains are satisfactory for feeding rabbits and that the milled products—rolled, cracked, or ground—if stored for any length of time, especially during the warm season, lose some of their food value and are less palatable.

It is not necessary to cut or otherwise prepare hays if they are not coarse and if they are of the best quality. Cutting the coarse hays into three- or four-inch lengths makes them more convenient to feed and also reduces waste.

Two types of pelleted rations are on the market—the all-grain pellet to be fed with hay, and the complete pellet ("green pellet")
which usually contains all the necessary food elements for a balanced ration. Pelleted feeds are readily available in some regions and in many cases are the only feeds to be had in urban areas. They take up little storage space and are easy to feed, but are more expensive than rations made up of feeds in their natural forms.

In many instances considerable money can be saved by providing storage space, by using home-grown feed, or by buying crops from the producer when they are being harvested. Buying feed a bag or a bale at a time reduces the margin of profit and may make the difference between success and failure in a commercial enterprise.

**FEED REQUIREMENTS OF RABBITS**

Rations for dry does, herd bucks, and developing young should provide the following dietary elements:

- **Protein** ........................................ 12 to 15 per cent
- **Fat** ........................................... 2 to 3.5 per cent
- **Fiber** .......................................... 20 to 27 per cent
- **Nitrogen-free extract** ...................... 43 to 47 per cent
- **Ash or mineral** ................................. 5 to 6.5 per cent

Rations for pregnant does and does with litters should contain more protein and should include:

- **Protein** ........................................ 16 to 20 per cent
- **Fat** ........................................... 3 to 5.5 per cent
- **Fiber** .......................................... 14 to 20 per cent
- **Nitrogen-free extract** ...................... 44 to 50 per cent
- **Ash or mineral** ................................. 4.5 to 6.5 per cent

The protein content of the rations is important in the development of the young and in the quantity of food required for a certain gain in live weight. Adding the proper quantity of protein supplement to a ration composed of grains and hay will increase the rate of growth of young rabbits 13 to 20 per cent and effect a saving of 20 to 25 per cent in the quantity of feed required for a unit of grain.

Protein is the most expensive part of the feed, but the proportions recommended are those that have proved most economical. The upper limits suggested give better results than the lowest, and there is no danger in feeding higher levels of protein than recommended, provided the ration is adequate in all other ingredients. Consequently, in small herds of rabbits, or where management practices make it inadvisable to feed two rations, the ration for
pregnant does and for does with litters can be fed to the entire herd.

A GUIDE IN PURCHASING COMMERCIAL FEEDS

Nearly all states have laws regulating the sale of commercial feeds. In most of them the law requires that a feed tag giving the guaranteed analysis and a list of the ingredients be attached to the sack. Usually the percentages of protein and fat must be no less than those stated and the percentage of fiber must not be greater than is guaranteed. In some states the nitrogen-free extract is not listed on the tag.

Breeders can compare the analysis of the feed as shown on the feed tag with the feed requirements given in this leaflet and select the feed that comes nearest to meeting them. In the case of a complete pellet, if the percentage of protein is below the requirements, pelleted or pea-size soybean, peanut, or linseed meal may be added to obtain the necessary proportion. For example: If the complete pellet contains protein in the proportion of 13 to 15 per cent, and the ration is to be fed to pregnant does or does with litters, it would be necessary to add one part, by weight, of the 40 to 44 per cent protein—soybean or peanut, pea-size cake or pellets—to 4 parts of the pelleted ration to bring the quantity of protein up to the 19 or 20 per cent level. If linseed (30 per cent protein) is used, 1½ parts of linseed—pea-size cake or pellets—would be mixed with 4 parts of the complete pellets.

Only fresh soybean, peanut, or linseed cake or pellets, as indicated by a distinct nutty aroma and taste, should be fed.

MAKING UP RATIONS

Breeders can make up home-mixed rations from carbohydrate feeds, plant protein supplements, and hay. A typical ration for dry does, herd bucks, and developing does and bucks would consist of two parts of whole oats or barley and two parts of whole wheat (group 1), and one part of soybean, peanut, or linseed in the pea-size cake or pelleted form (group 2), this mixture to be fed with good quality legume hay (group 4).

A ration for pregnant does and does with litters could be made up of two parts of whole oats or barley and two parts of whole wheat (group 1), and two parts of soybean, peanut, or linseed in the pea-size cake or pelleted form (group 2), this mixture also to be fed with good quality legume hay (group 4).

If it is desirable to feed these rations in pelleted form, the grain and protein supplement may be made into an all-grain pellet to be
fed with hay, or the grain and protein supplement and the hay can be made into a complete pellet. The usual proportions are 60 to 50 per cent grain and protein mixture and 40 to 50 per cent hay. Detailed information on making up rations from the available feeds from this Northwest area and other sections of the United States is contained in U.S.D.A. Farmers' Bulletin No. 1730, *Rabbit Raising*. Copies of this bulletin can be obtained from any county agricultural Extension service office.

Salt may be incorporated in the protein supplement meal when this is pelleted to be fed with whole grains, or in the mixture to be made into an all-grain pellet or a complete pellet, in the proportion of \(\frac{1}{2}\) pound to each hundred pounds of the whole ration.

### FEEDING TIPS

1. Whole grains used should be of good quality, indicated by plump, round kernels, and free from molds or smut.

2. It is unnecessary to grind or roll the grains unless they are to be mixed with a finely ground meal. In this case, the mixture should be dampened slightly before feeding, to prevent the meal from being wasted by its settling to the bottom of the feed trough.

3. If complete pellets are not being fed, keep a good quality hay in the mangers at all times.

4. Feed green feeds or root crops in the hay mangers or feed troughs to prevent contamination.

5. Rabbits that are not used to green feeds should each receive daily a small handful; then a larger amount as they become accustomed to them. Green feeds or root crops should not entirely replace the grain, household wastes, and hay rations except in the case of mature rabbits that are not in production.

6. In providing rabbits with water during freezing temperatures, do it once a day just before feeding and then empty the containers promptly to prevent freezing.

7. Once each day, dry does, herd bucks, and developing breeding stock should receive the quantity of grain or grain and household scraps that they will eat within 20 to 30 minutes. The amount to feed the individual rabbit will depend on its condition—if it is too thin, the amount should be increased slightly; if too fleshy, it should be decreased.

8. A day or two previous to kindling, the doe will usually eat less, and, thereafter, her grain or grain and household scrap portion
of the grain should be increased gradually, so that she will eat more feed without waste.

9. When three weeks old, the young will usually begin to eat solid foods, and then the doe and litter should have all the grain or grain and household scrap mixture they will consume each 24 hours. When the litter is weaned, the doe should again be fed the restricted grain or grain and household scrap ration with hay and green feed.

**SLAUGHTERING AND SKINNING**

A rabbit to be killed may be stunned by hitting it with a stick on top of the head back of the ears. It is then suspended and the head removed immediately to permit thorough bleeding. A No. 6 screw hook fastened to a wall five feet from the floor is handy for suspending the carcass while it is being dressed (Fig. 2). The hood is inserted between the tendon and bone of the right hind leg just above the hock. The tail and front feet are cut off. The free rear leg is removed at the hock joint. The skin is cut just below the hock of the suspended leg and opened inside the leg to the root of the tail. The incision is extended to the hock joint of the left leg. The edges of the skin are separated from the flesh, and the skin is so pulled down as to leave the fat on the carcass.

Avoid making any other cuts in the skin. After it has been removed, make a slit in the carcass along the median line of the belly. Remove the entrails but leave the liver, heart, and kidneys in place. Remove the right hind foot at the hock joint.

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*Fig. 2.—Steps in skinning rabbits, right to left.*

—Courtesy, U.S.D.I.
Cleanse the carcass by rinsing in cold water to remove any stray hair and blood. It may then be cut up and displayed for sale as in Figure 3.

-Courtesy, U.S.D.I.

Fig. 3.—Cuts of a rabbit carcass and methods of display for market.

CARE OF THE PELTS

Pelts are a by-product of rabbit-meat production. All have a market value and should be properly handled, as they are now (1943) in demand, especially by fur and felting industries. The returns from the sale of pelts will go a long way toward paying the feed bill.

Shapers for the pelts (Fig. 4) may be made from No. 9 galvanized wire 4 feet long for the small ones and 5 feet long for those that are larger. A thin board for shaping the skins of fryers should be 24 inches long and 4 inches wide at the narrow end and 7 inches at the base. A board shaper for skins from rabbits weighing 10 to 12 pounds should be 30 inches long and 4 inches wide at the narrow end and 9 inches at the base.

While the skin is still warm, put it, flesh side out, with the fore part over the narrow end of the shaper, and remove all wrinkles. The skin should be so placed on the shaper that both front legs are on one side. It may be made fast with clothespins at the front end of the shaper, and should not be over stretched.
The following day, see that the edges of the pelt are drying flat and that the skin on the front legs is straightened out. Remove any surplus fat, for, if left on the skin, it may cause fat burns and lower the value.

Hang the skins out of reach of mice and rats until dry. They should not be dried in the sun or by artificial heat.

If the dried skins are to be stored for any length of time, they should be sprinkled with naphtha flakes and packed in a tight box.

Salt should never be used for preparing rabbit skins for market.

**RABBIT DISEASES**

**Coccidiosis**

The seriousness of Coccidiosis lies primarily in the heavy mortality of young rabbits from six weeks to two months old. Liver Coccidiosis, or what is called "spotted liver" disease, is often seen in young rabbits about three or four weeks of age and they frequently die in large numbers. Affected rabbits are listless, have poor hair coats, and usually become potbellied. Some of them will survive and reach maturity, while others will slowly waste away and die. Occasionally no symptoms will be noticed until the rabbits are dressed, at which time white spots will be seen on the liver. When cut open these white spots usually liberate white, creamy material.

Many times questions are raised as to whether or not the carcasses of rabbits infested with spotted livers are fit for human
consumption. If the rabbit was in proper condition and there was no other disease involved, there is no reason why these carcasses should not be entirely satisfactory for human consumption. The liver should be destroyed.

The most effective way to control Coccidiosis is by sanitation. This consists of removing manure, soiled bedding, and unused feed, and cleaning hutches and equipment at regular intervals. Even though one has a modern type self-cleaning hutch, they need attention, as there are always platforms, corners, feeding and watering equipment that must be regularly cleaned. The procedure should be mechanical cleaning first, followed by washing the pen with scalding lye water. The lye water is made by adding one pound of commercial lye to 10 gallons of boiling water. Care should be taken to protect the hands and face from the lye water. In case of an outbreak of the disease, a complete clean-up should be made every day during warm weather, and at least every other day during cool weather.

Medicines to cure this disease are not effective so far because it has been impossible to get treatment to the infected tissues. Quite often, objections to feeding green feed are raised because of the belief that green feeds cause spotted livers. Green feed itself, if fresh and sound and free of contamination, will not cause spotted liver. However, the method of feeding this material is no doubt responsible in a great many cases because too often it is thrown on the hutch floor. The rabbits contaminate the feed with their dirty feet and then when they eat the green feed they have a fresh supply of coccidia organisms for reinfestations.

Sniffles

This is a disease that may be seen in rabbits of any age, but is usually thought of as a disease of young rabbits. It affects the upper respiratory tract, or nasal passage. The first symptom is sneezing. There is a thick discharge from the nose and a heavy, watery discharge from the eyes. The hair and skin around the nose will often become matted and crusty. This disease is usually chronic and tends to clear up, only to occur again. The rabbits will grow weaker and thinner, and pneumonia will develop that results in death of the animals. Conditions that may lead to its development are: unsanitary conditions, improper feeding, poor hutch construction and equipment, drafts and exposures. Good housing, feeding, and sanitation that will keep the rabbits in the best of condition are control measures suggested.
Other Diseases
Diseases and parasites rather common with rabbits which are more or less controlled through sanitation are ear and skin mange, lice and fleas and worms. Whenever there is a serious disease problem one may wish to consult a veterinarian.

MISCELLANEOUS TROUBLES

Fur-Eating Habit
Rabbits that eat their own fur or the fur of other rabbits, or the bedding material and the fur in the nest box, in most cases do so because the ration has been too small or low in quality.

The experienced breeder notes carefully the condition of each animal in the herd and regulates the quantity of feed to meet its individual requirement. Keeping a good quality hay before the rabbit at all times and feeding fresh, sound, green feed or root crops as a supplement to the grain or pelleted ration will also help to correct the abnormal appetite. Sometimes this is due to the protein content of the ration being too low; therefore, adding more soybean, peanut, or linseed to the ration will correct the deficiency.

Buck Teeth
If the large incisor teeth do not meet at the proper angle and do not wear normally, they become very long, causing malocclusion, the condition know as “buck teeth.”

Breeders should examine the incisors of all young rabbits that are to be kept or sold for breeding purposes when they are weaned at two months of age. Malocclusion, or buck teeth, can be easily and accurately diagnosed at that age, although sometimes a case may develop later.

The long incisors of rabbits with malocclusion should be cut back periodically to normal length with a pair of sharp, side-cutting pliers, to make it possible for the animals to eat properly and attain good condition for slaughter.

Malocclusion is inherited, and, to rid the herd of this undesirable characteristic, it is necessary that no doe or bucks be selected for breeding, the parents of which have produced young in which malocclusion has developed. Extreme care must be taken in this matter, for does and bucks even though they have normal teeth may yet be carriers of the gene for malocclusion and give the characteristic to their offspring.

Malocclusion caused by abscesses must not be confused with the inherited type.
For more detailed information and printed matter about this subject, write to the United States Rabbit Experiment Station, Fontana, California.

**Sore Hocks**

Sore hocks, the inflamed or ulcerated areas on the undersurface of the hind feet or on the pad and toes of the forefeet of the rabbit, are the cause of considerable loss to the industry. These sore and tender areas cause suffering and loss of flesh, lower the animal’s vitality, prevent normal development, prevent does from properly nursing their litters, and shorten the period of usefulness for herd bucks and breeding does. It is a condition that has developed with the domesticated rabbit, for, in their natural environment, cottontails, jack rabbits, wild hares, and snowshoe rabbits do not develop sore hocks.

Sore hocks are not inherited but there are certain predisposing factors which produce sore hocks. Some of these are hereditary; others are environmental.

The hereditary factors are:
1. Dense and long fur on foot pads. (A predisposing factor only if not kept dry and clean.)
2. Nervous temperament that results in increased activity and stamping of rear feet.

The environmental factors are:
1. Inadequate weight-supporting area of self-cleaning type of hutch and pen floors.
2. Collection of moisture, urine, and filth on hutch and pen floors.
3. Increased weight of animal per square inch of foot surface.

**PREVENTION AND TREATMENT**

As cases of sore hocks develop, the padding wears off and exposes the skin which becomes irritated. The tissues become bruised. The bare area becomes inflamed, abrasions occur in the skin, the tissues may become infected, and abscesses form. Rabbits suffering from sore hocks raise and lower the affected feet in rapid, successive movements and lie in positions whereby the tender and sore areas do not touch hard surfaces.

Rabbits that show signs of tenderness in their feet should be examined. If the padding is wearing off or the skin is irritated, the animals should receive prompt attention. Solid-floor hutches should be well-bedded to keep the rabbit dry and clean. A portable self-
cleaning lath platform should be placed in hutches equipped with floors of wire mesh or hardware-cloth so that the animal may rest without the affected feet coming in contact with irritating surfaces. The platform should cover at least half the area of the floor. It may be built by placing two pieces of ¾ by 1½ inch boards on edge to form the ends, making the floor surface of lath, spaced ½ inch apart and nailed to the end pieces. The hutch should be thoroughly cleaned, kept dry and sanitary.

Sore hocks may be treated quite successfully unless abscesses have formed. Adherent or adjacent matted fur should be clipped off; then the affected areas should be washed with warm soapy water, all loose scabs and debris being carefully removed. The parts should be dried well, and zinc or iodine ointment applied every other day until healing is well under way. Healing will take place more readily if the rabbit is confined in a pen on well-drained clean soil. In such a pen, mild cases of sore hocks will often heal without medical treatment. In the more serious cases where abscesses have formed, it would be advisable to destroy the animals unless they represent especially valuable blood lines or are to be kept for sentimental reasons. When it is thought wise to treat these advanced cases, the affected animals should be isolated in order to help prevent the spread of infection throughout the herd.

The abscesses should be freely lanced, opening them to the bottom of the cavity to insure proper drainage. Express as much pus as possible and flush out the cavity with a mild disinfectant solution or soapy water. The cavity should then be swabbed, thoroughly but gently, with pledgets of cotton saturated in tincture of iodine. Examine the animals every other day to see that proper drainage is taking place, and repeat the treatment as long as pus formation continues. Healing, to be permanent, must occur from the bottom of the cavity outward.

Sore hocks will respond to treatment better if the rabbits are fed a properly-balanced ration and are made comfortable. They should not be mated until all inflammation has disappeared and the infected area has healed.

Select breeding stock from individual animals with quiet disposition, and protect herd from disturbances by natural enemies—cats, strange dogs, rats, snakes, coyotes, bobcats, opossums, etc.—especially at night.

Do not use feeding methods that develop breeding stock too rapidly or cause the animals to put on excessive weight or maintain the condition over an extended period of time.
For more detailed information about sore hocks in domestic rabbits and the work that has been done on it at the U. S. Rabbit Experiment Station, ask your county agent for A.H.D. No. 83, January, 1946, *Sore Hocks in Domestic Rabbits.*

**RABBIT MANURE**

The manure from rabbits is rich in plant food. For that reason it is especially valuable for garden and truck crops. Analysis shows that rabbit manure contains about two per cent of nitrogen, which is considerably higher than that found in manure produced by other farm animals. In phosphoric acid and potash content, rabbit manure is equal to others. This makes rabbit manure an important fertilizer to be used in connection with vegetable growing.

If there is a cover crop growing on the garden, the manure should be spread as it is taken from the hutches. This is the best system that can be devised. Where it cannot be spread on a cover crop, it should be stored under cover and applied in the spring before planting.

This bulletin deals entirely with the small unit operated for producing rabbit meat as economically as possible for home consumption. Breeders interested in commercial production may secure U.S.D.A. Farmers’ Bulletin No. 1730, *Rabbit Raising.*