



Rabbit Project Reference Manual

Message to county Extension agents and adult leaders

This manual is a reference guide for young people and adults wanting to participate in a 4-H rabbit project in Texas. Raising and marketing rabbits is an ideal project for 4-H members, especially in urban areas and on small farms with limited space. A rabbit project allows them to experience the joy of owning a fine, purebred animal with a minimum investment.

The 4-H member will learn principles of nutrition, care, grooming, breeding and economics. All they need is a good place to house rabbits, feed to keep them growing, a willingness to make the project a success and your help as an adult leader.

Although intended for 4-H use, the information in this manual can benefit producers also.

Acknowledgments

We are indebted to Robert W. Berry, former Extension plant pathologist, for developing the earlier version of this publication.

Breed photos courtesy of the American Rabbit Breeders Association. Other photos courtesy of Purdue University. Drawings courtesy of Robert Eaddy, *Rabbit Production Handbook*.

Special thanks to the primary editors and contributors to this manual: David Reue, county Extension agent, Burleson County; Kyle Westfall, volunteer, Brazos County; and Paul Richter, volunteer, Washington County. Also, this manual would not be available without the support and vision of the Texas 4-H Rabbit Project Team. Members include:

Jerry Ayers, Cass County

Elaine Beck, Denton County

Gloria Blackman, Harris County

Maureen Dunckel, Comal County

Marcel Fleury, Bexar County

Kent Hall, Extension Associate, Texas Agricultural
Extension Service

Sara Hignight, Crockett County

Greg Kaase, Extension Associate, Agricultural
Economics

Dr. Steven Lukefahr, Animal and Wildlife
Sciences, Texas A&M University-Kingsville

Rogelio Mercado, Extension Agent, Jim Wells
County

Ken McCracken, Harris County

Marilyn Ratliff, Upton County

David Reue, Extension Agent, Burleson County

Paul Richter, Washington County

Carol Roberts, Moore County

Nita Shed, Comal County

Fran Walker, Dallas County

Kyle Westfall, Brazos County

Chad Wootton, Extension Assistant-4-H

Cover photo models are (from left) Matthew Rector, Melissa Druery, Melanie Druery and Kyle Westfall. Photo by Jerrold Summerlin, Agricultural Communications.



Chad Wootton*

Rabbit Project Reference Manual



Raising rabbits is fun. At the same time, a 4-H Rabbit Project can provide an important life skill learning experience. Rabbits require no fancy or expensive equipment: They can be confined to hutches, and can be raised in urban as well as rural areas. They also can help you learn animal husbandry, or the proper care and management of animals.

Those who work with rabbits find that something different is always happening. You will find that handling rabbits, and their response and dependence on you, are rewarding. Caring for and managing your rabbits provides new experiences each day. Possibly the greatest thrill is when you share your experiences with friends and neighbors.

Before you launch into a rabbit project, take some time to decide if it is right for you. Calculate whether you have time and money to care for your project, and decide if dogs, cats, and other animals in the area would be harmful to your rabbits. Ask your neighbors if they object to your raising rabbits as a 4-H Project. If you live in an incorporated area, check city ordinances also, to see if it is legal to raise rabbits in your area.

*Extension Assistant-4-H, The Texas A&M University System

If conditions are right for a rabbit project, you can look for a suitable place to keep your rabbits and arrange for proper hutches and equipment.

Your rabbit project

Your 4-H Rabbit Project will give you:

- ◆ Opportunities to share with friends in a 4-H Club.
- ◆ Fun and learning activities with other 4-H members.
- ◆ Help in developing leadership and communication skills.
- ◆ Opportunities to learn about animals' behavior, how they live and reproduce.
- ◆ Help in developing patience, understanding and concern for living creatures.
- ◆ Experiences that teach you about animal science, feed and nutrition, animal health and disease control.
- ◆ Help in developing responsibility. Your rabbits will depend on you for their care and comfort.
- ◆ An opportunity to keep records and manage a business of your own.
- ◆ Experience in raising and caring for rabbits.

Project options

You can participate in the Texas 4-H Rabbit Project through a variety of options, depending on the intended use of your project.

Market rabbit project: In this project, you own one or more does (a doe is a female rabbit; a buck is a male) and an appropriate number of bucks (generally, one buck for every eight to 10 does). One or more litters are raised and marketed for meat. Members may have crossbred or standardized breeds. Members must provide for proper housing, feed and care of animals.

Rabbit breeding project: In this project, you own one or more does and an appropriate number of bucks. One or more litters are raised. Offspring are sold for breed stock and show animals. Members should also market the young. Members are encouraged to use purebred commercial breeds for this project, al-

though crossbred rabbits are acceptable. Members must house, feed and care for animals properly.

Pet project: In this project, you own one rabbit (buck or doe) as a pet. Members house, feed and care for the animal properly.

Even members without a rabbit can learn about rabbits and their care and share experiences through club meetings, tours, presentations, research projects, judging and identification activities, and sharing with other members.

All 4-H members have the opportunity to:

- ◆ Participate in method demonstrations, public speaking and Share-The-Fun contests.
- ◆ Participate in other related projects such as photography and food and nutrition.
- ◆ Attend camps, tours and field trips.
- ◆ Participate in fairs, shows and statewide activities.
- ◆ Meet and share with friends.
- ◆ Learn new things through experiences in club activities.

An early step in the project is choosing the type of rabbit to raise. Rabbit breeds are differentiated by their body type, while varieties are distinguished by the color of the rabbits' fur.

Domestic rabbits are divided according to size into four basic groups: "small" breeds, "medium" breeds, "large" breeds and "giant" breeds. Choose the breed based on your purpose for raising the rabbits and the amount of space you have available for them.

It is best to start with a breed you like and that is raised by someone near you, if at all possible. This gives you the advantage of that person's experience and knowledge if you have questions about the breed.

Also, it is usually better to start with a breed that is a solid color, as raising a marked breed (multicolor) can sometimes be difficult and frustrating. After you are familiar with the general aspects of rabbit raising, you can move to a more challenging breed.

When possible, it is best to buy rabbits from established, reliable breeders. These are people who have healthy rabbits, are respected by other

breeders, keep good records, and generally have good reputations as rabbit breeders and raisers.

Commercial breeds

White New Zealand, an American creation that appeared after the Red New Zealand, is one of the best all-around commercial breeds. It is an all-white rabbit whose fur can be dyed many colors for use as garment trims. The ideal weight of bucks is 10 pounds; does, 11 pounds.

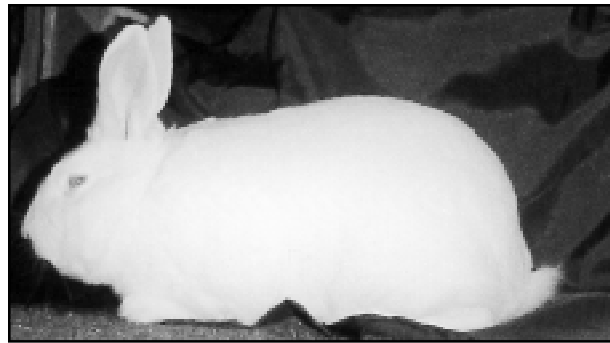
The **Californian** breed is another American creation. After experimentation and crossbreeding, this rabbit was produced in 1923. It was bred as a meat rabbit to have broad shoulders, meaty back and hips and a good dressing percentage (percentage of edible meat). This rabbit is white except for ears, nose, feet and tail, which are a dark gray or black. The ideal weight for bucks is 9 pounds; does, 9½ pounds.

The **Champagne d'Argent**, also known as French Silver, is probably one of the oldest breeds known and has been raised in France for more than 100 years. A well-known commercial breed, its fur is useful in its natural state and is still one of the leading furs used in garment manufacturing throughout Europe.

This rabbit is born black. At about 3 to 4 months, it takes on the adult color, a silver or skimmed-milk color with a dark slate blue undercoat. The ideal weight for bucks is 10 pounds; does, 10½ pounds.

The **Satin** is an American breed that occurred as a mutation in a litter of Havanas. The Satin mutation affects fur structure and sheen, which are determined by a recessive gene. This means that if you breed a Satin with another breed, the babies will probably have the other breed's fur structure and sheen. Therefore, it is best not to breed Satins with rabbits that have normal fur. Nine colors are recognized.

The breed is popular for two reasons: Its type and size make it a good commercial breed; its sleek coat with commercial properties, brilliant sheen and rich, vivid colors make it an excellent show rabbit. Mature bucks weigh 9 pounds; does, 9½ pounds.



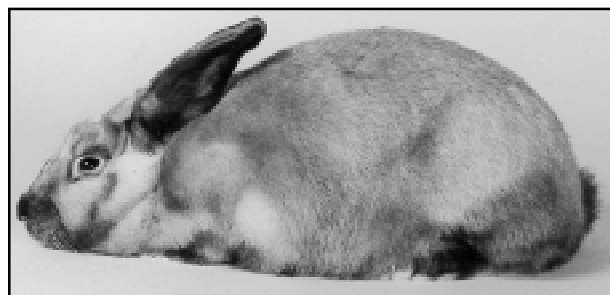
White New Zealand



Californian

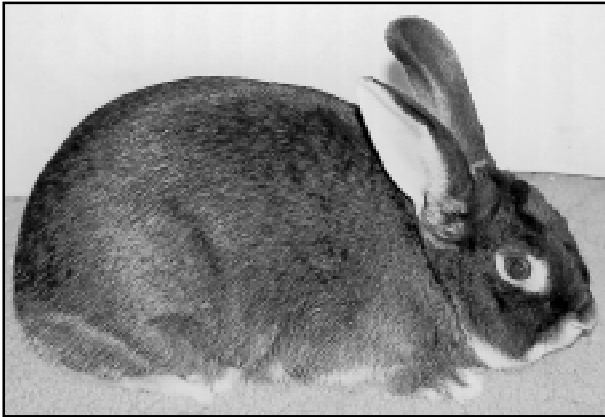


Champagne d' Argent

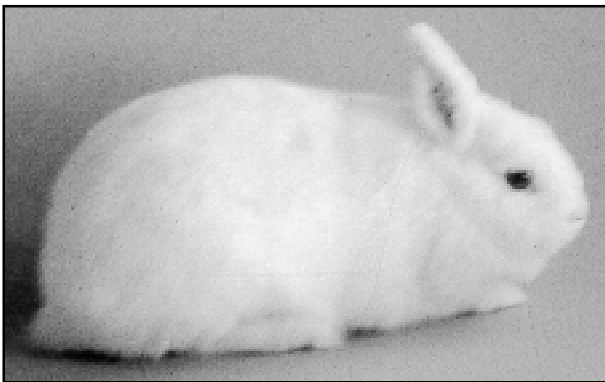


Satin

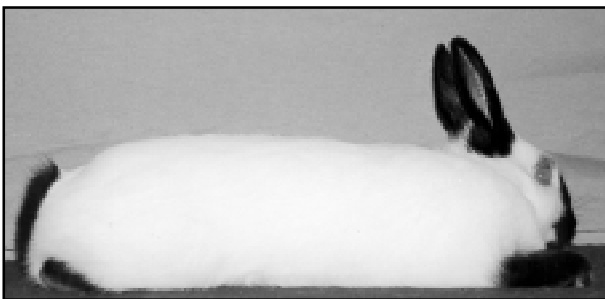
Fancy breeds



Silver Marten



Polish



Himalayan

Silver Marten fanciers have a choice of four colors: black (the most popular variety), blue, chocolate and sable. Choose a compact animal with a well-filled back and shoulders to bring out the desired type of the breed. Never stray from proper body shape. The basic color is as jet black as possible. Blue is a medium shade. A dark chocolate color is the standard, while the sable blends into various shades. All colors should be free from white hair, molt (shed fur) or stained fur. Proper color contrasts vividly with the silver-tipped guard hair, which adds much to this breed's beauty. Silver-tipped guard hair should be evenly distributed along the sides and rump. In weight, bucks range from 6 $\frac{1}{2}$ to 8 $\frac{1}{2}$ pounds; does from 7 $\frac{1}{2}$ to 9 $\frac{1}{2}$ pounds.

Polish is a neat, cobby (stout or stocky), sprightly rabbit with well-furred, short ears. The first Polish were all white with ruby-colored eyes. Although their origin is unknown, they probably were bred from Dutch or Himalayan stock.

Polish are recognized in four colors: ruby-eyed white, blue-eyed white, black and chocolate. Polish fur is short, dense and soft, resembling the Himalayan. For this reason, it was known in Germany as the Ermine rabbit, because its coat is white like that of the ermine, a member of the weasel family.

Polish have become so popular in this country that in most shows they rank among the top 10 breeds in numbers exhibited. They are nicknamed "The Little Aristocrat." 4-H members can have lots of fun exhibiting this toy rabbit, which weighs 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$ pounds.

The **Himalayan** rabbit came from the Himalayan Mountains in Asia, but has long been known as an inhabitant of countries north and south of the Himalayan range. One of the oldest breeds, it is distributed more widely throughout the world than any other rabbit. Thousands of these rabbits are sacrificed annually in China to the gods of crops and fruits of the earth.

The Himalayan characteristics are distinctive: a trim, well-built body covered with short, sleek white fur, ears erect and black, a black, egg-shaped nose with the small end coming well up between the eyes, black front and hind feet, a black tail and ruby red eyes. One peculiar characteristic of the Himalayan is that it

weaves its head from side to side when sitting at ease. Mature animals weigh up to 3 1/2 pounds.

The **Dutch**, said to have originated in Holland, was improved and developed for exhibition purposes in England. One of the most fancy popular breeds, it rates tops with rabbit fanciers.

This breed has six varieties: black, blue, chocolate, tortoise, steel gray and gray. Because it is a small rabbit, weighing from 3 1/2 to 5 1/2 pounds, the Dutch is ideal for fanciers with limited space. The Dutch is cobby and compact with a well-rounded body, smooth in every respect. Markings of the Dutch, sometimes difficult to achieve, should be clean cut, clear and sharp.

The **Mini Lop** originated in Germany as the "Kleine Widder" but the exact origin is unknown. It has a massive, thick-set body and good depth and width from the shoulders to the hindquarters, which are slightly heavier. The body color may either be patched or have blanketed markings. The ideal weight for bucks is 5 1/2 pounds and for does, 6 pounds.

The **Rex**, meaning king, was named for its short hair by M. Amedee Gillet of Coulange, France. Rex have medium-length bodies with good depth, well-rounded hips and a well-filled loin. They come in several varieties and have excellent meat-producing qualities. The ideal weight for bucks is 8 pounds and does, 9 pounds.

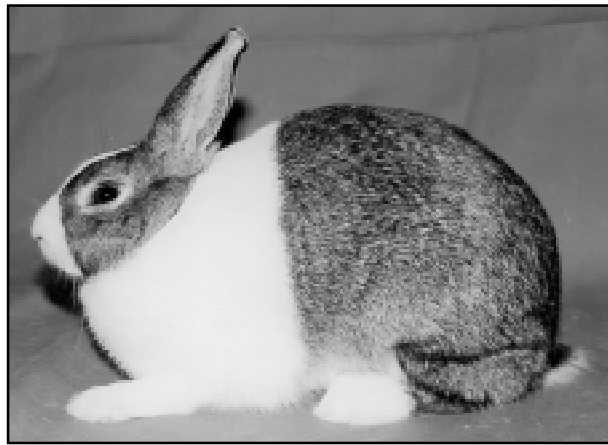
The above are only a few of the 45 recognized breeds. For a complete listing and description, contact the American Rabbit Breeders Association, P.O. Box 426, Bloomington, IL 61702. Phone: (309) 664-7500.

Equipment needed

Proper housing and good equipment are important for successful rabbit raising. In making plans, consider first the rabbits' comfort and your ease of handling. You don't need a lot of equipment, but feeding, watering and nesting equipment must be adequate and sanitary.

The hutch

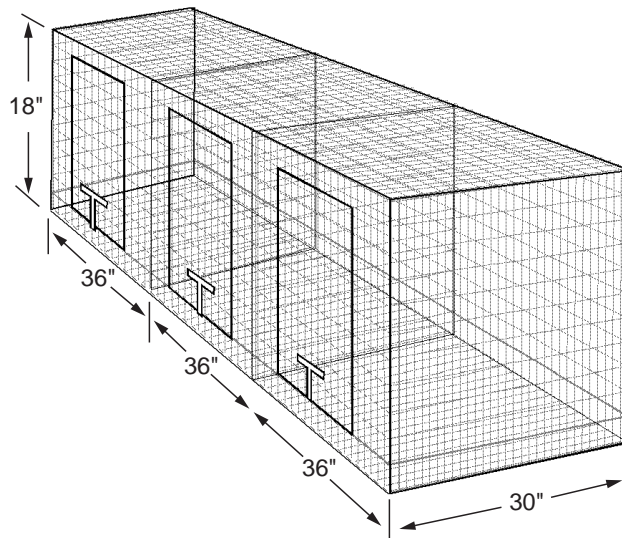
Rabbit pens, called hutches, should be convenient and sanitary, allowing plenty of fresh air and some sunlight. Each hutch should protect the rabbits from bad weather, dogs and other animals, and provide enough room for



Dutch



Rex



A modern wire hutch is made from welded wire.

growth and exercise. The most important point in building a hutch is sanitation. An open-air, self-cleaning hutch is recommended.

Modern rabbit hutch construction uses welded wire. The floor is made with 1/2-inch by 1-inch welded wire. Sides and tops are built with 1-by-2-inch welded wire. All-wire hutches are more sanitary and durable than wood and wire hutches. They can be hung in an existing building with adequate ventilation, or the breeder can build a new roof for the wire pens. This rabbitry is more attractive and efficient than outside hutches, especially when equipped with outside feeders and automatic water systems.

Pelleted rations have eliminated the need for hay mangers in rabbit hutches. The size of the hutch depends on the size of the breed. Hutches may be purchased pre-built.

Remember, it's easier to care for rabbits in well-built hutches than in poorly built, tempo-

rary ones. Open-air, self-cleaning hutches help rabbits keep cool. These hutches can be kept cleaner and diseases can be controlled more easily. To keep your rabbits from overheating, do not place the hutches in direct sunlight. Put them in partial or complete shade with good circulation.

Feeders

Use a feed crock, trough or hopper to prevent feed waste and to keep the feed clean. Because rabbits are fed daily or more often, crocks should hold at least a day's feed supply. Larger crocks or troughs may be wasteful, because rabbits contaminate the feed. Feed and livestock equipment stores sell crocks especially designed for rabbit feeding. These do not tip easily and have a lipped edge that prevents the animals from wasting feed. The main objection to crock feeders is that young rabbits get into them, soiling the feed.

The outside-mounted, all-metal self-feeder is most efficient when it is put onto all-wire pens. Outside feeders are unsuitable on outside open-air hutches, where rain can spoil the feed.

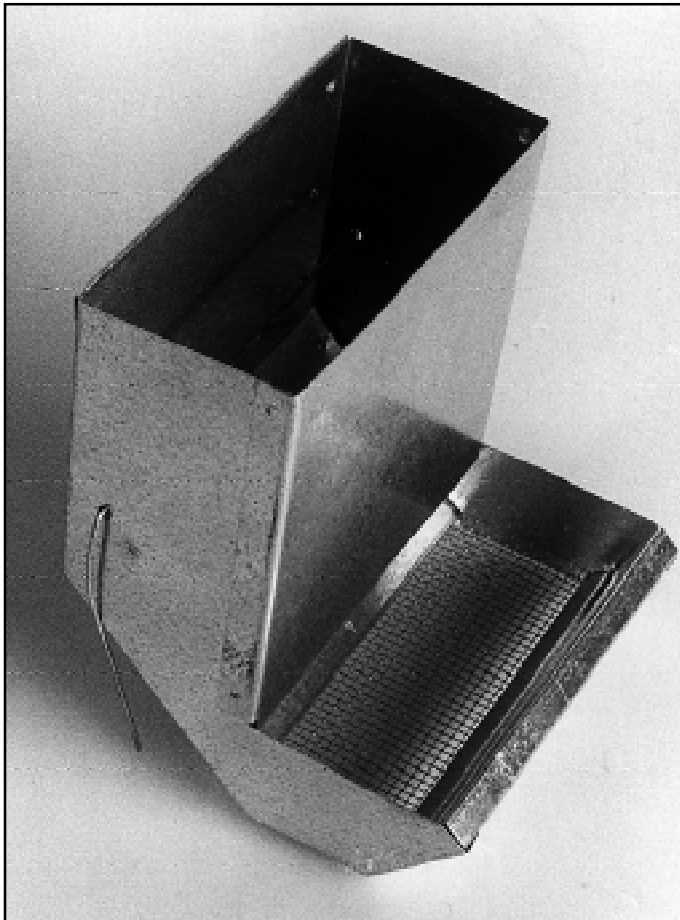
Feeds and feeding

Proper feeds and feeding methods are important to success with rabbits. The beginning rabbit grower should use the kind of feed to which the rabbits are accustomed. Feed should be changed gradually. *Sudden change makes rabbits sick and may kill them.*

The best way to change feed is to give a small amount of new feed half an hour after their regular ration. Gradually increase the amount, watching for ill effects (soft droppings, bloat, etc.). If no trouble appears within 2 or 3 weeks, use the new feed for the entire ration.

Green feeds and fresh leaf feeds are not recommended, because the supply may deplete, making ration changes necessary. Feed quality may be poor at times in these rations, and it may be difficult to supply the variety needed for good nutrition.

Animals fed exclusively on green feed never have the good condition or development needed for show animals. Therefore, commercial rabbit feed is generally the best and most practical feed.



A metal feeder is most efficient on an all-wire pen.

Feeding schedules

Feeding regularity is more important than the number of times the rabbits are fed daily. Because rabbits eat mostly at night, feeding them in late afternoon or evening is preferred. Morning feeding is less satisfactory. Offer feed at the same hour every day. If you use commercial feed, follow the manufacturer's directions for feeding.

Mature does without litters, mature bucks and growing young should receive 3 to 6 ounces of feed daily. Feed does with litters all they can eat. Mature rabbits of medium breeds, weighing about 10 pounds, remain in good condition with about 6 ounces daily of a complete pelleted ration. Feed smaller breeds 3 to 4 ounces, depending on their size. Amounts may vary depending on the animal's condition. Those too fat need less feed; thin ones need more.

Water

Providing enough clean, fresh water is vital for the rabbit producer. The amount of water needed depends on the rabbit's size; type of food; watering frequency; environmental temperature; water quality, availability and temperature; and individual variations.

A doe and a litter drink about 1 gallon of water a day. You can use either crocks or an automatic water system such as dewdrops or water bottles. Tin cups are not advisable, as they are easily tipped over and are hard to keep clean.

Nest box

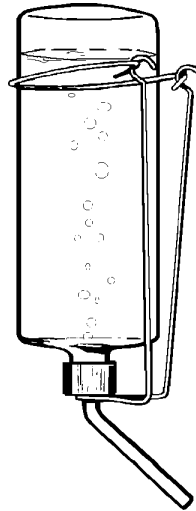
A rabbit is born hairless, blind and deaf; it is your job to protect it. A good nest box keeps the babies warm, allows for ventilation and moisture drainage, and keeps the young in the box until they are big enough to climb in and out by themselves. The nest box must also be large enough to keep the doe comfortable.

Never use a cardboard box for a nest box. Do not use built-in nest boxes unless you can remove them easily for cleaning and sterilizing.

Many rabbit breeders use an open box for nesting, particularly in the summer and in hutches protected from the elements. The box should be 16 by 10 inches, and 8 inches tall.



Provide plenty of clean fresh water bowl (top), or from a bottle tube waterer (below).



A kindling box should be big enough for the doe and her young to be comfortable.

In warm weather, provide fresh, clean straw nesting material for the does. If the doe reacts normally to her newborn litter, she will pull enough wool from her body to make a warm nest for her young. However, in winter, you may have to furnish extra nesting material. In this case, fill the nest box so completely with new, clean straw that the doe must burrow into it to form a cavity for a nest.

Metal nest boxes are commercially available. You can also buy wire frames that contain throwaway cardboard liners.

Remember, keep all equipment clean and sanitary, and always provide plenty of clean, fresh feed, water and nesting material.

Breeding and kindling

The age of bucks and does for first mating depends on the animal's breed and development. Generally, smaller breeds (up to 8 pounds) can be mated at 5 to 6 months old. Medium breeds, such as the White or Red New Zealand, can be mated at 6½ to 7 months; and giant breeds at 8 to 9 months. Growth is more



Check the new babies and remove the dead ones after the doe has kindled.

important than age, but it is a mistake to mate rabbits much younger than the ages listed, regardless of size.

After the first litter, the doe can be bred again when the litter is 7 weeks old. If the doe refuses the buck, try again in 3 days. After mating, the doe should be test-mated on the 18th day. Refusal of the buck, whining and attempts to escape indicate that she is bred.

Always take the doe to the buck's hatch. Mating should occur at once. Allow the buck to service the doe only twice. A second mating in 6 hours may increase the size of the litter. If service is effective, the buck will fall to one side.

Do not use bucks more than once every 3 days. However, daily breeding for short periods is satisfactory.

Overbreeding

A doe should produce only four litters per year. Do not allow her to raise more than eight young in each litter.

Breeding failures

Most failures to breed are caused by does being too fat. Excessive heat, especially during the summer, will make bucks sterile.

Sometimes does eat the young, for a variety of reasons. If the doe receives a wholesome, well-balanced feed, but still eats her young, it is best not to keep her for a breeder.

Kindling (giving birth to young)

About 25 to 28 days after a doe has been bred, put the nest box in her hutch. Fill the box with 4 or 5 inches of clean straw. Keep the doe quiet. Loud noises often cause a doe to miscarry.

Young are usually born between the 28th and the 32nd day. Gently check the new babies and remove dead ones after the doe has kindled. A doe will cover the young with fur from her body.

The doe is the best caretaker of her young. Each day during the summer after she has kindled, attract her attention with some feed or by stroking her with one hand. Use the other hand to examine the nest and take out any dead young. It is also advisable to remove all but seven or eight. If the doe nourishes too many

young, runts and weaklings result. Surplus young may be moved to does with small litters of equal size and age.

Just before kindling, the doe may eat little. Be sure she has plenty of fresh water. After she kindles, feed enough to supply necessary nourishment for her and milk for the young. In addition to more of the regular ration, feeding carrots, rolled oats or Calf Manna is beneficial.

Nursing

The doe enters the box to feed the young for about 1 minute early in the morning and again late in the evening. Well-fed babies are sleek, clean, fat and well-filled most of the time. Have no fear that they are starving; most rabbits are excellent mothers. Young rabbits are about 10 to 12 days old when their eyes open and fur appears.

Weaning

When rabbits are about 3 weeks old, they leave the box and eat with their mother. Do not wean until the young are 8 to 10 weeks old. They should be butchered immediately.

Prospective breeders can be left with the doe a few days, although it is unnecessary beyond 10 weeks. The doe can be rebred a week before weaning the litter.

Sanitation

The rabbits' environment must be kept clean and sanitary. This means removing wastes and keeping housing, feed, water and air relatively free of disease germs and parasites. Sanitation and disease prevention are the keys to a healthy rabbitry.

Quarantines

The best rule in disease prevention is to start with healthy animals from a reliable breeder. The history of disease in a colony of rabbits is as important as the health of individual animals when they are bought. To avoid buying disease "carriers" that transmit diseases without showing symptoms, ask the breeder whether his or her rabbits have had specific diseases.

Quarantine all new animals brought to an established colony (keep them at least 50 feet

from all other rabbits) for at least 2 weeks. Experienced rabbit raisers with healthy colonies buy few rabbits, because each addition brings a risk of adding new diseases.

Housing

Houses should be well ventilated and easy to clean. Thoroughly clean all hutches of manure and debris daily. Clean open feeders and waterers daily and closed feeders weekly.

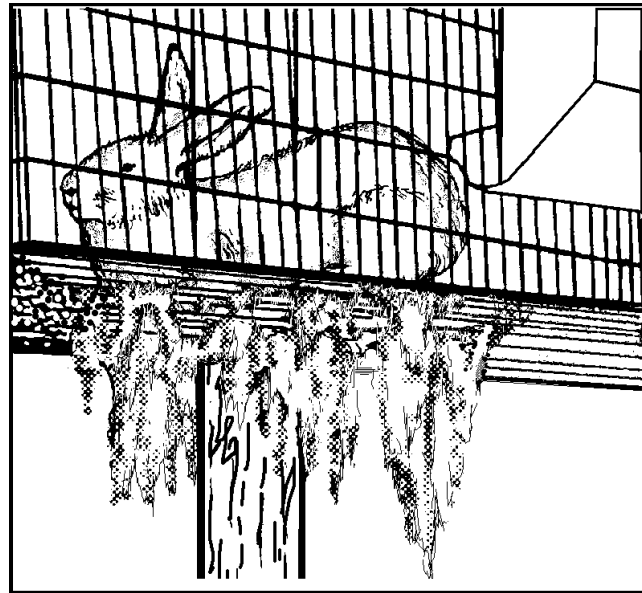
Clean nests and disinfect them before kindling and after the nest box is removed from the hutch. Change bedding when it becomes wet or contaminated with urine or droppings. Dispose of all used nesting material.

Cleaning and disinfecting

Clean all manure and dirt from equipment. Scrub it with hot water and detergent. A stiff bristled brush, scraper and elbow grease are the secrets of proper cleaning.

Visitors

Keep your animals as isolated as possible from people and strange animals. They bring diseases and disturb the breeding stock unnecessarily.



Do not allow hair to accumulate in the rabbitry.

Diseases, parasites and illnesses

How to detect illness

Through frequent and careful inspection, a good husbandman (one who raises and takes care of livestock or crops) can recognize when an animal is sick. This may not be easy for the beginner, but comes with experience.

Examine your animals daily. Note how much food and water are consumed, and the nature and quantity of wastes. Color, fur condition, breathing, nasal discharges and ear carriage (the way the ears are held) are indications of health.

Isolate sick animals until they recover. Do not handle sick animals until after you've cared for the healthy ones.

Dispose of all dead animals. Thoroughly clean and disinfect all contaminated hutches and equipment as soon as possible.

When diseases occur, consult your veterinarian, and ask first whether the treatment will be practical or economical. Be sure the veterinarian knows the true economic value of the animals involved, so that he or she can recommend treatments. You can take a sick animal to the veterinarian's office, but sometimes he may want to visit your colony.

Diseases are caused by living organisms such as bacteria, protozoa, fungi and viruses. Some organisms may be present in healthy animals, but do not cause illness unless the animal's resistance is lowered. Other organisms make the animal sick immediately.

An animal's resistance can be lowered by drafts, heat, cold, fright, crowding, overfeeding, overhandling, poor nutrition and sudden change of environment or feeding practices. These are sometimes called "predisposing causes" or "stress factors."

Different diseases may cause similar symptoms or conditions. Because the unskilled eye cannot determine seriousness, losses could be severe before proper treatment is administered. Contact your veterinarian when you have doubts about an illness, when deaths occur suddenly or when illness persists. Also, consult with a veterinarian before your animals are sick, for advice on added disease control practices important in your area.

Diseases

Colds or sniffles (rhinitis)

Cause: Bacteria, viruses or allergies.

Predisposing causes: Drafts, exposure to heat or cold, poor ventilation, dietary deficiencies or other stress factors.

Symptoms: Sneezing and a runny nose are the main symptoms. Nasal discharge may be watery to thick. The animal wipes its nose with the front paws, causing wetting or matting of the fur on the paws. The eyes may run, and often temperature is below normal. Animals suffering from sniffles often develop pneumonia.

Control and treatment: Remove infected animals from the rabbitry and isolate them. Commercial nose drops, used for other animals or human beings and containing either sulfathiazol, tetracycline or oxytetracycline, are beneficial. Apply 2 or 3 drops in each nostril morning and night.

Pneumonia

Pneumonia is an inflammation of the lungs and accompanies many diseases. Sometimes it occurs as a primary disease.

Cause: Bacteria, virus and foreign substances.

Predisposing causes: Chilling, parasites, poisons, other infections, inhalation of gases and liquids, etc.

Symptoms: The animal doesn't eat and has difficulty breathing; its body temperature generally is elevated; and its head may be extended to relieve breathing. Death may occur soon after the illness begins.

Treatment: Accurate diagnosis is necessary before treating pneumonia. Several drugs, such as sulfa drugs and antibiotics, help speed recovery.

Enteritis and scours

Cause: Scours, or diarrhea, generally is a symptom of some intestinal infection (enteritis) caused by parasites, bacteria, viruses, poisons, incorrect feeding or poor digestion.

Symptoms: Droppings range in consistency from semisolid to liquid; blood may or may not be present. There is a foul odor, and the hair

around the tail and back legs is soiled or matted. If diarrhea is not stopped soon, the animal will lose its body fluids and salts and become emaciated (thin). The fur appears ruffled and dull.

Treatment: The correct treatment for enteritis depends on its cause. If the cause is parasites, eliminate them with proper drugs. A laxative such as castor oil may be used in case the enteritis has resulted from moldy or musty feeds. Drugs such as bismuth sub-nitrate, kaolin, antibiotics and pectin, used for diarrhea in puppies and children, may be used for rabbits, although treatment seldom is successful.

Nose and face scabs (facial dermatitis)

Cause: Bacteria and fungi. Bacteria and fungi infect inflamed and irritated areas around the nose and face. The inflammation and irritation may be caused by secretions from a runny nose, bites, external parasites, rubbing the nose with the feet, gases from dirty pens, etc.

Treatment: Antibiotic injections help relieve this condition. Medication put around the mouth usually is licked off or rubbed off with the paws. Eliminate the cause of irritation.

Caked udders (edema)

Cause: Caked udders may develop just before kindling, right after weaning or any time between kindling and weaning. Edema is a hardening of the udder because fluids have accumulated in the tissue. The udder hardens, swells and is painful to the animal when touched.

Treatment: Apply hot towels over the udder or massage and try to remove some of the milk. If baby rabbits are nursing, be sure they are well and removing the milk.

Mastitis

Cause: Bacteria and fungi. The udder becomes swollen, hot and sore to the touch, with a caked udder. Infection gets into the udder through the teat canal. Injuries and irritation from a caked udder may bring on mastitis.

Treatment: Antibiotic injections are the best known treatment. If abscesses form and rupture, treat them locally with an antiseptic such as tincture of iodine.

Abscesses and sore hocks

Cause: Abscesses may be caused by bacteria or an infection entering the blood stream and causing abscess anywhere in or on the body. Abscesses may form after cuts, bites or any type of abrasion where an infection may enter the skin and the tissue underneath. Sore hocks are often caused by constant exposure to wire floors or hard floors with no bedding.

Treatment: Open the abscess and drain it; clean it thoroughly with clean water; then apply an antiseptic such as tincture of iodine.



Sore hocks can be caused by constant exposure to wire floors or hard floors with no bedding.

Internal and external parasites

Like other animals, rabbits can become infested with both internal and external parasites. The main parasites found outside the body are ear and mange mites. Both are microscopic.

When hutches are kept clean, internal parasites generally pose no problem. If they do occur, seek advice from your veterinarian on what type worm is present and what treatment is proper. Preventive measures consist of keeping hutches dry and clean, and controlling flies and mosquitoes in the area. Keep dogs and cats and other pets away from the rabbitry. Do not let them sleep on feed sacks or material to be used in hutches.

Ear canker

Cause: Ear mites.

Symptoms: The animal shakes its head, holds it to one side and scratches at its ears. Later, the ear becomes infected. If not treated, this builds into a moist exudate with crusts or scabs inside the ear, sometimes extending to the outside.

Treatment: Swab and remove as much debris as possible. Remove the scabs from the sores and pus from the bottom of the ear. Apply a solution of mineral oil and camphor medicine with an eye dropper, or a commercially available product, saturating thoroughly the inside of the ear and all sores or scabs.

Mineral oil alone may be used if the other two products are not available. Ear mites may also be controlled by using tick and flea powders that are used for dogs and cats. Sprinkle powder into the ear after the ear has been thoroughly cleaned.

Ringworms

Cause: Ringworm, caused by a fungus, is seen as circles of hairless spots or grayish scaly areas.

Treatment: Treat the affected area with tincture of iodine. Clean the hutches thoroughly every day when external parasites are present.

Coccidiosis

Cause: A parasitic disease, coccidiosis damages the liver and intestinal tract. It is caused by protozoa, which can be seen only under a microscope.

Treatment: A veterinarian's advice is needed for treating this condition.

Other problems

Slobbers

Cause: Slobbers may be caused by too much green feed, or green feed to which young rabbits are unaccustomed. It may also be caused by sniffles, coccidiosis or bad teeth.

Treatment: The treatment depends on the cause. If too much green feed has been offered, lower the amount. If irregular feeding of green feed caused the condition, give green feed daily. If bad or long teeth are the cause, correct this condition by either removing bad teeth or cutting off long teeth.

Cuts and wounds

Treatment: Clip hair around wounds. Clean the wound, then apply an antiseptic such as Merthiolate. If the wound is deep and wide, stitches may be needed.

Long front teeth (buck teeth)

Cause: To wear evenly, the large front incisor teeth should meet at a correct angle. In some cases, this does not occur, and the animal has difficulty eating.

Treatment: Trim the teeth even with the others, using diagonal cutters (many times ordinary wire cutters are adequate), and file down the sharp edges with an ordinary file. Do not keep these animals for breeding, since buck teeth may be inherited by offspring.

Processing for market and home use

4-H members may dispose of their rabbits in four ways:

- ◆ Sell live rabbits to a processor for slaughtering;

- ◆ Process them for direct sale;
- ◆ Process them for home use; or
- ◆ Sell them as pets or breeders.

Each 4-H member should begin the project with the goal to sell rabbits for meat and fur, rather than to keep them as pets or for breeding. Make arrangements to sell meat rabbits to a processor before fryers are ready for market.

Crating and transporting live rabbits

Most rabbits will probably be sent to market live. Properly crated rabbits in good condition can be transported safely, but do not expose them to extreme heat or cold. Good ventilation is important. Avoid overcrowding. Although having individual shipping compartments is better, 4-H members transporting rabbits for relatively short distances can probably use shipping crates made from packing boxes. As the scope of the project grows, obtain permanent shipping crates.

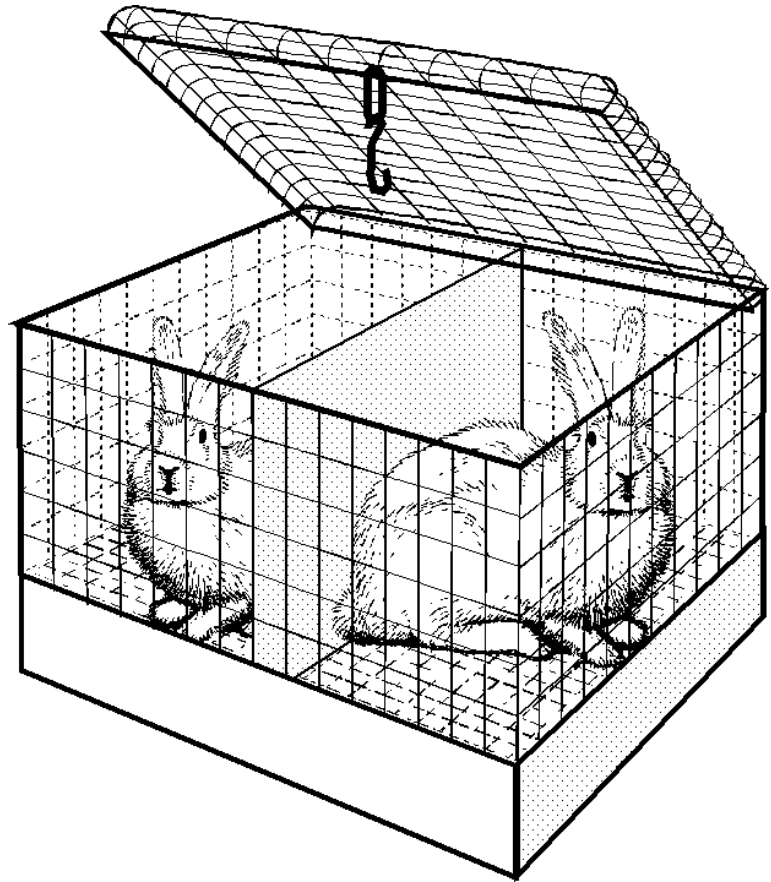
Marketing

To make your rabbit enterprise financially successful, you must have a way to sell your animals. Your marketing methods and the price you receive may determine your ability to pay your expenses and make a profit.

By the time a litter is partly grown, you must know how you will market the animals. Select outstanding animals from a strong bloodline (desirable strain) to keep as replacements for older animals or as new additions to the colony. Sell other animals that meet breed or production standards whenever possible to 4-H members or other people wishing to raise rabbits.

You might sell fryers live to commercial rabbit processors or to laboratory animal suppliers. Or, dress and sell the fryers to friends, relatives, neighbors, stores or restaurants. Each of these markets requires a clean, healthy, well-fleshed animal. Be sure to find out the county and state regulations governing the sale of dressed fryers.

Fryers can be sold either as a whole carcass or cut up and ready for meal preparation. It is probably best to use poorer fleshed animals at home. You can sell older animals as roasters or



A rabbit carrying cage can safely transport your animals to market.

stewers, either live or dressed. Be sure your customers know the kind of animal they are buying and the best way to prepare the meat.

The smaller rabbit breeds are often popular on the pet market. Eye appeal, ability to adapt and a good temperament are needed for this type of sale.

Rabbit manure is often in demand. An important part of your enterprise is the worm bed, where fishing worms and a garden mulch can be produced. This practice is recommended because it allows you to use the manure in a way that minimizes odor and fly problems. Sometimes you can sell rabbit manure to home gardeners or to people who raise worms commercially.

Selecting, grooming and showing

Generally, 4-H members should not raise rabbits for show only. Rather, they should select the best animals from their colony to show.

Successful rabbit raising begins with purebred foundation stock. Rabbits for show should come from purebred parents of a breed recognized by the American Rabbit Breeders Association (ARBA) in its “Standards of Perfection.” Avoid crossbred or mixed rabbits because they cannot be shown, and they vary greatly. It is wise to invest in the best stock available.

For showing, select the best rabbits according to the standards for its breed. Study the show rules, regulations and classifications carefully before taking a rabbit to a show. Shows impose strict requirements on weight, color, size and age of rabbits entered. Although pedigrees are usually not required, good records make good rabbits even more valuable for show and meat production.

You can learn a lot about showing rabbits by watching others show them. Some pointers you should know include:



Be present when your rabbits are being judged so you can learn from the judge's comments.

- ◆ Select best rabbits for showing. Do this early, allowing time for conditioning.
- ◆ Begin working with your rabbit at least 6 weeks before a show. Brush it with a soft brush and rub the hair coat with your hands to remove old, dead hair and give the rabbit a shiny new coat. This also helps gentle the rabbit. This is also the time to teach the rabbit to sit still on a table. Judges do not waste time with rabbits that jump around on the show table.
- ◆ Read all the rules and regulations for the show. Ear canker, sore hocks and other abnormalities disqualify a rabbit.
- ◆ Before the show, have your rabbit tattooed properly for identification.
- ◆ When you arrive at the show, check your entry with the show superintendent or secretary. Usually, exhibitors do not have to feed or care for the rabbit during the show. The show committee will take care of your rabbits and take them to the judging table, but you may be asked to help.
- ◆ As the judge examines the rabbit, information about the rabbit is written on the official record. This information usually is recorded also on the back of the card attached to the pen. A paper sticker showing the rabbit's placing is usually placed on the front of the card.
- ◆ Be present when your rabbits are being judged to learn from the judge's comments.
- ◆ In judging rabbits, the classifications of the American Rabbit Breeders Association usually prevail.

4-H members who show rabbits regularly can profit by reading this association's official Guide Book and Standard of Perfection. Members of the local rabbit producers association or 4-H leaders can also provide information. In most shows, classes are provided for the following: Senior Doe, Senior Buck, Intermediate Doe, Intermediate Buck, Junior Doe, Junior Buck, Pre-Junior, Meat Pen and Fur classes.

For information from the ARBA, see its web site at www.arba.net.

For more information

Magazines

Domestic Rabbits. American Rabbit Breeders Association, 1925 S. Main St., Bloomington, Illinois 61701.

Rabbits U.S.A. P. O. Box 190, Colton, Oregon 97017.

Rabbits Only. P. O. Box 207, Holbrook, New York 11741.

Bulletins and books

American Rabbit Breeders Association Official Guidebook. 1925 S. Main St., Bloomington, Illinois 61701.

Standard of Perfection. American Rabbit Breeders Association, 1925 S. Main St., Bloomington, Illinois 61701.

Rabbit Production Handbook. Instructional Materials Service, 2588 The Texas A&M University System, College Station, Texas 77843-2588.

Domestic Rabbit Production. By George S. Templeton. The Interstate Printer and Publishers, Danville, Illinois.

Your Rabbit - A Kid's Guide to Raising and Showing. Storey Communications, 105 School House Road, Pownal, Vermont 05261-9988.

Rabbits, Rabbits, Rabbits. By Clint Rusk, Norman D. Long and Lynn Blanchard. Purdue University Cooperative Extension Service.

Rabbit associations

American Rabbit Breeders Association., P.O. Box 426, Bloomington, IL 61702. Phone: (309) 664-7500. www.arba.net

Texas Rabbit Breeders.

Do's and Don'ts

Do:

- ◆ Keep hutches clean.
- ◆ Wash water crocks and bottles at least once a week.
- ◆ Put the nest box in the hutch 3 or 4 days before the doe is supposed to kindle (have babies).
- ◆ Leave all the doe's babies with her for 48 hours, then cut the litter to seven or eight.
- ◆ Furnish fresh water every day.
- ◆ Keep one buck for each eight to 10 does.
- ◆ Watch your animals carefully. If they get too fat, reduce the feed. If they get too thin, increase the feed.
- ◆ Watch for ear mites. A rabbit with ear mites loses weight.
- ◆ Watch closely for sore hocks. They also cause weight loss.
- ◆ Always lift a rabbit by a fold of skin behind the neck, over the shoulder, supporting the hind quarters with your other hand. Never lift a rabbit by the ears alone.
- ◆ Keep your rabbits out of drafts and dampness.

Don't:

- ◆ Breed rabbits in poor flesh condition.
- ◆ Breed does too young. Small breeds may be bred at 5 to 6 months; medium breeds at 6½ to 7 months; giant breeds at 8 to 9 months, depending on development.
- ◆ Allow your rabbits to be in sunlight for long periods.
- ◆ Use a buck under 6 months old.
- ◆ Overfeed your rabbits.
- ◆ Let your rabbits get overweight. They will not breed in this condition.



Produced by AgriLife Communications and Marketing, The Texas A&M University System
Texas AgriLife Extension publications can be found on the Web at: <http://AgriLifebookstore.org>

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.