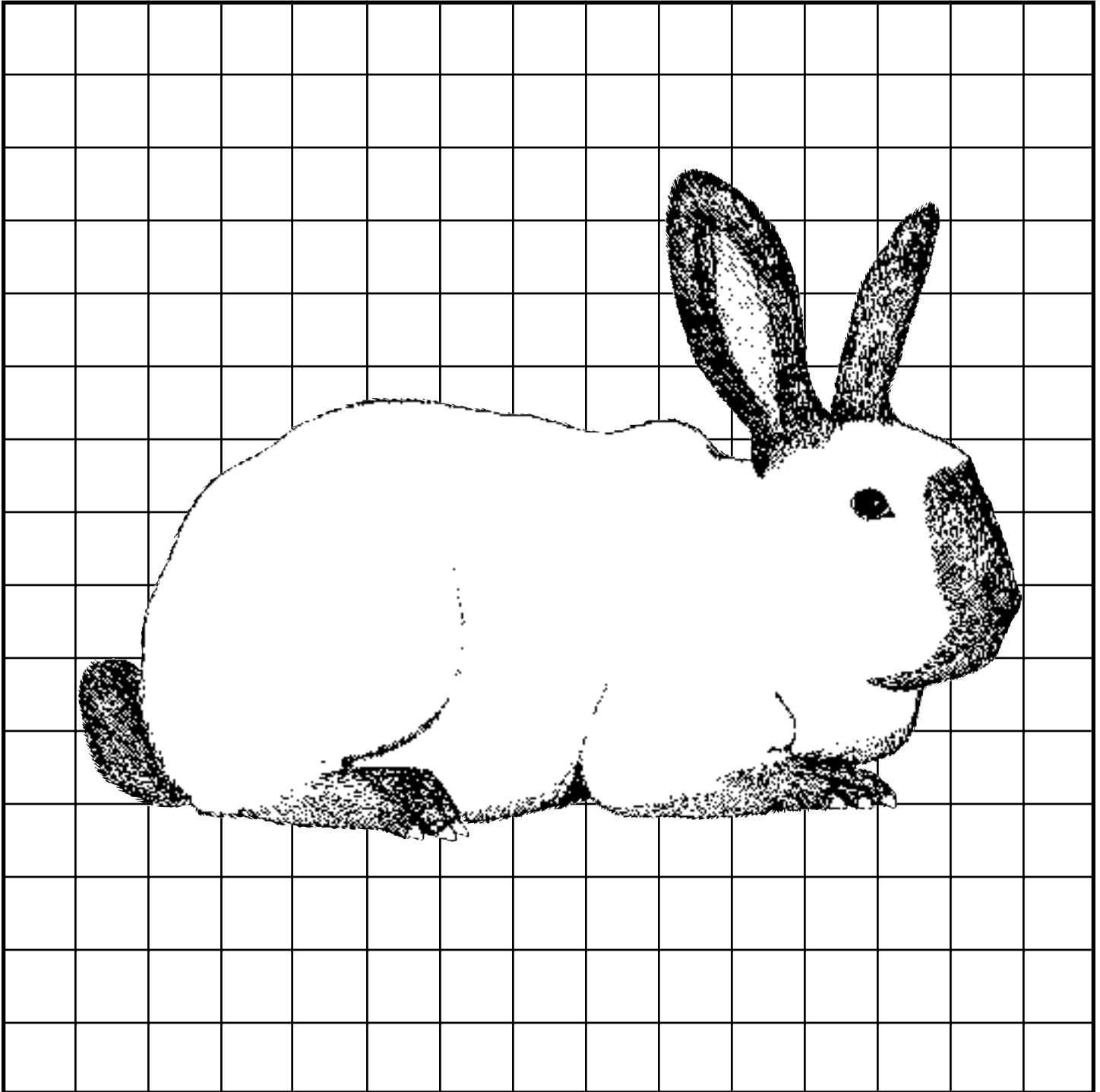


raising rabbits

helpful suggestions for beginners



The rabbit has been domesticated for years and is adaptable to confinement rearing and close association with humans. Persons wishing to raise rabbits for fun, profit, or to supplement the family meat supply should visit other rabbit raisers and observe their housing, feeding, and management methods. Contact and join a local rabbit club as an excellent means of becoming familiar with related rabbit information.

Newcomers wishing to raise show stock should attend several rabbit shows before buying. Watch the judge handle the animals and compare breeds. Those choosing meat production should visit commercial meat producers.

Whether you raise rabbits for meat and fur, wool, laboratory use, or show stock, select the breed best adapted to that purpose. It is never economical to purchase inferior breeding stock. One good producing doe will make more net profit than several inferior ones.

Commercial rabbitries are set up for the production of meat at a profit. You'll want a breed that will attain the required weight in a minimum of time, with the best dress-out, the type of fur that sells at a higher price, and stock with a good production record. The medium weight breeds with white body fur (White New Zealands and Californians) are most popular for meat production, because they produce a more rapid growth and a uniform fryer.

The market price of rabbit pelts is higher for white fur than colored because the white fur can be dyed to any desired color, while colored pelts have to be carefully matched and cannot be dyed a lighter color. The pelt market fluctuates greatly. Often no market is available for small lots of rabbit pelts.

Wool from the Angora rabbit makes a wonderful yarn and subsequently beautiful articles, but there is seldom any wool market available unless it is developed by the breeder through fairs, summer shows or

marketplace contacts. For show purposes or as a hobby, almost any recognized breed will serve including show strains of the commercial breeds mentioned above.

Rabbit shows are educational and fun. Breeding the colored and marked breeds is a challenge. To keep abreast of this ever-growing industry, all breeders should join specialty clubs, and plan and attend shows or schools.

Purchasing Stock

Care and consideration should be given when purchasing stock for a rabbitry. Unless you buy from a reliable breeder, you may end up with culls. Most breeders will show you their rabbitry hutch cards and production records. Officers of your local or state association will be glad to assist you in purchasing stock. Know your purpose for choosing a rabbit breed. Look the stock over carefully with emphasis on type, condition, and production records. Don't be afraid to ask questions.

Health

The best way to keep your animals healthy is to stay away from sick animals or those with parasites, mange, respiratory, or eye problems. Keep your animals well fed and in clean, dry housing. If you have a sick rabbit, isolate it. While doing daily chores, feed and care for the well rabbits first, then treat the patients and wash your hands.

Housing

Good housing is very important. The rabbits, while unable to tell you of their needs in housing, are expected to perform in your cages, raising large healthy litters.

Visit other rabbitries and see the great variety of cages in use. In planning your rabbitry, you must decide whether you want single- or double-tier wire cages. There are advantages and disadvantages to each. You'll find it much easier to observe your stock if the cages are single-tier and at a

height where the inside is visible without bending or stretching. With double-tier cages, you can house twice as many animals under the same roof, but cleaning and ventilation can be a problem.

A rabbitry should have plenty of fresh air, but no draft. A draft may cause colds and pneumonia. Locate your rabbitry in an area with good drainage. Utilize natural shade if possible and protect from prevailing winds. The rabbit areas should be fenced to protect the hutches from stray animals. Frightened rabbits often injure themselves (broken backs) or kill or injure their young.

Good ventilation inside the house is important. In cold areas, rabbit houses should be more carefully protected than those in milder areas. In general, all houses should have insulated roofs to reduce summer heat and winter condensation. The use of supplemental heat is not economically advisable, but it may still be necessary for sustained production in below-zero climates.

Individual hutches should have enough roof overhang to protect from driving rains. The back and windward sides should be solid.

Nonmechanized, multi-unit houses should include continuous ventilation areas under the eaves (well above the cages) and lower side wall area (below the cage floor). Eave ventilation is concerned with the area covered by a two-foot sheet of plywood nailed to the bottom of the rafters to deflect the incoming air into the center of the building. An adjustable damper is advisable. During the summer, vents should be open. In winter, they should be partially closed. Small adjustable center ridge ventilators are recommended to allow for the escape of excess moisture.

Larger, commercial rabbit houses require fan-type air control. Your county Extension agent or Extension poultry specialist can assist.

Aisles should be a minimum of three feet and end turn areas 10 feet for a feed cart or wheelbarrow. In addition, consider space and

building arrangements for future expansion.

Welded wire in $\frac{1}{2}$ " x 1" mesh is recommended for making rabbit cages, as such floors are almost self-cleaning. Large breeds will keep cleaner with $\frac{3}{4}$ " x 1" mesh wire. Use 14-gauge wire for all floors.

Hardware cloth is not recommended as it is a woven surface with more opportunity for manure to cling and rough galvanized edges are usually present to irritate the rabbit's feet.

Cage designs vary with the manufacturers and with the space requirements of the breed. Depth of the cages depends upon the height of the cage and accessibility of the farthest corner. Thirty inches is the usual depth although properly designed cages may be as deep as 36 inches. Except for giant breeds, 18–24 inches in height is sufficient. Hutch doors should be large enough to allow room to handle the rabbits easily or install nest boxes. Humane treatment of animals suggests that they have adequate room to turn and stretch. Suggested floor space allotments are:

Small breeds— $2\frac{1}{2}$ x $2\frac{1}{2}$ ft. = $6\frac{1}{4}$ sq. ft.

Medium breeds— $2\frac{1}{2}$ x 3 ft. = $7\frac{1}{2}$ sq. ft.

Large breeds— $2\frac{1}{2}$ x 4 ft. = 10 sq. ft.

If you have more than a few rabbits you should install automatic waterers and outside metal feeders. In locations which have freezing weather, a heating cable in the water line is a necessity. These two features will save time and prevent contamination of water and feed.

Although experimental data on this subject is not complete, it is suggested that electric lights be used as an aid to reducing fall and winter breeding problems. A 16-hour day length is recommended; 25-watt globes should be adequate.

Feeding Your Stock

Proper feeding and care of rabbits is a science. Overfeeding is the most common

problem and has far-reaching side effects. Regardless of the number of rabbits raised, best results will be obtained by feeding a commercial rabbit pellet. Salt spoons are not necessary with pelleted food. Feed companies have spent considerable time and money experimenting with balanced feed formulas. The cost of the feed itself isn't as important as the cost of the meat produced. The casual feeding of green feeds may cause scours and is almost sure to reduce the rate of gain. Some greens, such as burdock and sweet clover, are injurious to rabbits.

The goal for commercial rabbit raisers is to have 4- to 4¹/₂ lb. fryers in 8 weeks. To achieve that goal, the young rabbits need a good mother that can produce a lot of milk; they need feed and water continuously. Without water they soon stop eating.

Rabbits should be fed once daily, preferably in the evening since night is their natural time to feed. In order to insure that the feed remains clean and fresh, give them only enough to last until the next feeding. Old feed or moldy feed is very injurious to rabbits. Check inside the feeder to be sure water hasn't entered and caused caked feed in the corners.

The doe, from the time she is bred through her nursing period, should be full fed on a high protein diet. She and her litter will eat 100–120 lb. of feed during the 8-week period. The dry doe and buck are fed altogether differently. Large breeds eat 4 to 6 oz. on 12–15% protein pellets once a day. (A 6-oz. tuna fish can holds approximately 5 oz. of rabbit pellets. A 4-oz. vienna sausage can holds approximately 3¹/₂ oz. of pellets for intermediate size breeds.) Dwarfs need only 2 oz. per day per animal. They can be overfed very easily if their feed is not rationed. Free access to a choice legume hay, such as a No. 2 leafy or better grade of alfalfa, is also permissible providing a manger type feeder is available. Old loose hay in a cage soon produces mold and sick rabbits.

Junior bucks and does being developed for

breeders should be given only what they will clean up each day, or you may restrict the rations to the ratio of 1 oz. of feed per pound of body weight (4-lb. rabbit: 4 oz. feed). Improper feeding causes problems. If the buck is overweight, he will be lazy and sluggish and tire quickly. If the doe is overweight, she may be reluctant to mate, or if she does breed and conceive, the excess fat on the inside of her body makes kindling difficult. She may lose her young or even her own life.

Breeding

There are four methods of breeding: natural mating, forced mating, confined mating, and artificial insemination.

Natural mating—the best method to use. A doe shows signs of being ready for mating by restlessness and nervousness, by rubbing her chin on equipment, and by attempting to join other rabbits. External signs in females are also associated with coloring of the vulva. Deep red coloration indicates the female will usually accept the male. Usually only one service is necessary. Females in season should be introduced to the male's cage, not vice versa. The natural mating method gives up to 90% conception.

Forced Mating—This method requires that females who do not immediately accept the buck be restrained by a person so the buck can mate. Conception rate by this method will not approach the natural mating system. Does which have to be restrained should be eliminated as soon as possible as their temperament and reluctance to mate are inherited factors.

Confined Mating—This method is not recommended because (1) you do not know if mating occurred, and (2) the animals may permanently injure each other. Eligible females are kept with a buck for anywhere from 24 hours to several days.

Artificial Insemination—Semen is collected from males and introduced to females by artificial means. This technique requires ex-

perience and equipment for good success. At this time it is not a practical method to consider.

How to Breed—General Information

1. The small breeds mature sexually earlier than the larger breeds. Small breeds may be bred at 4 months of age, medium breeds at 5–6 months, and large breeds at 9–12 months. Another method of determining breeding time is by weight. Breed does whenever they attain proper size (New Zealand and Californian at 7 lbs.). Proper feeding schedules thus insure earlier reproductive ages.
2. Start bucks one month later than does on a limited schedule.
3. Take doe to buck's cage; leave for one service. After about two minutes return her to her cage. If doe fights buck, remove immediately. She may be restrained for service or returned several days later.
4. If the service is completed, the buck will fall away from the doe. If this characteristic motion is not observed, remove the doe and place with another buck.
5. Doe ovulates about 10–13 hours after first service. Some producers take doe back for second service at this time. This doubles breeding time but may help conception percentage during off season (July-October).
6. Experienced producers should gently palpate does 17 days after breeding to see if doe is pregnant. Litters will be lost if does are handled roughly. Rebreed does that have not conceived.
7. In small herds, breed does twice to insure large numbers of viable sperm. In large herds when breeding daily, use bucks every day and breed each doe only once. When breeding weekly, bucks may service two or three does on the breeding day.

8. Keep one buck to every 10–20 does. Active high-producing bucks solve most breeding problems.
9. Add nest box at 28th day. Normal gestation period for rabbits is 31 days but varies from 30 to 33 days.
10. Replace any buck whose record reveals small litters or whose offspring show poor type or rate of gain.
11. Production life of good bucks is from two to four years. It is normal for males to molt for a one-month period during the year. During this time they may not breed.
12. Production life of good does is two to three years. Save at least one young replacement doe per month for each 24 working does (50% replacement per year). This replacement rate will generally cover both culling and mortality. Eliminate poorest animals continually.
13. Inbreeding is a much discussed point. The answer lies in degree of inbreeding and vitality of the stock. If fertility is low and young are few, misformed, unthrifty, or small, try a new unrelated buck.

How To Breed—Fancy Breeds

1. Fanciers producing show stock arrange the breeding schedule to fit their show calendar. Championship quality rabbits take time to condition. Breeding does do not show well. Mis-scheduled litters reduce the doe's condition both in fleshing and in fur quality.
2. Fanciers often keep a higher percentage of bucks, as several breeds and varieties are kept and young bucks are being tested for results and sale.
3. Breeders of show stock rely heavily on special matings which appear to "nick" or produce superior young. These breeding animals should be kept as long as they can profitably produce young. Litter size is not as important as quality.

How to Breed—Commercial Breeders

1. In commercial meat production herds, the goal is to maximize the number of saleable fryers. Formerly, producers bred does every 42 days after kindling (31-day gestation). This 73-day breeding schedule produced five litters or 40 young rabbits per year. This is a good program for a beginner.

A more intense program now uses a 21-day breed-back schedule. The animal is bred every 52 days and produces 6 to 7 litters of young per year. To do this successfully, the young should be creep-fed milk supplement feeds to meet their nutritional needs and reduce their demands on the does. The young are removed from the doe by six weeks of age to allow a minimum 10-day dry period. Does and litters should be observed frequently. Only the best stock will stand this intense schedule.

2. Replace does that produce fewer than seven healthy babies per litter.
3. Whenever superior does not excessively overweight fail to litter eight or more young, check the buck's record. He may be at fault. This is particularly true with very young bucks, old bucks, bucks going into a molt or that are overweight.

From Nest Box to Market

Nest boxes in commercial rabbitries are constructed of sheet metal with masonite or wood bottoms because of ease of cleaning and disinfecting. Plywood boxes with edges lined with galvanized metal to prevent the doe from eating the wood and apple boxes are used by small producers. Pegboard is practical for summer since it is cool, lightweight, and durable. Extra insulation boards are added to the sides and bottom in the winter.

The does need room to get in, have their young, and nurse them. If the box is too roomy the doe has a tendency to live in it. Many use a box 18" long, 10" wide, and 8"

high, open at the top. Nest boxes with flat wooden tops provide more privacy for young does or does that have littered on the wire.

There are many bedding materials available. Wood shavings, fine grass hay, and coarse sawdust are most common. Use plenty of nesting material in the nest box in extreme cold weather. If straw is used, replenish the nest box daily as does may eat large amounts of the nesting material.

Does kindle in relationship to time of breeding. Does bred in the morning tend to kindle in the morning. Those bred in the afternoon tend to kindle at night.

Observe the expectant mothers frequently but do not disturb. Litters born outside the nest should be warmed immediately and placed in the nest box in a snug little pile covered with fur. Some mothers will join them within a few minutes. If there is no response within a few hours, place the mother in the nest box and hold her until the young start to nurse. A rabbit doe not cuddle her young but nurses them quickly (2–4 minutes) in a hunched-up position once or twice a day.

If the doe has more than 8 young, it is advisable to remove the surplus unless you know from past experience that that particular doe is a good milker and can handle the larger number. If you have several does, it is wise to breed more than one at a time. You can then transfer young from a doe that may have more than she can handle. The young exchange easily during the first few days. There is usually no need to rub noses with any kind of odor. Transfer young only between healthy mothers. Diseases such as mastitis are easily spread in this manner.

Keep a record of all transfers, both from whom and to whom the young are moved. The young which are transferred should be earmarked with a tattoo mark in the ear made by needle pricks.

If a doe has more young than she can raise properly and no other doe is available to

adopt them, cull out the weakest ones. Eight good healthy youngsters have a far better chance at life and will return more money than 12 to 14 weaklings.

The young are born naked with their eyes closed. They grow remarkably fast if the doe is a good milker and takes care of them. In about 2 weeks they will have their eyes open and in 3 weeks they want to get out of the nest box. It's important to keep the doe and litter on full feed and plenty of fresh water.

With good stock and good management, the meat rabbit should weigh 4 pounds or better at 8 weeks of age. That is the proper time to market them, and to select what you want for breeding stock.

Young breeders should be checked carefully for inherited characteristics which are detrimental to type, health, or production. Discard animals with buck teeth, crooked bones or tail, ruptures, abscesses, or any respiratory disease symptoms. Family traits, such as uneven growth, color aberrations, sore hocks, poor disposition, or lack of fertility, should be eliminated to reduce herd management problems.

Selection of replacement bucks is more critical than replacement does as the buck is one-half the genetic complement of all the litters he sires. That is, he is responsible for 10 to 40 times as many litters as any individual doe. Use your very best families for replacement stocks.

By 3 months of age, all growing stock should be separated by sex into cages containing not over 2 rabbits each. By 5 months of age the animals should be separated into individual cages. Permanent tattoo markings should be placed in the left ear of the rabbit at 8 weeks of age to identify it for further record keeping and cage identification if the rabbit escapes.

Records

Keeping records is the most important part

of raising rabbits. Without records one cannot determine production, mortality, litter weight at 8 weeks, cost of feed per pound of meat, or other desirable traits or facts.

There are several types of record forms. The most common is the individual hutch card that tells the rabbit's breed, ear number, birthdate, sire and dam, when and to whom bred, number in litter and number of young left at 8 weeks, their weight, and date rebred. The rabbit's three-generation pedigree and registration number, if registered with the ARBA, should be available for reference. There is also a stud record card that records the buck's pedigree, the does bred, the dates of each breeding, and results of each litter.

Slaughterhouse Regulations

Building an approved slaughterhouse for the processing and sale of rabbits to stores is expensive and is not economically feasible unless large numbers of rabbits are available on a steady basis. Large producers sell to already established rabbit slaughterhouses. Small producers may sell live rabbits direct to the consumer or to the processor. No uninspected dressed rabbit sales may be made to consumers, restaurants, or markets.

Killing and Dressing for Home Use Only

Slaughter in a clean, sanitary place. The rabbit should be made unconscious prior to slaughter by dislocating the neck or by stunning with a sharp blow with a small iron rod at the base of the skull between the ears. To dislocate the neck, hold the animal by its hind legs with one hand. Place the thumb of the other hand on the neck just behind the ears with the fingers under the chin. Stretch the animal by pushing down on the neck, while pressing in with the thumb. Raise the animal's head with a quick upward movement to dislocate the neck. This method causes instantaneous and painless death when done correctly. Immediately suspend the animal by inserting a hook between the tendon and the bone of the right hind

leg, just above the hock joint. Quickly cut off the head to permit thorough bleeding. Cut off the tail, the front feet, and the free rear leg at the hock joint. Placing the knife under the skin, cut just below the hock of the suspended leg, then slit open the skin on the inside of the leg to the base of the tail. Continue on across the rabbit's other rear leg. Separate the edges of the skin from the carcass and pull the skin down over the animal. Care should be taken to avoid cutting the skin; any cut detracts from its value.

After skinning, make a slit along the center line of the belly, cutting from the breastbone to the tail. Carefully remove the bladder and take out the entrails. Pinch or cut the gall bladder from the liver and leave the heart, liver, and kidneys intact within the body cavity. Unhook the suspended carcass, cut the remaining hind foot at the hock joint, and spray the carcass with cold water to flush away blood and stray hairs. Brush the neck thoroughly to remove clotted blood. Place the carcass in fresh, clean, cold water for not more than 15 minutes to chill. Longer soaking causes the meat to absorb water and is considered an adulteration. Remove the carcass, drain, and place in a refrigerator cooler.

Packaging

Rabbit can be packed into an attractive 7-piece fryer pack. Separate the front legs from the rib cage. Cut across the back at the end of the ribs and by splitting along the backbone, separate the section into two equal halves. Leave the center loin in one large piece. Cut the backbone between the two rear legs and remove from loin section. Larger rabbits may be prepared in this same manner, except that each leg would further be divided into two pieces and the loin section cut into a front and a back section.

A waxed box or tray 9" long, 4" wide, and 2¹/₂" deep is suitable for a fryer carcass weighing 1³/₄ to 2¹/₂ pounds. Arrange the cuts attractively. Include the heart, kidney, and liver. If the product is to be frozen, package in proper materials to avoid freezer burn.

Curing the Skins

The skins should be shaped while still warm. Place the skins flesh side out on wire or board stretchers, making sure both front feet casings are on the same side. Clothespins will help hold the hide. Remove all wrinkles from the skin. Hang in a warm, dry room. The following day, examine the pelts to see that the edges are flat and wrinkle-free. Remove all fat from the pelts and store as raw pelts in a dry, well-ventilated area free of mice.

Preparation of Pelt

The first step in tanning is to thoroughly soften the skin and clean from flesh and fat. A dull knife or old spoon makes a good scraper. If the pelt is whole, slit it down the middle of the belly and soak in clear, cool water. Change the water several times, squeezing, rolling, and working the skin over a smooth board or pail until all adherent tissue, fat, flesh, oil, and grease is removed.

The age of the animal and thickness of the pelt determine the length of time required to soak and clean the skin. Experience has shown that 12–14-week animals have the most uniform hides. Older animals may have uneven pelts or fur areas. Usual soaking time varies between 2 and 3 hours. Excessive soaking may cause hair to slip. Final soaking and working should be done in lukewarm water containing one ounce of soda or borax per gallon plus a small amount of soap. Remove from borax water, rinse several times in lukewarm water, squeeze dry, and dip and work again in gasoline to remove all tissue, dirt, fat, and grease. The skin is now ready for tanning.

Tanning by the Salt-Alum Process

Ingredients: 16 oz. ammonia-alum sulphate per gallon of water
4 oz. crystallized sodium carbonate
8 oz. table, noniodized salt per ¹/₂ gallon of water
1 oz. borax
Several pounds of flour to thicken above mixture

Dissolve 1 lb. of ammonia-alum or potash alum in one gallon of water. Add 4 oz. of washing soda and 8 oz. of salt; dissolve in $\frac{1}{2}$ gallon of water. Pour the soda-salt solution slowly into the alum solution, while stirring vigorously. Add sufficient flour to make a thin paste, first mixing the flour with a little water to prevent lumps.

Tightly tack the previously prepared pelt flesh side out on a board. Coat with $\frac{1}{8}$ " of tanning paste. Allow to dry 24 hours, protected with paper or sacking. The next day scrape off the paste and apply another coat. Thick skins may need several applications. Leave the last coat on for 3 to 4 days, then scrape, work the skin in borax water, rinse, and squeeze dry, but do not wring.

Stretch and work the pelt back and forth flesh side down over the edge of a board as if shining shoes with a cloth. The more the pelt is worked, the smoother and more pliable it will be. If the pelt is not soft enough when dry, rewet and rework. A sandpaper block may be used to gently sand the rough or thick areas on the wet pelt. A final cleaning may be given by working the skin in warm, dry, hardwood sawdust. This will restore luster to the fur.

Tips for Beginners

Material and equipment needed vary. Some things you will find useful are:

1. A tattoo needle and set of numbers.
2. A propane torch to burn off excess fur and disinfect cages and nest boxes after they have been emptied of all material.
3. Scales to keep an accurate weight record.
4. A set of tools including hammer, wire cutters, pliers, roll of wire, etc., for minor repairs.

5. Record cards and summary sheets.

The proper way to lift a rabbit is to firmly grasp the skin over the shoulders. After elevating the rabbit, place it against your body with your other hand under the rabbit's rump. Handle the rabbit gently. Never lift a rabbit by the ears or legs. This leads to permanent injuries.

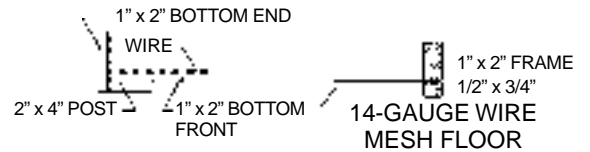
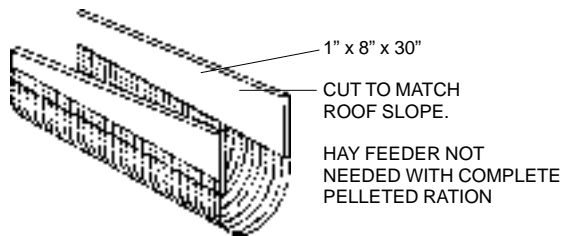
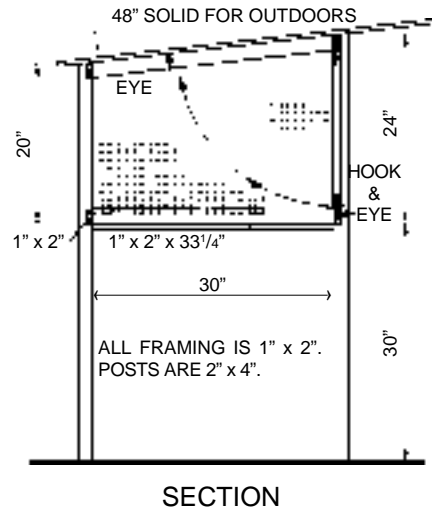
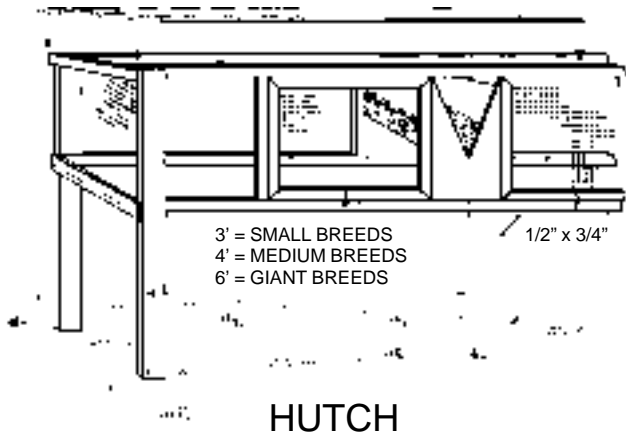
Worm Culture

Keeping hybrid earthworms beneath rabbit cages reduces odor and fly problems and offers an excellent opportunity for additional income from sale of the worms. This type of arrangement works well in open rabbitries and moderate climates. Inasmuch as worm beds must be kept wet and rabbits do best at lower humidity levels, the use of worms beneath the cages is not recommended in enclosed rabbitries or in cold climates where the beds stay cold for many weeks.

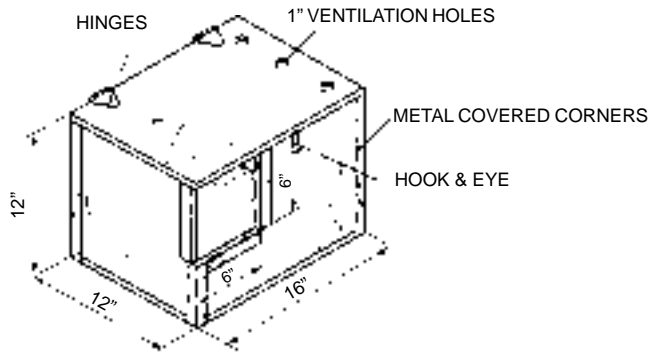
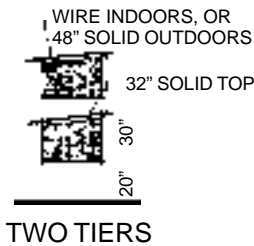
Worm culture requires extra time and work to keep the beds turned and to keep them moist, as well as developing a market and servicing it. If your rabbits are raised in closed housing and you want to raise worms, special worm pits should be built outside the rabbitry and manure moved to the pits. This will allow you to raise both rabbits and worms under the best conditions and convert the manure to profit.

Rabbit Manure

Rabbit manure is a valuable fertilizer sought by many horticulturists. Generally speaking it is not considered to be a "hot" manure and may be used freely.



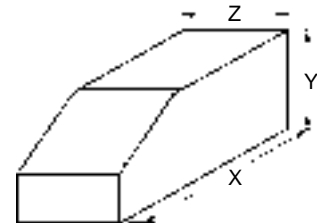
CORNER DETAIL PLAN **FLOOR ATTACHMENT SECTION**



LINE WITH 2 OR 3 LAYERS OF CORRUGATED CARDBOARD FOR SEVERE WEATHER. FILL WITH STRAW. DOE WILL MAKE NEST.

BOX NEST
1/2" PLYWOOD

TRADITIONAL NESTBOX

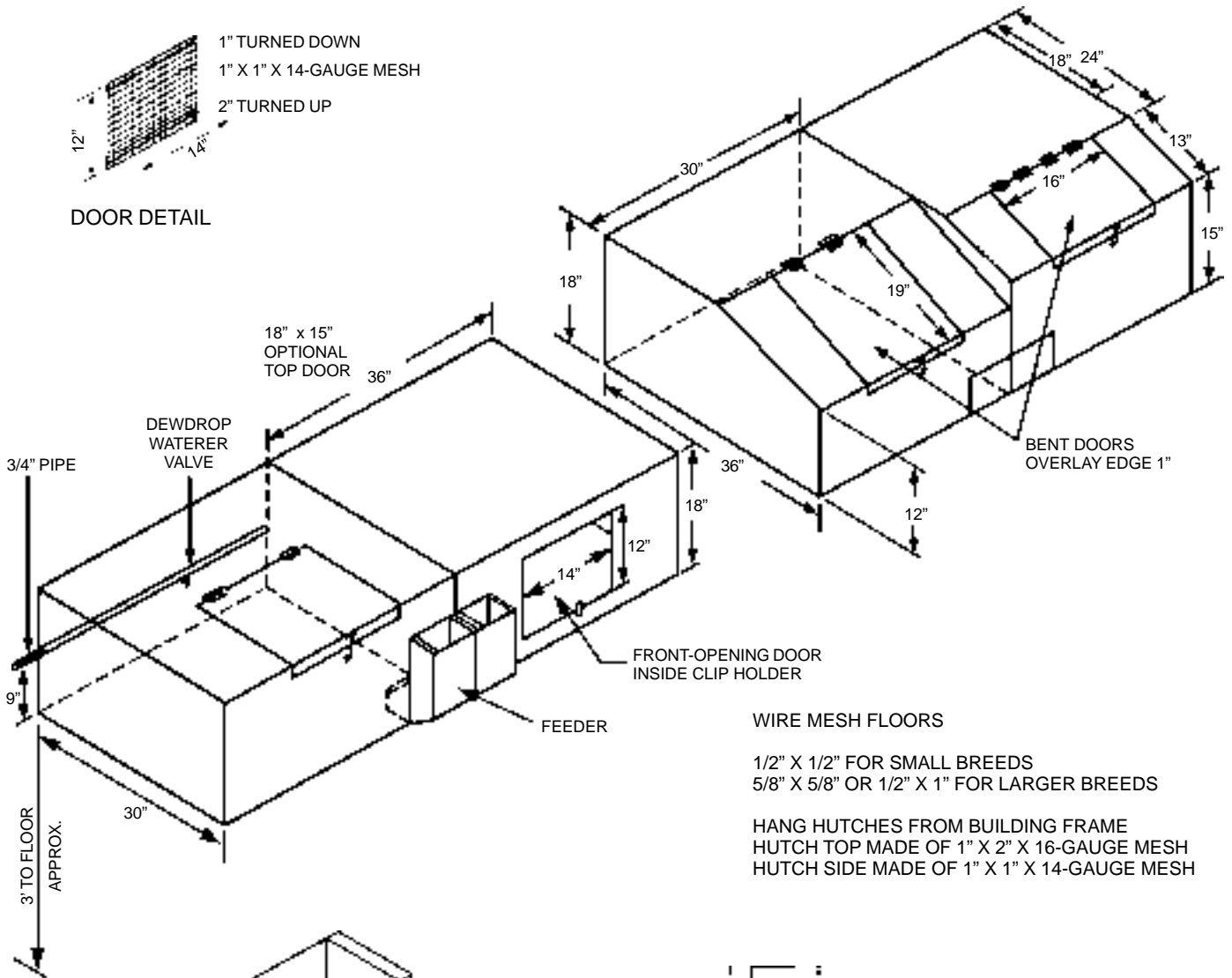
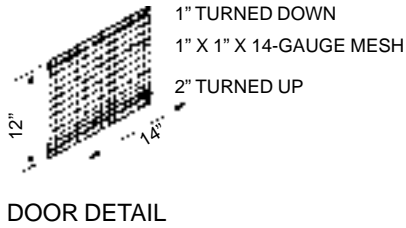


NESTBOX

	X	Y	Z
REGULAR	16"	10 1/2"	10"
SMALL	12"	8"	10"
LARGE	20"	11 1/2"	10"
EXTRA BOTTOMS	REGULAR	16" x 10"	
	SMALL	12" x 10"	
	LARGE	20" x 10"	

FLAT AND SLOPING FRONT SINGLE-DECK CAGES

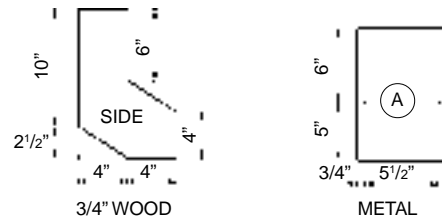
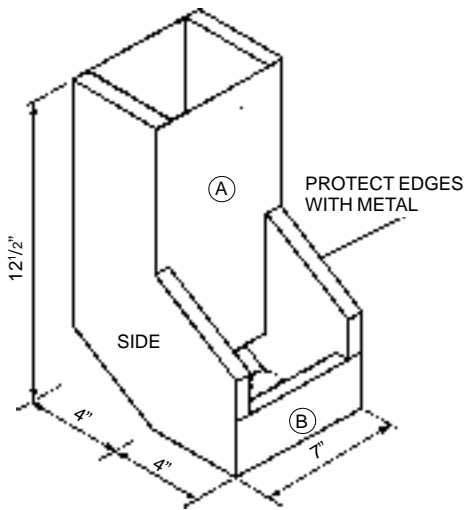
FOR INSIDE INSTALLATIONS, FRONT-OPENING
AND COMBINATION TOP AND FRONT DOOR



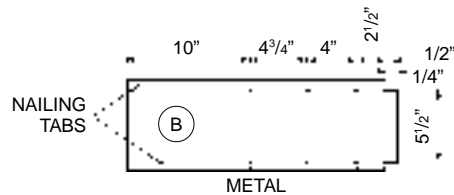
WIRE MESH FLOORS

1/2" X 1/2" FOR SMALL BREEDS
5/8" X 5/8" OR 1/2" X 1" FOR LARGER BREEDS

HANG HUTCHES FROM BUILDING FRAME
HUTCH TOP MADE OF 1" X 2" X 16-GAUGE MESH
HUTCH SIDE MADE OF 1" X 1" X 14-GAUGE MESH



METAL: 26-GAUGE GALVANIZED



CUTTING DIAGRAMS



College of Agriculture and Home Economics, Pullman, Washington

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