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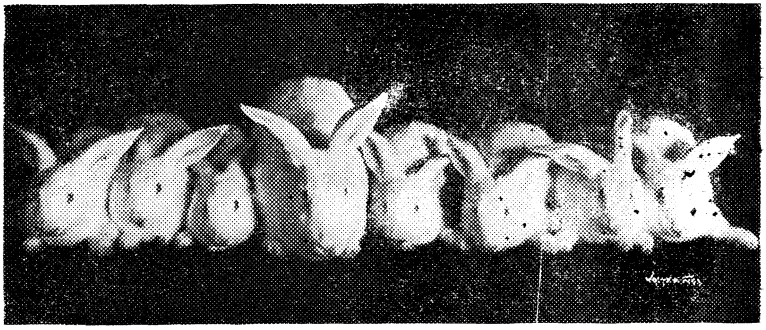
Rabbit Raising



COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF OKLAHOMA
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OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE
AND UNITED STATES DEPARTMENT OF AGRICULTURE
COOPERATING

RABBIT RAISING*

Introduction

Rabbit raising is an important industry in the United States. Rabbits are raised primarily for meat and fur, but increasing numbers are being used for biological, laboratory, and other experimental purposes. The production of rabbit wool, a recent phase of the industry, is still in its infancy. The industry lends itself to a wide range of possibilities, from small backyard units of 3 or 4 hutches to large commercial rabbitries of several hundred hutches.

Rabbit Meat as Food

In some sections of the country the consumption of domestic rabbit meat has attained considerable proportions, a market for the meat is well established, and trucks make regular trips to rabbitries to pick up market animals and deliver them to central slaughterhouses. The meat is available at butcher shops and is served regularly at restaurants, hotels, and hospitals in some sections of the country.

Domestic rabbit meat is white, fine-grained, and may be served throughout the year. Fryer rabbits weighing 3¾ to 4¼ pounds when weaned and ready for the market at 2 months of age will yield a carcass, including liver and heart, of 50 to 57 percent of the live weight. Roasters—does and bucks that have served their period of usefulness in the herd—when properly conditioned for the market will yield a carcass of 55 to 65 percent.

Rabbitskins for Fur

Regardless of size and color, all rabbitskins have commercial value. They are used more extensively by the fur trade than any other kind of fur. The better grades are dressed, dyed, and sheared (although some skins are used with the long hair) and made into fur garments and trimmings for women's coats, suits, and dresses. Skins not suitable for garments are used as linings for men's and boys' gloves and in the manufacture of felt hats. Even the fine shreds into which the skins are cut in separating the fur for felt purposes are utilized in the manufacture of glue.

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* Briefed from Conservation Bulletin 25, Fish and Wildlife Service, U. S. Department of Interior by H. G. Ware, Extension poultryman.

Rabbits for Laboratory Purposes

The increasing demand for rabbits for use in laboratories and for biological purposes offers opportunities to breeders living near hospitals and laboratories. If interested, they should find out from city or county health officials, laboratories, and hospitals in their vicinity the type, age, and size of rabbits desired.

Wool Production

The raising of rabbits for wool is a new phase of the industry, and its future will depend on a satisfactory margin between cost of production and dependable market values. The Angora rabbit produces a wool 5 to 8 inches long within a year's time, and under the commercial practice of shearing four times a year, the wool attains a length of 2½ to 3½ inches each quarter. A mature animal not suckling young will shear on an average about 12 ounces a year. The greatest quantity is produced in winter. Pregnant does should not be sheared over the belly. The wool is reported to be unusually warm and light when made into garments, but, owing to its cost and its fluffy nature, it is used mostly in conjunction with other fibers. The fiber is of a fine texture and takes the delicate pastel shades of dye. In general, Angora rabbits are cared for in the same way as other rabbits, but special precautions in feeding and management must be taken to obtain a clean fleece free from debris.

Choosing a Breed

A prospective rabbit breeder should first determine in which phase of the industry he wishes to engage—whether in meat and fur, wool, laboratory animals, or fancy stock—and then select the breed best adapted to his needs. Mature animals of the smaller breeds weigh 3 to 4 pounds each, and those of the larger breeds 14 to 16 pounds. In color, also, there is a wide variation, so the breeder may select the breed that will meet his individual preference in this respect.

The American Rabbit and Cavy Breeders Association has set up 51 different standards for breeds and varieties of rabbits, but the beginner in commercial production should make his selection from only 6 or 8 breeds. The rabbits best suited in size and conformation to the production of meat and fur are such medium and larger breeds as Flemish Giant, New Zealand, American, Beveren, French Silver, and Chinchilla. White rabbits that are satisfactory meat producers are most desirable because their skins usually bring higher prices in the

markets. The preference among white breeds is largely a matter of personal choice.

Selecting the Foundation Animals

The beginner in rabbit raising may start with young rabbits just weaned or with mature animals. When young are used for foundation stock, the breeder has opportunity to become acquainted with his animals and their habits before they reach the production stage. It is best to begin on a small scale, with 1 buck and 2 to 10 does, for example, and then expand operations as experience and the market demands justify.

When purchasing breeding stock, it is better to deal directly with reliable breeders; brokers handling live rabbits are seldom able to vouch for the conditions under which their animals were produced. Reliable breeders stand behind the stock they offer and will give references. National, state, and local rabbit breeders' organizations can furnish names and addresses of breeders from whom stock can be purchased.

The essential requirements of good foundation stock are: (1) health and vigor; (2) ability to reproduce profitably; and (3) type and conformation consistent with ability to produce marketable offspring of the desired quality and size. Animals deficient in vitality, even though free from disease, cannot be expected to produce young profitably.

Feeds and Feeding

To maintain health and produce good meat and fur, rabbits must be furnished wholesome feeds that are relished. For a profitable undertaking such feeds should be available at a reasonable cost. Only good-quality, fresh feed should be used; wilted, mildewed, moldy, and dusty feeds are predisposing factors to digestive troubles. Proper feeding is important in lessening losses from disease.

Minerals and Vitamins

Little definite information is available concerning the mineral and the vitamin requirements of rabbits. Unquestionably, a mineral or a vitamin deficiency is less likely to occur if the animals are supplied with a wide variety of feeds that include two or more grains, a plant-protein supplement, a good quality legume hay, green feed or root crops, and salt. It is especially important that the legume hay be bright green in color and leafy and that the green feed or root crop be fresh and sound.

Whole Grains

The whole grain—oats, wheat, barley, and the grain sorghums (milo, hegari, feterita, sagrain, and kafir)—are palatable and satisfactory for feeding rabbits. In feeding whole corn, considerable will be wasted, for the rabbit will eat the germ part of the seed and waste the hard portion. If the price of corn makes it desirable to use some in the ration, it should be ground into meal. Ground, rolled, or milled grains are less desirable for feeding rabbits, and when stored they become less palatable and decrease in nutritive value.

Cereal grains are similar in nutritive value, and in the formulas herein suggested one can be substituted for another, pound for pound, without materially changing the feed value. The choice of the grains to be used in a mixture will depend largely on availability and relative cost. The whole grains, however, even when a good quality legume hay also is fed, do not furnish a sufficient quantity of protein.

Protein Supplements

Soybeans, peanuts, and linseed are rich in protein and are desirable for balancing rabbit rations. The selection of a protein will depend on availability and cost, but the pea-size oil cake and the meal in pelleted form have equal nutritive value. The former, free from finer parts, is the most convenient form for mixing such protein-rich supplements with whole grains, but in localities where oil cakes are not available the pellets may be used. For rabbits these should be three-sixteenths of an inch in diameter and one-eighth of an inch long. Mills equipped with machines can make the pellets from the meals without adding binding material.

Legume Hays

The legume hays—alfalfa, clover, sweet clover, lespedeza, cowpeas, vetch, soybean, and peanut—are palatable and adapted to feeding rabbits. Hay for rabbits should be fine-stemmed, leafy, green in color, well-cured, and free from mildew or mold.

In preparing baled hays for use in large quantities, a hay knife saves considerable time and labor. The bale is placed on a slatted platform for convenience in cutting, and the hay is cut parallel to the bailing wire. Haycutting equipment, both hand and power driven, is available at hardware and implement stores.

Green Feed and Root Crops

Green feeds—immature and actively growing plants—are the natural food of rabbits. These are rich in protein, minerals, and vitamins and, being soft and tender, are easily digested. They should be included in the ration to maintain the rabbits in health and vitality.

Rabbits will consume a variety of green feeds, including lawn clippings, rape, cabbage, kale, palatable weeds, waste from garden vegetables, small prunings from fruit or other trees, green cereal or legume crops, and sweetpotato vines. Green feed that can be placed conveniently in a hay manger should not be thrown on the hutch floor, as it may become contaminated and unfit for consumption and be a source of reinfecting the rabbits with eggs of internal parasites. Any green feed not readily consumed should be removed from the hutch.

When green feed is not available, root crops may be used to supplement the grain-hay ration. Carrots, sweetpotatoes, mangels, turnips, and beets are palatable and may be fed fresh or stored for winter use.

Miscellaneous Feeds

Dry bread and other table and kitchen waste (except meat and greasy and sour foods) are acceptable to most rabbits, and when used as supplements to grain and roughage will add variety to the rabbit's diet. Cow's milk may be used in rations when the cost is not prohibitive, but exceptional care should be taken to prevent it from becoming sour or contaminated and causing digestive troubles. Dry bread mixed with milk is a satisfactory feed for does with young litters and for rabbits being conditioned for shows.

Water

Rabbits should be supplied with plenty of fresh, pure water. In summer they require large quantities; a 10- to 12-pound doe and her 8-week-old litter of 7 will drink about a gallon in 24 hours. Water should be kept available at all times. When freezing temperatures prevail in the rabbitries, the rabbits should be offered water (not too cold) at least once a day just previous to feeding. The water crocks should then be emptied to prevent freezing.

Salt

Rabbits require more salt than the quantity normally present in the grain and roughage part of their ration. Salt

should be available to them at all times so that each animal can satisfy its need from day to day. Small blocks of white salt may be placed in the hutch, or salt may be incorporated in the mixed feed or pelleted part of the ration in the proportion of one-sixth of a pound of salt to each 100 pounds of concentrates.

Quantity of Feed and Frequency of Feeding

Rabbits eat more at night than during the day. This is especially noticeable during the warm season.

Dry does, herd bucks, and developing does and bucks should be fed grain and protein mixtures in rations that they will consume readily within 20 to 30 minutes. Does and nursing litters should be given all the grain and protein mixtures that they will consume without waste each 24 hours. The quantity fed can be regulated to meet the requirements of any individual or group. If feed is left over the quantity given at the next feeding should be reduced.

After the litter is weaned, the quantity of the grain mixture fed to the dry doe should be regulated to suit her physical condition.

A good-quality legume hay should be kept before the rabbits at all times.

Green feed or root crops should be fed sparingly to rabbits that are unaccustomed to this kind of feed. To begin with, one-tenth of a pound daily to each doe or buck is sufficient, and if such material is available and economical to feed, the quantity should be gradually increased to what the rabbits will consume readily each day without waste. Green feed and root crops may be from 70 to 90 percent water; consequently, these feeds are bulky and should be used to supplement the grain-hay part of the ration but not to replace it entirely, except for maintaining, under some conditions, mature rabbits that are not in production.

Whether a herd of rabbits should be fed one, two, or three times each day is largely a matter of personal preference and convenience. Regularity in feeding is more important than the number of feedings. When a system has been adopted, it should be adhered to. At the Rabbit Experiment Station the breeding herd is fed grain and protein mixture and green feed in the morning and the rabbits have access to hay at all times. Does and litters are full-fed; that is, they receive all the grain and protein mixture and roughage they will consume without waste, whether they are hand-fed or self-fed.

The most successful breeders will study the individual

animal's food requirements and not attempt to feed all in the herd alike. Some rabbits will need slightly more than the average individual, some a little less. Then, too, occasionally a rabbit will go "off feed." When this happens it is well to reduce the quantity of the ration. The offer of a tempting morsel of carrot, bread and milk, or fresh green feed may induce the rabbit to begin eating again.

Suggested Rations

Rations for Dry Does, Herd Bucks, and Developing Does and Bucks

(Central States)	(Southwestern States)
Grain and protein: 2 parts whole oats or barley. 2 parts whole wheat. 1 part soybean or linseed meal.	Grain and protein: 2 parts whole barley, wheat, or oats. 2 parts whole milo, hegari, feterita, or kafir. 1 part soybean, peanut, sesame, or linseed meal.
Roughage: Alfalfa, clover, or soybean hay. Green feed or root crops. Salt.	Roughage: Alfalfa hay. Green feed or root crops. Salt.

Rations for Does and Litters

(Central States)	(Southwestern States)
Grain and protein: 2 parts whole oats or barley. 2 parts whole wheat. 2 parts soybean or linseed meal.	Grain and protein: 2 parts whole barley, wheat or oats. 2 parts whole milo, hegari, feterita, or kafir. 2 parts soybean, peanut, sesame, or linseed meal.
Roughage: Alfalfa, clover, or soybean hay. Green feed or root crops. Salt.	Roughage: Alfalfa hay. Green feed or root crops. Salt.

Breeding

Age to Breed

The proper age of bucks and does for the first mating depends on breed and individual development. The smaller breeds develop more rapidly and are sexually mature at a much younger age than the medium weight or giant breeds. Does should be mated when coming into maturity. Some difficulty may be experienced in getting them bred if mating is too long delayed. On the average, the smaller breeds may be bred when the bucks and does are 5 to 6 months old; the medium-weight breeds at 7 months; and the giant breeds at 9 to 12 months. Some individuals within a breed will develop more rapidly than others; therefore, in determining the proper time for the first mating, maturity of the individual is more important than age.

Breeding Schedule

The breeding schedule to be followed will be determined by the type of production. It would probably be best not to attempt to produce more than two or three litters a year in raising animals for show purposes. The time for matings should then be so arranged that the offspring will be of proper age and development for the show classification. In commercial production for meat and fur, the breeding animals should be worked, if possible, throughout the year. With the gestation period 31 or 32 days and the nursing period 8 weeks, this requires mating the does at the time the litters are weaned. If no "passes" (failures to produce young) occur, it is thus possible to produce four litters in a 12-month period. If the size of the litter is materially reduced for any reason, the doe may be rebred earlier than called for by the regular schedule.

The condition of the individual animal should be used as the index for the proper time of mating. If, upon weaning the litter, the doe is reduced materially in physical condition, she should be allowed to rest until she has regained proper breeding condition.

Making Matings

Does give evidence of being ready for first mating by restlessness, nervousness, efforts to join other rabbits in nearby hutches, and rubbing the chin on the feed mangers and water crocks. This condition continues for some time, and as the rabbit has no regularly recurring heat period, matings may be made over a period of time, provided the does are in proper

breeding condition and not diseased or in molt. Before mating, both the doe and buck should be examined to make sure that they are free from disease.

Gestation Period

The gestation period, or the period from mating to kindling, is 31 or 32 days. A very small percentage of litters may be kindled as early as the twenty-ninth day or as late as the thirty-fifth, but 98 percent of the normal litters will be kindled between the thirtieth and thirty-third days.

Inbreeding

In response to many inquiries as to whether inbreeding is desirable, that is, whether rabbits that are closely related should be mated, the average rabbit raiser is advised not to attempt inbreeding, for the following reasons:

Inbreeding knows no favorites. It will intensify poor qualities just as readily as it will good qualities.

The average breeder is unable to judge exceptional qualities in his breeding stock and usually does not have the necessary knowledge of the previous history of his animals to know what results may be expected.

Because the rabbits of the average breeder are usually of mixed inheritance, inbreeding such animals will always result in a variety of progeny.

Inbreeding is not harmful in itself, but it is sure, rapid, and effective in revealing the genetic structure of living forms. It will always remain a most potent procedure in developing and improving any breed of rabbits; in fact, no procedure other than close mating with rigid selection can be relied upon unfailingly to fix a type. Inbreeding, however, is a two-edged sword with which the ordinary rabbit raiser cannot afford to play. Discarding all undesirable forms, which is a necessary part of inbreeding, requires courage and considerable financial resources.

Line Breeding

Line breeding is the same in principle as inbreeding, except that the matings are made with animals that are not so closely related. Consequently, the characteristics of mated individuals, whether desirable or undesirable, are not fixed in the offspring so rapidly as when inbreeding is practiced. Probably most attempts by the novice at inbreeding or line breeding are made to avoid purchasing a new buck. Rather than take chances of obtaining inferior offspring by making

close matings, it would be better for the novice to purchase a new buck of the desired type when it is necessary to breed does that are related to the herd buck.

Crossbreeding

Crossbreeding is the practice of mating a purebred rabbit of one breed with a purebred rabbit of another. This form of breeding is adapted principally to the production of new strains and should be attempted only by breeders with considerable experience.

Management Practices

Just as in any other business, success in raising rabbits depends upon efficient management. First of all the rabbit raiser should become thoroughly acquainted with his animals —their characteristics and behavior, their likes and dislikes. Consideration for the welfare of animals is always necessary for success in raising them. Proper arrangement of equipment, hutches, and buildings is also essential to efficient management.

Methods of Handling Rabbits

Rabbits should never be lifted by the ears or the legs. Handling in this manner may cause injury.

Fryer or small rabbits may be lifted and carried comfortably by grasping the loin region gently, yet firmly, the heel of the hand being toward the tail of the animal. This method prevents bruising the carcass or damaging the pelt.

Medium-weight rabbits may be lifted and carried by grasping with the right hand the fold of skin over the shoulders, the back of the rabbit being toward the body of the carrier, and placing the left hand under the rump to support the weight of the animal.

Heavy rabbits may be carried comfortably and prevented from struggling by grasping the fold of skin over the shoulders with the right hand, and lifting and holding the rabbit against the left side of the carrier with its head under his left arm, his forearm being extended along the side of the animal with his hand under its rump to support its weight.

Kindling

A nest box with a sufficient quantity of straw to make the nest should be placed in the hutch 27 days after mating. A day or two before kindling the doe usually consumes less food

than normally. She should be undisturbed and made as comfortable as possible. Small quantities of green feed are tempting to the appetite at that time and have a beneficial effect on the digestive system. Most litters are kindled at night. After kindling, the doe may be restless and should not be disturbed until she has quieted down.

Care of the Young Litter

On the day after kindling it is good practice to inspect the litter. Quietly place the hand in the nest box and remove any deformed, undersized, or dead young. If one is careful and quiet in making the inspection, the doe will generally not object to it and there is no danger of causing her to disown the young. If she should become nervous and irritable, place some tempting feed in the hutch immediately afer the inspection to distract her attention and quiet her.

There is considerable variation in the size of litters. In the utility breeds litters usually number 7 or 8, but some may contain as many as 12 to 18. For commercial purposes 7 is the ideal number to leave with the doe. If several does are mated at about the same time, the litters can be increased or decreased in number by adjustments within 2 days after kindling. When young are no more than 2 days old, the does do not object to transfers from one litter to another. A larger number of animals can be developed more uniformly if the litters are of the desirable size.

The doe will line the nest with fur from her own body. If she should fail to pull sufficient fur to protect the litter properly, it would be well to pluck some from the region of the hip, side, and under parts. The fur is easily removed at that period.

Does that Destroy Young

Individual does occasionally destroy and eat their young. In most cases this abnormal appetite is due to a ration inadequate in quality or quantity; in others, to a nervous doe being disturbed following kindling. Proper feeding and handling during pregnancy will do more than anything else to prevent this tendency. A valuable doe that destroys her first litter should be given another chance; if she continues the practice with subsequent litters she should be sold for meat.

Weaning the Litters

Does that are excellent mothers will nurse their litters for 6 to 8 weeks, and the young will develop more rapidly if they are left in the hutch with their mothers until they are 8 weeks of age. By that time the milk supply will have decreased and the young become accustomed to consuming more feed; and weaning will be less of a shock than if undertaken at an early age.

Determining the Sex

The sexes should be separated at weaning. The sex of young rabbits can easily be determined by pressing open with the thumb and forefinger the sexual aperture just in front of the anal opening. In does, a longitudinal slit is observed; in bucks the opening is round, and the male organ can be made to protrude.

Marking for Identification

In order to keep records it is necessary to identify each of the breeding rabbits. Tattooing the ears is satisfactory and permanent and, when properly done, will not disfigure them. Instruments for the purpose may be obtained from biological and livestock supply houses. A good type is one in which separate lugs, with a series of numerals, can be inserted into a plierlike handle. Such an instrument perforates the inner surface of the ear in one operation. India, or drawing, ink is then rubbed into these small holes.

A box that is adjustable for restraining rabbits of various sizes is a convenience that makes it possible for one person to do the tattooing. It is constructed as follows:

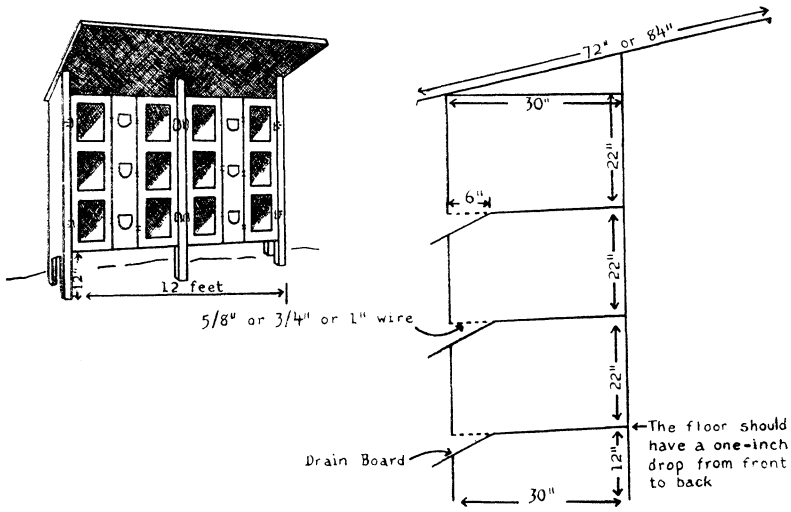
Two boards, 1 by 8 by 20 inches, are used for the sides and two pieces, 1 by 8 by 6⅛ inches, for the ends of the box. The top board is 1 by 8 by 19⅜ inches and has an opening 2¾ by 3¼ inches at the front end to allow the ears to protrude. The top is fastened to the box at the back with a 3- 2⅜-inch T hinge and at the front with a door hook. The adjustable bottom consists of a board 1 by 6 by 18¼ inches.

One board, ¼ by 4 by 6½ inches, set in slots is used for adjusting to the length of the rabbit. Two pieces, 2 by 3 by 4 inches, are beveled on bottom and back and are nailed in the front upper corners of the box to restrain the rabbit's head.

One piece ½ by ¾ by 7⅝ inches, is nailed to the box at the front end of the top board.

Two pieces of 7-gage market wire, 2 feet long, are bent in a U shape to form springs that are attached to the under side of the bottom board with three small staples. The ends of the springs extend through the end boards. The bottom board can be adjusted to various-sized rabbits and to difference in body depth in front and hindquarters by using the notches in the ends of the box. The bottom notch on the back end should be 1 inch and that on the front end 1½ inches from the lower edge of the box.

Rabbit Hutch



Each stall is 36 inches long, 30 inches deep and 22 inches high. Fronts can be covered with ⅝" or ¾" or 1" wire.