

FEED FOR GOOD CONDITIONING

It is now November and our does in Walker County, need to be in breeding condition by December. Rabbits that are on a good feeding program now will be much quicker to breed in December. There are many excellent feeding programs and I suggest that you stick with the one that best suits your herd. The following is a formula that has been used by a well-known breeder and judge.

Morning feeding conditioner

3 parts crimped oats (premium)

1 part crimped barley

1 teaspoon wheat germ oil for every cup of oats

Mix the above thoroughly and evenly.

1 cup of carnation calf manna (milk replacer pellet) for every 9 cups of grain)

Feed ¼ cup of mixture every morning.

Night feeding

1 vienna sausage can (approximately 6 oz.) of pellets

Remember that the very best feeding program will not have a maximum effect if the doe has long nails, ear mites, worms, sore hocks, or any condition that keeps her from feeling good. Remember to keep your crocks clean and full of clean water! If their water supply is not fresh and plentiful, they will not eat. The best motto that I can think of is, “feeding is ½ of your breeding!”

P.S. – If you have only a few rabbits – then get together with other exhibitors and share the ingredients of the conditioner.

Breeding Rabbits for Success

- Set-up operation (pens, feeders, water system, etc.)
 - Acquire sound breeding stock
 - Condition breeding stock
 - Check over for signs of illness
- Fur mites, ear canker, sore hocks, and genitalia on both bucks and does and address any problems you find.
 - Stabilize their diet
 - Check their weight

ALL OF THE ABOVE SHOULD BE DONE BEFORE BREEDING!

Because we breed for Walker County in the winter --- we must “trick” the rabbits into thinking it is springtime. You should increase their exposure to natural or artificial lighting. Remember – rabbits are nocturnal by nature.

Listed below are some of the things you can do to ensure a good breeding:

- Begin 3-4 weeks prior to breeding by adding apple cider vinegar to their water. That is 2 tablespoons vinegar to 1 gallon of water. This will promote their hormones and “jump-start” their reproductive system. *This is especially if your does are older or have not produced a litter in a long time.*
- You can add peanut oil as well as wheat germ oil on top of their feed.
- Slightly decrease the does feed ration about 7-10 days before breeding period begins. Give them extra hay. This will decrease the amount of fat in the uterus which can block egg passage. *This is especially true if your does are overweight.*
- 2-3 days before your 10 day breeding period begins --- check the coloration of the genitalia on all of your does to see who is pale pink and who is red to reddish-purple and swollen. Make note of who will be ready to breed first, then most likely 2nd, etc. This way, you will breed the ones who are ready first and won't miss breeding them at the beginning of the 10-day breeding period. A doe cycles (or is receptive) to breed 3-4 days each week.
- Breed in pairs so you will have a “back-up” plan for emergencies. For example, you have a doe that has 9-10 *kits*; you will need to foster them to another doe. Or you could have a doe die.
- **Buck selection.** One buck can easily service 10-12 does over the 10-day breeding period. It is good if you have a back-up buck, if possible. Select the buck that you feel has the desirable traits that perhaps your does may be lacking in. Try to pair up the doe and the buck so that you can build a better rabbit. Make use of the pedigree for your rabbit so that you will not be breeding any siblings. *(example of pedigree attached)* Remember an older buck may not be as active due to his age but he will have the experience. A young buck will be very active but may be lacking in experience. For example, if you have an older, somewhat grumpier doe that is more aggressive, she may make a young, less experienced buck cower away and just sit in a corner.

- **ALWAYS TAKE THE DOE TO THE BUCK PEN FOR BREEDING.** Does are more territorial and may attack the buck if it is put in her pen. There will probably be a minute or two of chasing each other around but the doe should stop and allow the buck to mount her if she is ready to be bred. Some bucks will even pull small tufts of fur off the doe during this mating ritual. If she is ready to breed, she should momentarily stop, slightly raise up her back end (called *flagging*) and then the buck will be able to breed her more easily. It is customary for the buck to sort of fall off to the side momentarily and for him to even "thump" the bottom of the cage with his feet after mating.
- Allow them to breed a couple of times (estimate 5-8 minutes). then remove the doe from the buck's pen. Watch the mating from a short distance because when mating does occur, it will be over quickly and you could miss it, then not knowing whether or not the mating took place. About 45 minutes to 1 hour, put the same doe back in the buck's pen for re-breeding. Research has shown that this type of breeding increases the hormone levels and a higher conceptions rate if they are bred and then re-bred about 1 hour apart.
- When having to breed within a specific time period --- it is necessary to ensure that they are bred during that time so that they will be the right age and size for our show. I suggest attempting to re-breed the does again in 3-5 days. That way, if they did not conceive the first breeding, you have a better chance of them conceiving during that time period and you won't get a missed breeding. An experienced breeder can also *palpate* the doe at 10-14 days after they are bred to see if they are pregnant.
- It is essential that you keep good breeding records. Get a calendar or some method that works best for you and note which days you either bred or *attempted* to breed your does. Then go to the gestation chart (copy attached) and see what their due date is and mark that date on the calendar as well. Then you will know when to be watching for *kindling*. Kindling should take place between 29-31 days from the date of breeding. Put their nest box in 2 days prior to their due date.

• **OTHER BREEDING ISSUES**

*If you have a doe that fails to conceive, re-breed them. Don't allow them to sit all year long and then expect them to breed when you want them to. The longer they sit and remain unproductive --- the harder it will be to get them going again.

*If you have a doe that for whatever reason loses her entire litter --- re-breed 3-7 days after kindling UNLESS there is a medical problem that needs to be addressed first!

*If you have a doe that has too many kits (8-10), foster some of them off to other does that don't have as many. Too many kits on one doe will slow down the overall development of the rest of your meat pen babies.

*If you have a doe that has a small litter (2-3 kits), re-breed them 3-14 days after kindling. If you have another doe that you can foster these babies to, do that instead of wasting your doe for 6-8 weeks on such a small litter.

*If you encounter a "sitting doe" she may not be ready to breed. Re-try her in 2-3 days. If she is still sitting, try another buck or place her in a pen next to a buck to try and bring her around. Another method that sounds kind of crazy but I know it has worked, is to take the doe for a ride to town and then bring her back home and try breeding her again. This sometimes stimulates the does. *Note: If you have a doe that is difficult to breed each and every time, you may want to consider culling this one out of her herd.*

*Temporary buck Sterility. Especially in your older bucks, anytime the temperature exceeds 85 degrees or higher for days or longer, it can render the buck sterile (temporarily) for 60-90 days. The younger bucks are not usually affected by the heat.

ADDITIONAL NOTES:

31 DAY GESTATION TABLE FOR RABBITS

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sapt.	Oct.	Nov.	Dec.	Jan.
1	1	4	4	5	5	6	6	6	7	7	8	8
2	2	5	5	6	6	7	7	7	8	8	9	9
3	3	6	6	7	7	8	8	8	9	9	10	10
4	4	7	7	8	8	9	9	9	10	10	11	11
5	5	8	8	9	9	10	10	10	11	11	12	12
6	6	9	9	10	10	11	11	11	12	12	13	13
7	7	10	10	11	11	12	12	12	13	13	14	14
8	8	11	11	12	12	13	13	13	14	14	15	15
9	9	12	12	13	13	14	14	14	15	15	16	16
10	10	13	13	14	14	15	15	15	16	16	17	17
11	11	14	14	15	15	16	16	16	17	17	18	18
12	12	15	15	16	16	17	17	17	18	18	19	19
13	13	16	16	17	17	18	18	18	19	19	20	20
14	14	17	17	18	18	19	19	19	20	20	21	21
15	15	18	18	19	19	20	20	20	21	21	22	22
16	16	19	19	20	20	21	21	21	22	22	23	23
17	17	20	20	21	21	22	22	22	23	23	24	24
18	18	21	21	22	22	23	23	23	24	24	25	25
19	19	22	22	23	23	24	24	24	25	25	26	26
20	20	23	23	24	24	25	25	25	26	26	27	27
21	21	24	24	25	25	26	26	26	27	27	28	28
22	22	25	25	26	26	27	27	27	28	28	29	29
23	23	26	26	27	27	28	28	28	29	29	30	30
24	24	27	27	28	28	29	29	29	30	30	31	31
25	25	28	28	29	29	30	30	30	31	1	2	2
26	26	29	29	30	30	31	1	1	2	2	3	3
27	27	30	30	31	1	2	2	2	3	3	4	4
28	28	31	1	2	2	3	3	3	4	4	5	5
29	1	2	2	3	3	4	4	4	5	5	6	6
30	2	3	3	4	4	5	5	5	6	6	7	7
31	3	4	4	5	5	6	6	6	7	7	8	8

TO READ CHART

Find the month you bred the doe.
Go down the column until you find the day bred.
Move horizontally (to the right) until you reach the next number.
This will be 31 days from the date bred.

Rabbits Things to Consider

First thing – county show requirements

- breed your own or purchase
- date of show
- Californians or New Zealands

If county requires exhibitor to raise own bunnies --

Count back 100 days from weigh in date of show to start breeding does

Keep all adult rabbits in their own cages

Bring the doe to the buck when breeding

- should breed in a minute or two
- if does not breed quickly remove doe and try again in couple days
- if successful bred, repeat the breeding in 10 or so minutes

Care before and after kindling (birth)

- 29 days post breeding; put in breeding boxes with bedding
- 31 days post breeding, kits (baby rabbits) should be born
- 5 to 7 days after birth replace bedding and check eyes for infection
- 14 days after birth replace bedding
- 21 days remove breeding boxes or when kits getting out of box
- 5 weeks wean the kits
- litters range from 5 to 10
- cannibalism by mother not uncommon
- born on wire not uncommon
- doe cage should have baby saver wire on bottom and minimum of 3 inches up the side.
- when weaning kits keep litters together in same cage with mom next to the litter (if you have cage space)
- try to keep litters together to select pens from siblings
- Does and bucks should fed 8 to 10 ozs of pelleted feed per day
- Fresh water (self watering system worth the investment)
- Wire boxes are 2' deep, 30" wide and 18" tall
- Temperature comfort zone is 60 to 75 degrees
- Fresh air ventilation is important

Feeding market rabbits

- Self feeder and fresh feed (check it)
- Add crock if several rabbits in cage
- Clean plentiful water
- Snack mix (barley and black oil sunflower seeds) start couple weeks before the show to aid hair coat quality
- If go off feed, give hay
- Need to hold, give oats or hay

Health

- Establish a relationship with your veterinarian
- Ear mites – treat does before breeding, 0.2 mls of ivermectin on back or in ears
- Watch eyes for infections
- Coccidia – Corid – 0.6 ml of the 9.6 % solution in 500 mls of water

Weighing

- Start two weeks out from county weigh-in date
- Groom them as weigh with damp rag or brush
- Get them used to being handled
- Practice showmanship (videos for steps)
- if possible, have separate showmanship bunny

Selection

- Think clones, same litter is plus
- Think half a soccer ball, width of loin equal in size as height of top loin from table & width of loin should carry through the hip (no pinching or catching)
- Three Cs
- Smooth flesh covering
- Weight should be uniform
- Hair is a tiebreaker, should fly right back when rub it in the opposite direction.
- Check teeth (top over bottom)
- Toe nails – a nail on each toe and of uniform color

Exhibitor's Name: _____

School: _____ 4-H or FFA Grade: _____

Location of stock (if different): _____
(need physical address)

Email Address (optional): _____

[illegible]

Exhibitor's signature: _____ Date: _____

Received by W.C.F.A. Committee: _____ Date: _____

FRYER-PEN RABBIT DIVISION RULES

1. This show is not a TRBA/ARBA sanctioned show, however, ARBA rules and standards will be followed in the judging process.
2. All rabbit entries will be subject to the general rules and regulations of the Walker County Fair Association.
3. Exhibitors must own and be in possession of their breeding does prior to the first mandatory meeting (first Thursday in November).
4. All eligible Walker County 4-H and FFA members are qualified to compete.
5. All participants/exhibitors must attend two mandatory meetings in order to remain eligible for competition. Each exhibitor and parent/guardian will receive and sign for a copy of the rabbit division Rules and Spot Check procedures. At the first mandatory meeting, information forms including breeding doe tattoo numbers will be filled out to include all breeding doe tattoo numbers. When completing the "Breeder Registration" form, if you have multiple children that reside in the same household (siblings, grandchildren, cousins, etc.), you need to include all of the same doe tattoo numbers on each child's form as they are in the same immediate family. If you keep your rabbits at another location where multiple families keep their rabbits, ownership must be separated by each child that is not in the same immediate household. The second mandatory meeting is to complete the information forms by indicating the number of kits born still alive to each doe according to the tattoo number of each doe. A validation tattoo will also be affixed to each kit at this time and only on this date. Without this validation tattoo, they will not be allowed to be used in the meat pen. *All kits must be brought to the meeting in a rabbit carrier/cage with a solid bottom to contain their waste.* The second mandatory meeting will be *12 days* prior to the date of *the* rabbit show (date to be determined by WCFA). The date of our 2nd mandatory *meeting* will be determined by September 1st each year. **ALL EXHIBITORS MUST ATTEND BOTH OF THESE TWO MEETINGS UNLESS PRIOR NOTICE HAS BEEN GIVEN TO THE COMMITTEE AT LEAST 7 DAYS PRIOR TO THE DATE OF THE MEETING FOR APPROVAL. IF NO NOTICE IS SUBMITTED FOR APPROVAL, THE EXHIBITOR WILL BE DISQUALIFIED FROM COMPETITION IN THE WALKER COUNTY FAIR.**
6. WCFA Entry Forms will be provided at the *2nd Mandatory Meeting*. The completed entry form along with the entry fee must be turned in at this meeting in order to maintain eligibility *for show*.
7. A meat pen is to consist of 3 rabbits of the same breed or variety. Each rabbit is to be under 70 days old and weigh a minimum of three (3) pounds to a maximum of five and a half (5 1/2) pounds to qualify for the show.
8. Rabbits entered in the meat pen competition must be permanently tattooed in the left ear with separate and unique identifying letters and (or) numbers. Validation tattoo must be affixed in the right ear.
9. Each exhibitor must deliver his/her meat pen to the check-in table prior to commencement of judging. Prior to or upon check-in, exhibitors will be responsible for completing all paperwork required by the WCFA. During the check-in process, weights and ear tattoo numbers will be recorded and verified. Following check-in, a WCFA Rabbit Committee representative will place the rabbits on the show table. Following the judge's remarks, exhibitors are responsible for removing their meat pen from the show table and placing them in the designated exhibit pens, in accordance with rule #13.
10. Only in cases of extreme hardship, and then only with a written letter to the Committee Chairman, will an exhibitor be excused from showing an animal and being present at the Premium or Freezer Sale in which the pen is sold.
11. If one or more rabbits in a pen is disqualified and/or eliminated because of a disease, medical or illness related issue, the entire pen is disqualified and will not be allowed to sell in the Premium or Freezer Sale and animals must be removed from the fairgrounds immediately. Any other reason for disqualification as defined by the ARBA Standards of Perfection will not preclude

the exhibitor from competing but will instead be placed at the bottom of the class as a “no place” and they will be allowed to continue their participation in the fair and in the Freezer Sale.

12. The Judge’s decision on placements of the class will be final and all prizes will be awarded in accordance with A.R.B.A. Standard of Perfection by a licensed judge. However, should any violations of the WCFA general rules or the rules contained herein occur, exhibitors will be subject to the penalties and/or forfeiture of their winnings as stated in these rules.
13. All exhibitors will select only one fryer from the meat pen shown which shall remain on exhibit throughout the fair until the designated check-out time. No substitutions will be allowed without the written consent of the WCFA Rabbit Committee. Any allowable substitutions must be from the meat pen shown.
14. All qualified meat pens shown, as defined in rule #13, will remain on exhibit during the fair, but ONLY the top fifteen (15) pens will be sold in the Premium Sale. Any additions to or changes in the sale order will be determined by WCFA.
15. Each exhibitor will be responsible for DAILY feeding and care of his/her rabbits, keeping the pen and surrounding area clean at all times during the fair. Exhibitors must furnish their own feed and clean fresh water for their pen. No feed or water storage containers or equipment of any kind will be allowed to be stored in the exhibition area.
Rabbits on exhibit will be subject to inspection by the Committee to insure compliance with show rules.
16. At the conclusion of the fair, there will be a designated check-out time to remove exhibitor’s rabbit(s) from the exhibition area. Upon check-out, all tattoo numbers will be verified before they are released to the exhibitor and/or their parent(s). The exhibitor and/or parent will be required to sign a release form before they will be allowed to remove the rabbit(s) from the fairgrounds.
17. All breeding stock and possible fair entries (offspring) will be subject to mandatory spot checks at the discretion of the committee between the first mandatory meeting date and 2 weeks prior to the rabbit show. Random additional spot checks will be conducted at the discretion of the committee to ensure compliance with the rules by all exhibitors and their families. If *an* exhibitor does not comply with this rule or any of the rules stated herein, they will not be allowed to show.

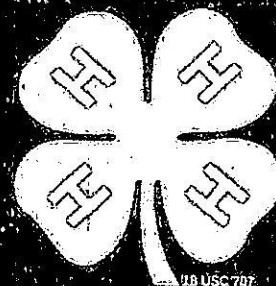
Rev. 09/2019

**WCFA GENERAL RULES HAVE BEEN
UPDATED AND CAN BE REVIEWED AT THE FOLLOWING LINK:**

<http://www.walkercountyfair.com/>
(under the Tab “About” “General Rules”)

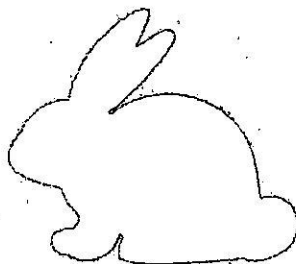
WALKER COUNTY 4-H RABBIT CLUB

Club Information



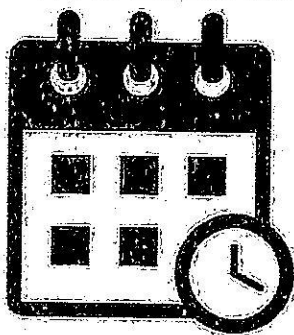
CLUB LEADER

Kristy Titzman
kristy.titzman@ag.tamu.edu
936-435-2426



LOCATION

Walker County Extension
Office
102 Tam Rd, Huntsville, TX



RABBIT CLUB MEETING DATES

- October 7
- November 4
- December 2
- January 6
- February 3
- March 3

AT 6:00 PM

IMPORTANT WALKER COUNTY FAIR DATES

Click on underlined forms/links to open

NOVEMBER 4

Mandatory Breeder
Registration Form Due

MARCH 17

Kit Validation & Entry
Form/Fees Due

MARCH 29

2022 County Fair
Rabbit Show

WALKER COUNTY FAIR RABBIT SHOW RULES

ENROLL IN WALKER COUNTY 4-H

Enroll in Walker County 4-H online at
texas.4honline.com

\$35/member if enrolled by October 31



TEXAS A&M
AGRI LIFE
EXTENSION

Rabbit Breeder List

Ray Alexander: alexanfam@hotmail.com - 281.794.2001

Jerry Pacely – Franklin – (979) 450-0666

Royal Rabbitry - Keith Robison - 936-524-7606 – Conroe - Californian

Heaton Rabbitry - Michael Heaton - (361) 564 8764 - Heatonrabbits@yahoo.com

Vera Rudel – R&R Rabbitry – (218) 914-1562 – Waller

Bender Rabbits – (979) 479-4180

Mary Dozier – (979) 255-7600 - Franklin

Stacie Grange - Bryan, TX. Email is slgrabbitry@gmail.com

Chase Austin - www.meatpens.com – (979) 549-3337 – New Braunfels

Kathy Hillery – (979) 793-5858 – Boling

Aspen and Susan Roberts - Fat Chance Rabbitry - aspenjinx@yahoo.com - 254-702-8387 –
Harker Heights near Belton

- TEXAS CALIFORNIAN RABBIT SPECIALTY CLUB Meat Pen Breeder List
www.TexasCals.org

Chase Austin New Braunfels, Tx. 78132 CCMeatPens@aol.com

Michael & Leslie Burge Cody Burge Sweeny, Tx 77480 rabbits@thewildharefarm.com

Stace & Margarita Crews 2273 FM 1681 Stockdale, Tx. 78160 Margarita@tspinFarms.com
www.tspinFarms.com

Jake & Gretchen Dixon Mackenzie Dixon Huntsville, Tx. 77340
GretchenDixon@yahoo.com

Maureen Dunckel 1235 FM 1863 New Braunfels, Tx. 78132 Dunckel62@aol.com

Glenn Gridley 1275 FM 1863 New Braunfels, Tx. 78132 GGridley@live.com

Kathy Hillery Boling, Tx. 77420 979-793-5858 Boling Bunny Farm

Michael & Leigh Iselt Clay Iselt Ty Iselt 1656 E. CR 327 Lincoln, Tx. 78948
Iseltpaint@aol.com

Vic Kaiser 21023 Golden Sycamore Trail Cypress, Tx. 77433 VicKaiser@gmail.com

Buster & Lisa Klingemann Tristan Jordan 306 Las Cruces St. Buda, Tx. 78610
Buksonline.com

Rodney & Trista Korczynski Kutter Korczynski Haize Korczynski Sage Korczynski
Rosenberg, Tx. 77471 tsmk@rocketmail.com

Carl & Jessica LaBiche 2508 Beauvoir Dr. Iowa, LA. 70647 CarlLaBiche@yahoo.com

William & Amber Looney Stephanie Looney Magen Looney Rebecca Looney Jodie Looney
Gilmer, Tx. 75644 LooneyFarm6@yahoo.com www.LooneyFarm.webs.com

Alan & Christie Moon Hunter Moon 193 E. Grandbluff Beckville, Tx. 75631
MoonC@beckvilleisd.net

Jimmy & Martha Mullings Mac Mullings Temple, Texas 76504 lighman@yahoo.com

Aspen Robert Harker Heights, Tx. 76548 Aspen.Robert@aol.com

John Schaeffer Montgomery, Tx. 77316 JWS1940@gmail.com

Deena Springer Andrew Springer New Braunfels, Tx. 78130 Deena.Springer@comalisd.org

Jeff & Amber Tondre Kellie Tondre Krystal Tondre La Coste, Tx. 78039
ARTondre@yahoo.com

Joey Word 385 Hickory Road Big Sandy, Tx. 75755 Text- 903-738-1901

Wayne & Carolyn Wright 108 Justin Davis Lane Smithville, Texas 78957 512-237-4164
WCWright108@gmail.com

We breed Californians for meat pens year-round. We live in Brazoria County and our breed date is usually around July 4th so our bucks live in air-conditioning for the summer. We would like to be added to your meat pen list. Our contact information is :

Mike and Nikky Burge - Sweeny, TX - 979-345-4850 or 979-709-2031 - email
rabbits@thewildharefarm.com

Mike Miller. PO Box 581 Dawson, TX 76639. Texentryboy@hotmail.com 9036732939 home 9032293425 cell. Check out my website at www.twobucksandadoe.com

Ryan Devin Dunivan 210-385-2735 rzd1176@aol.com New Braunfels, TX 78132 – New Zealand Whites

John and Mary Jo Terry meat pens and single fryers 20239 N Fm 486 cameron Tx 76520. 254 482 1363

Happy and gordon carver weatherford tx – No Contact Info Received

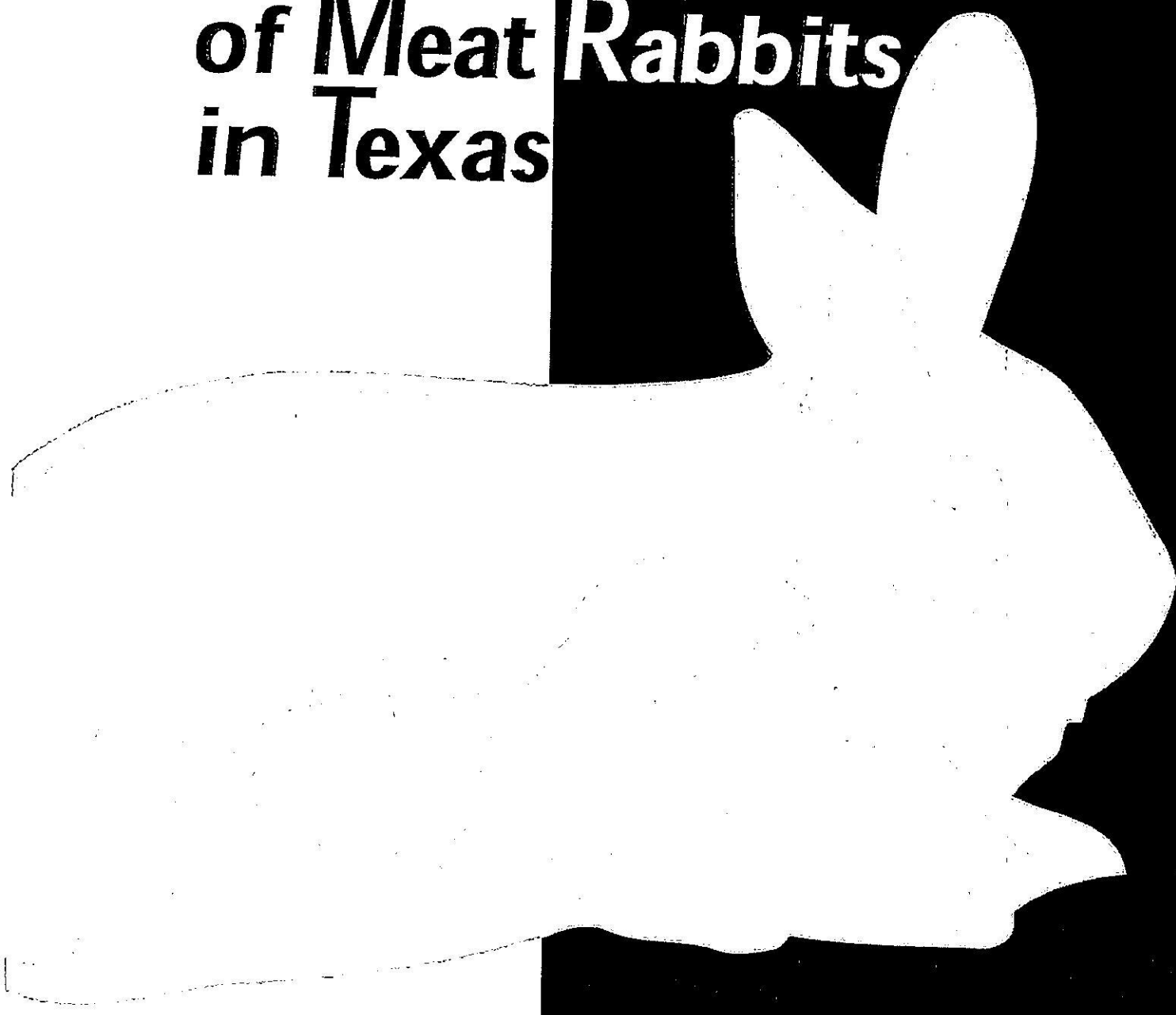
Scott and Mistie Weems owners of Pride and Joy farms raise Californian rabbits and have meat pens and fryers. for sale currently message us or call 254-624-3981

Mark and Beth Manglberger, manglberger bunny farm, 830 232 6344.

Pete Basgil - Crosby, Texas 281-785-7605 – New Zealands

Mark/Beth Mangleberger - Leaky, Texas 830-232-6344 – New Zealands

Backyard Production of Meat Rabbits in Texas



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Backyard Production of Meat Rabbits In Texas

Steven D. Lukefahr, Joe C. Paschal, and John E. Ford*

In Texas, the cultural acceptance of eating rabbit meat is probably due to the long-standing tradition of hunting wild cottontail rabbits. The commercial farming of domesticated rabbits, however, has occurred only recently. The cultural acceptance of eating cottontail rabbit meat has set a favorable stage for the growing popularity of raising domestic meat rabbits as a small-scale, backyard enterprise.

The farming of domesticated meat rabbits is not a traditional agricultural activity in Texas, compared to beef cattle, goat, poultry, and swine production. To date, there is little practical information available to assist rabbit producers. There are perhaps even more myths than facts about how to raise rabbits successfully. The lack of available and reliable information on rabbit production has contributed to some producers' decisions to sell out because "the rabbits

would not reproduce," or "they got too hot in the summer," or "the neighborhood dogs ravaged my stock." Many such problems could have been prevented if producers had known more about rabbit production.

The purpose of this publication is to provide general and practical information that will help the new producer become a successful producer of meat rabbits as a backyard activity under Texas conditions.



Benefits of Backyard Rabbit Production

Backyard rabbit raising offers many potential benefits. When planning your rabbit enterprise, identifying your

goals and anticipated benefits is very important. For example, your primary goal might be to produce enough rabbits so that your family might consume meat from two fryers each week all year long. This production goal would require a small backyard operation consisting of about four breeding females (does) and one breeding male (buck).

As a backyard activity, and compared to most livestock or outdoor pets, rabbits are quiet, odorless, and docile animals that often go unnoticed by neighbors, even in residential areas. However, if you live within legal city limits, contact your county health department office to find out about possible restrictions concerning the keeping of rabbits.

Overall benefits from a backyard rabbit enterprise include:

- Nutritious and wholesome meat.
- Educational experiences for young people.
- Enjoyable occupational activity.
- Rich manure for gardening or flower beds.
- Potential extra income.

* Associate Professor, Department of Animal and Wildlife Sciences, Texas A&M University- Kingsville; Associate Professor and Extension Livestock Specialist, Texas Agricultural Extension Service, Corpus Christi; Extension Agent, Kleberg County, Texas Agricultural Extension Service, The Texas A&M University System.

Table 1. Nutritional Value of Rabbit and Other Common Meats.

Skinless Meat	Protein (%)	Fat (%)	Calories (per oz.)	Cholesterol (mg per oz.)
Rabbit ¹	22.8	6.3	44	55
Beef ²	29.9	10.1	61	73
Catfish ³	22.3	5.9	40	20
Chicken ⁴	28.9	7.4	54	80
Lamb ⁵	28.1	9.5	58	78
Pork ⁶	27.7	14.8	60	72
Turkey ⁴	28.9	4.9	48	65

Source: USDA.

¹Wisconsin Meat Facts and Analysis, Fact Sheet ME 87-3, USDA Handbook 8-17, 1989. (whole carcass)

²USDA Handbook 8-13 Rev., 1989. (composite sample)

³NutriFacts Seafood. (whole)

⁴USDA Handbook 8-5, 1979. (composite sample)

⁵USDA Handbook 8-10, 1991. (composite sample)

⁶USDA Handbook 8-17, 1989. (composite sample)

According to USDA, domesticated rabbits produce an all-white meat product that is high in protein and low in fat and cholesterol (**Table 1**). For years, some physicians have recommended rabbit meat to patients with coronary conditions.

For young people, raising rabbits, ideally as a 4-H or FFA club project, offers a wonderful learning experience in the life sciences, including animal behavior, genetics, growth and development, and the anatomy and function of the reproductive and digestive systems. Particularly for a young child, rabbits are easy to handle and represent a minor investment. Rabbit raising also teaches responsibility, budgeting costs and returns, care and concern for animals, and the acceptance of livestock as a source of food for human beings.

As an occupation or hobby—whether for the young, the elderly, or any family member—raising rabbits

can be an enjoyable and family-focused activity. The time or labor required to raise rabbits is about 20 hours per breeding doe per year. For the backyard operation with four breeding does, this labor input is equal to just 1½ work-weeks (60 hours) per year, or less than 15 minutes per day. However, many families enjoy spending more time than this with their rabbits.

Rabbit farming complements the efforts of the serious gardener and flower grower. The manure from rabbits makes excellent compost, rich in organic matter and nutrients (**Table 2**). Commercial redworms or African night-

crawlers grown in rabbit manure produce a superb and fairly odorless organic material. Many commercial rabbit producers sell both the organic material in bags and bait worms in cartons as a supplemental source of income. If your family enjoys fishing, you will also have a regular supply of bait worms.

The small size of the backyard rabbit enterprise, typically four to five breeding does, represents steady meat production at minimal investment and operating costs. It takes little time or money to either scale down or expand the size of the operation. The labor required can be shared among almost all family members. These features mean that the rabbit enterprise carries minimum economic risk. This favorable "economy of scale" is highlighted in the budget shown in **Table 3**. The bottom line of the budget shows a net return of \$18.25 per doe over annual costs, not including the cost of the buck or the building. This figure considers 30 fryers produced from one doe that are consumed or sold, based on an average market value of \$3.38 per 4½-pound live fryer at 10 weeks of age. Chicken usually costs less than \$3.38, but a dressed rabbit is more comparable to skinless, boneless chicken breast because of less waste (skin, fat, and bones). If

Table 2. Composition (%) of Manure from Livestock.

Animal	Nitrogen	Phosphorus	Potassium
Rabbit	3.71	1.33	3.47
Cattle	2.90	0.72	2.14
Poultry	4.70	1.58	1.03
Swine	3.52	1.60	1.00

Source: Various reports from the literature.

Table 3. Projected Budget Per Doe for Backyard Rabbit Farming.

	Life-Span (years)	Purchase Cost (\$)	Annual Cost (\$)
Start-up Costs*			
Initial doe purchase	1 year	15.00	-
Cage (30 x 30 x 18 in.)	5 years	17.00	3.40
Feeder (9 1/2 in.)	5 years	3.50	.70
Water bottle (32 oz.)	5 years	3.00	.60
Nest box	5 years	2.50	.50
Sub-total		41.00	5.20
Annual Operating Costs**			
Feed			74.00
Utilities (electricity, water, etc.)			4.00
Veterinary/Misc. supplies			5.00
Sub-total			83.00
Annual Returns***			
Value of 30 fryers (consumed or sold)			101.25
Return over investment			60.25
Return over annual costs			18.25
*Building and buck costs not included. Costs of these will charge return over annual costs. Labor is assumed to be shared by the family and therefore does not represent an added cost.			
**Feed reflects consumption of doe, 30 fryers from 6 litters, and one replacement doe fed to breeding age (5 months).			
***Based on \$0.75 per pound market value for 4 1/2-pound rabbit at 10 weeks of age.			

the rabbitry is well managed, the family should be rewarded with wholesome and delicious meat at a reasonable cost.

Texas Environment

Contrary to popular opinion, rabbits can be bred to produce litters all year round, despite the high summer heat and humidity that characterize much of Texas. In fact, in many countries with more adverse tropical climates, rabbits produce fryers throughout the year. With good commercial meat stock, adequate housing and ventilation, and proper and timely management, the enterprise goal of

year-round fryer production is certainly possible. One or more of these three basic necessities is usually lacking when poor fertility or production problems occur.

Commercial Meat Stock

Commercially bred rabbits are more hardy and resistant to stress, in general, than purebred fancy rabbits. In commercial lines, the long-term results from selection for production traits and crossing to introduce hybrid vigor provide the basis for the improved genetic quality. A commercial rabbit is capable of producing litters all year, and accordingly should not be allowed to remain idle for months without being repro-

ductively active. On the other hand, purebred rabbits that lack this regular producing ability—or commercial rabbits that are managed to go on “summer vacations”—are more apt to become overweight and less fertile. An overweight rabbit will suffer the most during periods of high temperature and humidity. Later, when reproduction is resumed, discouraging results usually occur even for some months.

Housing and Ventilation

The rabbit's immediate environment will have the greatest effect on production during adverse climates (whether heat waves or northern cold fronts) in Texas. Complete wood-framed rabbit hutches should facilitate natural ventilation. If rabbits are raised in wire cages placed inside a shed, the width of the shed should not exceed 20 feet, and the structure should be open-sided. Further, the open sides should face the direction of prevailing breezes, usually from the southeast. During the summer months, especially, direct exposure of rabbits to sunlight should be prevented to minimize heat-stroke. If these specified housing features are met, it may not be necessary to use fans, fog mist systems, air conditioning, or other costly measures. One practical alternative, however, is to move the rabbits from a hot, poorly ventilated building to a location beneath large shade trees.

During the winter months, rabbits should be protected from direct exposure to cold drafts, strong winds, and chilling rains. For sheds, temporary plywood panels or roll plastic sheets may be used for

this purpose. Some complete hutch designs provide for an enclosed wooden rear compartment for winter protection, although this compartment should be blocked off during summer months because the rabbits will get overheated if they hide or nest in it. In unusually cold periods, hutches or cages can be wrapped with inexpensive polyethylene sheets or old blankets if necessary.

Heat Stress Management

In periods of extreme heat, proper management techniques can be followed to maintain normal fertility levels in commercial breeding stock. The buck is more prone than the doe to experience infertility in the summer. Buck fertility may decline when temperatures are above 85°F for several consecutive days, which actually represents several months out of the year in Texas. Young bucks (6 to 9 months old) have higher fertility and sex drive than older bucks and can be mated to does during the summer season to achieve reproductive success.

To further cope with heat stress conditions, one strategy is to ensure that the inside temperature where the rabbits are housed is at least 10 degrees cooler than the outside temperature.

Thermometers can be placed both inside and outside of the shed (or other building) as a check. A well-ventilated shed or even shade trees will help meet this objective. During the heat of the day, you can place sprinkler hoses on the roof of the shed or

hutches and turn them on and wet the grounds around the hutches with a garden hose to promote evaporative cooling. Water directly reduces the surrounding temperature, and, when water comes in contact with prevailing breezes, this cools the stock. If necessary, you can also freeze plastic soft drink bottles filled with water or water-soaked burlap sacks or towels and place them in the cages. You can even put ice in the cages on especially hot, humid days when there is no breeze. In particularly adverse situations, large fans or commercial fog mist systems may be justified. Be careful to avoid getting the animals wet.

Proper timing and consistency in implementing these heat stress management interventions is vital to the comfort, productivity, and even survival of the stock.

Basic Housing and Equipment

If you do not already have a shed, there is little economic justification for the expense of building a new shed just for raising rabbits. A wiser investment would be to construct a complete rabbit hutch (**Figure 1**). You should locate the hutch in a safe area (for example, under shade trees or in a fenced lot), so that the rabbits will be protected from the natural elements, including predators. Wire cages are designed for hanging inside sheds or other buildings. Cages are usually about 30 inches wide, 30 inches long, and 18 inches high for doe production or fryer growth purposes. For growing fryers, one cage for every 2 does is

recommended. Ideally, fryers can be grown in used cages to offset costs. Bucks may be accommodated in cages with dimensions of 30 x 24 x 18 or 24 x 24 x 18 inches, depending on the size or breed of rabbit.

Commercially available feeder and automatic watering equipment can be used in the backyard rabbit operation (**Figure 2**). Water bottles or crocks are also popular. Nest boxes are discussed in the **Reproduction** section. For information on cages, feeders, waterers, and other equipment specifically designed for rabbits, you can request a free catalogue from the Bass Equipment Company (P.O. Box 352, Monett, Missouri, 65708 or 1-800-798-0150).

Breeds and Selection

Breeding Stock

The American Rabbit Breeders Association recognizes more than fifty breeds of rabbit. However, most of these breeds are bred and raised strictly for fancy or show exhibition. In general, a fancy bred doe is unsuitable for year-round meat production. In other words, fancy rabbits are selectively bred for the show table rather than for the meat table. Examples of show table traits include body, head, and fur type and coat and toenail color.

Similarly, rabbits from pet stores and flea markets are not a good source of breeding stock. This is because such rabbits have an unknown background or are not from

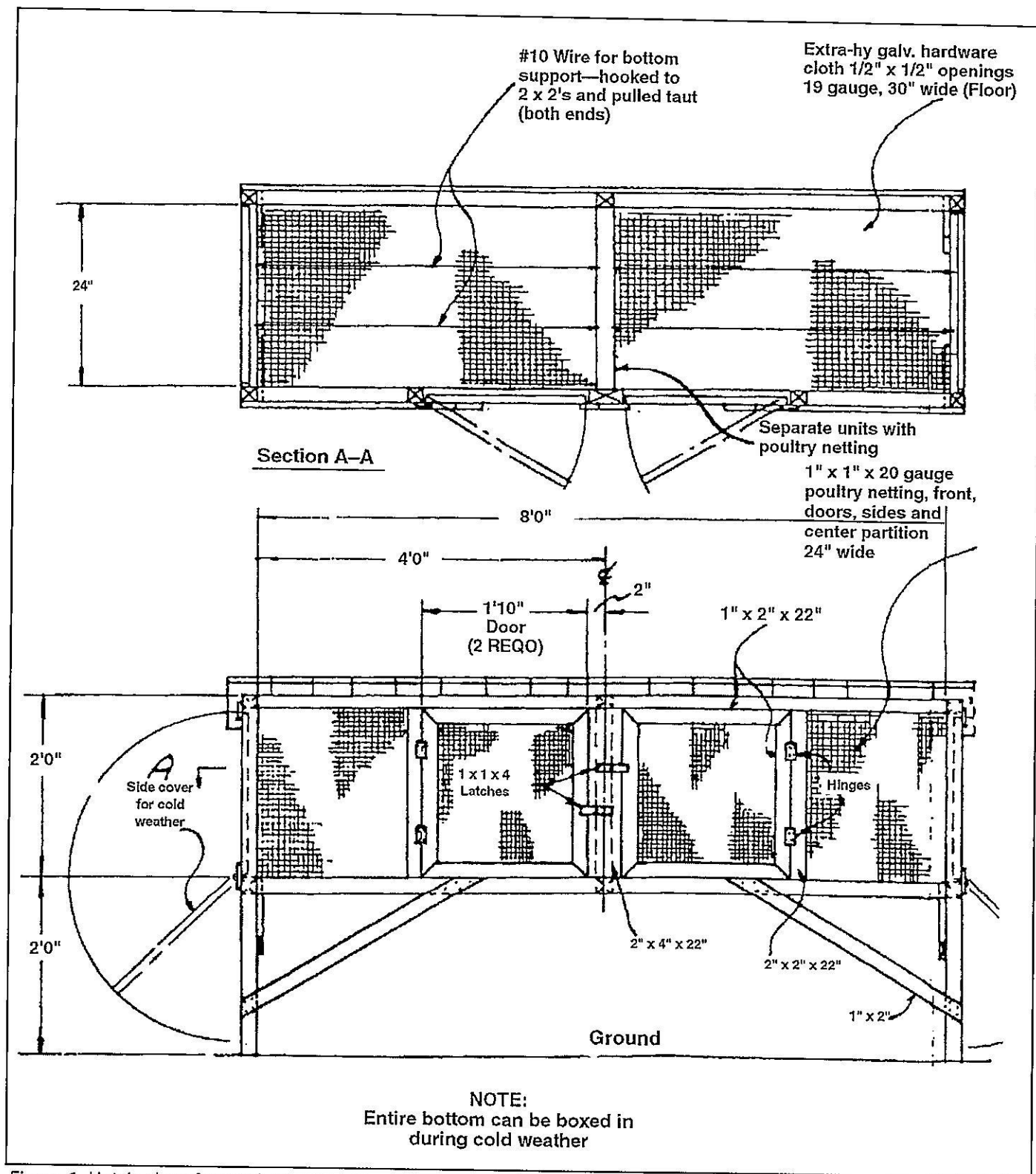


Figure 1. Hutch plans for small rabbit units.



Figure 2. Rabbit drinking from an automatic waterer.

commercial meat-quality stocks. Instead, purchase your breeding stock from a reputable commercial breeder who provides pedigree and production trait information for each rabbit and offers the rabbits at a reasonable price. There is no reason to pay more than \$25 for a commercial bred rabbit, regardless of the age, breed or cross, or pedigree.

A commercial bred doe, purebred or crossbred, can produce 6 to 8 litters in a year. According to scientific studies, commercial bred stock, as compared to fancy bred stock, have more vigor and are more productive (for example, have higher fertility, kindle larger litters, and produce meatier fryers). For the backyard meat rabbit enterprise, purebred or fancy stock may not produce as well as

the commercial rabbit, so you probably should not use them for meat purposes.

Breeding Systems

If you intend to use a single breed solely for backyard meat production, consider the commercial bred New Zealand White. Purebreeding or straightbreeding is a simpler system than crossbreeding. However, because of hybrid vigor (a major advantage of crossbreeding), it is recommended that meat rabbit operations (large- or small-scale) use either commercial New Zealand White purebred or Californian X New Zealand White crossbred does. Both breed types of doe have outstanding fertility, mothering instinct, and milk production.

One breed weakness of the commercial New Zealand

White is lower carcass dress-out and a lower proportion of meat to bone. Fryer meat yield can be improved by using purebred Californian or Champagne d'Argent bucks for crossing with commercial New Zealand White purebred or crossbred does. Alternatively, faster gaining and more efficient terminal crossbred fryers that reach market size (4 pounds) at an early age can be produced by mating purebred Checkered Giant, Flemish Giant, or commercial ALTEX (developed at the Rabbit Research Center, Texas A&M University-Kingsville) bucks to New Zealand White purebred or crossbred does. The word "terminal" implies that all crossbred offspring are used for meat, with no offspring being saved as replacement bucks or does.

Replacement Stock Selection

The decision to select young replacement stock should be based on the production records of their parents. Trait averages from buck or doe record forms (**Figures 3 and 4**) can serve as a guide in making selection decisions. Important traits include litter size weaned, total litter weight at 21 days of age (an indication of milk production), and fryer weights at 8 weeks of age. Closely inspect each replacement candidate for heavy body weight, desirable meat type, and physical soundness, which includes lack of body defects or blemishes, normal teeth, and thick fur on the foot pads. If you have a good-quality herd, it is less costly to produce your own replacement stock than to purchase new animals.

Table 4. Management Schedule for 6 or 8 Litters Per Doe in One Year.

Litters per doe per year	Age to wean litter	Time to rebreed doe*	Litter interval**
6	28 days	28 days	59 days
8	28 days	14 days	45 days

*Age of litter.
 **Number of days between litters if no infertile matings.

appears to be in poor body condition (underweight and rough fur) the mating should be delayed until body condition is restored.

When the doe is 28 days pregnant, provide her with a nest box for the new litter (**Figure 5**). Nest boxes are usually made of 1/2-inch plywood, with dimensions of 10 x 16 x 8 inches (width, length, height). A top piece for the nest box is unnecessary. Fasten screen wire (1/8 inch) to the bottom of the nest box using wood molding and finishing nails. This feature promotes drainage so that the kits (newborn rabbits) remain dry, warm, and comfortable. The nest box should contain clean

dry grass clippings, grass hay, wood shavings, or shredded newspaper to keep the newborn, furless kits warm. Since the doe may start to build a nest when the nest box is first provided, you may need to add more bedding material up to the time that the litter is born. However, some does may show little interest in nest building until just minutes before the litter is born.

The delivery of newborn rabbits, which usually takes place in the early morning hours, is referred to as "kinding." The typical size of the litter for commercial rabbits is seven to eight kits. Inspect the newborn litter promptly, so that you can determine the

number of kits, remove the afterbirth and any dead kits, and manage the nest. Nest management consists of placing the live kits together into the nest constructed by the doe, and then covering them with fur that the doe has pulled to provide warmth. It takes only a few seconds to inspect the litter every morning. A doe will not mind this brief but essential management practice. This inspection and handling of the kits will not cause the doe to abandon or lose interest in her litter.

A first-time doe is less likely than an experienced doe to make a good nest. You might need to help her line the nest with fur and deliver her litter to the nest. If the first litter is lost, always give the doe a second chance to successfully produce a litter. If the second litter is also lost, the doe should be dressed out or sold for meat.

Litter Management

Does nurse their kits only once a day—usually in the early morning hours—for about 3 to 4 minutes. Especially in a large litter, this gives the kits a brief period to feed and compete for subsistence for another 24 hours until the next nursing.

A good management practice is to equal out the number of kits per doe by transferring kits from one nest to another. The transfer of kits between does for nursing is called "crossfostering." For this useful practice to be successful, the does should be mated no more than 3 to 4 days apart. The main advantage of this practice is that competition for milk among kits is reduced in litters that

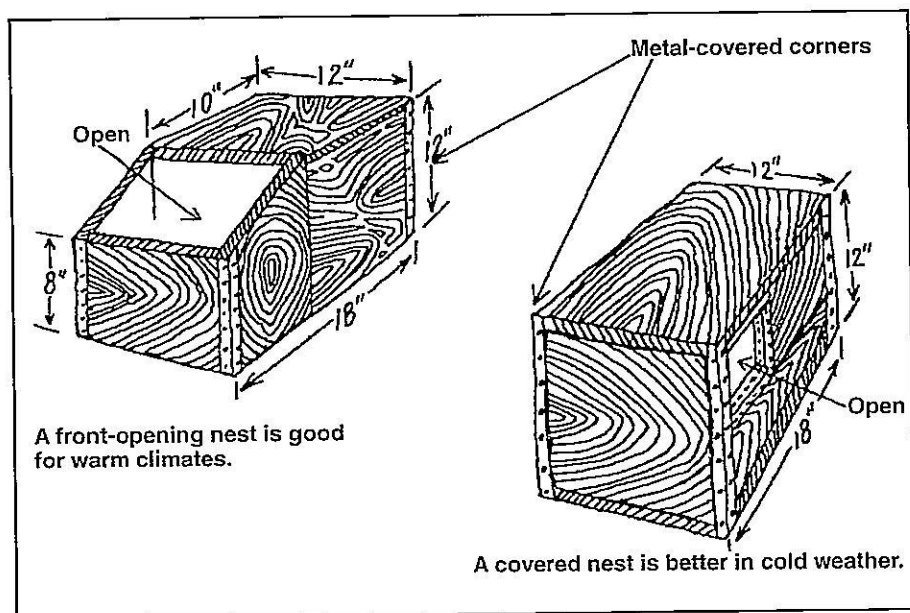


Figure 5. Nest box dimensions and design.

would otherwise be very large. This results in higher kit survival and more uniform fryer weights by market age.

The litter can be weaned at 4 weeks of age, since the doe's milk production level is low by this time (**Table 4**). Weaning involves removing either the doe or the entire litter from the rearing cage. By 8 to 10 weeks (market age), most fryers should weigh at least 4 pounds. This is a good time to determine which fryers could be saved as herd replacement stock, as discussed in the **Breeds and Selection** section. Replacements should be placed individually in cages by 3 to 4 months of age, at least 1 month prior to first breeding.

Feeds and Feeding

Most rabbit producers feed commercial feeds, such as pellets, in their operations. The advantages of feeding pellets include convenience to the producer and increased consumption with minimum waste by the rabbits. In addition, most manufactured pelleted feeds are complete formulations that do not require the producer to provide sup-

plements, such as protein, vitamins, or salt. However, many feed companies have different rabbit feed formulations. A less-expensive diet is not always the best buy, because poorer production may possibly result. The best advice is to feed a reputable feed brand available at a reasonable and competitive price. If your rabbitry consists of at least 10 does, ask your feed dealer for a bulk discount on the feed purchase.

Discussion of each required dietary nutrient is beyond the scope of this publication. However, in terms of practical feeding, producing does, litters, and young growing stock should be fed free-choice for best performance results. Mature stock that are not reproductively active should be limit-fed to maintain desirable body condition. As a general guide, a basic feeding chart is provided in **Table 5**. Rabbits should always have access to clean, cool water.

There is some local interest among producers to feed less-expensive hays, grains, lawn clippings, garden and kitchen wastes, etc., to their rabbits. This practice usually results in a poorer overall diet quality,

which in turn results in lower reproduction and growth response. You should be aware that it is the **quality** of the diet rather than the **quantity** that determines performance results. However, as long as the nutritional needs of the rabbit are satisfied, it doesn't really matter which feed ingredients are actually fed. Simply feeding a good commercial pelleted diet takes out much of this guesswork. On the other hand, there is no problem in providing small amounts of fresh feeds (for example, a carrot, a few blades of grass, or a couple of cabbage leaves). This practice will help to stimulate appetite and promote gentle behavior in rabbits. The fiber content of the diet (15 percent) is important in preventing hairballs, stimulating gut function, and preventing diarrhea.

Health Management

Properly fed, housed, and managed commercial-bred rabbits generally remain in good health. Vaccines, antibiotics, and other medications are not required to maintain a

Table 5. Major Nutrient Requirements and Simple Feeding Chart.

Class of Production	Protein (%)	Fat (%)	Calories (per lb.)	Fiber (%)	Daily Feeding Level
Pregnant or Lactating does (21 days or with litter)	16-20	3-5.5	1136	12-14	Free choice
Growing fryers (1-3 months)	16	2-4	1136	14-16	Free choice
Replacements (3-5 months)	16	2-4	1136	14-16	6 to 8 oz. (0.25-0.3 lb.)
Breeding bucks (3 matings/week)	16	2-3	1136	14-20	6 to 8 oz. (0.25-0.3 lb.)
Dry bucks/does	12-15	2-3.5	955	14-20	4 to 6 oz. (0.25-0.4 lb.)

Source: National Research Council Publication 1194.

healthy and profitable rabbit herd. Many diseases can largely be prevented or treated through sound management practices. However, when a disease does occur, recognizing the early signs and promptly providing the correct treatment can minimize its impact. Some major rabbit diseases are discussed below.

Digestive Disorders

The newly weaned rabbit is most vulnerable to stress and digestive disorders that can result in death. Commercially, the average mortality rate for rabbits between weaning and market age is about 10 to 15 percent. Because of weaning stress, the rabbit may go off feed for 1 or more days. Later, when the rabbit becomes excessively hungry, it simply eats too much feed. This irregular feeding pattern triggers changes in the intestines, where various microbial organisms are found. When over-consumption of feed occurs, certain bacterial species release natural toxic substances which are deadly to the rabbit. Diarrhea may or may not precede death. This nutritional condition occurs also in young calves, lambs, and pigs and is called "overeating disease" or **enterotoxemia**. This condition can also be caused by changing feeds, especially feeds high in grains. In young rabbits this disease can be controlled by providing grass or alfalfa hay to newly weaned rabbits when the signs first appear, or by controlling the amount of feed provided when the rabbit's consumption of feed becomes irregular.

Diarrhea can also be caused by **coccidiosis**, a protozoa that has two forms: hepatic

(liver) and intestinal. Hepatic coccidiosis causes animals to have a rough hair coat and to lose weight rapidly; death follows in a few days. Intestinal coccidiosis, the more common form, also causes weight loss, a rough hair coat, and a "pot-bellied" look. Both can be controlled with medication from your veterinarian and proper sanitation.

The clearest sign of coccidiosis is the presence of small white spots on the liver. When you are dressing out fryers, always check the livers (see page 12). Daily cleaning of cages will help to control this disease. Commercial medications are available, but use these only if an outbreak occurs.

Pasteurellosis

In commercial rabbit production, the major respiratory disease is **pasteurellosis** or "snuffles." The respiratory tract (upper nasal passages and lungs) becomes infected by a bacterial organism (*Pasteurella multocida*). This contagious disease usually occurs when large numbers of rabbits are housed together, especially if poor ventilation conditions exist. The ammonia level from the urine causes irritation to the respiratory system, and this irritation leads to infection, sneezing, and the discharge of pus from the nasal region—but death does not necessarily occur.

Fortunately, in a small rabbitry, pasteurellosis is usually not a serious problem, because there are few rabbits and the air quality is usually sufficient (good ventilation and lack of strong ammonia odors). However, a problem may develop if rabbits are reg-

ularly taken to shows, where they may well become directly exposed to the bacterium that causes pasteurellosis.

Antibiotics can help in combatting the infection, but there is no cure for this disease. The best control measures are providing a well-ventilated environment and culling of affected animals. Snuffles is often a precursor to pneumonia, which is not uncommon in rabbits (also known as "bordetella," after the organism which can cause the condition).

Parasites

Two major types of parasites affect rabbits: mites that cause **ear and skin mange** and a protozoa that causes coccidiosis of the liver (discussed above). Keeping hutches and cages cleaned daily helps to control infestations of these parasites.

Mites spread from rabbit to rabbit. The signs are crusty or scab-like debris inside the ears (ear mange) or behind the ears on the shoulder region (skin mange). To control mites, treat all adult stock at the same time by applying several drops of an oil solution to the affected area (this procedure drowns the mite). A monthly treatment routine may be necessary. Commercially available oil solutions or other medications may be obtained from your local veterinarian.

Sore Hocks

One disadvantage of raising rabbits on wire floors is the stress that it may cause to the hocks (the bottom pads of the feet). A rabbit may have poor fur cover on the hocks, be a nervous stomper, or simply be a heavy rabbit. In these situa-

tions, the fur is worn off the hocks, removing this cushion between the wire and the hocks. The hocks may develop open sores, and, if an infection sets in, the rabbit will experience pain and stress. This condition is known as "sore hocks."

Regular examination of the hocks in adult rabbits is helpful in detecting cases early. In advanced cases, treatment is limited, and the rabbit may need to be destroyed. Effective prevention strategies include selecting breeding stock with thick fur that shows little wear on the hocks and, if a rabbit weighs more than 10 pounds, providing a 1/4-inch plywood board (6 x 8 inches) for a resting area in the cage.

Predator Control

In rabbit production, perhaps nothing is more emotionally disturbing than to lose stock from predator attacks. The predator can be the family's or a neighbor's pet dog or cat; native coyotes, opossums, or snakes; or even insects like ants and wasps.

Losses from predators can largely be prevented. Some predators gain entry into the cage or hutch through the gate, so the cages or hutches should be of sturdy construction, and the gates should be well secured. Even if the predator fails to break into the cage or hutch, the rabbit may be so alarmed from the attack that a serious, even fatal, injury may occur. If the hutches are located in a problem area, the best strategy is to keep large predators away

from the rabbitry by either placing the cages inside a shed or placing the hutches inside a fence. You can also contact the local animal control office or the Texas Animal Damage Control Center for assistance.

On occasion in Texas, snakes (bullsnakes and rattlesnakes) may pose a problem in the rabbitry by eating young kits inside the nest box. If this occurs, place 1/2-inch hardware cloth covers over the top of the nest box, secured with staples and tied down with roofing nails and thin wire strands. Each morning, open the box for the doe to nurse her litter, and then, when the doe leaves the box after nursing (3 to 4 minutes), tie down the cover again. You may have to do this daily until the young are 2 weeks of age, when they are too large to be easy prey for snakes.

Insect damage can be controlled by removing dead kits and afterbirth from the nest box soon after kindling. Daily morning inspections of the nest box to remove any dead young are also effective in discouraging insects (especially ants) from being attracted to the nest box. Keeping kits covered in fur produces a good barrier between the kits and insects such as biting flies and mosquitos. Commercial insecticides, if used, should be used only according to the labelled directions. Keep the insecticides away from the rabbits, their feed and water, and the surface of their cages.

Controlling predator and insect problems (including even the common housefly) will increase productivity and reduce the spread of disease.

Market Outlets and Promotions

Because no established market for meat rabbits exists in Texas, the primary objective for rabbit production is to provide a source of meat for the family table. A four- to five-doe operation should yield about two fryers per week for family consumption: you should not overlook the economic value of table rabbits consumed by your family (Table 3).

However, if an additional objective of the operation is to realize cash returns from rabbit sales, you can explore other opportunities. If you decide to sell surplus rabbits for meat, expand your herd only gradually. For example, if you find that you are able to consistently sell five dressed fryers per month to neighbors and local clients, then add two does to your herd operation. Expanding your herd before exploring local market opportunities is not a good strategy. You can also sell your rabbits as breeding stock and pets, or market by-products such as tanned skins, foot-charms, bagged manure or compost for gardening, and earthworms (redworms or nightcrawlers) for fishing bait. The development and marketing of these products should not require much effort because of the small size of the rabbit operation. Try ads in newspapers first to either determine the initial response or to actually begin sales of your rabbit products.

It is recommended that you expand your breeding herd only to meet the local demand for rabbit meat. If the local demand continues to increase, you and other rabbit producers may benefit by forming a marketing association or cooperative. As a group, rabbit producers can plan and coordinate the production and distribution of either live or dressed fryers. Present Texas state laws do not require veterinary inspection of rabbit processing or of rabbit meat before it can be sold in retail outlets. The rabbit producer is responsible for ensuring that any rabbit meat sold is wholesome and properly handled prior to delivery. A small custom-slaughtering facility is justified only if the local demand for rabbit meat continues to rise.

Finally, the ultimate objective is to educate the public about the high nutritional quality of rabbit meat. The recipes included at the end of this publication will provide a good start, even for people who have never tried rabbit meat.

For further information about rabbit production and meat rabbit inspection, contact your county Extension agent.

Dressing Out a Rabbit Fryer

In order to ensure a high-quality product from your rabbit operation, you must know how to properly slaughter the animals, process the meat, and, if desired, process the skins.

Slaughtering and Skinning

Slaughter the rabbits in a clean, sanitary area. Follow any regulations or restrictions from the local health authorities.

The preferred method of slaughtering a rabbit is by dislocating the neck. With the left hand, hold the animal by its hind legs. Place the thumb of the right hand on the neck just behind the ears, with the

four fingers extended under the chin. Push down on the neck with the right hand, stretching the animal. Press down with the thumb. Then, with a quick movement, raise the animal's head and dislocate the neck. The animal becomes unconscious and stops struggling. This method is instantaneous and painless when done correctly.

Another method is to hold the animal with one hand at the small of the back, with its head down. Then stun it by a heavy blow at the base of the skull.

Suspend the carcass on a hook inserted between the tendon and the bone of the right hind leg just above the hock (Figure 6). The hook should be at about eye level. Using a 5-inch skinning knife, remove the head immediately to permit thorough bleeding so the meat will have a good color. Remove the tail and the free rear leg at the hock joint, and cut off the front feet and the tail.

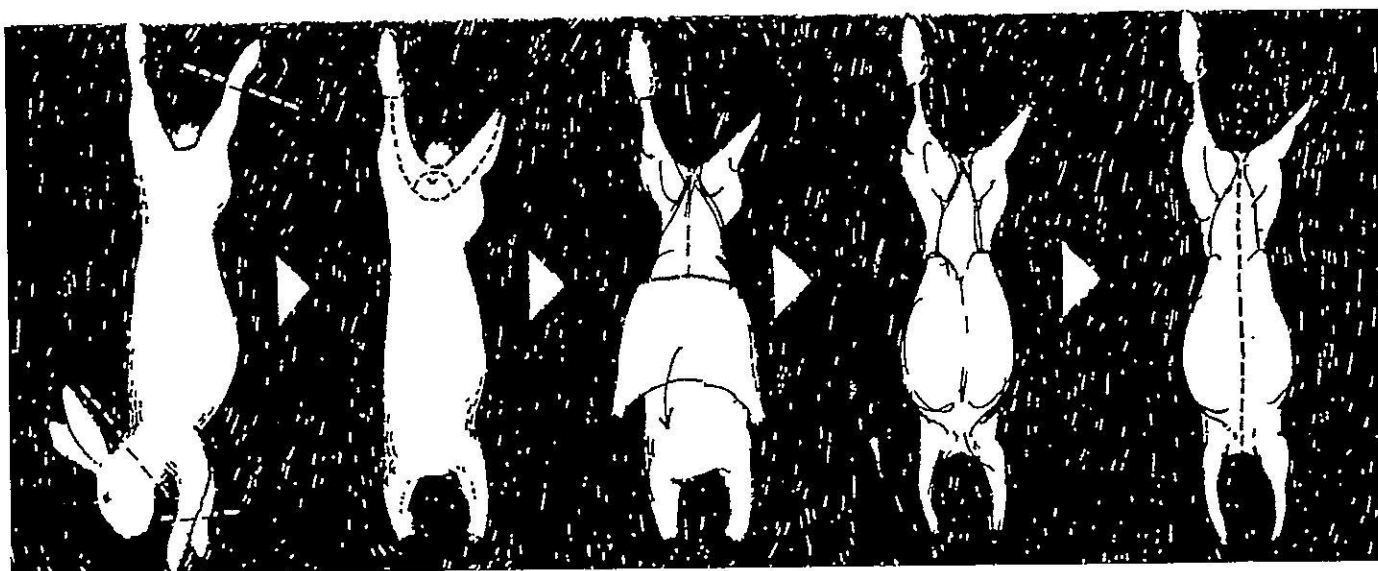


Figure 6. Steps in dressing rabbits.

Cut the skin just below the hock of the suspended right leg and open it on the inside of the leg to the root of the tail, continuing the incision to the hock of the left leg. Carefully separate the edges of the skin from the carcass, and begin working the skin free from the meat on the hind quarters using your fingers and the knife. Be careful to leave all the fat on the carcass as the skin is pulled down. The fat cover is important for preserving the quality of the meat. As the skin is removed, be careful not to cut it; even small cuts reduce the value of a skin.

Break the pelvic bone between the hind legs by inserting the knife inside the pelvic area and cutting outward. Slit the belly down the midline from the pelvis to the chest area as far as possible. Be very careful not to puncture any of the internal organs, or their contents will contaminate the meat. Cut around the anal opening and remove the entrails and gall bladder. Leave the liver, heart, and kidneys in place. Remove the right hind foot by severing it at the hock.

Be especially careful not to get hairs on the carcass. They are difficult to remove, detract from the appearance of the meat, and are unsanitary. Rinse the carcass in cold water; rinsing makes removal

of hair and blood easier and cleans the carcass. Do not rinse or soak the carcass longer than 15 minutes. Otherwise, the carcass will absorb water, and additional water is considered adulteration of the meat.

Remove the carcass from the hook and chill it in a refrigerated cooler. Arrange the carcass on a cooling rack so that the air movement and temperature in the cooler will reduce the internal temperature of the carcass to no lower than 30 degrees and no higher than 40 degrees within 24 hours after slaughter.

Cutting the Meat

When the carcass has been chilled, cut it into the desired pieces. Cut the meat with a knife; using a cleaver may splinter the bones. The carcass can be cut into seven pieces: two hind leg pieces, a loin, two rib pieces, and two front leg pieces. Larger carcasses can be cut into twelve pieces by cutting each hind leg piece into two pieces, the loins and back portion of the ribs into five pieces, and the front portion of the ribs and each of the front legs into one serving each.

Curing the Skin

While they are still warm, place the skins to be cured flesh side out on wire or board

forms or shapers (with the fore part of the skin over the narrow end). Remove all wrinkles.

You can make a satisfactory skin shaper from 5 feet of No. 9 galvanized wire. This equipment has been called a "stretcher," but the term may give the wrong impression. You should not stretch the skin too much.

Mount the skin on the shaper, making sure both front feet casings are on the same side, and fasten it with clothespins. This arrangement reduces injury to the fur of the back, which is the most valuable. On the day after skinning, examine the pelts to see that the edges are drying flat, that the skin on the front legs is straightened out, and that any patches of fat are removed.

All skins must be thoroughly dried before you use or pack them, but do not dry them in the sun or by artificial heat. Hang them up so the air can circulate freely around them. If you will not use or ship the dried skins for some time, hang them in loose bundles of fifty in a cool, dry place away from rats and mice. In the summer, sprinkle the stored skins with naphtha flakes. Never use salt in curing rabbit skins.

Rabbit Recipes

Rabbit Stew

1 rabbit, cut into 4 parts
Water
3 cups diced Irish potatoes
3 tablespoons minced onions
1/2 cup chopped celery
2 teaspoons salt
1/2 teaspoon pepper

1 No. 2 can tomatoes
3 tablespoons sugar
1/4 pound butter or margarine
3/4 cup catsup
2 tablespoons worcestershire sauce
1 cup cream-style corn

Put the rabbit meat in a deep boiler and cover it with water. Cook slowly until the meat is tender and ready to leave the bone. Remove the meat from the broth and set aside to cool. Add the next eight ingredients to the broth and cook 10 minutes. Pull the meat from the bones and chop it into small pieces. Add the meat to the broth; simmer for 20 minutes. Add the catsup, worcestershire sauce, and corn. If the stew is too thick, add a small amount of water. Season to taste.

Barbecued Rabbit

3 pounds rabbit meat, cut into serving-size pieces
Flour

Salt and pepper, to taste
3 tablespoons vegetable oil

Sauce:

1 cup cider vinegar
1 teaspoon salt
1/2 cup vegetable oil
2 tablespoons brown sugar
1 tablespoon paprika
1 teaspoon dry mustard
Cayenne pepper, to taste

2 teaspoons hot red pepper sauce
2 tablespoons worcestershire sauce
1/4 teaspoon chili powder
1 cup tomato juice
1/4 cup chili sauce or catsup
1/2 chopped onion

Roll the meat pieces in a mixture of flour, salt, and pepper. Heat the oil in a heavy skillet or roaster. Brown the meat on all sides over moderate heat, about 20 minutes. Meanwhile, combine the ingredients for the sauce in a saucepan. Cover and cook over low heat for 15 minutes; pour the sauce over the meat. Cover the pan and bake at 325° F until the meat is tender (about 45 minutes). Uncover the pan and place it under the broiler. Broil 15 minutes or until the meat is brown. Serves 6.

Note: The sauce, when made without the vegetable oil, makes a good overnight marinade. This recipe makes about 1 1/2 cups of sauce.

Baked Stuffed Rabbit with Carrots

- | | |
|---|-------------------------------|
| 2 cups mashed potatoes (3 to 4 medium potatoes) | 1 cup finely chopped celery |
| 2 tablespoons butter or margarine | 1 whole rabbit, ready to cook |
| 1 teaspoon salt | 2 large carrots, quartered |
| 1/2 teaspoon pepper | Bacon or salt pork |
| 1 teaspoon dried summer savory | 1 or 2 cups hot water |

Season the mashed potatoes with butter, salt, pepper, savory, and celery. Fill the body of the rabbit with the potato mixture and sew it up. Place the rabbit on a rack in a baking pan with the legs folded under the body. Place quartered carrots beside it in the pan. Secure the bacon over the back with toothpicks to keep the meat from drying out. Bake in a hot oven (400°F). After the first 10 minutes, pour hot water over the meat. Continue cooking until tender, about 1 1/2 hours. Shortly before the meat is done, remove the bacon and let the meat brown.

Wild Rabbit with Wine

- | | |
|---|------------------------|
| 1 3-pound rabbit, ready to cook | 1 cup red wine |
| 1 cup finely chopped onions | 4 teaspoons salt |
| 1 can mushroom pieces and liquid, separated | 1/2 teaspoon pepper |
| 6 tablespoons butter or margarine | 1 teaspoon thyme |
| 6 tablespoons flour | 2 teaspoons parsley |
| 4 cups water | 2 bay leaves, crumbled |

Wash the rabbit thoroughly in lukewarm water; then drain and dry it. Cut off the legs; separate the hind legs into two pieces at the joint. Cut the saddle into three pieces, dividing the section nearest the head end into two pieces by splitting it down the backbone. Sauté the onions and mushrooms in butter until the onions are soft and slightly brown. Push the onions and mushrooms to one side and add the flour. Mix thoroughly and add the water, wine, and the mushroom liquid. Then add the seasonings and stir. Place the pieces of rabbit in the pan and cover. Steam for 1 1/2 hours or until tender.

Note: Half a pound of fresh mushrooms with 1 cup of water may be substituted for the canned mushrooms and liquid.

Earl F. Kennamer

Smothered Rabbit and Onions

- | | |
|---------------------------------|-----------------------|
| 1 rabbit, cut into small pieces | 3 tablespoons butter |
| Salt, to taste | 1 to 2 onions, sliced |
| Paprika, to taste | 1 cup sour cream |
| Flour | |

Season the rabbit with salt and paprika. Coat the pieces with flour. Melt the butter in a large skillet and sauté the rabbit meat until brown. Cover the meat thickly with onion slices. Sprinkle onions with salt. Pour in the sour cream. Cover the skillet and simmer for 1 hour, or bake at 325°F until tender.

Earl F. Kennamer

Rabbit Delight

1 rabbit, cut into serving-size pieces
1 tablespoon vegetable oil
1 cup chicken broth
 $\frac{1}{4}$ cup lemon juice
 $\frac{1}{4}$ cup orange juice

2 green peppers, chopped
 $\frac{1}{2}$ cup mushrooms, chopped
1 tablespoon parsley, chopped
Pinch of ginger
Salt and pepper, to taste

Heat the vegetable oil in a large skillet; brown the rabbit meat. Add the remaining ingredients. Cover and cook slowly until tender, about 1 hour.

Fried Rabbit

1 rabbit (up to 2 pounds), cut into serving-size pieces
1 cup flour
Salt and pepper, to taste
Vegetable oil

Roll the rabbit pieces in a mixture of flour, salt, and pepper. Heat the oil in a 10-inch skillet over moderate heat. Cook the large meaty pieces about 10 minutes before adding the smaller pieces. Turn the pieces often for even cooking. Cook until tender and brown, 30 to 35 minutes. Serves 3 to 4.

R. B. Deavours

Rabbit Fricassee

1 rabbit, quartered or cut into small pieces
Flour
3 tablespoons butter or vegetable oil

Salt and pepper, to taste
Milk
Onion juice (optional)

Heat the butter or oil in a large skillet. Roll the rabbit pieces in flour and brown them in the skillet. Season the meat with salt and pepper. Slowly add just enough milk to keep the meat from sticking. Cover and cook until tender. Add flour to make gravy in the pan. Flavor with onion juice, if desired.

Variation: Add sliced onions to cover the meat and 1 cup of sour cream instead of making the milk gravy. Cover and simmer for 1 hour or bake at 325°F until tender.

Rabbit à la Mode

1 rabbit, cut into small pieces
Vinegar
Water
2 bay leaves, divided
6 peppercorns

1 onion
Salt and pepper, to taste
Flour
3 tablespoons butter or margarine
1/2 cup sour cream

Place the rabbit meat into a crock or jar. Cover with vinegar and water (1 part vinegar to 2 parts water). Add 1 bay leaf, peppercorns, and onion. Marinate in the refrigerator for 1 to 2 days. Remove the meat from the crock and sprinkle it with salt and pepper. Coat the meat with flour. Melt the butter in a large skillet; saute the rabbit pieces until brown. Combine 1 cup water with salt, pepper, and the remaining bay leaf. Pour the mixture over the meat. Cover the skillet and simmer until done. Do not allow the mixture to boil at any time. Remove the meat from the pot. Thicken the broth with a paste of flour and water. Stir in the sour cream. Heat through but do not boil. Serve immediately.

Stir-Fried Rabbit

1 2-pound rabbit
1 1/2 tablespoons vegetable oil, divided
2 garlic cloves, crushed
3 slices fresh ginger root, minced
3 tablespoons sherry
3 tablespoons soy sauce
3/4 teaspoon salt
1/2 teaspoon sugar
1/8 to 1/4 teaspoon cayenne
2 tablespoons cold water

1/2 pound fresh mushrooms, sliced
2 celery stalks, sliced thin
1/2 cup bamboo shoots
1/2 cup water chestnuts, sliced
1 green pepper, sliced thin
12 scallions, sliced lengthwise
1/2 cup walnuts, cashews, or almonds
1/2 cup canned chicken broth
1 tablespoon cornstarch

Bone the rabbit and slice the meat into thin strips. Heat half of the oil in a large skillet. Add garlic and ginger root; stir a few times. Add the rabbit meat and stir until it loses its pinkness, about 2 to 3 minutes. Combine sherry, soy sauce, salt, sugar, and cayenne and add to the meat; stir 1 minute more to blend. Remove the rabbit and sherry mixture from the skillet. Heat the remaining oil in the skillet. Add the vegetables and nuts; stir to coat with oil, about 1 to 2 minutes. Stir in the chicken broth and heat quickly. Then return the rabbit and sherry mixture to the pan and cook, covered, over medium heat until done, about 2 to 3 minutes. Meanwhile, blend the cornstarch and cold water to make a paste; add to the skillet and stir to thicken. Serve at once. Serves 4 to 6.

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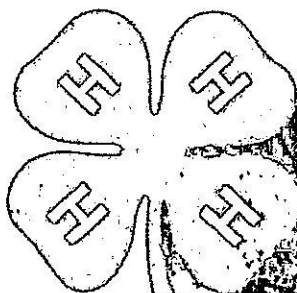
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Rabbit Project Reference Manual

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

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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:

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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.

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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.

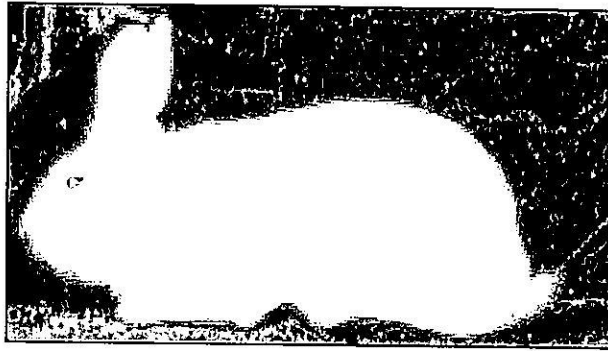
The **Californian** breed is another American creation. After experimentation and crossbreeding, this rabbit was produced in 1923. It was bred as a meat rabbit to have broad shoulders, meaty back and hips and a good dressing percentage (percentage of edible meat). This rabbit is white except for ears, 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.

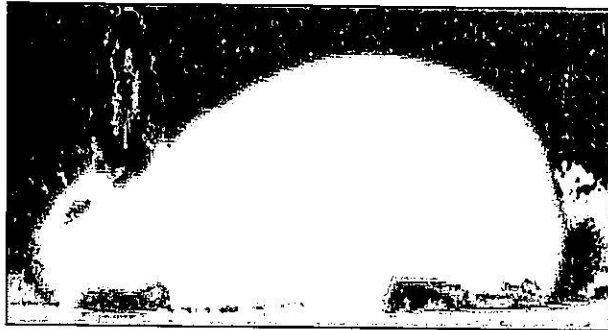
This rabbit is born black. At about 3 to 4 months, it takes on the adult color, a silver or skimmed-milk color with a dark slate blue undercoat. The ideal weight for bucks is 10 pounds; does, 10½ pounds.

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.



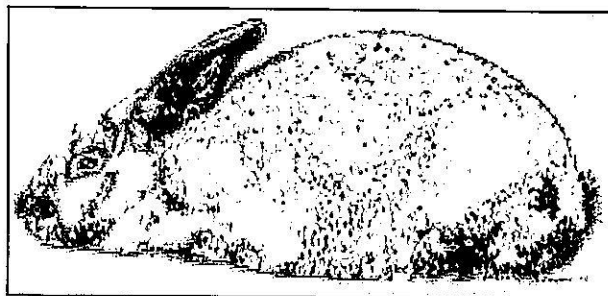
White New Zealand



Californian

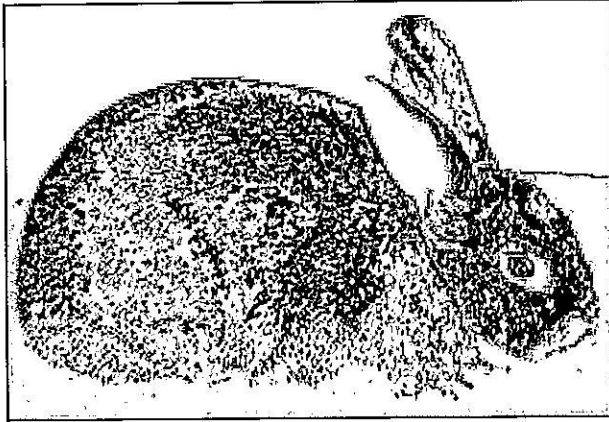


Champagne d' Argent

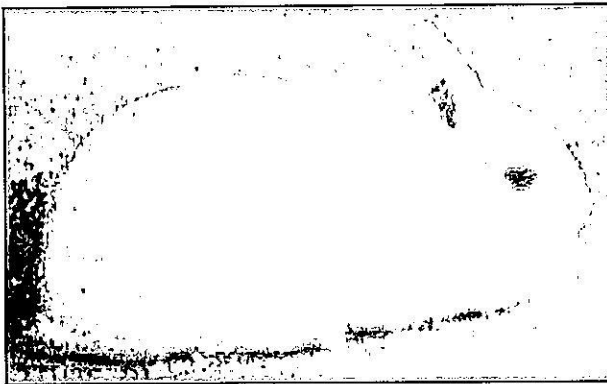


Satin

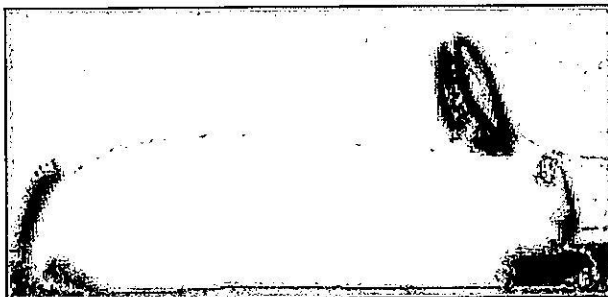
Fancy breeds



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 6½ to 8½ pounds; does from 7½ to 9½ 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 2½ to 3½ 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.

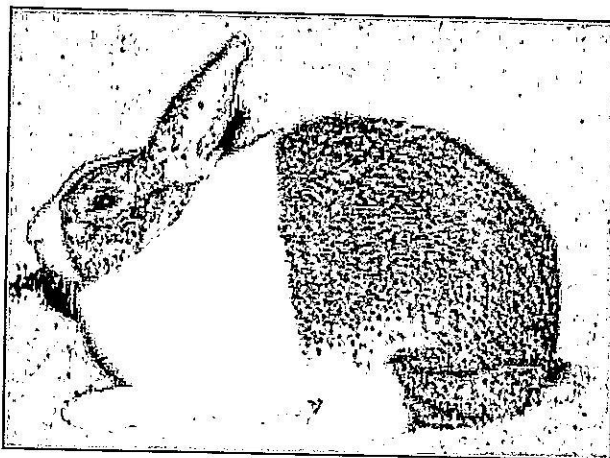
The above are only a few of the 45 recognized breeds. For a complete listing and description, contact the American Rabbit Breeders Association, P.O. Box 426, Bloomington, IL 61702. Phone: (309) 664-7500.

Equipment needed

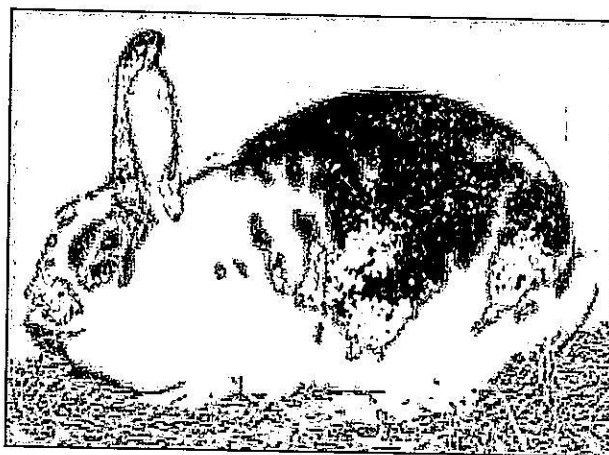
Proper housing and good equipment are important for successful rabbit raising. In making plans, consider first the rabbits' comfort and your ease of handling. You don't need a lot of equipment, but feeding, watering and nesting equipment must be adequate and sanitary.

The hutch

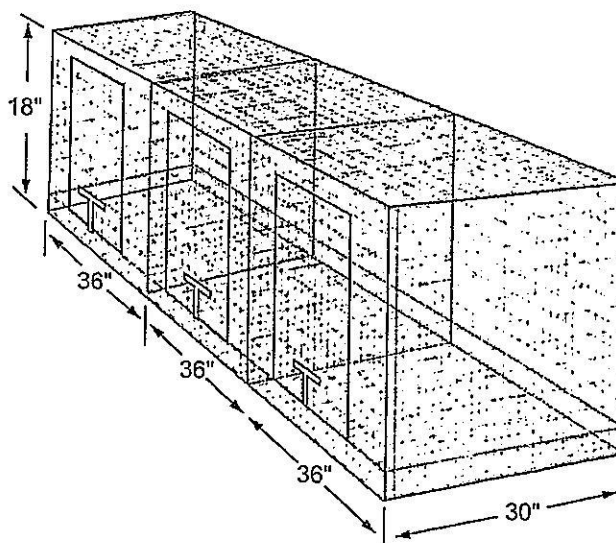
Rabbit pens, called hutches, should be convenient and sanitary, allowing plenty of fresh air and some sunlight. Each hutch should protect the rabbits from bad weather, dogs and other animals, and provide enough room for



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.

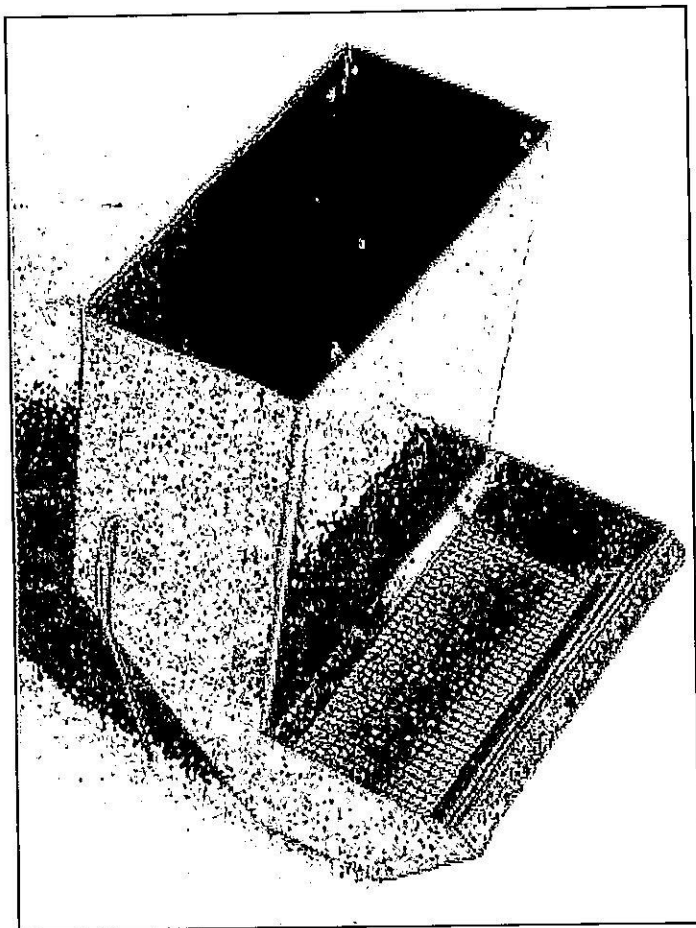
Feeds and feeding

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

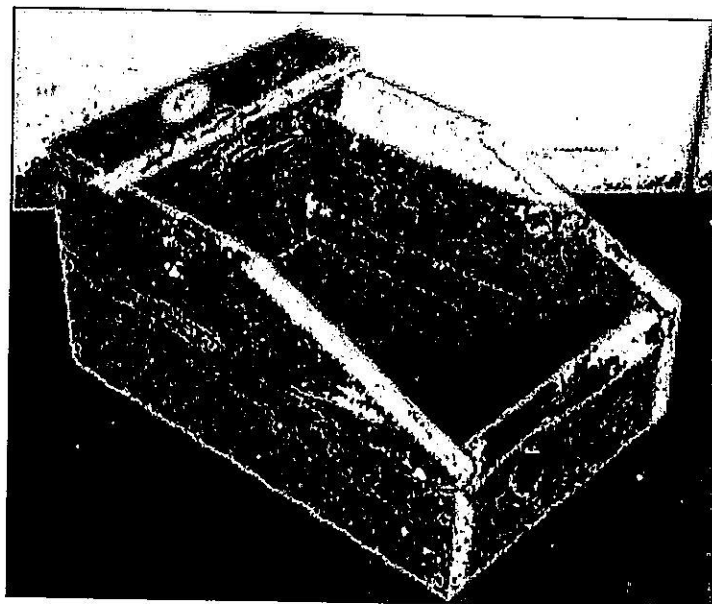
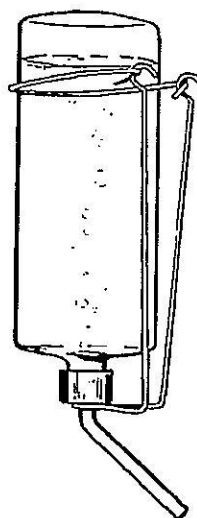
A rabbit is born hairless, blind and deaf; it is your job to protect it. A good nest box keeps the babies warm, allows for ventilation and moisture drainage, and keeps the young in the box until they are big enough to climb in and out by themselves. The nest box must also be large enough to keep the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

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



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

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.

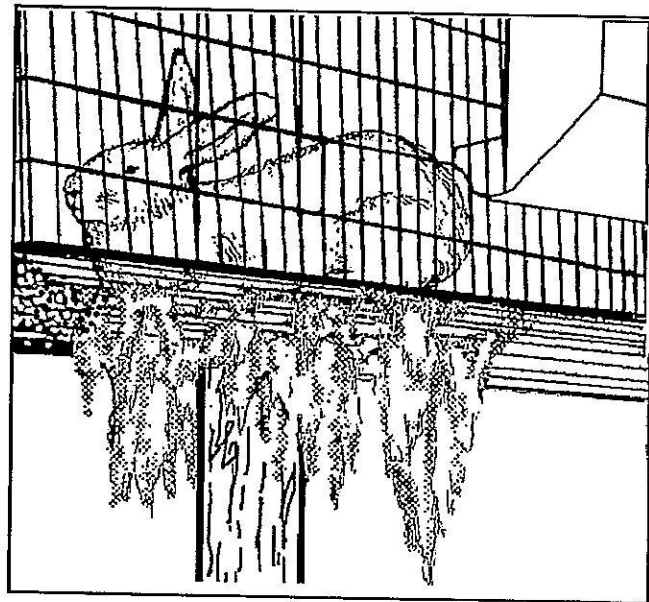
Clean nests and disinfect them before kindling and after the nest box is removed from the hutch. Change bedding when it becomes wet or contaminated with urine or droppings. Dispose of all used nesting material.

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.

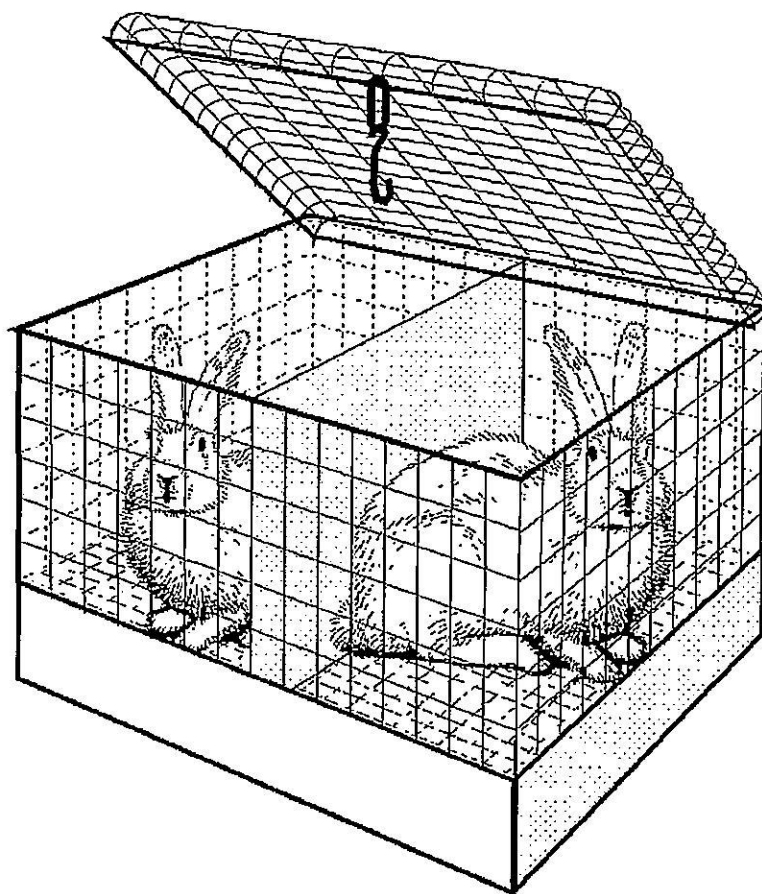
Marketing

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.

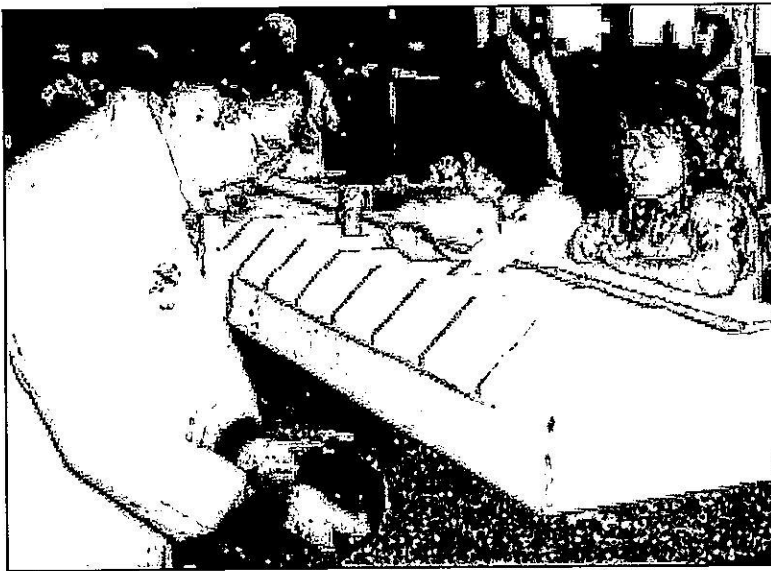
For showing, select the best rabbits according to the standards for its breed. Study the show rules, regulations and classifications carefully before taking a rabbit to a show. Shows impose strict requirements on weight, color, size and age of rabbits entered. Although pedigrees are usually not required,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

- ✦ 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.



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

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.

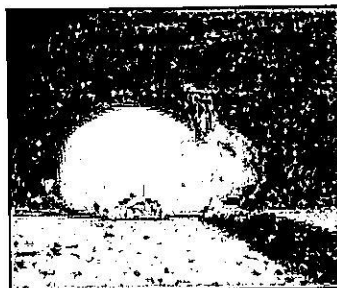
Do's and Don'ts

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.



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Revision