



# Meating' the Future



**Level 3**

## Meat Goat Activity Guide

Name \_\_\_\_\_

County \_\_\_\_\_



# Note to the Helper

If you were a project helper for youth involved in completing Meat Goat 1 or 2, you know what a great experience this important role is. As a helper, you are in the perfect position to help youth grow and develop in positive ways as they learn about meat goats and about themselves. You nurture and cultivate their interest in this project by guiding their planning, helping them carry out their activities, and recognizing them for a job well done.

## Your Role

- Become familiar with the material in this activity guide and the *Helper's Guide*
- Support youth in their efforts to set goals and complete each Achievement Program
- Date and initial the activities on the Meat Goat Achievement Program as they are completed and discussed.
- Help them get to know themselves, including their strengths and weaknesses
- Encourage the use of the experiential learning cycle described on this page

## The Meat Goat "Skills for Life" Series



This guide, *Meating the Future*, is the third in the series of three for youth, which also includes Meat Goat 1 *Just Browsing*, Meat Goat 2 *Growing with Meat Goats*, and the *Meat Goat Helper's Guide*. The three youth guides have been designed to be developmentally appropriate for grades 3–5, 6–8, and 9–12 respectively, but may be used by youth in any grade based on their project skills and expertise.

All activities in the guides have several parts: A description of the skills to be practiced, discussion questions, suggestions for additional activities, and additional helpful information. The success indicator listed for each activity is an excellent way to evaluate the youth's success. Each of the guides also includes an Achievement Program to encourage youth to learn more about goats while developing important life skills. In the *Helper's Guide*, you will find another evaluation piece titled "Evaluating the Impact." Use this before the youth begins each level and after each level is completed.

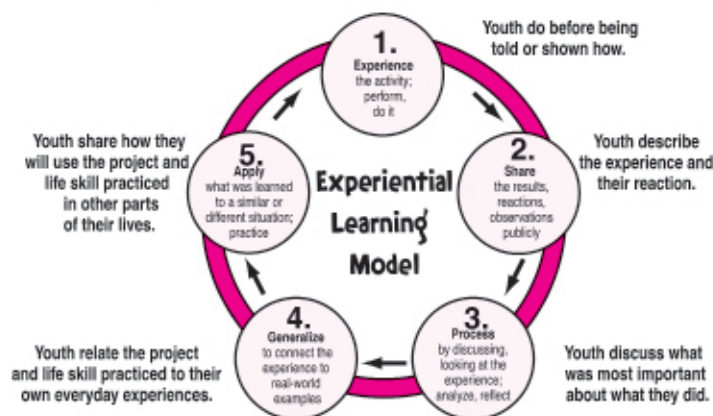
Each activity is designed so the young person has an opportunity to learn by doing before being told or shown how. Your challenge

is to stay in the background while the youth explores the activity and learns from the experience, even when it doesn't work the way it's expected to. You can help with the learning most effectively by listening as the young person considers the questions and draws conclusions. At times the activity may call for you to be a resource person for content or ideas.

The fourth publication in this series, *Meat Goat Helper's Guide*, provides additional learn-by-doing activities that can be adapted to the family, the classroom, after school child care, 4-H project groups, clubs, or other groups. You'll also find helpful hints about characteristics of youth, life skill development, teaching experientially, meeting ideas, as well as answers to many of the activities in the youth guides.

## Experiential Learning Model

This five-step model is included in each activity in this series.



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

As you can see, the youth first attempt the activity on their own. After the youth do as much as they can and answer the questions, you then meet together and discuss: What did they do? What was important about what they did? How does what they did relate to their lives? And finally, how might they use the life and project skills practiced in the future? Sample questions are included following each experience. Your ability to ask additional thought-provoking questions and to clarify and expand participants' ideas will add to the educational experience.

**Good luck in your role as Project Helper and thanks for contributing to the positive development of our youth!**

## Acknowledgements

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# What's Inside?

For more on meat goats,  
look for these other guides  
in this set.

## Level 1 Just Browsing

<b>Chapter 1 Selection</b>	Name That Part! Choosing Wisely Kikos and Pygmies and Boers—Oh My!
<b>Chapter 2 Marketing and Products</b>	We Can't Have Quality Without "U!" Meat or Milk? There's No Business Like Show Business! Be a Sport
<b>Chapter 3 Health and Disease</b>	Ding Dong Bell, Is That Kid Feeling Well?
<b>Chapter 4 Feeds and Nutrition</b>	I'm Stuffed Ruminant on This!
<b>Chapter 5 Husbandry of Animals and Resources</b>	Goat Cries Making Kid Cents into Big Bucks Learning the Ropes Meat Goat Talk 1 (Glossary) Meat Goat Resources



## Level 2 Growing with Meat Goats

<b>Chapter 1 Health and Disease</b>	Is Your Wether Under the Weather? Put Your Veterinarian on Speed Dial!
<b>Chapter 2 Selection</b>	Choosing Your Genes
<b>Chapter 3 Feeds and Nutrition</b>	Mares Eat Oats and Does Eat Oats... and Sometimes Toxic Plants! Through Thick & Thin
<b>Chapter 4 Husbandry of Animals and Resources</b>	The Scoop on Poop Being Water Wise What You Don't Know
<b>Chapter 5 Reproduction</b>	And...ACTION! The Birds and the Bees No Kidding Around! I Kid You Not
<b>Chapter 6 Marketing and Products</b>	'Round the Ring and Back Again Holy Cabrito!
Meat Goat Talk 2 (Glossary) Meat Goat Resources	



## Helper's Guide

Youth Learning Characteristics Developing Life Skills Teaching and Learning Experientially	
<b>Chapter 1 Planning and Organizing</b>	Looking Ahead For the Record
<b>Chapter 2 Project Skills</b>	What's On Your Calendar? All Goats Are Not Created Equal Plane It Safe
<b>Chapter 3 Games and Activities</b>	Learning Doesn't Have to Be "Bores-ing!" Skillathon Time! Going On the Road Let Me Tell You All About It!
<b>Chapter 4 Time to Think</b>	Believe It or Not? Better Living with a Couple of Bucks and Lots of Doe On the Path to a Career
<b>Chapter 5 Developing Character</b>	Helping Animals Fare Well Accepting the End
Glossary Meat Goat Meeting Ideas Answer Key: Meat Goat 1, 2 and 3 Evaluating the Impact Meat Goat Resources	



# Level 3 Meeting the Future

Note to Project Helper	Inside Front Cover
What's Inside?	1
Having Fun with the Meat Goat Project	2
Planning Guide	3
Achievement Program	4

## Chapter 1 Health and Disease

As the Worm Turns	5
The War on Germs	8

## Chapter 2 Selection

Behind the Scenes	10
Talk the Talk	12
Who's Your Daddy?	14

## Chapter 3 Feeds and Nutrition

It's a Balancing Act	17
In Search of Greener Pastures	20

## Chapter 4 Husbandry of Animals and Resources

Is That Ethical?	22
This Land is Your Land...	24
Ee-i-Ee-i-Oh!	26

## Chapter 5 Reproduction

Four for Dinner, Please	28
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## Chapter 6 Marketing and Products

Getting Market Savvy	30
Meat, Milk and More	32

Meat Goat Talk 3 (Glossary)	34
Meat Goat Resources	36



# Having Fun with the Meat Goat Project

By now you are probably an expert on meat goats, or you certainly know more than you did when you started this project. Whether you raise one or several project animals, you are in an excellent position to share your experiences with others. *Meating the Future* provides several opportunities for you to develop your leadership skills as you strive to complete the Meat Goat 3 Achievement Program.

Here are some of the things you'll do:

- measure the level of parasite infestation in your herd
- establish your farm's biosecurity
- conduct a judging clinic
- select a herd sire
- judge with oral reasons
- formulate a ration
- measure your pasture's productivity
- consider ethical issues
- examine meat goat products
- investigate land zoning issues
- sponsor a farm field day
- prevent reproductive diseases
- investigate marketing options
- research careers with meat goats



## Meat Goat 3 Project Guidelines

- Set your goals and record project highlights.
- Do a minimum of seven activities in Level 3 of the *Meating the Future* Achievement Program each year and complete the Program within three years.
- Participate in a minimum of three of the learning experiences listed on the Planning Guide each year.
- Practice and develop the life skills of keeping records, learning marketable skills, developing self responsibility, making decisions and more.
- Increase your meat goat knowledge and skills.

## Achievement Program

While you are having fun doing the activities, you'll also be completing Level 3 of the *Meating the Future* Achievement Program. A level is included in each of the goat project activity guides. This program will help you set goals, record your successes, and be recognized for your good work.

## Your Project Helper

On your team supporting you and making learning more fun is your project helper. This person may be a parent, goat breeder, project leader or advisor, a neighbor, or an older friend who knows about goats. The choice is yours. As you do the activities, discuss with your helper what you did and the questions in the "Ruminations" part of each activity. Sometimes your helper will work with you to identify resources, including people, Internet sites, organizations, events, magazines and books necessary to complete an activity. Once you have successfully completed each activity, your helper will date and initial your Achievement Program.

Write the name, phone number and E-mail address of your project helper here:

My Project Helper: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_



Good Luck with Meat Goat 3 —  
**Meating the Future**





# Achievement Program

## Directions

1. Do at least seven of the *Meating the Future* and *Udder Ideas* activities each year.
2. Complete at least 21 of the *Meating the Future* and *Udder Ideas* activities within three years to complete this Achievement Program.
3. Have your project helper date and initial the activities as you complete them and discuss them.

## Meating the Future Activities

Date Completed      Helper's Initials

### Chapter 1 Health and Disease

As the Worm Turns

The War on Germs

### Chapter 2 Selection

Behind the Scenes

Talk the Talk

Who's Your Daddy?

### Chapter 3 Feeds and Nutrition

It's a Balancing Act

In Search of Greener Pastures

### Chapter 4 Husbandry of Animals and Resources

Is That Ethical?

This Land is Your Land...

Ee-i-Ee-i-Oh!

### Chapter 5 Reproduction

Four for Dinner, Please

### Chapter 6 Marketing and Products

Getting Market Savvy

Meat, Milk and More

## Udder Ideas

Select and do any of the *Udder Ideas* activities in *Meating the Future* or make up your own. Record the page and number of each one you complete and ask your helper to initial it.

Page	#	Date Completed	Helper's Initial

Write your own activity here.

Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_

Write your own activity here.


Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_

Write your own activity here.

Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_



<b>Project skill:</b>	Controlling goat parasites
<b>Life skill:</b>	Self responsibility
<b>What youth will do:</b>	Monitor status of parasites on the farm by running a series of fecal egg counts
<b>Success indicator:</b>	Names five internal or external parasites of goats and gives parasite control measures



## As the Worm Turns

**P**arasites are one of the major challenges to your goat's health, so you have to develop a plan to control them. In this activity you will use your science and recording skills as you assess and monitor the level of parasite contamination on your farm. It will also require some patience, because this activity will take you a year to complete!

## Start Capering

Find a vet or science teacher who can commit to helping you with this project for one year. Perform a *quantitative* fecal egg count according to the procedure explained in the resource publication on the project Web site. This exam should be done once a month for a year. During the year, practice recommended parasite control measures. At the end of the year, determine if these parasite control measures have helped decrease the fecal egg count in your animals. Your helper will need to help you with the first few exams, but then you should be able to handle things on your own.

Record fecal egg counts once a month for a year and record all parasite control practices. Make a judgment about the effectiveness of your efforts after one year.

Date	Fecal Egg Count (eggs per gram of feces)	Parasite Control Measures This Month

My parasite control efforts DID \_\_\_\_ or DID NOT \_\_\_\_ make a difference in reducing the fecal egg counts in my herd in one year.

**Disclosures/disclaimers:**

*Remember to consult your veterinarian if you have any questions about your goat's health, including questions about parasites.*

**My Word!**

- Anthelmintic
- Quantitative



*"Uh-oh, I see worm eggs."*



- *Haemonchus contortus* is called “the barber pole worm.” Can you guess why?
- *Parelaphostrongylus tenuis* is a harmless parasite of deer that requires an intermediate host (snails) to complete its life cycle. If other species such as goats ingest snails infected with *P. tenuis* larvae, the larvae can wander throughout the goat’s nervous system, causing paralysis and death.

## Ruminations Discuss the answers to these questions with your helper.

### Chew Your Cud (Share)

- What types of parasite eggs did you see in the fecal exams you did?
- Did you enjoy this activity? Why or why not?

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### Gain Ground (Process)

- Why is it important for you to take responsibility for controlling parasites in your herd?

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### Forage for More (Generalize)

- What other types of research projects might take a long time to carry out?

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### Wattle You Do Next? (Apply)

- How will you use what you learned to improve your parasite control program?
- How can you share what you learned with others?

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#### Resources:

*Veterinary Parasitology Reference Manual* by Dr. William J. Foreyt, 1997, 4th edition, Pullman, WA. Available from SCAVMA Bookstore, PO Box 2188CS, Pullman, WA 99165, 509-335-8359.

## Udder Ideas

*Complete one or more of these activities and share the results with your helper.*

1. Visit a feed store and examine goat supply catalogs to see what dewormers are available.
2. Interview a veterinarian about parasite control measures and dewormers for goats.
3. Develop an educational poster about the life cycle of nematodes, flukes, coccidia, lungworms and/or lice.

## Meat of the Matter

### Goat Parasites

- Nematodes (roundworms including *Haemonchus contortus*, *Ostertagia*, *Nematodirus*, *Bunostomum*, *Cooperia*, *Chabertia*, *Trichostrongylus*, *Strongyloides*, *Trichuris*, *Oesophagostomum*)
- Flukes (flatworms including *Fasciola hepatica*, *Paramphistomum*, *Fascioloides magna*)
- Tapeworms (*Echinococcus*, *Taenia*, *Monezia*)
- Protozoa (*Eimeria*, *Cryptosporidium*, *Toxoplasma*)
- External parasites (ticks, lice, keds, fleas, flies, mites)
- Bots (*Oestrus ovis*)
- Lungworms (*Muellerius*, *Dictyocaulus*)
- Pinworms (*Skrjabinema ovis*)

### Parasite Control Practices

- Feeding in bunks or feeders above the ground where goats can't climb in them
- Raking up and removing manure regularly (daily is best)
- Composting manure
- Spreading composted manure on hayfields, not pastures
- Letting animals graze after grass has dried in mid-morning
- Using *anthelmintics* regularly or when indicated by fecal examinations or your vet
- Worming the entire herd all at once
- Harrowing or spreading manure that accumulates in pastures
- Feeding coccidiostats to all growing animals
- Adding to your herd only healthy animals that have been wormed regularly
- Worming all animals before you bring them onto your farm
- Rotating pastures and resting them for at least three weeks before re-grazing
- Draining or fencing off wet areas if allowed by law
- Using a larvacidal wormer mid-winter to kill larvae over-wintering in dormant stage in animals
- Protecting water sources from manure
- Clipping long pastures so the sun can dry out larvae in moisture on plants near ground

### Performing a Survey Fecal Exam

#### Materials:

- Six to ten fecal pellets
- Microscope (available at your school or vet's)
- Fecal flotation solution\*
- Mixing stick
- Microscope slide
- Microscope slide cover slip
- Fecal separator (borrow from your vet or purchase from veterinary supply catalogs)
- Disinfectant
- Gloves
- Reference manual to identify parasite eggs
- Materials for quantitative exam (see reference on Web site)

#### Performing a Survey Fecal Exam

1. Put on gloves.
2. Place goat feces in fecal separator chamber.
3. Cover feces with flotation solution.
4. Mix well with mixing stick.
5. Insert separator unit.
6. Fill fecal separator chamber to top with flotation solution.
7. Place microscope slide cover slip on top.
8. Wait five minutes.
9. Carefully remove cover slip and place on microscope slide.
10. Examine under microscope at 100x power and identify parasite eggs.
11. Wash hands well.

#### \*Recipe for Flotation Solution

- 8 oz. (one cup) table sugar
  - Just under 6 oz. hot water
- Refrigerate to discourage mold.



# Parasites of Goats

## Ectoparasites

- Lice - Damalinia  
Linognathus
- Ked - Melophagus
- Strike
- Flies - Lucilia  
Calliphora  
Chrysomya
- Mites - Chorioptes
- Ticks - Dermacentor  
Ixodes  
Amblyomma  
Boophilus  
Otobius

## Mesenteries

Taenia hydatigena  
(Cysticercus)

## Spinal Cord

Parelaphostrongylus  
tenuis

## Muscle

Taenia ovis  
(Cysticercus)  
Toxoplasma  
(Pseudocyst)

## Brain

Taenia multiceps  
(Coenurus)

## Nasal Sinus

Oestrus ovis (rare)

## Lungs

Muellerius  
Hydatid cyst

## Liver

Fasciola  
Thysanosoma

## Cecum & Colon

Oesophagostomum  
Chabertia  
Trichuris

## Small Intestine

Cryptosporidium  
Trichostrongylus  
Cooperia  
Nematodirus  
Bunostomum  
Strongyloides  
Moniezia  
Eimeria

## Rumen

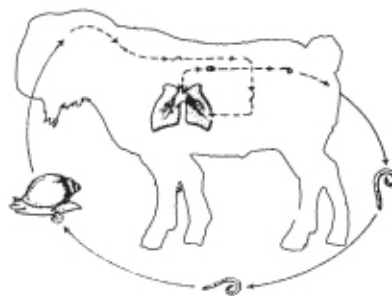
Paramphistomum

## Abomasum

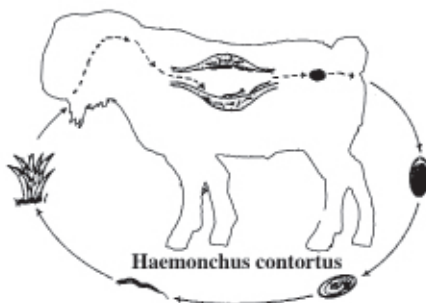
Haemonchus  
Ostertagia  
Trichostrongylus



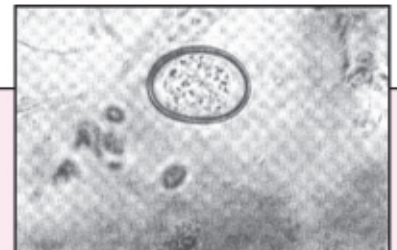
*Life cycle of Parelaphostrongylus tenuis, the meningeal worm.*



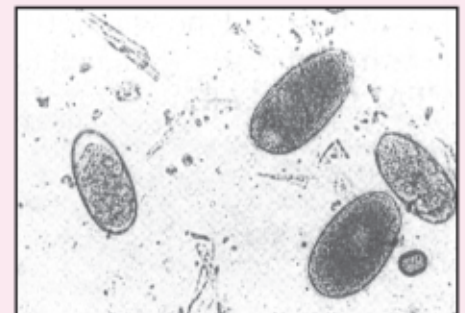
*Life cycle of Muellerius capillaris, the goat lung worm.*



*Life cycle of Haemonchus contortus, an important goat parasite.*



*A coccidia egg at 650x magnification.*



*Nematode eggs at 250x magnification.*



*A louse.*

Graphics from "Veterinary Parasitology Reference Manual" by William J. Foreyt. Used with permission.

**My Word!**

- ## The War on Germs



## Start Capering

## My Biosecurity Program

What are the results of your interviews?

- Do you have a biosecurity program?
- Do you have a closed or open herd?
- What is your policy regarding visitors?
- What is your policy regarding visitors who have traveled internationally?
- What is your vaccination program?
- What is your parasite control program?
- What steps do you take when you need to purchase a new animal and add it to your herd?

- What factors influenced how you designed your facilities?
- What is your protocol for isolating sick animals?
- What is your quarantine protocol?
- How do you control rats, mice, flies, cats, and birds on your farm?
- What type of disinfectant do you use?
- What type of protective clothing do you use on your farm, and how often do you change it?

shiska **BLURB!**

*The Animal and Plant Health Inspection Service employs hundreds of people throughout the country who inspect plants and animals for important diseases that could threaten our country's biosecurity.*



## Ruminations

### Chew Your Cud *(Share)*

- What is your definition of “biosecurity?”
- How did you feel when you interviewed the producers?

### Gain Ground *(Process)*

- Why is biosecurity important?
- What diseases were the producers you interviewed concerned about, and what were they doing to prevent them?

### Forage for More *(Generalize)*

- How do you make decisions regarding factors that affect your health?

### Wattle You Do Next? *(Apply)*

- How will you teach others about the importance of biosecurity?
- How will you actually apply what you learned about biosecurity to your farm situation?

## Udder Ideas

1. Make a scrapbook of current event articles on biosecurity topics.
2. Investigate different types of disinfectants and sanitizers.
3. Talk to the operator of a dog kennel and discuss his/her biosecurity issues and program.
4. Develop “blueprints” for the ultimate biosecure goat facility.

## Meat of the Matter

## Ensuring Biosecurity

By now you have learned that biological security (“biosecurity”) refers to establishing and maintaining the health of living things, with an emphasis on reducing the risk of the introduction and spread of disease. There are several specific goat diseases you should be concerned about. Look for information about them on projects on line—Meat Goats on the 4HCCS Web site.

### Parts of a Good Biosecurity Plan

**Sources of animals.** The most secure plan is to have a closed herd. If animals must be brought in, they should come from a reliable source of healthy animals, not an auction or sale yard. Ask your veterinarian to recommend such a source. Test animals for all possible diseases including Johne’s Disease, CAE, tuberculosis, Brucellosis, and parasites and only purchase those with negative tests; also, examine them for clinical diseases such as orf, ringworm, CL (abscesses) and foot rot. Do not purchase any with these problems.

**Vaccinations.** Work with your vet to develop a good annual vaccination program.

**Isolation and quarantine.** Have a well-designed hospital area to isolate sick animals. When doing chores, go from healthy to sick animals, then wash your hands, change your clothes, and *disinfect* your boots and equipment. Have separate feed and water buckets for this area. Isolate all new animals and watch them for signs of illness for AT LEAST two weeks (four is better) before adding them to the herd.

**Protective clothing.** Use rubber boots that are easy to disinfect. Have several pairs of coveralls—change and wash them often. Use disposable gloves when treating sick animals or when there is a risk of contracting a disease yourself.

**Visitors.** The most secure facilities do not allow visitors. If you allow visitors and they have been on another farm, ask them to wear clean coveralls and disinfected boots. They should disinfect their boots when they leave your farm, too. People who have visited a farm overseas should launder their clothing, disinfect their shoes and delay visiting your farm for at least one week after international travel. If you visit other farms, avoid livestock pens and direct contact with livestock. Wear protective coveralls and rubber boots; disinfect after returning home. Park vehicles on paved areas away from livestock or feeding areas. Keep tires washed clean.

**Vermin control.** Flies, birds, rodents and cats can spread diseases from place-to-place on a farm. Take measures to reduce or eliminate the risk these creatures pose.

**Facilities.** Concrete floors and metal fencing and gates are much easier to disinfect than are dirt and wood. Sunshine, drying and freezing all help kill disease-causing organisms. Good air quality helps prevent pneumonia. Make sure there is enough space for all animals. Crowding stresses animals and they are more likely to become ill. If disinfectant foot baths are used for people or foot baths are used to treat or control foot rot, they must be kept clean and changed often. Keep animals out of feed bunks. Clean pens and haul manure away often. Do not allow over-the-fence contact with animals in other herds.

**Disinfectants.** Many types are available. Ask your vet to help you pick one. Dispose of used disinfectant as directed on the label.

**Personal hygiene.** Wash your hands often, especially after handling animals and before eating. Clean under your fingernails.

### Biosecurity supplies

- Coveralls—cloth or disposable
- Boots—rubber or disposable plastic
- Latex gloves
- Disinfectant
- Long-handled brush
- Trash bags
- Paper towels
- Spray bottle with disinfectant
- Soap
- Bucket