

# Livestock Nutrition for Small Acreages

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## INTRODUCTION

Often, new landowners desire to place livestock on their small acreages. Indeed, this is one reason why you bought your property—so you and other family members can enjoy country living as well as teaching children responsibility. You may have asked yourself the following questions: What kind of animal should I buy? Which will be the most costly to maintain? How much will they eat? Are there things I should be aware of? Will my small acreage provide enough grass to maintain my grazing animal? Where can I go with my questions?

## CLASSIFICATIONS

Farm and specialty animals can be placed in the following broad classifications shown in Table 1: monogastric (or simple stomach like a human); ruminants (4 stomach compartments); pseudo-ruminants (3 stomach compartments); and hindgut fermenters (some digestion of fiber in the cecum). Farm animals with simple stomachs are typically more efficient at converting feed into final product (meat or eggs). You can get a general idea of the amount of feed required to produce a final product in Table 1 Cost. Costs for yearly maintenance can logically be expected to be greater for larger animals with less efficient feed conversion with horses > cattle > llamas/alpaca > sheep/goats > swine > rabbits > chickens. Additional costs for horses would include shoeing, tack, and transportation costs. Housing costs will vary with the size and complexity of animal care. Chickens and swine lack the body temperature regulation of other farm animals and thus housing costs will increase with these species.

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## BASIC NUTRIENTS

The main nutrients needed for livestock are water, protein, energy, minerals, and vitamins. Specific recommendations for the classes of livestock in Table 1 can be found in Cooperative Extension publications

available online. The following generalization can be made; ruminant animals and pseudo-ruminants are more efficient at supplying amino acids and B vitamins than are monogastric animals due to the contribution of microbes within the rumen. To a lesser extent, hindgut fermenters can also supply some of these essential nutrients through microbe action. Younger animals require a more nutrient dense diet, often necessitating the purchase of balanced commercial grain mixes with added minerals and vitamins.

## BE AWARE

Sheep and llamas/alpacas are sensitive to copper and should not be fed trace mineral products designed for cattle. Copper toxicity for these livestock species can occur when the diet exceeds 25 ppm (parts per million). Young, developing horses are especially sensitive to the calcium to phosphorus ratio and can develop developmental orthopedic diseases in response to inverted phosphorus ratios (phosphorus content exceeding calcium). It is recommended that the calcium:phosphorus ratio be around 1.5 to 2.0:1 for horses. Horses are also especially sensitive to rapid changes in diet, erratic feeding schedules, and feeding or watering while still heated up from exercise. These improper feeding management practices can contribute to colic, a life threatening event for horses. For ruminant animals, rapidly changing their diet from a roughage based to a grain based diet without allowing rumen microbes to adjust with “step-up” rations can contribute to acidosis in the rumen and rapid death. Chicken layers need extra calcium in their diet to compensate for the calcium deposited in egg shells but these higher calcium diets should not be fed to growing chickens.

## GRAZING

Will your small acreage provide enough forage to maintain your livestock while also protecting your pastures from erosion and loss of species diversity? Probably not, unless you have an intensively managed and fertilized irrigated pasture. The small pastures on your ranchette should be viewed more as turn out paddocks that can be used for a few minutes per day. See <http://cals.arizona.edu/pubs/animal/az1352.pdf> for more guidelines.

## RESOURCES

For more information, enter the following in your web browser search engine: “equine (or whatever species of choice you desire) nutrition”

Animal	Classification	Diet Characteristics	Daily Feed Intake, % of Body Weight (except chickens) <sup>1</sup>	Typical Harvest Weight, lbs. <sup>2</sup>	Feed Conversion (lbs. feed/ lb. live wt. gain)
Swine	Monogastric	Requires balanced ration with complete nutrients, usually a complete purchased ration	4 % for young pigs 3 % for 200 lb. hogs	235 to 250 lbs. @ 170 to 200 days	3.3:1
Chicken	Monogastric	Requires balanced ration with complete nutrients, usually a complete purchased ration	7 lbs. to harvest for broilers; 1.8 to 2.4 lbs. laying mash/wk. for laying hens ≥ 20 wks	5 lbs. @ 7 wks. for broilers	Broilers: 2:1 Layers: 4.2 to 5.6 lb. feed/doz. eggs
Cattle	Ruminant	Can utilize high forage diets	2 % (greater for lactating and growing cattle)	1050 to 1350 lbs. @ 18 to 20 mos.	6 to 7:1 (higher grain diet)
Sheep/Goats	Ruminant	Can utilize high forage diets; Goats can handle more browse	3 % (greater for young growing animals)	Sheep: 110 to 135 lbs. @ 6 to 7 mos. Goats: 60 to 80 lbs. @ 6 to 11 mos.	6 to 8:1
Llama/Alpaca	Pseudo-ruminant	High forage; can handle browse	1.5 % (more for lactation and rapid growth)		
Rabbit	Hindgut Fermenter	Needs high fiber diet (25% recommended to avoid obesity)	2.6 %	4 to 5 lbs. @ 56 to 70 days	3.3 to 5:1
Horse	Hindgut Fermenter	For idle horses mostly hay diet; add grain for exercise, growth and lactation	2 % average 3 % lactating 1.5 % calorie control		

<sup>1</sup>For example, a 200 lb. hog would require 6 lbs. of feed per day (200 lb. \* .03 = 6.00 lb.)

<sup>2</sup>Beef cattle harvest weights are highly dependent upon sex, frame size, and breed <http://ag.arizona.edu/pubs/animal/az1054.pdf>

“Cooperative Extension”. This will help you enter the gateway to a large base of unbiased, peer reviewed articles written for lay people. Some resources you may want to look at as a start are indicated below.

Rabbit Nutrition, Scientific article

<http://www.asas.org/jas/jas0942.pdf>

Rabbit, North Dakota State University

<http://www.ag.ndsu.edu/pubs/alt-ag/rabbit.htm>

Agricultural Alternatives, Rabbit Production, Penn State

<http://agalternatives.aers.psu.edu/Publications/rabbit.pdf>

Commercial Rabbit Production, Department of Animal Production, Republic of Botswana

<http://www.gov.bw/Global/MOA/Commercial%20Rabbit%20Production.pdf>

Management of Small Flocks of Chickens

<http://www.afn.org/~poultry/flkman2.htm>

Poultry Science Technical Information, North Carolina Cooperative Extension Service

[http://www.ces.ncsu.edu/depts/poulsci/tech\\_info.html](http://www.ces.ncsu.edu/depts/poulsci/tech_info.html)

Small Scale Poultry Flocks Resources, North Carolina Cooperative Extension Service

<http://roberson.ces.ncsu.edu/files/library/78/0206poultryindex.pdf>

Llamas and Alpacas

[http://www.rmla.com/camelid\\_nutrition.htm](http://www.rmla.com/camelid_nutrition.htm)

Equine Nutrition, Texas A & M University

<http://animalscience.tamu.edu/academics/equine/publications/index.htm>

Thinking of Owning a Pleasure Horse?, University of Arizona

<http://cals.arizona.edu/arec/pubs/horses/horsebookletprint.pdf>

Goats, Langston University

<http://www.luresext.edu/goats/index.htm>

Goats, Oklahoma Meat Goat Manual, Oklahoma State University

<http://meatgoat.okstate.edu/>

ATTRA National Sustainable Agriculture Information Serv.; Meat Goats: Sustainable Production

<http://www.attra.org/attra-pub/PDF/meatgoat.pdf>

ATTRA National Sustainable Agriculture Infor. Serv.; Dairy Goats: Sustainable Production

<http://www.attra.org/attra-pub/PDF/dairygoats.pdf>

Sheep, Swine, and Beef Cattle

<http://cals.arizona.edu/gila/animalsciences/publications.html>

<http://www.csuabmeat.com/> (access to Cattlemen's Library online from here)

<http://www.ansi.okstate.edu/>

Sheep Production Handbook, order form

[http://www.sheepusa.org/?page=site/text&nav\\_id=42c985d7b36d445107825b11f21ff35b](http://www.sheepusa.org/?page=site/text&nav_id=42c985d7b36d445107825b11f21ff35b)

Pork Industry Handbook, order form

[http://www.ces.purdue.edu/extmedia/AS/PIH\\_Order\\_Form\\_2008.pdf](http://www.ces.purdue.edu/extmedia/AS/PIH_Order_Form_2008.pdf)

Small Scale Pork Production, SARE publication

<http://www.sare.org/publications/hogs/profpork.pdf>