



EQUINE FACTS

Guidelines for Horsekeeping in Maine

Bulletin #1011

*These guidelines refer to horses, but are also applicable to ponies, donkeys, mules, and other equidae. They are practical and reasonable, and are offered as the basis for constructive discussion and reasonable solutions. They are geared towards the individual horse owner and horse operations that do not need a Maine Nutrient Management Plan (7 Maine Revised Statutes, Annotated 4204). Horsekeepers are encouraged to try to follow these guidelines or seek and follow the recommendations of a qualified professional.**

Feed and Water Requirements



An average saddle horse weighs 1,000 pounds and will eat from 17 to 22 pounds of dry feed per day (with a total ration that is mostly forage as opposed to grain). Total ration is a combination of hay, grain and pasture. Salt should always be available. Provide plenty of fresh, clean water at all times. A horse will drink 10–12 gallons a day depending on temperature, humidity, feed and work. Remember that winter is no exception. Use stock tank heaters to keep water free of ice.

§ These boxes identify Maine laws that apply to the recommended practices.

*See the resource list at the end of this fact sheet.



Horses need supplemental hay when pasture forage is not available, for instance during snow cover. Providing hay also extends the grazing season on small acreage properties. Base the amount of hay on the weight of the bales and nutrient value of the hay, as well as the nutrient needs of your horse. Hay quality varies greatly, and cannot be judged by color alone. Your county Cooperative Extension office or local feed store can analyze your hay to determine nutrient value.

How much hay will you need?

If an average 1,000 pound horse will eat 20 pounds of medium quality hay per day,

$$\begin{aligned} & (\# \text{ days to feed hay} \times 20 \text{ lb hay per day}) \\ & \text{divided by } 45 \text{ lb of weight per bale} \\ & = \# \text{ bales needed} \end{aligned}$$

$$(225 \text{ days} \times 20 \text{ lb}) / 45 \text{ lb} = 100 \text{ bales for the year}$$

Grain (usually oats and corn) is typically added to the diet of working horses. Young and old horses may also need grain.

§ See 7 MRSA §4013: Necessary sustenance.

Health Care

It is crucial to develop a partnership with a veterinarian before an emergency situation arises. Find a veterinarian to consult about your horse's routine and preventive health care.

- 1) **Vaccinations** – Horses should be vaccinated at least once a year, usually in the spring. The

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animal's age, use and overall health determine the vaccination program. Time of year affects the risk of infectious diseases, so be sure to consult the veterinarian for recommendations. At a minimum, protect your horse against tetanus and rabies.

- 2) **Testing for Equine Infectious Anemia (EIA)** – A negative EIA test less than three years old is generally required for show participation.
- 3) **Internal Parasite Control** – Horses need to be de-wormed several times each year. Risk of colic is reduced with timely deworming. How often treatment is required varies with the horse's management.
- 4) **External Parasites** – During grooming, horse keepers should check for signs of external parasites. Treat them if they are found.
- 5) **Foot Care** – Hooves should be cleaned before and after riding. Check them regularly for problems. They also need to be trimmed regularly. Hoof care varies with the use and age of the horse. Contact a qualified farrier for your horse's needs.
- 6) **Dental Care** – Teeth should be checked by a veterinarian at least once a year. Teeth may need to be floated (filed) because of uneven wear while eating.
- 7) **First Aid** – Your first aid kit should have a thermometer, bandage material, ointments and other related items: ask your veterinarian what else it should contain. Contact your veterinarian whenever your horse appears sick, disoriented, or has been injured.
- 8) **Manure Management** – Please remember that the proper manure management helps keep horses healthy.

§ See 7 MRSA §4014: *Necessary medical attention.*

Land and Housing Requirements

Land to maintain a horse is not as significant as the care of the animal and its use. The most important factors for the animal's welfare are exercise space and cleanliness in manure management. For example, less than an acre of land can be adequate if

it is near a park or public riding facility. However, the same amount of land in a high-density urban area with no exercise facilities or manure removal system may not be adequate. Consider the intended use of the horse: show horses are confined to stalls and exercised in a ring; breeding stock is housed in open paddocks.

Pasture & Paddock

The major component of a horse's diet is good forage, such as hay or pasture. A horse that weighs 1,000 pounds will eat about 600 pounds of forage each month on a dry basis. The average amount of pasture needed to feed a mature horse is one to two acres per horse. The amount of pasture your horse needs depends on the quality of pasture and the nutritional requirements of the animal. If your pasture has adequate moisture and is managed well as a crop by soil testing, fertilizing, clipping weeds and managing manure, you may require as little as from 3/4 to 1 1/4 acres per horse.

Your horse will not eat grass that has been trampled or has manure on it. Overgrazing will damage your pasture to the point that the plants may never recover. To prevent overgrazing, subdivide the pasture so that the horse(s) graze any given paddock for no more than seven days. Leave about two inches of grass and allow it to grow to eight inches before it is grazed again. Four or more paddocks or pasture subdivisions are needed to accomplish this. Paddock areas should be large enough for the horse to move around in comfortably and be well drained, so that standing water does not accumulate. A suggested area is 350 square feet per adult horse: this will vary based on your circumstances.

Fencing

Outside exercise or grazing lots should be fenced in a manner that is safe to both animals and people, and located so that horses don't damage neighboring property. The fence must be *visible* to the horse. Fences can be constructed of wood, woven wire, pipe, or PVC, with a height of 48 inches and posts that are 10 feet apart; or electric fencing (wide ribbon wire is best because of visibility). Electric fence is best used as an interior fence and not as a major exterior fence, although a single wire electric fence on the inside of a solid exterior fence will give the horse added respect for the fence. Barbed wire fencing is not recommended for equines!



Housing

Horses need a large exercise area such as a paddock, corral or pasture. They also need shelter from the elements, both hot and cold. This can vary from a three-sided shed to a complete stable with box stalls.¹ Consideration should be given to neighbors and property lines when siting housing for horses. Also, check with your local town code enforcement officer for setback requirements.

Constructed shelters should be clean and well ventilated with no drafts. The preferred flooring for stalls is clay. Other acceptable flooring materials include sand or rubber mats. The flooring should provide a well-drained, solid footing surface, with some give when horses lie down. Wooden floors are slippery when wet and can splinter. Cement and asphalt are also slippery when wet and cause abrasions. Three-sided shelters should face south, away from the prevailing wind, be located on an elevated, well-drained site, and be accessible for feeding animals and handling materials.²

Space Recommendations¹

Open-front shelter:

60–80 square feet per 1,000 lb animal

Stall sizes for mature horse:

	<u>Box stall</u>	<u>Tie stall</u>
Small	10' x 10'	—
Medium	10' x 12'	5' x 9'
Large	12' x 12'	5' x 12'

Minimum ceiling height 8'

§ See 7MRSA §4015: *Equine Shelter*.

Manure Management

Pollution Prevention

Start by making a map of your property. Show the placement of barns, pastures, paddocks, dams, ponds and wetlands. Ask yourself how you can improve the current layout and facilities. Look at how, where and when you collect, store and dispose of manure. Learn and chart how the water runs off your property. Where does it enter and exit? Where are the slopes? Are there problematic wet areas? Where is your well and septic system? Locate your



neighbors on the map as well, and note appropriate setbacks. Then take these steps:

- 1) Divert clean water away from your barnyard to minimize mud, prevent erosion, and reduce polluted runoff.
- 2) Install fencing to keep horses out of lakes, ponds, streams and wetlands. Use additional fencing to subdivide pastures and facilitate grazing rotation and pasture rest, promoting healthy grass.
- 3) Avoid manure build-up in the paddock. Either store manure in a well drained area, or compost it.
- 4) Learn about state manure stacking site guidelines, found in the *Manure Utilization Guidelines*.³
- 5) Test pasture soils. This will save money and reduce pollution by avoiding over-fertilization, as well as maintain healthy grass that will reduce erosion, mud and polluted runoff.

Option: Covering your manure piles can reduce runoff, protecting lakes, ponds and wetlands; reduce fly breeding; and prevent well water contamination. Horsekeepers may want to develop a Manure Management Plan with a certified professional.

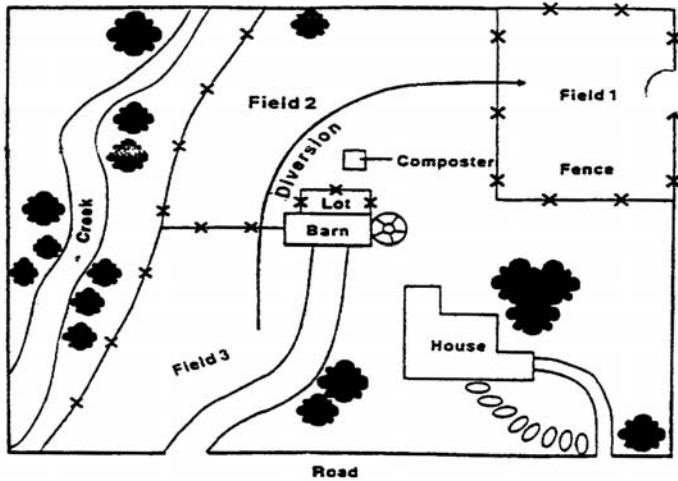
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¹*Horse Handbook: Housing and Equipment*, MWPS-15. Ames, IA: Midwest Plan Service, Iowa State University, 1994.

²*Ibid.*

³*Manure Utilization Guidelines*. Augusta, ME: Maine Department of Agriculture, Food and Rural Resources, November 2001.





Example of a property map showing how to manage horses and their waste. Runoff should not be allowed to discharge directly into a stream or other water body. Placing a diversion above a high-use area may prevent outside runoff from flowing across the barn or manure containing paddock and storage areas. A diversion placed below the high-use area will help direct runoff from the lot away from water or wet areas.⁴

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Proper manure management includes collection, storage, spreading, composting, transportation and/or giving away the manure.⁵ Manure storage design and management consultation is available from University of Maine Cooperative Extension, the Natural Resources Conservation Service, and the Maine Department of Agriculture, Food & Rural Resources. See the resources section for contact information.

§ See 7 MRSA §4204: Nutrient Management Plan; and 17 MRSA §2701-B: Action against improper manure handling.

Manure Handling

Did you know that the average horse (1000 lb) will produce about 50 pounds of manure a day, and eight to ten tons per year? Manure must be handled so that it becomes an asset and resource, and not a nuisance. The majority of manure nuisance complaints are odor related. Fly and rodent populations will also be minimized with proper manure management.

Fly elimination must start in the spring with an aggressive program. Fly traps and fly strips work remarkably well when coupled with a good manure management program. Keep feed in tightly covered and rodent-proof containers to discourage rodents.

- 1) **Collection:** Pick up manure regularly from the horse's stall and heavy use areas unless a proper bedding pack (deep bedding) is used.

Deep bedding – or pack – is reputed to keep stalls warmer in cold weather. In typical bedding, manure and urine-soaked bedding are removed each day, with fresh bedding added as needed. In deep bedding, instead of daily cleaning, a layer of new bedding is added over soiled bedding each day. Over the course of the winter, the bedding becomes progressively deeper. Water and urine are able to filter through the upper layers. The lowest layer of bedding begins to decompose slightly and produce some heat.

In the spring, all the old bedding is stripped from the stalls. It then will need to be stored at least temporarily or spread on hay or crop fields.

A key component of the deep bedding technique is that, like any suitable bedding, the surface must remain dry. The horses' legs and feet should not come in contact with mud or wet bedding. The bedding should provide a dry place for the animals to lie down. Muddy or saturated conditions in the stalls are not an appropriate, healthy way to bed the horse. Horsekeepers should be able to kneel down in the stall without getting clothing wet.

§ See 7 MSRA §4015: Proper shelter, protection from the weather and humanely clean conditions.

- 2) **Storage:** You will need an area about 12 x 12 x 5 feet to hold the manure for one horse for a year. Storage facilities don't have to be elaborate. Locate your storage facility in a low profile place, conveniently to the manure source. A carefully sited field stack will work as well as a constructed facility. A cement pad is advisable to prevent nitrate leaching over time in certain soils. Ground surface slopes should range from one percent to five percent, with two percent to four percent being ideal. Building a grass buffer strip (diversion ditch) will help take care of

⁴Pollution Control for Horse Stables and Backyard Livestock. Washington, D.C.: Terrene Institute Publications Division, 1994.

⁵Manure Utilization Guidelines.



Good Manure Management (GMM) includes placing the manure stacking pile: choose an approved site on a knoll or high spot that does not receive much runoff and has at least 24 inches of fine, textured soil to bedrock. The stacking site should be on a slope no steeper than five percent and meet the following setback distances:⁶

Feature	Setback Distance When Feature Is	
	Upslope	Downslope
Perennial (year round) water bodies	100'	300'
Intermittent (seasonal) water bodies	50'	200'
Private water supplies (not owners)	100'	300'
Public water supplies (wells, lakes, ponds, rivers, springs)	500'	500'
Private water supplies (owners)	100'	200'
Property line	100'	200'
Residences (neighbors)	300'	300'
Diversion	25'	150'
Gully/swale/ravine	25'	150'
One hundred year flood plain	not within	not within

Horsekeepers are encouraged to solicit the assistance of a qualified person when siting a manure stacking site or pad.

potential runoff. Covering the pile will also help reduce nutrient leaching. Be sure that your pile is easily accessible to power equipment that may be needed for loading and unloading. Storage is only a temporary solution. Manure will then need to be spread, composted, transported or given away.

- 3) **Spreading:** Manure can be spread on well-vegetated fields at appropriate times of year, at an application rate of 10 tons per acre, or the latest recommendation from the University of Maine, based on soil tests. Testing pasture soils will save money and reduce pollution by avoiding over-fertilization, and will reduce erosion, mud and polluted runoff by maintaining healthy grass. Use caution when spreading manure on horse pastures since this may increase the parasite load on the pasture.

Manure cannot be spread from December 1st to March 15th. There are additional limitations if you live in certain lake watersheds.

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GMM: When spreading manure on your fields you need to consider how much manure your crop needs, apply only the amount of nutrients that your crop needs, time the manure application to maximize nutrient retention, use the correct application technique, and use the following buffers to protect water quality:⁷

Buffer	Feature
100'	Intermittent and perennial streams and rivers
100'	Lakes, ponds and marine water bodies
100'	Private wells and springs (except farmer's own well)
300'	Public drinking water wells
Avoid	Diversions, drainage ditches, gullies, non-vegetated swales and ravines
Avoid	Bedrock outcrops

⁶Manure Utilization Guidelines.

⁷Ibid.



- 4) **Composting:** Actively managed compost piles can be part of a good manure management program. A manure pile *does not* qualify as a composting procedure. To compost manure, you must pile it properly, monitor the pile, keep it moist, turn it over several times for several months, and allow it to cure for at least one month. Because the carbon content of the shavings used as bedding is high, horse manure needs additional nitrogen and makes a good addition to cow manure for composting purposes. It also combines well with grass clippings and other landscaping by-products. Contact local dairy and cattle farmers and landscapers to see if you can combine efforts.
- 5) **Transportation:** How will you remove the manure from your property? Do you have the necessary equipment, or will you need to hire someone to assist you?
- 6) **Giving away:** Place your manure in empty feedbags, shavings bags or other biodegradable bags, tightly closed. Offer it as fertilizer free for the taking. You may also be able to sell it if it's been composted first. Even if you provide the bag and give it away free, it may cost a lot less than storing it and moving it by bulk process.

Size your manure storage site or pad according to your number of animals and the number of days you intend to hold manure before use or delivery. To estimate the base size of your storage pad, use the following equation:

- Number of animal units (a.u. = the average total weight of your animals divided by 1000 lb, or one horse per a.u.) x number of days storage = cubic feet of manure
- Number of a.u. x cubic feet of bedding per day x number of days = cubic feet of bedding
- Cubic feet of manure + cubic feet of bedding = total volume
- Square feet of area required = total volume divided by desired storage height

Let's look at an example using three horses with a total weight of 3,200 pounds. Let's also assume the manure is removed four times a year, and you want to build a manure pad with sides four feet high.

- 3.2 a.u. x 90 days = 288 cubic feet of manure
- 3.2 a.u. x 2 cubic feet of bedding/day x 90 days = 576 cubic feet of bedding
- 288 cubic feet of manure + 576 cubic feet of bedding = 864 cubic feet total volume of manure
- 864 cubic feet / 4 foot height = 216 square feet required

A space 15 x 15 feet would be adequate for your needs. Other dimensions are also possible, such as 10 x 22 feet, or 12 x 18 feet. Horse keepers are encouraged to solicit the assistance of a qualified person when siting a manure stacking site or pad.

Equine Limited Liability: Maine law states that people engaged in an equine activity are not liable for any property damage or damages arising from the personal injury or death of a participant or spectator resulting from the inherent risks of equine activities as long as they are notified of the inherent risks.

§ See 7 MRSA §4103A: *Liability for equine activities.*

Source: *Guidelines & Best Management Practices for Horsekeeping*, compiled and produced by Lisa Derby Oden, Blue Ribbon Consulting (www.horseconsulting.com), New Ipswich, NH, and the NH Horse Council, Inc. (www.nhhorsecouncil.com). Adapted by Donna Lamb, Extension educator.



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Resources:

University of Maine Cooperative Extension, 5741 Libby Hall, Orono, ME 04426-5741; (207) 581-3188 or in Maine (800) 287-0274; <http://www.umext.maine.edu>

Maine Department of Agriculture, Food and Rural Resources, 28 State House Station, Augusta, ME 04333-0028, (207) 287-3871; <http://www.state.me.us/agriculture/>

Natural Resources Conservation Service, 967 Illinois Avenue, Suite #3, Bangor, ME 04401; (207) 990-9100, Ext. 3; <http://me.nrcs.usda.gov/>

Farm Bureau Horse Industry Council, 4 Gabriel Drive RR 5 Box 1254, Augusta, Maine 04330-9322; (800) 639-2126; <http://www.fb.com/mefb/>

Maine Revised Statutes Annotated, at <http://www.janus.state.me.us/legis/statute/search.asp>; or contact the Maine Department of Agriculture, Division of Animal Health or Manure Management, for copies of statutes of interest.



Additional Reading:

Equine Facts series. Orono, ME: University of Maine Cooperative Extension. Available online at <http://www.umext.maine.edu/publications/dairyli vestockpoultry.htm>:

Guide to First Time Horse Ownership, #1004
Basic Horse Nutrition, #1005
Pasture and Hay for Horses, #1006
Winter Care for Horses, #1007
Stable and Barnyard Safety, #1008

Manure Utilization Guidelines. Augusta, ME: Maine Department of Agriculture, Food and Rural Resources, 2001.

Good Neighbor Guide for Horse-Keeping, Manure Management, a joint publication by the NH Department of Agriculture, NH Department of Environmental Services, the UNH Cooperative Extension, and the US Department of Agriculture Soil (Natural Resources) Conservation Service, 1990.

Manual of Best Management Practices for the Handling of Agricultural Compost, Fertilizer and Manure. Prepared by Agricultural Best Management Practices Task Force and the USDA Natural Resources Conservation Service for the NH Department of Agriculture, Markets & Food, 1998.

Nutrient Management and the Horse: A Practical Guide on Horse Manure Management, Composting, and Pollution Prevention. Torrington, CT: Prepared by Litchfield County Conservation District, 1998.

David C. Seavey and John C. Porter. *Guidelines for Space and Housing of Farm Animals*. New Hampshire: UNH Cooperative Extension, 1999.

University of Maine Cooperative Extension Livestock Team. *Pasture Management Home Study Course*. Orono, ME: University of Maine, 2002. Contact information: garya@umext.maine.edu.

Horse Industry Handbook, A Guide to Equine Care and Management. Lexington, KY: American Youth Horse Council, 1994. Contact information: (606) 259-2742.

H.E.A.P. (Horse Environmental Awareness Program), 5 Ways to Prevent Pollution on Your Farm and Horses—A Common Sense Approach. Wallingford, CT: King's Mark Resource Conservation and Development. Available at <http://www.ct.nrcs.usda.gov/horse>



Reviewed and approved by

Richard Kersbergen, Extension educator, University of Maine Cooperative Extension

James Weber, Ph.D., D.V.M., Department of Animal and Veterinary Sciences, The University of Maine

Robert Causey, Ph.D, D.V.M., Department of Animal and Veterinary Sciences, The University of Maine

Dr. Chip Ridky, DVM, Maine state veterinarian, Division of Veterinary Services, Maine Department of Agriculture, Food and Rural Resources

David Rocque, state soil scientist, Maine Department of Agriculture, Food and Rural Resources

Bill Seekins, Maine Department of Agriculture, Food and Rural Resources

Lesley Lichko, director, Division of Animal Welfare, Maine Department of Agriculture, Food and Rural Resources

Craig Leonard, Maine Department of Agriculture, Food and Rural Resources

Jonathan Chalmers, Maine Department of Agriculture, Food and Rural Resources

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