HORSE PADDOCKS

Managing Your Horse's Environment

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As the national horse population continues to grow, more and more horses are being confined to small areas near cities and suburbs. These areas can be a source of soil erosion and water quality problems unless proper erosion control and other management practices are followed. Confined horses and their environment need care. Horse ownership really means a daily commitment of time for feeding, grooming, health care and management of paddocks, stables, and pastures.

A Planned Program for Small Pastures

Small pasture management is a long term commitment for keeping your horse healthy and for maintaining environmental quality. Planning is important in developing your property to keep a horse and the following should be considered.

- The size and type of pasture will dictate the number of horses you can support.
- Irrigated pasture requires a sufficient water supply.
- A pasture will not supply entire diet needs; supplemental feeding is required.
- Consider your horse's safety when selecting fencing.
- Fence off an area of your pasture for a paddock.

Establishing Your Pasture

Irrigated Pasture

Whether or not to establish irrigated pasture is the next decision. You may wish to contact your local USDA Natural Resources Conservation Service for help in evaluating your property's potential. Irrigated pasture requires an adequate and reliable water supply. Irrigated pasture requires a minimum of five gallons per minute per acre.

If flood irrigation is to be used, the land must be leveled and graded. The slope length and width of the checks or irrigation runs depends on the soil type and head of water. A water supply of ten gallons per minute per acre is needed for flood irrigation.

A sprinkler irrigation system may require less surface grading but is more expensive initially than border irrigation systems. Sprinkler irrigation has the advantage where water supply is expensive or limited to five-to-eight gallons per minute, the soil shallow or sandy, terrain rough or steep. A permanent sprinkler system may require some sort of protective barrier to prevent horses from damaging pipes, valves, sprinklers or themselves.

Once the irrigation and drainage system is complete, a seedbed should be prepared. Being careful not to damage your new irrigation system, rip chisel, or plow the land if not too shallow or rocky and follow with discing, harrowing, and rolling.

Continued on page 3

Irrigated Pasture

Continued from page 2

It is important to break up previously compacted layers and produce a firm, clod and weed free seedbed. Most soils in this area are deficient in phosphorus, sulfur, and nitrogen. Application of 300 to 400 pounds of single superphosphate per acre at the time of seeding will promote growth of legumes. It should be incorporated during the discing or harrowing. Nitrogen fertilizer is usually not recommended at the time of seeding since it stimulates weed growth which may smoother the population of legume seedlings.

The local Natural Resources Conservation Service and Cooperative Extension Service will recommend seed mixture, and seeding rates that apply to your area and needs. Seeds can be planted with a seed drill or by broadcasting, taking care to place the seed no more than 1/4 to 1/2 inch deep. Follow broadcast seeding with ring rolling to cover and press the seed into the ground. Late September to early October seeding is recommended for plants to make good growth before cold weather sets in and before vigorous winter growing weeds smother the desirable seedlings. Fall-seeded pastures may support limited grazing the first season but grazing should be delayed until plants are well established and well rooted. An alternative time for seeding is in the spring, however limited production can be expected the first season.

Apply irrigation water in accordance with a well designed irrigation system and water management plan. Irrigation amounts and frequency will vary depending on weather, soil type, rooting depths, and presence of subsoil impervious layers.

A Natural Resources Conservation Service technician can show you how to determine soil moisture using a soil tube, auger, or shovel. It is important to start spring irrigation early enough before the soil dries out and continue until the rainy season begins.

Standing water should drain in about 24 hours after each irrigation to reduce chances of mosquito and fly problems and invasion of water-loving weeds. Livestock should be removed from pastures during irrigation to avoid trampling, resulting in retarded root growth, poor water penetration and reduction in growth of desirable plants.

Weed control can be best accomplished by mowing one to three times per year, maintaining healthy pasture, proper drainage and avoiding soil compaction. Herbicides can also be effective when used to supplement good management and cultural practices. Recommendations for chemical weed control are available at your local Farm Adviser's office. Picking up manure or using a drag or harrow to break it up and spread it around will avoid coarse, clumpy, unpalatable growth and reduce internal parasites.

Once the pasture is established, a March application of 200 pounds per acre of ammonium phosphate (16-20-0) will promote grass/legume spring growth. Application of 250 pounds per acre of ammonium sulfate (21-0-0) in June and August will enhance grass growth through the grazing season. This fertilizer program would provide 116 pounds of nitrogen and 40 pounds of P_2O_5 per acre. Plant composition should be no more than 50 percent legumes to avoid founder.

Irrigated Pasture

Continued from page 3

Composition can be manipulated by adjusting the nitrogen-to-phosphorus ration: more nitrogen and less P_2O_5 to promote grasses or less nitrogen and more P_2O_5 to promote legumes.

Irrigated pasture should be grazed in a controlled, systematic manner by dividing it into four or more fields. Electric fence is an economical way to accomplish division. Generally, grass should not be grazed until eight inches in height. Grazing should cease when grass is approximately four inches. A four to seven day grazing period with a 25 to 30 day regrowth period after grazing might be a good place to start. Another method might be to graze horses on pasture a few hours each day and confine them to paddocks the rest of the time. Proper pasture management requires that you be aware of the condition of your pasture plants and adjust grazing, irrigation, and fertilization accordingly.

Dryland Pasture

If your pasture is inappropriate for irrigated pasture, you may with to improve it as dryland pasture. Again, Natural Resources Conservation Service or U.C. Cooperative Extension staff can visit your property and provide appropriate seeding recommendations. Some areas may need brush removal and maintenance by hand, mechanical or chemical means. Seedbed preparation and seeding may be accomplished similarly to irrigated pasture.

Grazing should be limited the first year until after the plants have produced seed. Grazing intensity should insure that adequate residues and seed production will be maintained for erosion control and continued forage production. Maintaining a healthy stand of palatable plants will avoid weed encroachment. Some mechanical or herbicide weeding may be required. Various native and introduced plant such as fiddleneck, yellow star thistle, lupine, and nightshade are poisonous. Your county Farm Advisor or Agriculture Commissioner can advise you of poisonous plants in your area. Horses usually avoid poisonous plants unless they are forced to eat them for lack of other feed or are nibbling out of boredom.

However, some horses acquire a taste for certain toxic plants such as yellow star thistle and locoweed and will deliberately consume them. Many ornamental plants such as oleander and lilies are poisonous and should not be planted where horses can reach them. Never feed yard clippings to your horse since poisonous ornamentals may be mixed in or the abrupt feed change and the tendency for lawn clipping to ferment either before or after consumption may cause colic.

If you seed your dryland pasture to a mixture of annual legumes and grasses, application of 300 to 400 pounds of single super phosphate per acre at

Continued on page 5

Dryland Pasture

Continued from page 4

the time of seeding will promote legume growth. Fertilizing every fall before the first rainfall with 200 pounds of ammonium phosphate sulfate will help maintain maximum forage production and lengthen the green-feed period.

Horse Paddock

With small pastures, an area should be fenced off for a paddock so that the pasture can be managed to be aesthetically and environmentally positive. The paddock provides an area to confine the horse to prevent soil compaction and trampling and over grazing of pasture plants when the pasture is wet. It can also be used to prevent the horse from overeating when pastures are lush.

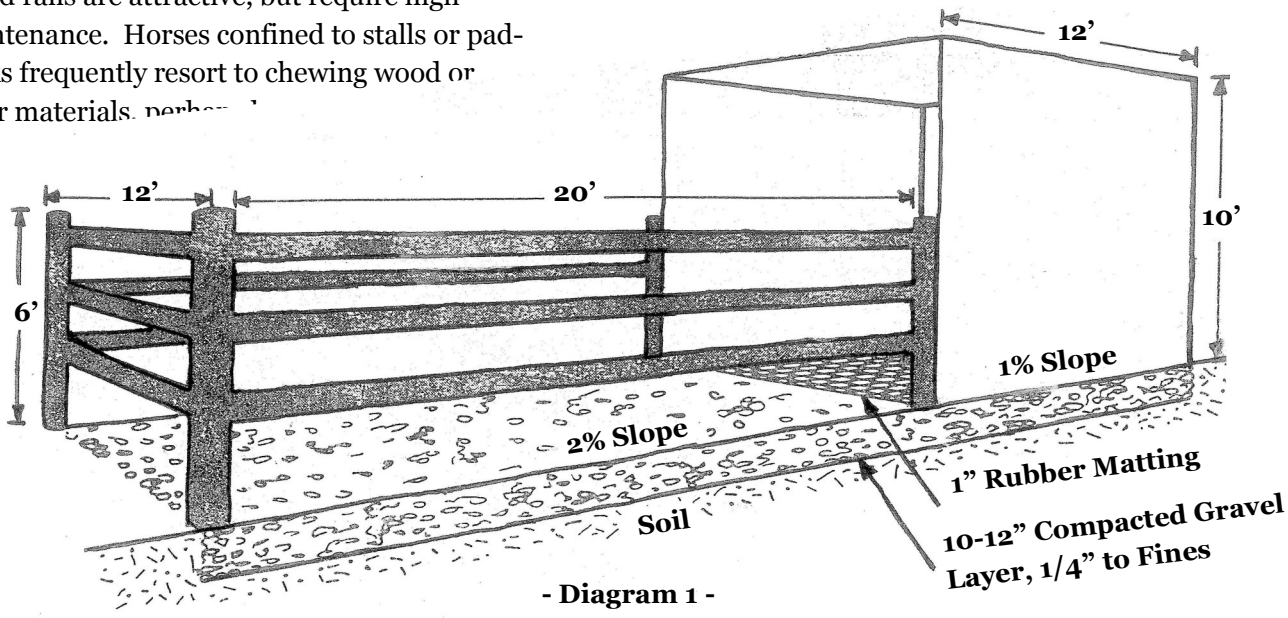
The paddock should be established at least 50 feet away from natural water courses to eliminate impacts on water quality.

Paddock fencing should be strong and free from sharp or jagged protrusions on which a horse may injure himself. Gaps in which a horse could catch his foot or head should also be eliminated. A variety of fencing material is available. Barbed wire should never be used. Wood rails are attractive, but require high maintenance. Horses confined to stalls or paddocks frequently resort to chewing wood or other materials, perhaps

Increasing the amount of activity, prolonging the feeding time, or shortening the feeding interval may lessen the problem. Creosote or nontoxic repellants can also be painted on wood surfaces to discourage wood chewing. Pipe fencing or smooth wire may be the most economical and attractive in the long term.

The stable can be an elaborate structure or a simple shelter as long as it provides adequate protection from prevailing winds and rains. Proper stable construction and maintenance is critical to maintaining the health of your horse. A 12 foot by 12 foot covered area is probably the minimum for one horse. The stable and paddock should be well drained and kept clean to avoid hoof thrush, internal parasites and flies (see diagram 1).

Continued on page 6



- Diagram 1 -

Feeding and Watering

Horses require between 5 and 20 gallons of water per day, so a means of meeting that need must be provided in each paddock and pasture. The individual automatic waterer is probably the most efficient and hygienic. It features a small bowl for water with a float valve or push lever by which the horse activates to refill. A larger tank or trough with a float valve bay be more useful for larger numbers and kinds of livestock.

Feed requirements for a 1000 pound animal for one month is about 1000 pounds of forage. During a 6 to 8 month growing season (March thru October), one acre of established, well managed irrigated pasture should supply enough green-feed for one or two 1000 pound horses. Non-irrigated pastures may require ten acres per horse.

Forage quality of irrigated and dryland pasture changes through the grazing season. Plan on supplemental feeding, particularly when the grass is dormant. Alfalfa hay containing some grass is a common supplemental feed. A horse on hay alone eats about 1.5 to 1.8 percent of its weight daily. Thus, a 1000 pound idle horse or one used for only light or occasional work needs 15 to 18 pounds of quality hay daily or one 100 pound bale every 6 to 7 days, depending on the season and the individual horse. Grains or other concentrates may be added as the situation demands, and to make a balanced ration due to variations in hay quality. Always have fresh water and iodized or trace mineral salt block available. Several publications on horse nutrition are available through U.C. Cooperative Extension and some feed stores.

Horse Care

As other animals, horses are susceptible to various parasites and diseases, some of which can be controlled by conscientious environmental management. Observe your horse's behavior and condition regularly and maintain a schedule of deworming and vaccination. Find a good, local veterinarian to advise you and become familiar with health care publications available from U.C. Cooperative Extension, feed and tack stores and horse-interest magazines.

Horses should have their hooves trimmed and/or shod about every two months, depending on the type of use and individual horse's hoof condition. Become familiar with a good farrier.

Horses can bring great joy into your life, but they require constant care. Consider what needs to be done to protect your animal, your property and the environment. Contact your local Natural Resources Conservation Service and Cooperative Extension Service office for help and advice (contacts on back page)

Maintaining Stormwater Quality

As rainwater flows over driveways, pastures, and sidewalks it picks up debris, such as animal waste and other pollutants. Unlike water in sanitary sewers, anything that enters a storm drain flows directly to natural water bodies like lakes, rivers, and streams without being treated. Contaminants harm fish and wildlife and pollute the water we use for swimming, fishing, and drinking.

Maintaining Stormwater Quality

Continued from page 6

Pasture Management

Never allow animal waste or care products to enter the street ,storm drain , ponds or waterways. Some environmental consequences of animal keeping activities that may contribute to water pollution are:

- Sediment caused by eroding areas such as overgrazed pastures, trails, or bare soil in paddocks, turnouts, corrals and arenas.
- Polluted water draining from manure piles and animal wash areas.
- Excessive animal waste that can wash off pastures during storms.
- Removed or trampled vegetation at streamside areas that can lead to stream bank erosion.
- Removal of vegetation which filters and absorbs water pollutants from runoff.

Control Erosion

Bare ground can cause accelerated erosion which will wash soil from areas such as arenas, paddocks, turnouts, and pastures. Severe erosion can form gullies, destabilize creek banks, and damage roads. To help prevent erosion, keep areas well vegetated and restore bare areas with vegetation. Plants, such as various grasses, can hold soil in place and help water infiltrate into the ground. Maintain vegetative filter-strips and riparian buffers near creeks, ponds or other water features. Keep creek banks vegetated to hold soil in place, trap sediment, and provide valuable wildlife habitat. Maintain a strip of dense grass down slope of bare areas such as paddocks and turnouts to help trap sediment. Manage pastures to prevent heavy grazing. Avoid soil compaction and excessive removal of vegetation by timing the use of pastures and controlling the number of animals. Rotate horses to allow pastures to "rest" from grazing. Use proper construction techniques. Revegetate areas disturbed by construction or grading. During construction install and maintain measures such as straw bales to trap sediment and slow the movement of water or straw mulch to prevent erosion.

Manure Management

Remove manure regularly - daily is best. Cover stored manure with a roof, tarp or other cover and keep away from water bodies or ditches. Direct runoff away from manure storage areas. During heavy rainfall, consider indoor feeding, a practice that keeps manure under a roof and away from runoff. Never hose down animal holding areas! Sweep or shovel manure to prevent wastes from ending up in a stream or storm drain.

Compost soiled bedding and manure, donate composted material to local greenhouses, nurseries and botanical parks or transport manure to topsoil companies or composting centers. See http://compostingcouncil.org for more information.

Horse Grooming

Use less toxic alternatives for grooming. Even biodegradable products can be harmful to water bodies and the environment. Follow instructions on the products and clean up spills. When washing horses, either wash over a grassy area which allows wash water to seep into the ground or wash in an area that is routed to the sanitary sewer. Do not let wash water enter the storm drain or any bodies of water. Conserve water by using a spray nozzle with an automatic shut-off. Turn off the water or kink the hose when not in use.

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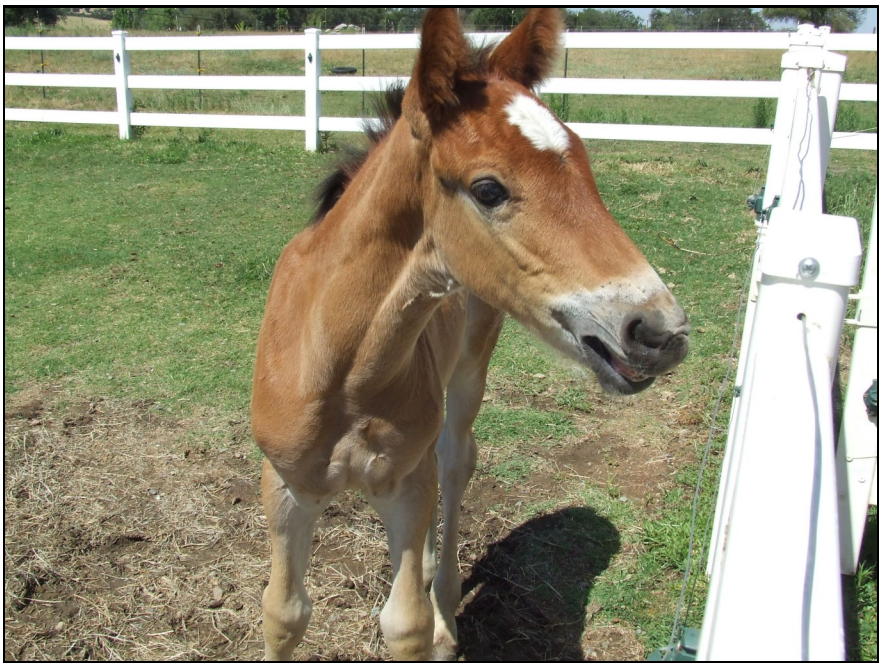
Placer	11661 Blocker Drive, Suite 115 Auburn, CA 95603 (530) 885-3046	11477 E Avenue Auburn, CA 95603 (530) 889-7385
Nevada	113 Presley Way Suite 1 Grass Valley, CA 95945 (530) 272-3417	255 S. Auburn Grass Valley, CA 95945 (530) 273-4563
El Dorado	100 Forni Road, Suite A Placerville, CA 95667 (530) 295-5630	311 Fair Lane Placerville, CA 95667 (530) 626-2468
Sierra	159 Lawrence St. Quincy, CA 95971 (530) 283-7511	208 Fairground Road Quincy, CA 95971 (530) 283-6270
Yuba	1511 Butte House Rd. Suite B Yuba City, CA 95991 (530) 674-1461	142 Garden Hwy. Suite A Yuba City, CA 95991 (530) 822-7515



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