Pasture Management

LANGLEY ENVIRONMENTAL PARTNERS SOCIETY

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Pasture Management

Pasture management is one of those tasks that is often overlooked, but it can have substantial benefits.

Properly managed pastures can reduce:

- feeding costs
- health problems
- erosion and runoff
- weed concerns
- stall cleaning

Pasture Management

Poorly managed pastures can:

create mud and dust, which can

cause respiratory disease, sand

colic and thrush

create the perfect environment

for topsoil erosion and pollution

runoff

Pasture Renovation

Before you undertake any kind of renovation of your pastures you should do a full assessment of the current conditions.

Things to consider include: weed identification, soil conditions, topography, grass species and grass density. It is impossible to know exactly what needs to be done until you know what is already present.

Pasture Renovation

What is the difference between complete and partial pasture renovation?

Maintaining a healthy pasture for your horses can be achieved in one of two ways: partial or complete pasture renovation.

Keeping your pastures healthy will help to keep your horses in good body condition, free of disease and well nourished.

Pasture Renovation

Partial Pasture Renovation

The wet climate and acidic soil conditions in BC causes weeds to flourish and out-compete grasses. Even in the drier areas of BC there are issues with alkaline soils and lack of irrigation. Partial pasture renovation is ideal if your grasses appear to be lacking in density and somewhat overrun by weeds.

Pasture Renovation

Partial pasture renovation can include a combination of management strategies such as:

- Improving pasture drainage to eliminate the ideal growing conditions for weeds
- Implementing a weed management strategy to deal with the species present
- Liming to eliminate acidic conditions
- Aerating the soil to improve soil structure and drainage
- Spreading finished manure compost and harrowing
- Reseeding with a different seed mixture tailored to your growing conditions

Pasture Renovation

Complete Pasture Renovation

Complete renovation should be used only as a last resort due to cost and the fact that you will need to keep your horses off the pastures to allow the grasses to re-establish. However, if less than 25% of your pasture growth is composed of desirable plant species (i.e. pasture grasses) then a complete renovation is something you may want to consider.

Pasture Renovation

The partial pasture renovation strategies apply in this case as well, but you may find that you need to cultivate or rototill the existing grass in order to develop a sufficient seedbed.

Tips:

Matching of plant species to the specific soil and microclimate environment in your pastures

Select high quality seed and use a proven seed mixture

Ensure that grasses are growing at a high density with no bare soil to ensure that weeds do not have a chance to establish

Keep horses off the field until grasses are at a height of at least 15 to 20 cm (6 to 8 in) to maintain grass density and resilience.

Weed and Poisonous Plant Management

Why do I need to manage my weeds?

'WEED' is a nasty four-letter word to many landowners. The threat of weeds is often neglected and eventually they can get out of control.

Weed species such as creeping buttercup, field horsetail and tansy ragwort are highly poisonous to horses, cattle and sheep and can cause serious health concerns. Horses have been known to consume all of these weeds when grass density and height are too low.

Weed and Poisonous Plant Management

Weed Species Common to the Lower Mainland	**Pasture Conditions that Encourage Growth**	**Detrimental Health Effects**
Creeping Buttercup (*Ranunculus Repens*)	Acidic and wet (boggy) conditions	•Contains toxins that cause serious inflammation in the digestive tract •Sap from stems can cause blistering on the skin or mucous membranes and even around the hooves of horses •Mouth blisters, colic, bloody urine or diarrhea, twitching of the eyelids, loud breathing and a weak pulse
Field Horsetail (*Equisetum arvense)*	Poorly drained and acidic soils	•Especially poisonous for young horses •Jaundice, loss of appetite, weakness, staggering gait, excitability and paralysis
Tansy Ragwort (*Senecio jacobeae*)	Damp and acidic conditions with sparse pasture grass	•Contains liver-damaging alkaloids •Weakness, liver failure, high temperature, incoordination and yellow mucous membranes

Weed and Poisonous Plant Management

Early detection and early treatment is the trick for staying on top of weed growth. Weed species vary by region so be sure to correctly identify the weeds to help determine your management strategy.

Eliminate areas of bare soil by seeding with appropriate grass varieties to help to out-compete weeds as bare soil provides an ecological niche for undesirable species to exploit due to the increase in nutrient, water and sunlight.

Check areas such as animal handling locations, watering sites, feeding areas and fence lines, as these are common weed spots.

Weed and Poisonous Plant Management

How do I control my weeds?

Prevention is the best mode of defense against weed infestations. Prioritize your weed management strategies; instead of attacking large infestations aim your efforts at controlling the spread and size.

Weed and Poisonous Plant Management

Physical and mechanical control methods for weeds:

Pulling

Mowing/cutting

Tillage/seeding

Burning

Herbicide use – use only as a last resort

Biological control

Weed and Poisonous Plant Management

Prevention

The key to effectively managing weeds is to prevent them from growing in the first place. Some actions you can take are:

Make sure you have proper grazing management strategies Use only high-quality, certified weed-free seed

Prevent soil disturbance and bare soil where weeds can easily colonize

Use a diverse seed mixture to ensure that there is no vulnerability in grasses

Out-compete weeds by preparing a good seed bed and increasing seeding frequency

Lime regularly if you have acidic soil

Amend the soil with horse manure compost or other composted material

Hand pull or spot spray any weeds in the pasture prior to them going to seed and

Plant native species such as black hawthorn, red-osier dogwood

Soil Analysis

Why should I test my soil?

Soil quality is very important. Plants get all of the nutrients they need for growth from the soil. In order to effectively manage your pastures you need to know certain soil characteristics such as: pH, organic matter, nitrogen, phosphorous, potassium, calcium, magnesium, certain micronutrients, salinity and texture. If you know the ratios of these things then it is much easier to determine application rates of materials such as lime and compost.

Soil Analysis

How do I sample my soil?

Try to get 20 to 30 samples from each different soil type within each field and collect samples from the same crop cover separately (i.e. pasture vs. hay fields).

Do not use rusty tools to collect samples as they can contaminate the sample with iron

Collect samples from at least 3 different depths (0-15 cm, 15-30 cm, and 30-60 cm)

Mix similar samples in a plastic pail to prevent metal contamination and mix thoroughly to break up any clumps

Package, label and submit the samples – 0.5 kg per clean plastic bag (separate samples for each soil type and depth and label accordingly)

Spreading Soil Amendments

Before spreading composted manure onto your pastures it is in your best interest to test the manure for total nitrogen, phosphorus, potassium, ammonium and moisture content which will allow you to accurately match the manure application with the pasture needs.

Spreading Soil Amendments

There are a number of benefits to spreading manure compost when compared to raw manure. Some of the benefits of adding compost to pastures include:

- Increased water infiltration
- Increased water-holding capacity
- Increased moisture content
- Increased aeration and permeability
- Increased soil aggregation and rooting depth
- Decreased soil crusting
- Decreased soil bulk density
- Decreased runoff by erosion
- Most plant nutrients in compost are not immediately soluble in water and are released gradually
- Nitrogen in composted manure is released gradually into the pasture soil

Spreading Soil Amendments

How do I sample my manure for testing?

Before sampling your manure compost make sure that you check with your local soil lab to see if they have special sampling guidelines that you should follow.

- Obtain a representative sample by collecting from 6 to 8 different locations within your manure pile
- Take samples from both the exterior and the interior of the pile
- Thoroughly mix the manure samples to break up any clumps and combine them well
- Collect a minimum of 3 sub-samples from your representative sample and label well
- The samples should be analyzed within 24 hours of collection

Spreading Soil Amendments

How do I calculate manure spreading rates?

An over-application of compost can lead to leaching and surface or groundwater pollution, while too little can reduce pasture growth.

Application rates are based on: (1) nutrients required by the plant for optimum growth, (2) nutrients present in the soil, and (3) nutrients available in the compost.

The application rate will also depend on field topography, climatic region and soil type so these should be taken into account when spreading.

Spreading Soil Amendments

How do I calculate manure spreading rates? cont'd

According to the BC Ministry of Agriculture and Lands, manure or a manure/bedding mixture from 3 to 4 horses can be spread on each acre of productive pasture on your land.

Manure compost should also be spread in several applications throughout the growing season from April to September, but not from October to April.

Most soil and manure testing labs will supply crop requirement information and application rates in easy to read formats.

Spreading Soil Amendments

Average fertilizer content in horse manure (as-is basis)	
N/ton	8.6 kg (19lb)
P205/ton	6.4 kg (14 lb)
K20/ton	16.3 kg (36 lb)

Spreading Soil Amendments

How do I spread compost?

Manure compost is an excellent source of nutrients for your pasture grasses as nutrients are released gradually, allowing them to be used more efficiently by the plants on an on-demand basis. This can reduce the amount of fertilizer needed and prevent leaching.

Manure compost should only be spread during the growing season from April to September. Apply a ¼ inch of compost at a time and no more than 3 to 4 applications per year. Reapplication should only occur when the previous layer has worked its way into the soil.

Since composted manure is lighter and more uniform than raw manure it is easier to spread. However, there may be some clumping so it is important to harrow or cultivate your pasture after spreading. Seeding can take place shortly after spreading as compost provides a great medium for seed germination.

Spreading Soil Amendments

Why should I lime my pastures?

Liming can:

- Help prevent pasture management problems
- Raise the soil pH to a more alkaline level (above pH 7)
- Help grass out-compete weed species by allowing the right conditions for efficient nutrient absorption
- Help balance the soil profile in acidic regions such as the Lower Mainland where the soil is often limiting in magnesium

Seed Mixes and Forage Quality

The key to choosing seed mixes for your horse pasture is diversity. The different species in your grass mix will be able to grow in their respective microclimates within your pastures and will lead to lower vulnerability to disease and pests.

It is beneficial to include a legume (i.e. clover) into your seed mix as these are very high in protein and minerals and help to fix nitrogen in pastures. However, be careful if your horses are pre-disposed to laminitis or Cushing's disease as a high protein content can be detrimental.

The best time to broadcast overseed (spread seed over already established grasses) your pastures is in late September to early October after you have spread your manure compost.

Seed Mixes and Forage Quality

There are many different grass species that will work for horse pastures, but they are highly dependent on the field use and the soil conditions. The following table outlines some grass species and the growing conditions that are well suited to their variety.

Soil type	Grazing only* or grazing and hay	Exercise area*
Well-drained	•Tall fescue •Orchardgrass •Perennial ryegrass	•Bentgrass •Fine fescue •Tall fescue
Somewhat poorly drained	Tall fescue Perennial ryegrass	Fine fescue Tall fescue
Pasture grasses should always be “endophyte-free” Source: Managing Small-acreage Horse Farms: For Green Pastures, Clean Water, and Healthy Horses (2003) Oregon State University Extension Service		

Seed Mixes and Forage Quality

Tall fescue can tolerate acidic soil with low fertility and can withstand damage from horse hooves, while perennial ryegrass establishes quickly and is highly palatable. If using a mixture of these two species then 2/3 should be tall fescue and only 1/3 perennial ryegrass. In the interior perennial ryegrass can act like an annual, therefore, grass options for this region include bluegrasses, creeping red fescue, orchardgrasses, wheatgrasses and alfalfa.

Seed Mixes and Forage Quality

What forage species should I avoid?

There are a few grass species that horse owners should avoid. These include endophyte-infected tall fescue, alsike clover and Kentucky bluegrass. Endophyte-infected tall fescue contains a fungus that lives inside the plant and produces mycotoxins.

Alsike clover is associated with the occurrence of photosensitization and/or liver damage. Some horses are more sensitive than others and the amount needed to cause harm is unknown. The symptoms of toxicity include a sunburned appearance in light-skinned areas of the horse (i.e. face, muzzle and legs), disrupted liver function and jaundice.

Grazing Management

Appropriate grazing management strategies can substantially increase pasture productivity and decrease pasture management costs.

Pasture grass should reach a height of 15 to 20 cm (6 to 8 in) before allowing animals to graze and remove them when they have grazed down to 8 to 10 cm (3 to 4 in).

This will ensure that the grasses have enough food reserves to permit rapid re-growth. Re-growth can take up to 2 to 6 weeks, depending on the time of year

Wet pastures can also lead to health problems such as foot rot and parasite infestation.

Grazing Management

How many horses can my pasture support?

The general rule of thumb for pasture carrying capacity is approximately 1 horse per acre. The total land available for grazing on your property can be calculated by totaling what is left after excluding land for buildings, barns, trees, driveways, landscaping and watercourses/riparian areas.

Soil and climate characteristics will also play a role in available pasture as the number of horses should be reduced or eliminated in times of drought or heavy rainfall. Finally, the physiological state of your horse(s) will determine how much they graze as lactating mares with foals or draft horses will require more forage than mature geldings.

Grazing Management

How should I graze my pastures?

Rotational or limited grazing can maximize pasture grass when it is in short supply. Rotational grazing involves breaking larger pastures up into smaller sections and only grazing one section at a time to allow the other areas to regenerate. This encourages even grazing of pastures as well as many other benefits such as:

Increased amount and quality of forage

Increased growth of desired grass species and reduced weeds

Better parasite control

Better manure distribution and nutrient recycling

More frequent horse-human contact

Grazing Management

How should I graze my pastures? Con't

Rotational grazing involves dividing a large pasture in two and grazing each of these separately. It is best to have 4 pastures that provide enough grazing for 7 to 10 days as this gives each pasture a rest for 3 to 5 weeks. It is important to remember that you will need to monitor pasture growth at different times of the year and rotate accordingly.

Limited grazing involves turning your animals out for limited periods of time. More supplemental feeding will be required and grass height will need to be monitored.

Grazing muzzles can also be used in order to allow your horses to have access to pastures without overgrazing them.

Grazing Management

Advantages of rotational grazing:

Increases amount and quality of forage obtained by grazing

Can support more animals on a small parcel of land

Reduces or eliminates spot or selective grazing

Minimizes rejection areas where horses will not graze

Promotes growth of desired grass species and reduces weeds

Can help control parasites

Provides better manure distribution and nutrient recycling

Allows for frequent horse-human contact

Grazing Management

What is a “sacrifice area”?

A small enclosure such as a paddock, corral, pen or turnout area for your horses to go when pastures are too wet or you want to limit grazing

Protect from overuse of pastures, over-consumption of lush grass in the spring and early summer, and act as a central watering and a feeding location for rotational grazing systems

Can also be useful when you need to care for sick or injured animals.

Grazing Management

Sacrifice area cont'd

Keep your animals off wet pastures as pasture grasses can be killed and mud can be created through trampling and churning of the soil. Large animals can compact the soil, which kills plant roots and reduces drainage.

Sacrifice area should be on high, dry ground with good footing material such as dry hog fuel, crushed rock or sand and be approximately 100 m2 (1000 ft2) for one horse.

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