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Section 6

GRAZING

What are the benefits of grazing sheep? 65
What are the principles of pasture management? 65
What are the types of grazing management systems? 67
What is stockpiling? 68
Can sheep help with noxious weed control? 69
What is the relationship between sheep and leafy spurge? 69
Can grazing sheep help with brush control? 70
Are sheep a good fit with forestry cut blocks? 70
Can sheep graze in riparian areas? 71
What are some of the challenges of grazing sheep? 72
How can I use manure to my advantage? 72
What should I know about sheep grazing behaviour? 73
References 73
Additional resources 74

What are the benefits of grazing sheep?

- Grazing can help to reduce atmospheric levels of carbon dioxide and may reduce greenhouse gas accumulation as there is low fossil fuel expenditure per pound of livestock weight gain.
- Sheep foraging habits differ from those of other grazing livestock and help to create and maintain biological diversity.
- In specific areas, grazing can help increase conifer growth and manage vegetation to decrease soil erosion.
- Grazing sheep can increase pasture carrying capacity and overall production.
- Sheep can graze where terrain is rough and near bodies of water where some residual herbicides cannot be used.
- Sheep offer a unique opportunity in the areas of multi-species grazing and noxious weed control as an alternative to the common use of chemicals.
- Sheep manure is high in nutrients and is used as a natural fertilizer.
- Grazing increases light intensity to lower, younger tissue.
- It increases stomatal resistance promoting water conservation.
- Livestock provide an economic return from most rangeland and pastures.
- Grazing provides a relatively inexpensive and energy-efficient feed source.

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What are the principles of pasture management?

- When selecting a pasture, plant requirements need to be considered, including: growth requirements; seasonality and fluctuations in production; and nutrient quality.
- Requirements of the sheep also need to be considered including: expected performance; nutrient intake levels; forage quality; and forage palatability.
- Ensure sheep have access to fresh clean water and minerals.
- Sheep need from 7.5 to 10 litres of water per day.
- Sheep may walk from three to five kilometres for water (depending on topography). The distance they have to travel has a significant influence on production. The greater the distance to water, the more energy and time is needed to satisfy the sheep's requirements.
- Sheep need access to some form of shelter (e.g. trees, sheds).
- Livestock seek shade and cool locations during hot summer periods, which may result in excessive grazing under trees and in riparian areas.
- Livestock usually overuse dry southern exposures early in spring and then switch to riparian and shaded areas during hotter times of the year. North-facing slopes usually remain underused.
- Stocking rate – the number of animals per unit of land – also needs to be considered.
- Want help to calculate your stocking rate? Here are some useful links:
  - http://www.omafra.gov.on.ca/english/crops/pub19/4stockr8.htm#csr
  - http://www.gov.mb.ca/agriculture/crops/forages/bjb00s17.html

- http://www.mbforagecouncil.mb.ca/CustomBlox/Files/Live/Blox/652/8.2A_animal_unit_months.pdf
- http://www.mla.com.au/TopicHierarchy/InformationCentre/FeedAndPastures/Pasture+and+Grazing+management/Stocking+rate+calculator.htm

- The goal is to:
  - Balance livestock demand with forage availability.
  - Promote rapid pasture re-growth during the grazing season.
  - Promote long-term pasture persistence.
- There are seven rules for pasture management:

1. Graze at the correct stage of growth:
   - The grass must be long enough to have built its root reserves, but short enough not to have gone to seed.
   - When sheep enter the pasture, the grass should still have some leaf to assist the root reserves in boosting growth.
2. Vary grazing interval:
   - Spring growth is fast and vigorous so sheep should be quickly rotated, just 'topping' the pasture at this time.
   - During the summer months, grass growth and re-growth slows and so too should the rotation of the sheep.
   - In the late summer, the grass begins to grow faster.
   - Often paddocks can be saved for fall pasture.
   - It is important to pay attention to the climate. For instance, if it is very dry then paddocks need to be rested longer.
   - In general, the more severe the climate the larger the rewards from controlled grazing, but also the greater the risk from doing it wrong.
   - Each grass species responds differently to grazing.
   - Pasture height and rest periods need to be adjusted. For instance, if there is not enough alfalfa in the pasture, keeping the grasses shorter will encourage the alfalfa.
3. Aim for good utilization:
   - The goal is to have the sheep graze as evenly as possible, with no ungrazed clumps or overgrazed areas.
   - If you have difficulty achieving this, consider altering the amount of pasture the sheep are exposed to.
4. Graze quickly:
   - The best controlled grazing systems involve having the flock in a different paddock, or different section of a paddock each day.
   - Some producers may use portable electric fencing to move the flock through the pasture gradually.
5. Do not over-graze, particularly just prior to winter:

- Plants that have been eaten down almost completely will have little opportunity to manufacture sufficient food for transfer into the roots as a reserve.
- Nutrient reserves are important for early growth in the spring as well as during a dry period.

6. Recognize surpluses early and conserve:
   - If the grass is going to seed before you can get the sheep into that pasture consider cutting it for hay or silage.
7. Harvest before fibre content gets too high:
   - Try to feed hay that is the same quality as the feed they consume on pasture.
   - See Pasture and Forage Management subsection for more information. http://www.cansheep.ca/User/Docs/PDF/T2-6_Pasture_and_forage_management.pdf.

What are the types of grazing management systems?

- Several different grazing management systems can be employed to ensure sufficient pasture in a stage suitable to graze at all times throughout the grazing season.
- **Continuous grazing** means putting animals out on a pasture and leaving them there for the majority of the season.
- The number of animals the pasture can support is determined by the forage yield during the period of poorest pasture productivity.
- In most cases, stocking rate needs to be very low or the sheep will lose weight during the summer.
- Individual animals can do well under this type of grazing management if stocking rates are low enough.
- Drawbacks of continuous grazing include:
  - Meat or milk product per hectare is very low.
  - Spring-produced forage is wasted.
  - Animals selective graze and can cause the pasture to become less productive over time.
- **Controlled grazing** is when sheep stay in an area for a long time, but the size of the area is adjusted by moving fences.
- The grazing area can be increased when forage growth is slow or it can be decreased when forage growth is fast.
- Forage growth is measured by taking the height of the pasture.
- Controlled grazing requires the manager to check pasture growth daily and have additional land for pasture.
- Advantages of controlled grazing include:
  - More produced forage is used.
  - Higher number of animals can be supported.
  - More meat/milk is produced per unit of land.
  - Pasture recovers quickly after being grazed.
  - Pasture remains productive for a longer period of time.

- **Rotational grazing** involves dividing a pasture into several small paddocks using fencing.
- Livestock graze paddocks in sequence, moving to a new paddock when forage is ready to be grazed.
- Generally, livestock are put into a paddock when the forage is 25 to 30 cm tall and removed when the pasture has been grazed down to 8 cm and paddocks are rested.
- Using a relatively high stocking rate forces the sheep to graze the forage more evenly.
- Rotational grazing does not necessarily mean increased daily live weight gains, but does allow for heavier stocking rates, which increases gains per hectare.
- **Strip grazing** is when animals are given just enough pasture to supply half to one day's requirements.
- Fences are moved once or twice daily to provide fresh forage.
- This is the most labour-intensive method of grazing.
- Strip grazing also results in the highest quality of feed and the least waste.
- **Forward grazing** is where the pasture is grazed by two groups of animals.
- The first group to enter the pasture is those with higher nutritional needs (e.g. ewes with lambs) and grazes the top of the plants.
- The second group, with lower nutrient requirements (e.g. dry ewes), grazes what is left by the first group.
- This allows for higher weaning weights when forage is limited or where competition between young stock and dams exist.
- **Mob grazing** is a form of rotational grazing where large numbers of sheep graze the pasture until forage is grazed down evenly and closely.
- This is normally used to clean up pastures with coarse, mature forage.
- **Mixed grazing** is when different types of livestock graze different plants.
- Two or more types of animals graze the paddock at the same time, or follow one another through the pasture.
- Do not graze sheep with horses.
- Sheep, goats and cattle do not have the same grazing habits – this can be very helpful in pasture management.
- Sheep are more selective than cattle and tend to prefer grazing on forbs (broadleaved plants).
- Cattle and sheep will complement each other if grazed on pasture with a high proportion of forbs and browse.
- Multi-species grazing can benefit the producer with better economic gains (different markets), predator protection, and improved range health.

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What is stockpiling?

- Stockpiling is also known as fall-saved pasture or deferred grazing.
- It is the practice of saving certain hay or pasture grown during the spring and summer for grazing in the fall and winter.
- Forage may be stockpiled following an early hay/silage harvest or grazing.

- It can extend the grazing season into the late fall by several weeks.
- It is used primarily to reduce harvesting and feed costs, and manure removal from feeding areas is not required.
- When developing a successful stockpiled forage system it is important to consider:
  - Forage species selection.
  - Accumulation or rest period between grazing or cutting.
  - Soil nutrient management.
- Forage used for stockpiling must be able to re-grow rapidly and maintain quality after fall frosts.
- If grazing occurs after snowfall, forage mass needs to be higher as grazing efficiency is reduced and grazing losses increase.
- Species that are used must also be erect to make it easier for the sheep to access the feed under the snow.

Stockpiling is also known as fall-saved pasture or deferred grazing.

Can sheep help with noxious weed control?

- Small ruminants can control and utilize plants other animals avoid or find toxic.
- Sheep appear unaffected by leafy spurge, spotted knapweed, kudzu, tall larkspur and tansy ragwort.
- Sheep grazing has been used as an effective method of weed and vegetation control.
- Grazing sheep provides an alternative to chemical use and can be used in areas where herbicides cannot be applied.
- Grazing will not eliminate weeds, but can be implemented as part of a larger, integrated weed control strategy.
- There are some weeds that are harmful to sheep such as kalmia angustifolia, commonly known as lambkill or sheep laurel.
- The majority of research done in Canada has been on grazing sheep and leafy spurge.

Sheep grazing has been used as an effective method of weed and vegetation control.

What is the relationship between sheep and leafy spurge?

- Leafy spurge (*Euphorbia esula*), native to Europe and Asia, is an extremely competitive weed and capable of completely displacing desirable plants.
- It poses a serious threat to production, reduces grazing capacity, devastates wildlife habitat by compromising diversity, invades a variety of land types and threatens sensitive species.
- Leafy spurge emerges early in the spring, ahead of other vegetation. Seed production is extremely prolific and the extensive root system provides strong competition for surrounding vegetation
- The deep tap root system can exceed 20 feet and stores reserves for the plant.
- A spreading lateral root system enables the weed to reproduce rapidly and spread.

- The milky white latex secreted by leafy spurge is a skin irritant that can cause dermatitis in humans and grazing animals.
- Indigestion of this latex causes scours and weakness that may be fatal.
- Sheep and goats are not affected by the toxin, and can be grazed on leafy spurge as a control method.
- Leafy spurge has been found to provide good forage for lambs and lactating ewes.
- The feed value is comparable to the feed value of alfalfa.
- Crude protein value is greater than 27% in the early season and declines to 20% after maturity.
- Sheep may start consuming grass in the pasture that was intended to compete with the leafy spurge.
- Sheep may damage trees and shrubs if used for continuous grazing.
- Leafy spurge seeds can be spread by sheep and can increase the size of infestation.
- Sheep should begin grazing leafy spurge when it reaches a height of three to four inches.
- Grazing alone will not eliminate leafy spurge, but can be integrated into a larger control program.

Can grazing sheep help with brush control?

- Use of sheep for brush control benefits the environment by limiting or eliminating the use of herbicides, which also reduces cost. As well, brush encroachment can disrupt wildlife habitat. Sheep grazing projects can clear and control brush overgrowth.
- Sheep grazing promotes grass growth and will stop the spread of brush. It may take a long time to clear brush, but it can be done with a very high stocking rate.

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Are sheep a good fit with forestry cut blocks?

- Sheep grazing can help increase conifer growth and aids in vegetation control.
- Grazing can assist regeneration of ponderosa pine, douglas fir, radiate pine, sugar pine, spruce and western hemlock forests.
- Proper management of the sheep is critical to achieving even vegetation removal over the cut block.
- It is recommended that sheep are kept together as a cohesive unit and that they are only moved once over any given portion of the block to avoid trampling damage to seedlings.
- Grazing should leave 5 to 15% of the target vegetation cover so that sheep do not damage seedlings .
- To learn more about requirements for sheep on cut blocks, see the Forest Practices Code: http://www.for.gov.bc.ca/TASB/LEGSREGS/FPC/

Can sheep graze in riparian areas?

- Grazing riparian areas poses serious challenges including contamination or erosion caused by the drinking animals, and heightened public awareness of the impact of livestock on water quality.
- As they go to drink, sheep will trample the banks of the watercourse, which can cause a loss of vegetative cover and lead to increased stream bank erosion directly into the watercourse.
- Sheep can also cause soil compaction, which reduces water infiltration rates and increases run-off.
- Manure entering the watercourse is a source of bacteria and other disease-causing microorganisms.
- Moving salt and minerals away from the watercourse is one way to keep the sheep away.
- Another solution is to ensure shade trees near the watercourse are removed.
- Additionally, rocks and shrubbery could be placed along the banks to help deter livestock access.
- Fencing, however, is the most effective tool to ensuring sheep do not have access to watercourses.
- Producers are encouraged to refer to their provincial legislation and programs for information related to livestock access watercourses such as:
    - Environmental Farm Plans (National)
      http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1181579114202&lang=eng
    - Fisheries Act (National), which protects fish and fish habitat. Penalties can be levied due to the destruction of fish habitat.
      http://laws.justice.gc.ca
    - Nutrient Management Act (Ontario)
      http://www.omafra.gov.on.ca/english/agops/index.html
    - Livestock Manure Management Initiative (Manitoba)
      http://www.manure.mb.ca/legislation.php
    - The Regulation of Intensive Livestock Operations (Saskatchewan)
      http://www.agriculture.gov.sk.ca/Regulation_ILOs_SK
    - Beneficial Management Practices: Environmental Manual for Alberta Farmsteads
      http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex11157
    - BC Agriculture Research and Development Corporation
      http://www.ardcorp.ca/index.php?page_id=35
    - Livestock Operations Act (New Brunswick)
      http://www.gnb.ca/0062/regs/99-32.htm
    - Manure Management Guidelines (Nova Scotia)
      http://www.gov.ns.ca/agri/rs/envman/manureguide_2006lowres.pdf
    - Nutrient Management Planning (Prince Edward Island)
      http://www.gov.pe.ca/af/agweb/index.php3?number=72032&lang=E

Producers are encouraged to refer to their provincial legislation and programs for information related to livestock access watercourses.

What are some of the challenges of grazing sheep?

- **Bloat** occurs in ruminants when gas produced during fermentation becomes trapped inside the rumen rather than being expelled through eructation or belching.
- The resulting rumen distension can exert pressure on the animal's respiratory and circulatory systems to the point of death.
- A hungry animal may overeat when given access to fresh pasture and develop bloat.
- Bloat can be reduced through the following pasture management methods:
  - Use pastures so that no more than 50% of the forage mixture is alfalfa or clover.
  - Consider planting non-bloating legumes.
  - Fill up animals on dry roughage or grass pastures before turning them out onto legume pastures.
  - Turn sheep onto alfalfa that has reached the bloom stage or later.
- **Internal parasites** are one of the biggest challenges of grazing sheep.
- The parasite load in sheep is determined by a biological interaction between the pasture and forages, animal factors (including guardian animals), the life cycle of the parasite as well as weather and seasonal affects.
- Internal parasites can cause reduced production, increased susceptibility to disease and even death of sheep.
- Good management practices can be used to control internal parasites as can the assistance of a veterinarian.
- To develop an effective control strategy requires knowledge of all these factors, and sometimes the expertise and assistance of a veterinarian.
- See Parasites subsection for information on internal and external parasites as well as dewormers, etc.
  http://www.cansheep.ca/User/Docs/PDF/T2-4_Parasites.pdf
- **Predation** is another challenge related to grazing.
- Most successful predator control programs use an integrated approach – combining good husbandry with effective control methods.
- For managing predation, a variety of methods must be available; one method will not be effective for every producer.
- Prevention cannot be stressed enough, because once predators kill, they are more likely to return and kill again.
- Costs for predator control must be considered (e.g. fencing, guardian animals)
- See Predation section (7) for information on control measures, etc.

How can I use manure to my advantage?

- Utilizing manure for fertilizer can be a money saver.
- Sheep manure can have varying amounts of nitrogen, phosphorus, potassium, sulfur and micronutrients.

- Manure is considered a viable source of organic matter that improves soil stability, decreases soil density and increases water retention.
- Producers should test the nutrient content of soil and manure to determine the amount of manure required based on crop nutrient requirements.
- Well-composted manure is available at most garden stores and makes a good fertilizer.
- Possible disadvantages include: spread of weed seeds and percentage of salt.

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What should I know about sheep grazing behaviour?

- Sheep have narrower mouths and more flexible lips than cattle; therefore, they can be more selective in their grazing by taking individual bites.
- Their forage selection is a function of past experience.
- Livestock select food that is pleasing in texture; they choose familiar foods and green material is preferred over dry material.
- Sheep are reluctant to graze areas that have natural predator cover.
- Sheep have a strong flocking instinct and maintain social spacing and orientation in pens as well as in pasture.
- Isolation of individual sheep usually brings about signs of anxiety and may cause the sheep to try to escape.

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Additional resources

Pasture and Forage Management

Information on pasture management, forage quality, forage types and forage testing.
http://www.cansheep.ca/User/Docs/PDF/T2-6_Pasture_and_forage_management.pdf