

Multispecies Livestock Grazing

Grazing Management Guide

Introduction

Multispecies livestock grazing harnesses the power of biological diversity to enhance pasture productivity and soil health. With pastures that have been developed to include increased plant diversity (a multitude of forage species and structural diversity), multispecies grazing strategies can be advantageous. As vegetation of pastures becomes more diverse, multispecies grazing tends to improve composition and utilization. Research shows that grazing multiple livestock species on the same pasture can increase carrying capacity as well as livestock productivity compared to grazing a single species alone. Multispecies grazing can also benefit operational successes by providing more diverse marketing options.

Vegetative diversity

Pastures with high vegetative diversity, when managed well, support the soil ecosystem and environment better than sites with low vegetative diversity. High vegetative diversity provides energy and nutrient exchange through the season due to differing growth periods. Photosynthesis provides energy for plant and root growth and feeds soil microbes such as bacteria and fungi, which in turn helps nutrient transfer and exchange to plants. The diversity of plants also provides a soil environment comprised of different root structures. These diverse root systems can acquire water, nutrients, and energy to supply microbes over a large soil area or volume. Subsequently diverse pastures can in general maintain a stable composition under higher foraging pressure when more than one herbivore is used to stock pastures.

Weed and brush management

Pastures that have infestations of weeds or pervasive brush species can be grazed with livestock species that graze or browse the plants present, potentially reducing the ability of any one plant species to dominate the landscape. Understanding the growth habits of weeds and desirable plant species, along with which animals graze them and when, allows for targeted grazing to reduce weeds while giving desirable plants enough rest to recover. Livestock preferences for different forage and browse is a dynamic process and relative to what is available, the stage of plant development, weather, learned behaviour and habits, and management. One livestock species may eat what another will reject. Using the correct livestock and timing allows managers to potentially suppress and reduce a weed problem. Understanding plant response and grazing timing enables strategic management that enhances pasture health and biodiversity. These principles also support aligning livestock species with vegetation complexes presented in differing stages of a silvopasture or riparian pasture development, allowing animals to suppress competition around crop trees and shrubs minimizing damage.

Livestock species and grazing preferences

Cattle are often described as *grazers*, sheep as *intermediate feeders*, and goats as *browsers*. A general guideline for their intake is: **cattle** (horses are similar) consume 70% grass, 15% forbs, and 15% browse; **sheep** consume 50% grass, 30% forbs, and 20% browse; and **goats** consume 10% grass, 30% forbs, and 60% browse. The graphics below outline the typical differences amongst livestock species. That is not to say there are no variations across flocks or herds.

The following factors can play a role in influencing livestock preferences in a given situation or area:

- Timing or season
- Stand diversity or plant species options
- Time or space to be selective for grazing location or plant preferences
- Livestock growth stage
- Lactation in breeding animals
- Breed
- Learned behaviour (trained or mother and herd influenced).

Observing and/or monitoring where, what and when livestock choose to graze or browse will provide insight regarding future rotational adjustments. The decisions require an integration of specific foraging behaviour, plant growth habits, and pasture condition, which is site-specific and complex. Herein lies some of the “art” of grazing management.

Domestic Grazers - Diets of Grass, Forb, and Browse

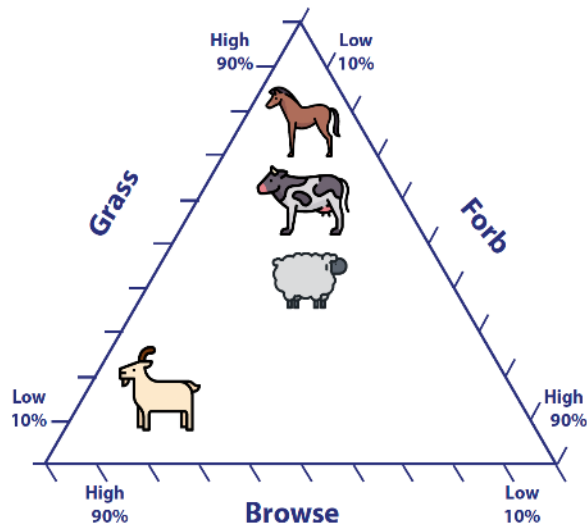


Figure 1. Comparison of diet selection among grazing animals. Source: Launchbaugh, 2016.

Preferred Diets

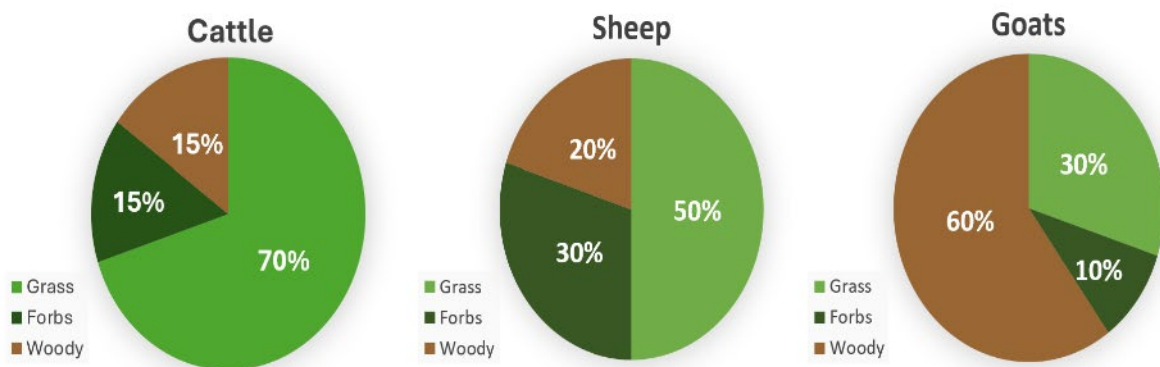
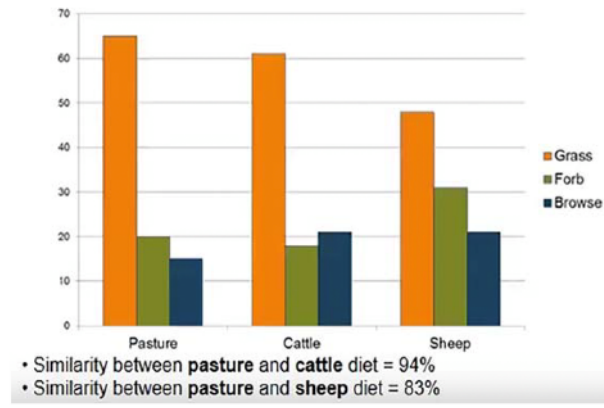


Figure 2. Diagram of Preferred Diets of livestock: Cattle, Sheep, and Goat. Adapted from Launchbaugh, 2016

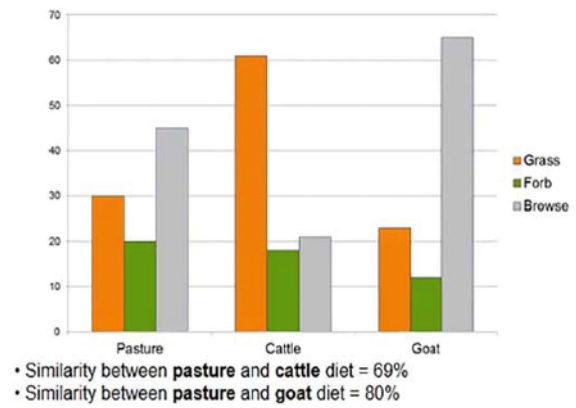
Below are two examples of pasture composition and livestock species suitability.

Example 1. Grassy Pasture



Sheep and cattle diets correlated to a predominately grassy pasture. Source: Karen Launchbaugh, 2016

Example 2. Shrubby Pasture



Sheep and cattle diets correlated to a predominately shrubby pasture. Source: Karen Launchbaugh, 2016

Figure 3. Charts of pasture composition and livestock species suitability.

In Example 1, the grassy pasture, both the sheep and cattle dietary preferences line up quite well, so grazing it with either or both of those species should allow them to maintain that pasture and its species composition. In Example 2, the shrubby pasture, the goat diet matches the vegetation more closely than the cattle. In this situation grazing cattle and goats together allows both species to target their preferred diets, making good use of the diverse plant species. From a management perspective, managers need to balance the grazing pressure of both species to ensure that the cattle do not overutilize the grasses and the goats overutilize the browse species. In both examples, monitoring and observing to ensure the plant species types are vigorous will be necessary. Making adjustments is often needed year to year or within season. The changes may be to the rotation (i.e., grazing days, rest, or timing) for either or both livestock species. It is important to recognize that these dietary preferences are generalized and subject to variation due to the specific plant species present in the pasture, as well as seasonal shifts in forage species and availability.

Comingled species

For example, a flerd (a flock of sheep and a herd of cattle together), can improve grazing distribution within paddocks and possibly reduce predator risks. It may reduce fencing requirements in that well integrated flerds may be managed with fewer electric fencing strands. Considerations must be made for the provision of water and minerals. Ensuring that sheep do not have access to the same mineral as cattle and goats is important, as both species have higher copper requirements than sheep can tolerate. Water supply may also need to be separated to ensure cattle do not damage the lower water troughs best used for sheep and goats. If using cattle-sized troughs, providing steps up to the trough for access and steps within the trough so smaller animals can get out if knocked in may be desirable.

USDA researchers have noticed that when small ruminants are bonded to cattle to form one flerd, they tend to remain together, which provides safety from predators and results in less time required to routinely check on livestock. Bonding species together imparts other benefits as well. It has been noted that cattle fencing can work very well for sheep when the sheep are bonded to cattle. Grazing distribution is enhanced as well, as sheep and goats tend to spread themselves more evenly over the landscape during foraging compared with non-bonded flocks.

In terms of behaviour and social dynamics, specifically with mixing sheep and goats, if space is limited it can result in bullying of the less dominant animals. The risk could be starvation of sheep fed with more dominant species (like goats). It may be more common in a confined feeding situation, but important to manage.

Mouth anatomy considerations

Mouth structure also affects grazing behaviour. Cattle have broad mouths and use their tongues with a tearing motion to graze. Sheep and goats, on the other hand, have small mouths and split, nimble lips so they can select single leaves. Due to the differences in their mouthparts and selectivity, goats and sheep typically select higher quality forage than cattle from the same environment. Horses have broad mouths as well as nimble lips. They also have top and bottom teeth that allow them to crop forage very close to the ground. Goats tend to graze from the tops of plants down, while cattle typically start at the bottom or side and have bottom teeth with a hard upper dental pad as they lack upper incisors. Recognizing these features can assist when monitoring grazing impacts on pastures and their complement of plant species, planning rotations, and fine-tuning rotations when plant growth is reduced or slowed.

Pigs and poultry in grazing

Pigs and poultry have attributes that allow them to be beneficial and valuable additions to multispecies grazing systems. Pigs on pasture seek high-quality vegetation but get most of their nutrition from fed grains due to their high energy and protein needs. The biggest impact they can have on a pasture is from their manure, their rooting activity (unless it is a breed that is not prone to rooting), and selection of specific species (e.g., blackberry and poison ivy). Poultry are seed eaters but will pick green stuff and insects and are particularly good at decimating fly larvae from manure. Grazing cattle and sheep, then poultry to pick through manure, then pigs to aerate and to facilitate renovating the soil/pastures can utilize the tendencies of these species. By setting the site up to be rejuvenated via seeding or in some instances an appropriately long rest period, the pasture will be ready for the next rotation. It will be important to monitor the degree of disturbance in conjunction with the pasture's vegetative response. It is not necessary nor always desirable to leave the pigs on-site long enough to disturb the soil surface, for example repeated disturbances on wet ground can cause soil compaction.

Due to concerns of disease transmission, even though there are potential benefits, the mixing of poultry and pigs should be avoided, particularly at time of publishing, as pigs can serve as a "mixing vessel" for reassortment of avian influenza and human influenza, potentially leading to human influenza pandemic concerns.

Parasite management benefits

Grazing multiple species together or in sequence can help break parasite cycles and reduce parasite populations aiding the incorporation of an integrated parasite-management plan. Reduction in parasite cycles can occur due to the timing of grazing and the characteristics of the parasites that infect each species of livestock. To minimize the risk of parasite infection, it is important to avoid allowing livestock to graze too close to the ground as parasite larvae are most concentrated in the lower portions of the stand (below 4 inches/ 10 cm). Parasites are often livestock species specific, so given that sheep parasites do not usually affect cattle, cattle can be used to break the life cycle of sheep and goat parasites (and vice versa, generally). *Factsheet 9 - Different Livestock Species* has some additional insights; however, seeking guidance to develop a parasite management strategy with your veterinarian can be of benefit.

Disease and parasite concerns and management considerations

Mixing sheep and goats in some circumstances can exacerbate parasite problems as they share parasites and goats generally have higher parasite loads. Sheep can be very sensitive to disease from parasites. Mixing these species can be done successfully, but more frequent parasite monitoring and control may be prudent in these mixed grazing systems – consult with your veterinarian for options.

Mixing sheep and cattle (and of particular concern bison), can increase the risk of Malignant Catarrhal fever (MCF) in cattle/bison. The virus that causes MCF (Ovine Herpesvirus 2) can be carried by visually healthy sheep, cattle are usually resistant, but can be infected, and if infected generally die. Bison are very sensitive to MCF and as a precaution should not be grazed with sheep (or in close proximity) (see pop out box info below).

In some areas of BC, liver flukes can also be a concern for grazing animals, particularly cattle. Domestic animals including cattle, horses, and other grazing livestock including sheep and goats are susceptible. Sheep and goats are an abnormal host, resulting in higher death rates. Liver flukes are not transmitted animal to animal, but from an intermediary of an aquatic snail. Animals grazing in and around wetlands can consume the fluke larvae which means controlling grazing access in wet areas. If cattle in particular have liver fluke their livers are discarded at slaughter when it is identified. Liver flukes can be in wild cervids and bighorn sheep. It is not possible to treat free-ranging wildlife but treatment options for domestic animals exist – consult with your veterinarian for guidance.

Predator control and shelter

Ensuring you address predator risks/issues and provide adequate and suitable shelter for the species being grazed is crucial for their well-being. Predator risk can be reduced through the use of specifically designed predator resistant fencing, use of guardian animals and/or the use of dry lot or sheltering areas. Bringing livestock into dry lots or sheltered areas (e.g., night pens) that offer protection from predators can be combined with handling and/or weather shelter areas to make things more cost-effective.

Cumulative grazing considerations

The plant species in pastures will respond to the degree of defoliation, duration, and timing of grazing regardless of the livestock species. Forage species respond to the cumulative presence of livestock as a grazing period. For example, a paddock grazed for 3 days by cattle, followed by 2 days by sheep and 2 days by poultry, effectively experiences a 7-day grazing event. Treat the multispecies livestock grazing as cumulative when looking at both the grazing period (duration) and rest (growth or regrowth) period. Make candid observations of species being used and the degree of that use by each species as they rotate through the paddocks. If species overlap is minimal then grazing duration may not be a significant issue, however if some key plant species are targeted by all the livestock species, monitoring their response to defoliation and vigour will inform if any future adjustments are needed. In areas with diverse plant species, such as silvopastures and riparian areas, observing and/or monitoring the level of use trees and shrubs receive is important (or other impacts such as rubbing). If the use levels are excessive, livestock need to be removed. In some instances, selectively removing only the livestock species targeting the trees or shrubs may suffice if doing so is feasible.

Summary

There are many variations of multispecies grazing, and the examples provided here are just the beginning. The preceding text is only intended to provide some examples and should not be seen as limiting. The possibilities are only limited by our imagination, creativity, operational environment, business opportunities, and operational objectives. When putting any of these opportunities into play, remember the key principles or fundamentals (*FIO Principles*), associated with maintaining vigorous plants and plant communities and healthy soils while supporting a healthy, productive, and efficient livestock operation.

Note: while there are benefits to the multispecies grazing strategy there are also risks, particularly regarding biosecurity and disease transmission. For more information and resources on which diseases to watch for and prevention, you can visit the Ministry of Agriculture and Food's *Animal disease information* webpage [here](#). For questions specific to your operation have an in-depth discussion with your Veterinarian.

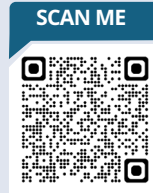
Multi-livestock species grazing can be complex and vary in intensity in terms of management. There can be clear benefits of utilizing multiple species together (e.g. Flerd or over the land base in separate timings) in your grazing system, but this will need to be evaluated with management objectives, whether the strategy fits with the objectives, input needs or potential risks (such as parasites or disease).

Find more information:

Ministry of Agriculture and Food's Animal Disease Information:



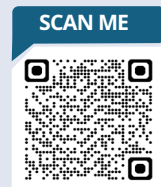
[Animal Disease Information](#)



Factsheet 9 – Different Livestock Species – Grazing Considerations:



[https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/biodiversity/grazing-management-guide/09 -
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