

Pasture Renovation and Management

Grazing Management Guide

Considerations for forage mixes or blends

Forage species mixes are quite common in pasture seedings. Based on the theory that, given the variable, and sometimes dynamic, conditions that often occur in pastures (e.g., wet areas, soil variation, hilltops), the species most adapted to a particular part of the pasture will eventually dominate.

As the pasture species compete and attempt to establish themselves, the unsuited species eventually disappear, leaving species better suited to the area, or micro-areas within a large pasture, to make up the resulting stand. That can result in a bit of a time lag until the predominant stand composition is achieved; and may result in the loss of productive species. Thus, the traditional recommendation for pasture mixes is to keep it simple, with no more than 2 to 4 species in the mix. Knowing the climate and soil characteristics of the pasture site is therefore important to ensure suitable forage species are seeded, resulting in a productive pasture stand.

Strategies such as regenerative agriculture, encourage the use of multiple species mixes or polycultures in both perennial and annual (cover crop) forage stands. There are various interpretations of what constitutes a polyculture but typically is defined as mixes of eight or more species – often twelve or more – including both warm- and cool-season grasses, forbs, and legumes. This is particularly the case for annual or cover crop forage stands. Potential benefits of taking this approach include:

- Plants grow at different times of the year, supporting soil microbes longer through continuous photosynthesis
- Varied root systems that increase nutrient uptake and soil structure (aggregation)
- Nutrient sharing amongst plant species (e.g., legumes fixing nitrogen, phosphorus transfer)
- Potential to increase soil organic matter and overall soil health
- Higher forage quality through the season
- Increased stand resilience

These benefits don't happen automatically. To achieve them, the stands must be managed carefully, so grazing supports plant growth and avoids either overgrazing or underuse.

Extending grazing with cover crops

Cover crops (strategically selected annual and/or biennial species) can provide forage earlier in the spring and later in the fall than perennials. When used in conjunction with perennial pastures, they can extend grazing the season while providing quality forage. Select species grow during and produce forage for those periods.

They can also be used to:

- Supplement forage volume or fill forage gaps such as when stands are being renovated – this can benefit both pasture and stored feed systems
- Strategically provide quality forage to livestock at key times in their growth and/or production cycles
- Provide flexibility to grazing systems, for example, summer when cool season perennial forage growth slows

For additional information refer to the [*Cover Cropping Guide for British Columbia*](#).

Pasture productivity and stand life are affected by many things other than grazing practices (addressed in the Grazing Management Guide), some of which can be influenced directly and others that cannot, for instance weather and disasters. Plant nutrition and soil fertility will benefit from soil sampling and analysis, utilizing soil chemistry and/or biological assessments. When adding nutrients, use these analyses to guide the level and type of nutrients to be provided. Baseline information such as pH, salinity, soil type and local climate helps inform species suitability and selection and can support “troubleshooting” if some species are increasing or decreasing faster than desired.

Well- designed irrigation and drainage systems improve productivity and enable effective and efficient use of water resources. From a general perspective, these systems consider soil texture, local climate, root zone or depth, and plant species needs. Managing these systems in accordance with seasonal variation in evapotranspiration and precipitation further increases their effectiveness to water use and production.

Methane Reduction Through Forage Species Selection

Methane stemming from rumen fermentation (enteric methane) can be reduced in pasture or grazing situations. The most common approach is to plant forage species with anti-methanogenic properties. Many plant species (legumes, forbs, and herbs) produce bioactive compounds that reduce enteric methane emissions. Research in this area is ongoing, so new insights, strategies, and options may emerge. Grasses have little to no bioactive compounds that can reduce methane. Planting and maintaining a substantial percentage of legumes and forbs (e.g., forage chicory and forage plantain) in pasture stands is a good way to reduce methane emissions.

In general, having greater than 1/3 of the stand composed of those species notably reduces methane emissions. Based on research and observations at Kansas State University, there is an indication that operations or pastures that have high levels of plant biodiversity may also reduce methane emissions. Beyond the methane reduction aspect, establishing and maintaining a high percentage of legumes and forbs will improve summer forage production, improve livestock nutrition, as well as increase soil nitrogen.

Forage Species Selection

When it comes to selecting forage or plant species for any given pasture, there are no set answers. Select species and/or varieties that are suited or adapted to the site and its future use. Things to consider include:

- Soil pH, soil salinity, soil moisture (wetland, rangeland, dryland, or irrigated)
- Winter hardiness, and drought
- Disease resistance or tolerance, and
- Look for attributes that support your:
 - Livestock species
 - Pasture management objectives
 - Riparian or silvopasture objectives
 - Operational approach (organic, conventional, regenerative, regenerative organic, or other protocols)

Guidance from seed suppliers, agronomists, experienced neighbours, local trial sites, publications, and online tools (such as seed calculators) can provide valuable insights and help with decision-making.

Species for consideration include, but do not be limited to this, are:

| Category / Conditions | Species |
|---|--|
| Dryland (<405 mm / <16 in per year) | Alfalfa (variety specific); Cicer Milkvetch; Sainfoin; Sweetclover; Bromegrass (Meadow, Hybrid, Smooth); Reed Canarygrass; Wheatgrasses (Crested, Hybrid, Intermediate, Northern, Slender, Tall); Wildryes (Altai, Dahurian, Russian) |
| Dryland (>405 mm / >16 in per year), irrigated or sub-irrigated | Alfalfa; Birdsfoot Trefoil; Cicer Milkvetch; Clovers (Alsike, Kura, Ladino, Red, White); Sainfoin; Sweetclover; Bromegrass (Meadow, Hybrid, Smooth); Fescue (Meadow, Tall); Festulolium; Kentucky Bluegrass; Orchardgrass; Perennial Ryegrass; Reed Canary Grass; Timothy |
| **Warm-season perennial grasses (use cautiously) | Big Bluestem; Little Bluestem; Indiangrass; Switchgrass |

Table 1. **These four species are warm season perennial grasses that may be worth considering depending upon your location and site characteristics. Currently, there is limited information on the suitability of these and other species for B.C. Review their characteristics as thoroughly as possible and avoid using them as the main component of a stand if considering them.

Find more information:

For assistance regarding species characteristics and site suitability, e.g., pH, salinity, standing water tolerance, seeding rates, etc., see the following resources:



[Cover Cropping Guide for British Columbia](#)

[BC Rangeland Seeding Manual](#)

[Alberta Forage Manual](#)

[Ontario Guide to Forage Production](#)

[Forage U-Pick](#)



[Tutorial on how to use the Forage U-Pick tool: video tutorial](#)

[BC Range Ecology](#)

[Saskatchewan Forage Crop Production Guide](#)

[Ontario Guide to Forage Production](#)

[Peace River Forage Association – Seeding, Establishing, and Revegetation Resources](#)

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