Manitoba Range and Pasture Health Assessment Initiative

By Mae Elsinger, Agriculture and Agri-Food Canada and MFGA Board Member

The CFGA wound up its annual conference in Manitoba last month, with many of the agenda topics focused on forages and the environment. With the Paris Accord and carbon taxes in the news of recent, looking at some of the benefits forages can and do have on our environment may be timely.

Though many may be aware that forages and livestock have a direct relationship, few really grasp the role of forages in sustaining the environment. Because grasses, legumes, shrubs, and forbs are around us every day, we rarely look closely into the many jobs they do. And as better management practices are developed for forages, , they are being utilized in new ways. Forages are fuel for animals, but they also benefit the earth. Many farmers are using forages for positive results on all types of land, but particularly on marginal crop land. Forages can be a simple answer to soil erosion and decline in organic matter and fertility, a problem caused by modern cultivation and fallowing practices on much of the farmland in western Canada. Forages can also help you reduce nitrogen fertilizer costs and the energy costs associated with applying nutrients.

When we look at forages for pasture or hay production there are many benefits of having land under forage production:

Increased Soil Quality - The extensive root systems of perennial forages add significant amounts of soil organic matter (carbon). Perennial forage crops have been shown to return more than twice the soil organic matter as annual crops such as cereals or pulse crops. The root system can also improve water infiltration and internal drainage, especially on clay soils. This results in improved soil drainage and water use by subsequent crops, helping producers get on the land earlier in spring when excess moisture is often an issue. Improved drainage is especially evident when alfalfa is terminated with herbicide, rather than tillage, because soil pores and tunnels remain intact, and potentially improve saline soils.

Reduce Greenhouse Gas - When you grow perennial forages, you are also doing your part to reduce carbon, one of the components of greenhouse gas. The large root systems of perennial forages can store up to 2.7 times more carbon than annual crops, and place (sequester) it deeper into the ground for better longer-term storage. As well, the lack of annual tillage slows the breakdown and release of carbon from the plants'

roots. A recent study on Greenhouse gas emissions of Canadian beef production showed that a significant reduction in GHG intensity over the past three decades has occurred as a result of increased average daily gain and slaughter weight, improved reproductive efficiency, reduced time to slaughter, increased crop yields and a shift towards high-grain diets that enabled cattle to be marketed at an earlier age. Another study out of Oklahoma looked at Grass versus Grain Fed Beef**.** The study showed that there are tradeoffs in different aspects of sustainability when comparing the two finishing production systems. Grain-finished beef has a lower carbon footprint than grass-finished beef because of cattle's more efficient utilization of feed in the finishing phase, fewer days on feed and greater amount of beef produced per animal. However, grass-finished beef contributes to sustainable beef production by utilizing forage resources to produce food from plants that are largely inedible by humans. Grasslands and pastures can sequester carbon dioxide from the atmosphere, which can help mitigate climate change; accounting for carbon sequestration could lower the carbon footprint of grass-finished beef. The bottom line is that using either system can sustainably meet consumer demand for beef.

Increased Fertility - when legumes are included, Nitrogen is added to the soil. In a no-till system when herbicides are used to terminate the forage, N becomes mineralized and is metered out over the growing season and into the next.

Other Benefits - Forages can help reduce the amount of soil erosion by wind or water on highly erodible soils. Forages in rotations with annual crops can reduce disease pressure and weed populations and increase yields in subsequent crops.

For more information:

The Benefits of Including Forages in Your Crop Rotation

Greenhouse gas emissions of Canadian beef production

Grass versus Grain Fed Beef