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GHGMP Project Reports by Region

Manure powers forage crop benefits

Management practices that extend the life of a forage crop may make more economic and environmental sense than spending time and money to start over

When it comes to hay and pasture land productivity, Paul Cowger and Brian Clarke have seen the power of manure.

The B.C. Peace River Region farmers both describe a dramatic difference in forage stands on their respective farms after manure application. The producers from the Fort St. John area participated in a multi-agency funded forage and nutrient management project. Part of that funding came from the federally funded Greenhouse Gas Mitigation Program (GHGMP).

Paul Cowger, of Montney, B.C., runs a cow/calf and hay operation.

Cowger, who runs a cow/calf and hay operation near Montney, says manure significantly increased the carrying capacity of an older alfalfa and timothy pasture he manured in the fall of 2002. "We saw a very good response in grass production in 2003," he says. The manure application was combined with a tined aerator tillage treatment that aerated the pasture soil. The increased forage growth allowed Cowger to extend the grazing period on the manured field by about two weeks with more head of cattle.

Clarke made similar observations on his family run beef, dairy and grain operation at Sunrise, east of Fort St. John. He applied manure to a 10-year-old hay field on a north-east facing slope where most of the alfalfa had died in recent years. "By far, manure produced the best response of any of the treatments," he says, referring to other parts of the field that received various combinations of commercial fertilizer.

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Although yields varied across the field, the manured area had more lush, vigorous growth that produced up to a tonne more hay per acre than the fertilized area. And, crude protein increased by three percent.

Distance a factor

While manure is an effective treatment, it not always a perfect option, say both producers. "It works well if you have enough manure," says Cowger. Clarke noted that "you can't forget the economics. It costs money to haul manure, so you need forage land within a reasonable distance of your manure source."

The nutrient management project involving forages was part of a multi-year demonstration project funded from a variety of sources, says Sandra Burton, forage co-ordinator of the Peace River Forage Association (PRFA), and regional field co-ordinator of the GHGMP.

The forage project was launched three years ago with support from industry, producer and provincial government sources, and continued last year with further assistance from GHGMP funds.

Brian Clarke operates a dairy, beef and grain operation at Sunrise, B.C.

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Reports of increased winterkill of pasture and hay stands in recent years prompted a look at the nutrient needs of forages, says Burton. The PRFA surveyed more than 50 fields. "It varied from year to year, with some producers seeing only patches of winterkill and others finding whole fields dead," she says.

Several factors contribute to winter kill of forages. Disease, cold temperatures and little or no snow cover are often what ultimately kill the plants. But, severity and timing of grazing, wildlife pressure, hay-cutting practices and poor regrowth conditions can weaken plants.

"If plants haven't fully recovered from harvest and haven't stored the necessary reserves in their root system, they are more susceptible to winterkill," says Burton.

Proper fertility of both injured and healthy stands is particularly important to maintain productive pastures and hay land. "In many cases fields are just tired and hungry," she says. "Most producers invest in fertilizer for their annual crop land, but as a generl practice, it hasn't been a priority with hay and pasture. There may be manure additions to the field but not in proportion to what is being taken off by haying or grazing."

There are several benefits to keeping forage stands vigorous and productive for as long as possible. Along with the cost of breaking fields to re-establish new stands, the production from those fields is lost for at least one season. Poorly performing forage stands also have reduced capacity for capturing carbon dioxide and storing carbon in the soil. That process known as carbon sequestering helps reduce the amount of greenhouse gas in the atmosphere.

Range of treatments

With funding partners that included Norwest Labs, Beef Cattle Industry Development Fund and GHGMP, Burton established field scale plot comparisons for a range of treatments.

One plot with no treatments served as the check, while other plots received a complete fertilizer blend as recommended by a soil test: sulphur only, potassium only, or manure only.

"As with everything in cropping, moisture is the key," says Burton. "There was less of a response in drier years, but when we had the moisture there was definitely a yield response to fertility, and manure appeared to have a greater effect than commercial fertilizer.

"Along with increased production of pasture and hay, improved fertility also improves forage quality, which can be a bonus in winter-feeding programs, especially in years when there may be a shortage of hay," says Burton.

With higher quality hay, supported by a nutrient analysis, the PRFA was able to show producers how to formulate rations that stretch winter feed supplies. "Producers can feed cattle less of the higher quality hay, supplement with straw and still maintain cattle in good condition," she says.

"Maintaining a vigorous and productive forage stand in most cases makes more economic sense than plowing down and starting over, or clearing another quarter section to make new pasture," says Burton. "Improved fertility reduces the risk of winterkill, and can produce more, high quality forage. Producers obviously need to keep economics in mind, but they need to consider all benefits that stem from improved fertility."

Regional reports will be posted as information becomes available. Please check back regularly for updates.