To get the best results from your herd, you need the best feed from the field. That’s why your DuPont Pioneer rep stays involved long after the seed is in the ground. Through The Silage Zone® services, we apply industry leading research as well as agronomic and nutritional expertise to help you succeed at every stage, from planting through feedout.

Ask your local Pioneer sales rep about the right Pioneer® brand forage products and services for your operation or visit pioneer.com for more information.
Welcome to Forage & Grassland Guide, a new annual publication produced in partnership by the Canadian Forage & Grassland Association (CFGA) and Farm Business Communications and distributed through Country Guide, Canadian Cattlemen and Le Bulletin des agriculteurs. It focuses on issues of importance of forage and grassland to crop and livestock producers across Canada. For more information on forage and grassland management in your area, we encourage you to contact and participate in the activities of your regional or provincial association.

Canadian Forage & Grassland Association
Ron Pidskalny, CFGA Executive Director
11312 – 57 Avenue NW
Edmonton, AB T6H 0Z9
(780) 430-3020
pidskaln@gmail.com
canadianfga.ca

Manitoba Forage & Grassland Association
Wanda McFadyen
(204) 475-2241
wanda@mfga.net
www.mfga.net

Saskatchewan Forage Council
Leanne Thompson
(306) 969-2666
office@saskforage.ca
saskforage.ca

Alberta Forage Industry Network
Lyndon Mansell
(780) 592-2262
info@albertaforages.ca
albertaforages.ca

Ontario Forage Council
Ray Robertson
(519) 986-1484
info@ontarioforagecouncil.com
ontarioforagecouncil.com

Quebec Forage Council / Conseil québécois des plantes fourragères
Nathalie Gentesse
(418) 563-1104
cqpf@yahoo.ca
cqpf.ca

Ontario Soil and Crop Improvement Association
Harold Rudy
(519) 826-4217
harold.rudy@ontariosoilcrop.org
ontariosoilcrop.org

B.C. Forage Council
Fran Teitge
(250) 267-6522
bcfc@bcforagecouncil.com
farmwest.com/bc-forage-council

Soil & Crop Improvement Association of Nova Scotia
Carol Versteeg
(902) 758-3530
carol.versteeg@ns.sympatico.ca
scians.org

A special supplement brought to you by:
Three overarching issues for forage and grassland in Canada

Regional groups across Canada agree on the need for more recognition and research

BY RON PIDSKALNY, EXECUTIVE DIRECTOR, CANADIAN FORAGE & GRASSLAND ASSOCIATION (CFGA)

Canada has about 33 million acres of cultivated forage crops and an additional 36 million acres of native or unimproved pastures and rangeland. While many think of native pasture as “unimproved,” those with a true appreciation for the value of forage and grassland tend to think of it as “naturally perfect.”

These 69 million acres generate almost $5.1 billion in economic activity for Canadians annually. This economic activity does not include the value of the environmental goods and services (EGS) contributed by the forage industry to Canadians in terms of climate change mitigation, erosion control, pollination services, recreation, wildlife habitat preservation, or the regulation, protection and improvement of water resources.

A multi-level analysis of Saskatchewan’s forage industry suggested that the indirect value of EGS could be worth over 2-1/2 times as much as the direct economic value — suggesting that Canadians receive almost $13 billion in value from their forage and grassland resources each year.

As stewards of Canada’s forage and grassland resources, CFGA met with its forage council and soil and crop improvement association members at its recent annual conference. All agreed that while each region has its own set of unique concerns and areas on which they need to focus, CFGA would speak as the “national voice” on forage and grassland issues. The group identified three overarching issues.

Environmental goods and services (EGS)

CFGA and its member stakeholders recognize that society needs to be convinced of its obligation to support the environmental value contributed through the good stewardship of the forage and rangeland resources of agricultural landowners. We also see that there are a number of independent, well-respected and trusted environmental groups that could help CFGA improve the recognition of the value of EGS. To this end, CFGA, through its environment committee will engage in a selection process to establish a formal partnership with an appropriate conservation organization.

Forage and grassland research capacity

Provincial stakeholders understand that each region has a number of key educational and government research institutions and important pieces of infrastructure that must be protected in order to maintain and improve forage research capacity. These resources include a number of dairy- and livestock-related operations.

We also understand that a number of research scientists and academics have moved away from basic and applied research, and into administrative roles. CFGA, in conjunction with its stakeholders, will help target areas in which these losses have occurred and play an important role in the development of a strategic plan to revitalize forage research across Canada.

As part of this process, we also need to recognize that industry has research and development capacity as well, and could work in conjunction with the public sector to further forage and grassland research.

Canadian research capacity will be important in the development and implementation of a national independent forage variety testing program. Survey results suggest that forage stakeholders, overwhelmingly, would like to see testing at a regional level. CFGA and its provincial and federal forage research stakeholders propose four testing regions: Atlantic Canada, Eastern Canada, the Prairies and British Columbia.

Infrastructure is in place and all regions may have the capacity to conduct variety trials, with the exception of British Columbia. The cost of setting up a variety testing program in each region is around $500,000, for an initial setup cost of about $2 million. Some regions and provinces have variety testing programs in place, and will be well served, but CFGA does not have the resources, currently, to set up and maintain a national variety testing program.

The marginalization of forages

A trend that CFGA’s forage council and soil and crop improvement association members find disconcerting, is the displacement of forage crops from better land in favour of higher-value annual crops. As the value of annual crops relative to forages increases, forages tend to be relegated to increasingly marginal and less productive land. Forage seed production is also dropping as seed producers move to annual crop production — and away from the perennial systems required to produce forage seed. Many also feel that agricultural producers need to make good use of better land to raise forages or the dairy and livestock sector (cattle and sheep, among others) will experience a loss in capacity to extract value from forage crops. Ultimately, we are all in the solar energy business — capturing a renewable source of energy from the sun to produce protein for human diets.

Key educational and government research institutions must be protected in order to maintain and improve forage research capacity.

Forage & Grassland Guide 2014
Day-to-day weather conditions require great adaptability. Case IH disc and sickle mower conditioners are designed with extensive customer input to provide a close cut for efficient regrowth. And, with the versatility and flexibility you need for changing conditions, you get thorough, consistent, best-in-class conditioning with a roll width of up to 125 inches, resulting in the finest quality crop possible. Season after season of clean cutting, faster dry down and superior nutrient retention – these machines make the cut every time. Learn more at your Case IH dealer or caseih.com/sicklebar-mower-conditioners.
The prairies of North America have declined 79 per cent since the early 1800s. A 2013 report by Roch and Jaeger on grassland fragmentation in the Canadian Prairies says that by 2003, over 97 per cent of tall-grass prairie, 71 per cent of mixed prairie and 48 per cent of short-grass prairie had been lost in North America.

While most of this loss occurred before the 1930s, alteration and degradation continues, with small patches being affected the most. This purge has catapulted grasslands to the dubious distinction of North America’s most endangered ecosystem.

There are glimmers of hope. Governments, producer groups and conservation groups are increasingly demonstrating the benefits of grasslands to producers.

That was one of the reasons for the Manitoba Forage Council changing its name to Manitoba Forage and Grassland Association (MFGA).

“Grasslands are such a critical part of Manitoba’s agricultural scene whether they are native grasslands that are still in place or forages,” says Wanda McFadyen, MFGA’s executive director. “We are dedicated to the development and promotion of sustainable hay, forage and livestock industry and the protection of our land, waterways and wildlife diversity.”

McFadyen says that the producers looking for forage and grassland solutions are quick to learn and quick to act once they are up to speed on programs available.

“I think more producers are starting to understand that with more tools in their tool box to manage the various grassland scenarios on their operation that they are not only seeing diversity in the area of sustainability but economic benefits as well.”

McFadyen says the MFGA represents some of the most visionary producers in the province, regardless of crop. They know the markets and they are able to identify best options for the bottom line of their farm. Somewhat surprisingly, despite the recent attention to corn, canola and grain, forages hold their own from an economic perspective.

“A producer’s ultimate motivation to manage grasslands should be profit,” says Glenn Friesen of Manitoba Agriculture, Food and Rural Development (MAFRD). “If producers don’t profit from grasslands, we won’t have producers managing the grasslands. And well-managed grasslands continue to give back to producers and society by providing environmental benefits they are known for.”

Friesen says that MAFRD’s marginal returns over total operating costs (net profit) analysis shows that growing and selling forage crops provide higher return on average than
all but winter wheat in Manitoba. He adds that properly grazing grasslands adds additional value to the land base.

Conservation Incentive

Conservation groups are also tackling the issue head on. Ducks Unlimited Canada (DUC), Nature Conservancy Canada (NCC), and Manitoba Habitat Heritage Corporation (MHHC) are a wide range of producer incentive programs aimed at providing more tools for producers to maintain and increase grasslands.

“Simply put, grasslands are one of the most threatened habitats in Manitoba. If we recognize that we have similar interest, working together becomes easy,” says Tim Sopuck, MHHC’s chief executive officer. “I believe that the biggest habitat conservation group in Manitoba is cowcalf producers because their operations fit so well with native land conservation, especially native grasslands.”

Sopuck says grasslands are “a marvellous reservoir of biodiversity” that can be maintained or enhanced through sustainable grazing practices.

DUC has been actively working with producers on the land for years via programs such as grazing clubs, rotational grazing and forage incentive programs. It also has dedicated science to highlight the values of wetlands and grasslands as critical components of the healthy prairie landscape for producers, society and wildlife.

“Grassland and wetland loss has had a dramatic effect on water quality, water quantity and soil organic carbon stores across Canada,” says Pascal Badiou, a research scientist for DUC. “If this loss is allowed to continue, past, current and future investments in expensive infrastructure such as water treatment facilities, flood mitigation and climate change mitigation will become increasingly less efficient.”

For NCC, grasslands are a high-priority biodiversity target.

“Grasslands are one of the most impacted ecosystem types on the globe and provide habitat for many species of risk on the Prairies,” says Kevin Teneycke, NCC’s director of conservation. “Grassland conservation is an effort that requires the collaborative assistance of a number of organizations and individuals at a landscape scale.”

Teneycke says his organization is keenly watching the developments around the divestiture of the federal community pasture program in Manitoba. Within each of their own parameters and priorities, MHHC, DUC, and NCC believe that there are significant opportunities for governments, landowners, livestock producers and conservation organizations to work together to maintain intact high-quality grassland habitats and promoting the benefits of forages. Producer groups such as MFGA and CFGA also have important valuable roles to play in the equation.

The message, according to MAFRD’s Friesen, should resonate with one group in particular.

“Anyone with cattle should be motivated because well-managed grasslands are the lowest cost, nutrient-balanced feed source,” he says. “They can also provide excellent unconfined winter feeding grounds. They capture rain where it lands, providing grazing options during dry times.”

Sharing Knowledge through Grazing Clubs

Ducks Unlimited assists local groups to hold meetings and tours

By Duncan Morrison

A grazing club is a community of producers who work together to improve the grazing management of their pastures. Community knowledge is critical, as is learning from others in the club. Ducks Unlimited Canada initiated the first grazing club program in Manitoba in 1999.

“We really are focusing on getting the most out of our pastures and helping producers and landowners make the best decisions they possibly can on the environmental and economic fronts,” says Michael Thiele, grazing club co-ordinator.

Thiele says there is growing interest in holistic management — a decision-making process that helps producers make better decisions that benefit the people, the land and the bottom line. Clubs hold informal meetings to acquire information on local grazing issues from expert speakers and researchers. Pasture tours are utilized to provide hands-on exposure to new forages, livestock watering systems, and pasture management techniques. Thiele says the information provided is always well received.

“There is a need for good information and producers are looking for new ideas and technologies that better the environment and their bottom line,” says Thiele. “This is one way producers can learn other ways and methods of running their operations.”

More information on grazing clubs can be found on Ducks Unlimited Canada’s website.
Cutting forages in afternoon yields benefits

Research shows starch levels in forages peak 11-13 hours after sunrise

BY HUGH MAYNARD

If you cut forages in the afternoon you can improve the digestibility of your dairy feed. Higher levels of non-structural carbohydrates (NSC) can promote the synthesis of microbial proteins, lead to a more efficient use of dietary nitrogen (N) and result in a five to 10 per cent increase in milk production.

Late-afternoon cutting is one of several factors that increase NSC levels in a variety of forage species, from alfalfa to timothy. Other factors are management of nitrogen fertilization for forage grasses and wilting conditions, particularly laying the cut forages in wide swaths to promote more rapid drying.

This is the primary conclusion from research led by Robert Berthiaume, an expert in forage systems at Valacta, the dairy production centre of expertise for Quebec and the Atlantic provinces. He collaborated with a multidisciplinary team of researchers from Agriculture and Agri-Food Canada and Université Laval to look at different ways to increase non-structural carbohydrates in forages for dairy cattle.

Plant matter is composed of about 75 per cent carbohydrates, and NSCs are the simple sugars such as glucose, fructose, lactose, sucrose and starch. Increases in NSC levels reduce proteolysis (the breakdown of proteins into amino acids) in the silo and balances the supply of fermentable energy and rumen degradable protein which, in turn, enhances ammonia capture by ruminal microbes. Legumes and grasses with high NSC levels also tend to have lower concentrations of acid detergent fibre and neutral detergent fibre.

Wider swaths

Berthiaume says that the time of cutting has the most effect on increasing the level of NSC in forages, mostly due to the higher levels of starch present in the plant later in the day, which peaks 11-13 hours after sunrise. He notes that cutting the forage into wide swaths also has additional payback.

“The wide swathing technique has become more popular because it helps improve sugar levels and the quality of the forage, so it has a double benefit,” he says.

The research by Berthiaume’s team shows that NSC loss is minimal for late-afternoon-cut alfalfa lying on the ground overnight and the plants will resume photosynthesis the following morning for up to three hours, the same as morning-cut forage. This means that the extra NSC levels accruing from late-day cutting more than offset any losses during the night, weather conditions notwithstanding of course.

Nitrogen fertilization is the next most important factor in enhancing NSC levels in forages, particularly for grasses. The key is to balance forage quality and yields.

Lower nitrogen fertilization can increase NSC and reduce crude protein concentrations, both of which improve the use of nitrogen in cattle. Too little fertilizer, however, can affect yields, so the trick is to balance the two aspects in order to enhance quality while maintaining reasonable yields.

The level of NSC does vary by forage species but Berthiaume’s work indicates there is insufficient research to make recommendations on combinations of legumes or grasses that will enhance NSC concentrations. He notes that recent research in Eastern Canada shows alfalfa has similar NSC levels to timothy but that the types of NSCs present in legumes and grasses are different.

Starch and pinitol are carbohydrates found in legumes, but not in grasses, that contribute to increased NSC levels. On the other hand, fructans, a reserve carbohydrate found in grasses, doesn’t seem to have the same effect. Therefore it’s difficult to assume that red clover mixed with tall fescue, both considered to be the species containing the highest NSC levels for legumes and grasses respectively, make the best combination of plants when trying to maximize NSC levels in the field.

Berthiaume notes that genetic selection shows potential for improved cultivars with increased levels of NSC. The U.K. has developed varieties of perennial ryegrass with higher sugar concentrations with the aim of improving forage intake and milk production and their studies show improved breeding can increase levels of available carbohydrates in alfalfa.

“We’d like to do more research that can be applied on the farm such as genetic selection for what we call ‘sweet alfalfa.’ We could get practical results faster with genetically modified cultivars but producers don’t want to use them so it will take time through traditional breeding techniques,” Berthiaume said.

Hugh Maynard is a specialist in agricultural communications located in Ormstown, Que.
Dairy producers - turn your forages into MORE milk!

when it comes to value, DHI DELIVERS BIG RESULTS!

5.0% MORE MILK
5.4% MORE FAT
3.5% MORE PROTEIN

Based on 539 new DHI herds, over a two-year period after they started DHI service.

canwestdhi.com
1.800.549.4373
Finding the ‘right’ way to inter-seed cover crops

An older practice finds new life with growers wanting improved soil stability, reduced erosion

BY RALPH PEARCE, COUNTRY GUIDE

Traditionally, when one thinks of “cover crops,” what usually comes to mind is red clover following winter wheat. In the past five to 10 years, there have been more cases of growers working with oilseed radish or rye or oats as covers, all with the primary goal of keeping that cereal field growing through the fall season.

Within that same time frame, there’s been increasing interest in inter-seeding cover crops into corn, and making better use of those crops in the rotation. In the U.S., some growers are hiring aerial applicators to seed covers into standing corn and soybeans. The move has also garnered some interest in Canada, with some who grow corn for silage, seed corn or those just looking to enhance the long-term impact on the health of their soils.

Anne Verhallen, horticultural soil management specialist with the Ontario Ministry of Agriculture and Food (OMAF), is also learning more about the practice. She has several growers who participate in field-scale trials and has been working with Laura Van Eerd at the University of Guelph’s Ridgetown Campus, all in the search for the right choice of cover crops, and just as important, the right timing for seeding into a standing crop. Verhallen has also toured parts of the U.S. and Quebec to see various sites where growers are engaged in inter-seeding cover crops. At the 2013 edition of Canada’s Outdoor Farm Show, she played host to a demonstration plot for Ontario Soil and Crop Improvement Association, showing cover crops seeded into field corn at various stages of the growing season. And the results have her convinced there’s more to research.

Quantifying benefits

For the past few years, the focus has been on getting growers to include cover crops in their rotation. Inter-seeding in field corn offers another opportunity. Verhallen says that before they can begin the process of quantifying the benefits — nutrients left behind, or improved soil organic matter — the first order of business is to determine the best types of cover crops and the timing on planting.

“It’s a whole systems approach, where you’re building the diversity, you’re building structure, you’re building soil that’s going to be more resilient and responsive, so it’s incremental changes,” says Verhallen. “I think that (Van Eerd’s) work has shown that what we can get out of the cover crops is that it’s not costing us money, it’s a break-even deal, it’s generally not an adverse effect, and that’s not looking at erosion control. And the cover crops that we’re working on aren’t going to generate a lot of nitrogen, unless we are putting in an alfalfa or clovers. But ryegrass certainly isn’t nor is oilseed radish.”

Inter-seeding corn isn’t difficult or expensive, says Verhallen. It’s often a matter of trial and error, and finding what works best. Some growers have built their own seeding units, which she says are not complex or costly. And if growers opt out of inter-seeding covers, they may be able to dismantle the seeding configuration and make it work for another aspect of the operation.

One grower Verhallen has worked with tried four different cover crops seeded at different times of the growing season — oats, rye, ryegrass and alfalfa.

“They’re all fairly good at sitting under a canopy, they’re fairly small seeded and you’re hoping you get enough growth out of them to make a difference,” says Verhallen, adding...
that she’s had the best response from ryegrass. “It has a very small seed, it’s good at getting going and spends the first part of its growth pattern in setting down some roots.”

However, a challenge with ryegrass is a tendency toward herbicide resistance. That means it will establish well, but weed control can be difficult in wheat seeded after corn.

**Seeding date**

Verhallen says determining the best time for seeding can be a challenge. At the COFS demonstration plot, she had a wide variety of options on display. In Eastern Canada, that timing is affected by the closure of the canopy. In the U.S., growers are being advised to seed well after tasselling as the crop is starting to dry down.

Coinciding with a fungicide application would be ideal. That could be between mid-July and early August, but in Eastern Canada, that can be the driest time of the growing season. Also, most cornfields are into full canopy closure come late July.

“I think right now that the earlier seeding is going to work better for us, because whatever you’re seeding, there’s a better chance of getting established before the canopy totally closes in,” says Verhallen. “If you walk in to our cornfields in the middle of July, and take a look at the ground and see how much bright sunlight is actually hitting the ground, it’s very low. However, this can also add a challenge in terms of herbicides and the impact on the germinating cover crop.”

Verhallen says Quebec growers she’s followed set an earlier target for their timing in seeding of a cover crop — around the five- to six- to seven-leaf stage. In the U.S., some growers have refined their seeding timing from after tasselling to the point at which the crop begins to dry. Verhallen says there are a lot of details to be sorted out, but the practice is gaining attention.

“To me, the real target is the guys who are growing silage corn, where the other opportunity for silage corn is to take silage off, do a manure application and then put in a cover crop.”

---

1 Quebec growers are inter-seeding their cover crops earlier in the season, around the five- to six- to seven-leaf stage, prior to full canopy.

2 Although they won’t generate a lot of nitrogen, inter-seeding oats, rye or ryegrass as a cover crop will help build diversity and resilience in the soil.

3 According to OMAF’s Anne Verhallen, growers with corn silage would be ideal candidates for inter-seeding cover crops.
You can rest assured that when you run a reliable, all-crop, all-condition John Deere baler, that you'll keep baling long after other balers have called it quits.

How do we do it? The 9 Series feature roller shafts that are 1/4 inch larger and bearings that are 1 1/2 inches larger than those found on the 8 Series. With an increased shaft size the baler can now handle even heavier loads in the toughest conditions. And the bigger bearings run cooler, last longer, and are more reliable.

Everything about a John Deere 9 Series Round Baler has been designed to raise performance to all new levels, while greatly reducing the chances of downtime. That’s why more and more hay producers run John Deere Round Balers than any other color baler. And should your baler ever need service, it’s good to know that there’s a local John Deere dealer standing behind you who will get you back up and running.

See your John Deere dealer today about a new 9 Series Baler — and elevate your uptime.
Elevate your uptime

You can rest assured that when you run a reliable, all-crop, all-condition John Deere baler, that you’ll keep baling long after other balers have called it quits.

How do we do it? The 9 Series feature roller shafts that are 1/4 inch larger and bearings that are 1 1/2 inches larger than those found on the 8 Series. With an increased shaft size the baler can now handle even heavier loads in the toughest conditions. And the bigger bearings run cooler, last longer, and are more reliable.

Everything about a John Deere 9 Series Round Baler has been designed to raise performance to all new levels, while greatly reducing the chances of downtime. That’s why more and more hay producers run John Deere Round Balers than any other color baler. And should your baler ever need service, it’s good to know that there’s a local John Deere dealer standing behind you who will get you back up and running.

See your John Deere dealer today about a new 9 Series Baler – and elevate your uptime.
Balancing the interests of cattle and birds

Selective grazing to leave different vegetation height is the best for protecting nesting birds

BY PEG STRANKMAN, BARBWIRE CONSULTING

Forage and grasslands support a strong livestock industry in Canada, but they also provide ecological services — erosion and watershed management, nitrogen fixation, pollinator habitat, biodiversity, carbon sequestration, oxygen production and of course cultural and esthetic values. These are valuable services, difficult or impossible to accurately value economically or to replace ecologically.

One of those values is grassland birds, whose numbers have been declining. This has spurred researchers to investigate how stocking rates, grazing timing and livestock distribution may be affecting them.

In many areas the traditional season-long grazing has given way to a rotational system, which is believed to be more productive. It is based on the principle that productivity of native grasses will be improved by livestock nipping off the grass plant just after the three-leaf stage and before it begins to reproduce. The plants are then rested, which encourages more vegetative growth.

However, changes to litter depth or vegetation height and density may not be what grassland songbirds like for foraging and nesting. A 2010 thesis by Cristina Lynn Ranellucci evaluated the effects of rotational grazing and continuous season-long grazing on grassland bird populations in southwestern Manitoba. It found grazing regimes at moderate and high grazing pressures seem to be more beneficial for grassland birds than lighter grazing intensities. Non-grazed land idle land (shrub encroachment) was the least preferred.

Season-long grazing benefited some grassland birds such as bobolinks and Baird’s sparrow and showed higher species richness and diversity. That may be because selective cattle grazing produces a mosaic of height, density and litter in the grass stand suitable for a wider variety of species.

Cattle and bird nests

Writing in Conservation Biology, Barbara I. Bleho looked at the effects of cattle on bird nests. Generally it’s the possible indirect effect of cattle grazing thought to impact grassland birds, for example in the case of a severely overgrazed area where the structure of the grassland is severely altered. But Bleho and her colleagues were interested in the direct effects of trampling and other disturbances on nest survival.

While they did find that nest destruction was positively correlated with grazing pressure (i.e., stocking rate or grazing intensity), overall rates of destruction of grassland bird nests by cattle are low.

The cattle producer community is beginning to utilize tools such as Rangeland Health Assessment Guides which ask questions about variables like plant community structure, integrity and ecological status.

Having the right information and tools are critical for producers to ensure healthy grasslands support sustainable agriculture production, rural livelihoods and functioning ecosystems.

Healthy grasslands also support native pollinator populations. Some may coexist with white or purple prairie clover assisting in nitrogen fixation. Others may ensure milkweed sets seed to reproduce for the next generation of monarch butterflies. Other pollinators make the flight to canola fields, increasing yield by up to 30 per cent.

Managing the effects of agricultural production on water, air, soil quality, ecosystems and biodiversity, maintaining rural livelihoods and increasing food production is a challenge.

Canadian agriculture is being asked to show consumers we share their values of an integrated conservation agriculture landscape where the provision of ecological services is an explicit objective of agriculture and rural development. ■
Web tool to make forage seed selection a snap

Useful to producers as well as to contractors revegetating oil and gas sites

BY TAMARA LEIGH

Forage producers in the B.C. Peace Region will have a new tool available to help them select the best forage mix for their growing region. The project will make the *B.C. Rangeland Seeding Manual* available online along with the added functionality of being able to share the latest information and research on forage varieties.

“The manual was a big effort a couple of years ago and a resource providing information on over 50 species of forage and native plants, and the different considerations for what species to grow in certain situations,” says Sandra Burton, one of the authors of the original manual who is working with the Peace River Forage Association (PRFA) to bring the web tool to life.

Recognizing that print publications quickly find themselves out of date and on the shelf, Burton and co-author, Allen Dodd, pushed to see if someone would pick the manual up and make it an interactive web tool. The Peace River Forage Association recognized the opportunity and took up the challenge to do a regionally based pilot.

“We want to eventually put it on an app or a website so if you’re a contractor sitting on a lease or a producer on your tractor, you can look at the conditions and what you are trying to do and the tool will suggest what species are best to plant,” says Bill Wilson of the Peace River Forage Association. “It’s a tool for producers, workers in the oil and gas sector, or anyone with an interest in revegetation of rangeland.”

The key, says Burton, is creating an interactive tool that is functional and responsive to the needs of the users. To that end, the team is working with a stakeholder group including forage producers, oil and gas industry contractors, seed suppliers, and staff from the B.C. Ministry of Agriculture, B.C. Ministry of Forests, Lands and Natural Resource Operations.

The tool includes features that allow growers to determine what forage varieties will best suit their geographic location and agronomic needs, perform seed mix calculations, and link people making the seed decisions with the seed sources.

“The web platform also makes it very easy to start adding in new information,” says Burton. “Research never stands still, and this tool allows the PRFA to take what it is learning and update it really quickly.”

Technical development is being led by Charles Burnett, web developer with GeoMemes, with funding from Enerplus, Murphy Oil, Shell, Peace Region Forage Seed Association, Peace River Regional District, and the Peace River Agriculture Development Fund. The tool will be available to stakeholders in mid-February, and to the public by the end of July 2014.

**Oil and gas revegetation**

The online forage seed selection tool is just one example of how the Peace River Forage Association is working proactively with farmers and the energy sector to address shared issues and make information available to improve practices.

To date the oil and gas footprint in the Peace River Agricultural Land Reserve is about 35,500 acres with pipelines, roadways, and well sites. Any investment in research and expertise to help revegetate these sites pays off for all of the users of the land.

“The soil conditions on these sites are terrible because a lot of it is subsoil,” says Wilson, who leads PRFA’s forage variety research project. “We want to find species or fertilizer conditions that will help something grow there, and grow quickly to keep invasive species or weeds from getting established, and to prevent erosion.”

The association has also been conducting research on seeding techniques, fertility, timing of seeding and other factors that influence successful reseeding, particularly on the berms that surround well sites and compressor stations.

The information generated by these projects has resulted in a series of soil and revegetation workshops with the University of Northern British Columbia. The courses are available to University of B.C. students, forage producers, agrologists and contractors and employees in the oil and gas sector.
When it comes to bloat prevention for cattle on pasture, timing is everything.

Grazing alfalfa in the vegetative state produces gains comparable to those achieved in a feedlot, but many producers are fearful of going that route, said Tim McAllister, a researcher in ruminant nutrition and microbiology.

“Bloat is still an impediment to the greater use of alfalfa and tame pasture as a method of increasing the productivity of the cow-calf sector,” said McAllister, who works at Agriculture and Agri-Food Canada’s Lethbridge Research Centre.

But the bigger risk is to the bottom line, he said.

“When you look at the extra gain and profitability that you can get from alfalfa, and you offset that against the death loss you may incur with bloat, in most instances you’ll still come out ahead.”

Although there are many factors at play in causing bloat, grazing cattle on alfalfa doesn’t have to be a gamble, McAllister said.

There are many ways to reduce or even eliminate bloat risk, and the greatest mistake a producer can make is simply “letting your guard down,” he said.

“If you want that additional productivity with alfalfa, you have to put in more management in terms of monitoring cattle, using rotational grazing, and keeping your risk at the minimum. You can never become complacent.”

McAllister recommends grazing alfalfa at the flowering stage rather than vegetative, as the flowering plant is digested more slowly and is less likely to contribute to rapid gas production. Allowing swathed alfalfa to wilt for 48 hours before grazing can also minimize bloat risk, but comes with a cost, McAllister said.

“The greatest nutrient value is in the forage while sitting out in the pasture,” he said. “Once you cut it, the plant continues to respire and the nutrient value declines.”

Weather can often play a part in bloat risk as well, McAllister said. In bad weather, cattle can spend long periods of time huddled together without eating. When the weather turns better, they are likely to eat too much and be at a much higher risk of bloat.

For that reason, it’s also not a good idea to let cattle out to graze when they are hungry.

A common misconception is that frost “burns off” an alfalfa plant and removes the risk of bloat, McAllister said.

“The risk of bloat actually goes up after the first frost,” he said, “possibly because of the rupture in the plant cell walls releasing more soluble protein.”

The use of bloat-preventing inputs introduced in the last decade can significantly cut risk as well. The alfalfa variety AC Grazeland, developed to have a slower digestion speed, reduces bloat by about 80 per cent, McAllister said.

Non-ionic surfactants like Alfasure can reduce bloat risk to zero when properly administered to cattle grazing vegetative alfalfa.

“Alfasure is one of the only methods that can bring the bloat risk to zero and still maintain maximum animal performance,” he said.

An alfalfa-sainfoin blend being developed at the Lethbridge Research Centre will offer the same 100 per cent bloat reduction without the use of extra inputs.

“Sainfoin is palatable, high in protein, and is very effective at preventing bloat,” said Surya Acharya, a forage breeder at the centre. “In the past, producers have been discouraged from growing it because of the cost.”

The new sainfoin variety can be seeded at a rate 15 pounds per acre alongside alfalfa at five pounds per acre, he said.

“Not only can this variety survive when grown with alfalfa, it is able to grow back for multiple cuts,” Acharya said.

The variety, dubbed Mountainview, in mixed alfalfa stands reduces bloat by 95 to 98 per cent, even in high-risk scenarios, Acharya said. Mountainview will be available for purchase for 2016 planting.

“In terms of the research going on around the world related to this, it’s probably some of the most advanced,” McAllister said. “And it’s one that could be sustainable at minimum cost since you don’t need to administer an additive.”

Mountainview, a new sainfoin variety, reduces bloat by 95 to 98 per cent in mixed alfalfa stands.
New Kubota Hay Tools

Kubota is pleased to offer a new line of hay tools; strong, compact, low maintenance and easily set for transport. Disc mowers offer 5’6” to 10’5” cutting widths. For fast drying, use Kubota’s TE4052T Rotary Tedder then collect with the single Rotor Rake RA1042T. Do More with Kubota.

Visit us at: kubota.ca   YouTube
Silage the latest candidate for yield monitors

The technology offers the prospect of tracking not only yield, but moisture and nutrient quality

BY RALPH PEARCE, COUNTRY GUIDE

Yield monitors are now common on grain and oilseed farms, though you’re not likely to find one on a dairy operation. But yield monitor technology for silage corn is now a reality, and it shows promise for adaptation to forages as well.

The concept of precision farming was initially adopted with great enthusiasm by some farmers, who used yield monitors and yield mapping to generate many pages of coloured maps and overlays. But that was initially followed by frustration because they were only able to use a fraction of the data the technology could provide.

That’s changed, and what’s been learned with grains and oilseeds may allow the evolution of yield monitors for corn and forage silage to come more quickly.

Kevin Putnam, a dairy specialist with DuPont-Pioneer in Lansing, New York, says developing a yield monitor for silage came with different parameters. Silage and forage quality have greater specificity than merely tracking yield.

For now, yield and moisture levels are still the two most important components in silage corn that can be measured with this configuration, says Putnam. But the technology can also provide higher-quality parameters, including acid detergent fibre (ADF), neutral detergent fibre (NDF), starch and sugar levels, as well as crude protein. John Deere is one manufacturer that has incorporated its HarvestLab and Constituents Sensor technology into its new choppers, while other manufacturers have separate systems that can be added.

In most cases, the yield monitor is a separate unit from conventional systems, which only makes sense, given the quality parameters in silage. It can even read the moisture or starch levels, and then adjust for cut length, which makes this technology an ideal piece of equipment for growers with corn silage, and also opens the door for use in forage crops.

More precision

The short-term hurdle is the precision in measuring those values.

“Right now the constituents aren’t as accurate as we might want them to be,” says Putnam, noting that it’s only a matter of time before those shortfalls are fine tuned.

“What we’d like to do in the next year is validate this system, so that we can say, ‘Here’s a plot, and Hybrid 1 was this level, and Hybrid 2 was this level for both yield and starch.’”

For the time being, laboratory analysis is still needed to confirm or accurately define those readings, but it will certainly provide an in-field thumbnail sketch of a variety of quality parameters.

“And instead of taking one or two samples to the lab from a 300- or 500-foot strip, now I have multiple time points along that whole strip that I can average,” adds Putnam.

The real value isn’t for potential plot evaluation, though; it’s for farmers having the ability to compare hybrids across the whole farm, and see which hybrids perform better under certain soil or field conditions. Also, to help find areas where different management strategies can be practised.

There are even inoculant application units that tie into the yield monitor so the correct rates of inoculants are applied. Last, but perhaps most important, it’s making sure that forages are the correct moisture for cutting, which also includes testing before harvest. Both can lead to a better quality by ensuring crop maturity and promoting good
Qualitative monitoring

Despite the use of terms that are well known for corn, soybean and wheat producers, these yield monitors are considerably different, adds Petheram. Yes, they monitor yield. Yet the big difference with corn silage — and ultimately forages — is that it’s a qualitative monitoring.

The challenge with it is that the guys who are buying one of our Guelph choppers, says Petheram, “don’t have this data yet, but when they go to the field, they’re not sure what to do with that information.” That’s changed, and the experience with yield monitors has been helping predict alfalfa harvest for nearly two decades.

Green Gold Program measures relative feed value and relays results to producers.

View from Canada

In Canada, the uptake has been even slower than that of the U.S, says Dave Pederson, integrated solutions manager at Deere & Co. and Premier Equipment in Elmira, Ont. The University of Guelph has purchased one of the Deere-built choppers, but Pederson agrees there may be some level of sticker shock associated with the units.

That’s changed, and the experience with yield monitors is that it does result in better feed quality, but you often have to see that work in your area or in your field before adoption starts to take place on a wider range.

Harvest Lab sensor which has been helping predict alfalfa harvest for nearly two decades.

Ttwo that applies when harvesting alfalfa is the Manitoba Forage & Grassland Association (MF&GA)’s ‘Green Gold Program’ which has been helping predict alfalfa harvest for nearly two decades. This year, a yield monitor started coming out around 2008-09, but the uptake has been even slower than that of the U.S., says Pederson. That trend is being fought, not only by the functionality of the information it provides, but also through the adoption of one piece of equipment. As farmers upgrade from one chopper to the next, it’s more likely to move up to these new systems that come with it.

In 2013, the farmers had a good year, and this year, it’s looking as though it’s going to be even better, and you look at the list of new choppers that came out this year. In his area of New York state, Putnam is seeing a slow fermentation. With this system, farmers can make better decisions.
At first glance, drought and dairy may not link together.

Unless, that is, you are a Prairie forage producer with intentions on selling part of your crop to American producers. Then drought and dairy are intertwined as two main factors in the success of your pursuits.

“We have a good relationship with dairy producers in Wisconsin that has been fortified by our annual visit to the World Dairy Expo held there each year,” says Chris Kletke, a Manitoba forage producer who chairs the Manitoba Forage Marketers Group (MFM). “But it’s a unique business that is somewhat difficult to establish customer loyalty as everything is on a need-to-have priority demand basis.”

Kletke points to 2012 as an example. Manitoba-grown hay that normally would have been earmarked for dairy farms in Wisconsin was being shipped to beef operations in West Texas as a stop-gap measure to help get those producers through drought conditions. Beef producers in West Texas needed the product and stepped up financially to ensure they received it. It was simply the basic supply-and-demand principle at work.

Last February, Kletke was joined by fellow forage producers and marketers Darren Chapman and Jake Heppner on a fact-finding 10-day mission that took the trio through South Dakota, Nebraska, Kansas and Texas to visit feedlots and beef producers to help build a network for future marketing of Manitoba forages.

“It’s always nice to build a network,” says Chapman, who farms near Virden, Man. “They were all in time of need and reaching abroad with interest in our competitive prices. That said, the demand shuts off overnight when the green grass starts growing and showing up in their local regions.”

Prairie reputation

According to the Canadian Forage and Grassland Association website, Canada is the premier supplier of hay, straw and forage products domestically and internationally. Canada exports approximately 600,000 tonnes of forage product annually valued at $150 million, primarily to United States and Asia, with emerging markets in the Middle East and Mexico.

The Prairie provinces of Alberta, Saskatchewan and Manitoba are all active on the export front.

“Prairie hay has a good reputation,” says Glenn Friesen of Manitoba Agriculture, Food and Rural Development (MAFRD). “Our long days and cool nights are conducive to producing forages that increase animal performance.”

The fact-finding mission also brought home several key factors for future marketing success. Included in this report was highlighting transportation as the largest factor in any forage-marketing plan.

“You need to know your product, stand composition, conditions prior to harvest, stored product condition and storage type,” says Chapman. “But you also have to understand the needs of the buyer before making the deal. Often, this includes transportation. You need to know how you are going to get the product to market or the buyer before you make the sale.”

In this regard, Manitoba producers have explored advantages to support their marketing efforts.

“Manitoba forage producers use packaging that is more transport friendly,” says Chapman. “Other places sell round bales, which are cheaper but come with transportation issues. Manitoba primarily ships medium square bales. Our most common sizes are 3x3x8 bales, and 3x4x8 bales are becoming more popular, especially in straw. We do ship round bales periodically when supply in the United States is extremely short.”

While the proximity to the United States market has developed some strong bonds between Prairie forage producers and their stateside feedlot, dairy and beef networks, there are two international opportunities that the MFM are watching closely.

One is CentrePort, an air/road/rail transportation hub being established just outside Winnipeg.

“We are very interested in CentrePort and how that may influence shipping opportunities via Churchill and we are equally interested in Mexico and the accelerated growth of its dairy operations in the world market,” says Chapman.

Manitoba hay went as far as Texas during the drought of 2012.
It’s a good time for forage producers to get into exporting — but there are pitfalls, too, says the chair of the Canadian Forage and Grassland Association’s forage export committee.

“One of the things we’re realizing is that good data is hard to find, especially when you are talking about exports to the U.S.,” said Marc Lavoie, who operates Macay Entreprises in the Peace River area.

“There are a lot of people that are sending product and it’s not being documented properly, so we don’t have very good numbers on what goes to the U.S.”

More than 95 per cent of Canadian hay is used domestically, with most of the rest going to the U.S., the biggest customer, Japan, South Korea and Taiwan, Lavoie told attendees at a meeting of the Alberta Forage Industry Network last March.

But China’s imports of Canadian forage are increasing, and the United Arab Emirates and Saudi Arabia are developing markets in the Middle East, he said. Niche European markets, like the racehorse industry, are also looking to import quality Canadian hay.

The horse industry wants high-end timothy, while lower-quality mixed hays are used by feed stores in the U.S. The dairy industry in South Korea and Japan want high-fibre, rather than high-protein, hays, while the Middle East buys alfalfa or mixed hays with high protein for their dairy herds. Alfalfa, mixed hay, timothy hay and straw are attractive forages for the Japanese beef market, while Middle Easterners want pure alfalfa hays for camels, goats and sheep. Many global markets are also looking for small quantities of hay for rabbits raised as pets or for food.

It’s also important to keep an eye on demographics, said Lavoie, noting the population of Japan peaked last year and is now edging downward.

“We know that eventually their usage will decline, therefore their forage imports will decline over the next 10 to 15 years,” he said.

Eight years ago, half of Japan’s imports of forage came from Canada, but last year that had shrunk to six or seven per cent because of hay shortages here, the rising Canadian dollar and increased freight costs, as well as increased competition.

However, Canada’s ample supplies of fresh water is an advantage, said Lavoie.

“Our freight costs are still higher than the U.S. but we’re still able to be competitive in certain areas. In some countries, we’re not,” Lavoie said.

Shipping to the Middle East is difficult, especially for producers from Western Canada, and access to containers is also an issue for Saskatchewan and Manitoba growers. Those wanting to export to that region also have to understand what quality is wanted and that Middle East importers want large bales, he said.

“These kinds of things are really important, if you’re looking at doing some export,” Lavoie said.

The Canadian Forage and Grassland Association has undertaken several fact-finding missions. On a trip to China last year, it learned about the country’s plan to double milk production.

“You don’t double your milk production without using double the forage,” noted Lavoie. “China is not able to grow double the forage, so where does it come from?”

On a trip to the Middle East three years ago, it looked at how the United Arab Emirates will adapt to a decision to stop using water to irrigate their forages. UAE forage imports hit 1.5 million tonnes last year and are expected to reach 1.8 million tonnes this year.

“Saudi Arabia has seven times the population of the United Arab Emirates,” said Lavoie. “If it is looking at importing all its forages, that leaves you with a big number that needs to be filled.”

India is also starting to import more forages.

“The poorer countries are starting to eat more like the richer countries, which means they are eating more milk and meat, which means you need more forages,” he said.

“Our freight costs are still higher than the U.S. but we’re still able to be competitive in certain areas. In some countries, we’re not.”

MARC LAVOIE

---

Export opportunities for forage producers are increasing

China’s bid to double milk production will mean a huge increase in forage imports, and opportunities abound in the Middle East

BY ALEXIS KIENLEN

---
Simple separation doubles effectiveness of manure fertilization

System addresses the N:P imbalance by separating manure into two fractions

By Tamara Leigh

The alternative to buying phosphorus fertilizer may be in your own backyard. Researchers at the Pacific Agri-Foods Research Centre (PARC) in Agassiz, B.C. have developed a low-tech system for separating manure into two products better suited to the needs of common dairy forage crops. The result could dramatically reduce the need for phosphorus fertilizer, particularly for corn.

“We focused on the dairy industry, where they bring in a lot of feed and fertilizer in order to maximize the production of the farm,” says Shabtai Bittman, one of the lead researchers on the project for Agriculture and Agri-Food Canada. “They buy nitrogen (N) for their grass and phosphorus (P) for their corn in a context where they have as much and maybe more than what they need from the animal waste.”

Bittman says the crux of the problem is that manure is not used as efficiently as it could be because the nutrient balance in manure does not meet the needs of the crops. While crops need an N:P ration of 8:1 or 10:1, manure is closer to 5:1. Add to that the fact that nitrogen is easily lost during conventional spreading of manure in the form of ammonia (NH₃), and that phosphorus doesn’t always do what you want it to do, and it makes sense for farmers to bring in inputs to optimize crop development.

Bittman, along with his research partner Derek Hunt and their team, have found that separating manure into different fractions corrects some of its natural imbalances, and by changing the way that manure is applied in the fields, they are getting results on both hay and corn that equal the production improvements of commercial fertilizers.

“Instead of using manure as one product ill suited to grass or corn, the dual-manure-stream concept separates manure into two products, a liquid fraction that is higher in N targeted to the grass, and a solid fraction that is higher in P for the corn,” says Bittman.

Doing nothing

“Manure separation is quite well known, but there have been problems because if you wanted to separate products, you had to get quite technical,” he says. “There is a simple way to separate manure to some extent by doing nothing — that’s the appealing thing about this system.”

The researchers have found that the natural separation that happens when manure tanks are allowed to settle, or more quickly in a double-lagoon system, is sufficient to correct the imbalance.

When manure sits in the tank, solid particles sink to the bottom and form a sludge or slurry, and a thinner product sits on top. The thin material, called supernatant, is watery, thin, and has a high level of soluble N. Once spread on the grass, the liquid soaks quickly into the soil, reducing the opportunity for N loss to ammonia.

“We have tested and found significant improvements in N efficiency using this technique,” says Bittman. “It’s about halfway between using commercial fertilizer and spreading whole manure.”

The liquid can be applied using conventional broadcast techniques, or with improved technology like surface banding — the application of liquid fertilizer in bands or strips on the soil’s surface.

The sludge that is left behind after the supernatant is removed has a lower N:P ratio, and becomes a possible source of P for corn.

“We know that the farmers are applying all and more of the phosphorus a crop will use as fertilizer, plus manure, and the soil is already testing high,” says Bittman. “Everyone is growing corn using pre-emergent fertilizer. From the standpoint of farmers trying to optimize their crops, it’s the right thing to do, but not from the standpoint of the environment.”

Placement

The slurry has high enough levels of phosphorus to replace commercial fertilizers, but the challenge is placement. It is critical that the seeds are planted within five to 10 centimetres of the P, so it is available when they need it. The trick, they found, was reversing the order of planting and fertilization.

“The only way to do it, is to do the manure first and then plant the seed, and plant precisely where manure was banded,” Bittman explains. “Phosphorus in manure is equally available as P in fertilizer. We have tested it, and have very good results that show that there is no loss in production and don’t have to buy fertilizer.”

The slurry is applied at the same rate as fertilizer using an injection system with the injectors spaced at 30 inches to match the spacing of the corn rows. The manure is allowed to sit for a few days after application and then plant as close as possible, or even over top of the injection furrow.

“It’s something that people can more or less do with equipment they have, with a bit of adjustment,” says Bittman. “From our standpoint, efficiency is the key. It’s about keeping the system going with the minimum amount of inputs. If you can do that you’ll be a good step on your way to nutrient sustainability.”

To date, this research has been done on small plots, but this summer Dennis Haak will be leading farm-scale demonstrations in the Fraser Valley, as well as a study of on-farm manure facilities.

“There is a lot of variety in how farms manage their manure storage depending on how they are set up,” says Haak. “We have 15 farms that we are sampling and tracking to find out what kind of management systems are more conducive to managing the manure in these separate fractions. If farmers can manage these types of different manure fractions without spending money it will be easier for them to adopt.”
The growing season of 2013 was one for the record books. We had it all: too wet, too dry, too cold, too hot. Although variability in the weather cannot be changed, we can learn to better manage under these conditions. Conservation of water and soil is vital to your success in all kinds of weather.

The 6th World Congress on Conservation Agriculture in Winnipeg, Manitoba, will present new ideas on all these topics and more. Be there June 22-25, 2014, for innovative solutions for challenges facing today’s agriculture. Weatherproofing agriculture is one of three major themes for the conference, along with Growing More with Less and Sharing Innovation Success Stories.
NEW HOLLAND
SMART. 

PETER JAMES

NEW HOLLAND
SMART. 

LEARN MORE ABOUT HOW PETER FARMS SMART
AT NHSMART.COM/PETERJ.

LEARN MORE ABOUT HOW PETER FARMS SMART
AT NHSMART.COM/PETERJ.

LEARN MORE ABOUT HOW PETER FARMS SMART
AT NHSMART.COM/PETERJ.