

Research Priorities for Forage Production in Alberta, Part 1

According to the Canadian Forage and Grassland Association, forage production in Canada creates \$5 billion in economic impact each year. Despite an impact on par with most annual crops, forage production may be relatively underserved in terms of research and development.



What are the major agronomic issues facing forage producers in Alberta today? Where should research dollars be targeted? Which areas will give Alberta the biggest bang for the buck?

In Part 1 of this discussion paper, ACIDF explores these issues by reaching out to forage, beef and dairy producers and industry insiders for their views. In Part 2, we consider research priorities regarding hay for export, forage and legume seed production and the value of forages in a crop rotation.

Forage for beef production in Alberta

“Our profit is in forage and we harvest it with beef.”

Doug Wray’s assessment of his 300-cow operation leaves no doubt where he feels the money is made. Wray, Chair of the Canadian Forage and Grassland Association, who farms near Irricana, believes the role of forages has often been undervalued within the agriculture industry.

How can forages get the respect and acres that Wray thinks they deserve? He advocates greater focus on research, from several angles.

Like many producers ACIDF spoke with for this report, Wray considers forage legumes as an area with vast potential. While some producers make worthwhile use of forages, others hold back, perhaps in part because of outdated fears about bloat.

“That legume component is what makes grass more productive without adding fertilizer,” says Wray. “Alfalfa is a great forage, but having 15% sainfoin in an alfalfa/grass pasture should mitigate bloat risk.”

One of Wray’s top priorities is to maximize the amount of time his animals can graze, without having hay supplied to them. He’s looking for fresh approaches that can stretch the grazing season and keep his feed costs as low as possible.

Despite an abundance of possible research topics around forage, Wray sees a shortage of professionals to do the work. Capacity-building for future research is needed. New forage research should also come with a longer-term timeline and a stick-with-it funding philosophy.

The biggest gains, in Wray’s view, may come when forage producers have the knowledge and tools to give forage the focus it needs. From there, as he sees it, the sky’s the limit.

“We need production systems that are flexible and risk-averse,” says Wray. “The mindset to make forage production all it can be just hasn’t been there. Understanding and management skill will be really important going forward.”

Forage production benefits agriculture and society

As Ron Pidskalny sees it, improving forage production through research should be a priority for the entire agriculture industry -- not *just* for those who grow forages for a living.

"The quality of the forage is reflected in the quality of the output," says Pidskalny, Executive Director of the Canadian Forage and Grassland Association. "In terms of beef production, the result is better-quality beef and higher yield per animal. Dairy producers recognize that high-quality forage means better milk production."

Pidskalny notes that research is needed across a broad front of forage production issues. This includes development of new varieties, new production ideas, agronomy work around inoculants and forage equipment innovation.

Who pays? That's a long-standing dilemma for the forage sector. Typically, a royalty on seed purchases can only be captured once every several years. Meanwhile, there's no checkoff on production itself.

Beyond beef and dairy producers, Pidskalny maintains that forages bring important benefits to the public, even if those benefits are difficult to quantify. Forages improve soil quality, help manage excess moisture on the land and may contribute to reducing the industry's overall carbon footprint. These ecological benefits – provided to the public at no direct cost – argue for a funding role by provincial and federal governments in advancing the value of forage production.

"Suppose you want to develop a new variety of birdsfoot trefoil," says Pidskalny. "It could cost \$600,000 per year to do this work, but the acreage will be low. Some of this work doesn't lend itself to the private sector."

Pidskalny cautions that forage producers can only provide these benefits to the livestock industries, and to the public, if it can be done at a reasonable profit. He advocates research that makes it easier for forage growers to produce profitably, which in turn makes their contribution to the industry and society more sustainable for the future.

"I'm talking about research that raises the gross margin and the contribution margin for production," says Pidskalny.

Canola and other annual crops may get more headlines, but the many benefits delivered by grass and legume forage producers must be recognized -- and enhanced.

Tell the story (and back it up)

Who benefits from new research on forage production? Forage producers, certainly. New knowledge can help them increase production and quality, while lowering costs and managing risk.

Grant Lastiwka looks at forage research in somewhat broader terms. The long-time Beef and Forage Specialist with Alberta Agriculture and Rural Development believes research can also provide a factual platform to explain to the public the benefits of forage and the ruminant livestock that feed on them.

"I've looked at different forage systems, and have found very little research to support what's being done or could be done out there," he says.

Everyone knows that legumes fix nitrogen, and as such, can contribute to higher production in current and subsequent crops, and to long-term soil health. Lastiwka sees the need for hard numbers to back this up. Producers will benefit from this information, and it bolsters the industry's provision of what Lastiwka calls 'ecological goods and services' to society.

"I'd like to know the amount of nitrogen fixed under various forage legume varieties in Alberta and in our western Canadian climate," he says. "I'd like to understand the water-use efficiency of different forage species to make wiser variety choices and the role of forages in rotations to deal with herbicide resistance and diseases in annual grain crops. Research could also help us understand the role of forages in carbon capture."

Alberta is renowned as a center of beef cattle production. Here, Lastiwka issues a call for awareness and action. He sees annual crops exerting a powerful economic gravity on forage producers. He sees forages at times losing the economic argument against canola.

"If we can look at the net return from both these crops, when forages are managed skilfully, how do these net returns compare?" asks Lastiwka. To help keep a robust cowherd in Alberta, he believes economic information on forage systems is critical. This is another area where research can make a contribution.

By the nature of forage production, a year or two of research won't necessarily reveal much. The issues Lastiwka describes will take years to sort out, so funding needs to be longer-term in nature.

"Researching forages is not a quick study," he says. "When we look at that time factor, it's one of the reasons forage doesn't get dealt with very well."

Wanted: better answers on winter grazing

No one likes hauling hay out to cattle in the winter. If people knew what conventional winter feeding actually costs, they'd like it even less. According to one study by Alberta Agriculture and Rural Development, the cost is upwards of \$2.50 per animal per day when all costs are included.

In Carla Rhyant's view, it's no wonder that beef producers are looking for answers.

"Winter cereals are potentially a big opportunity," says Rhyant, Executive Director of West-Central Forage Association. "We've looked at different ways of swath-grazing triticale in the winter. We should also be looking at other crops, like winter wheat and fall rye. We need to know more about the timing of seeding and the economics of this approach."

Rhyant believes that grazing winter cereals could have much to offer. In this approach, a late-summer-seeded crop is grazed between October and roughly December. Cattle graze the regrowth the following spring, the crop grows all summer and is harvested in the late-summer or early-fall.

"It's great to have something nice and fresh and green coming up in the spring that livestock can be grazing prior to being put on perennial pastures," says Rhyant. "We can also capture spring runoff this way. We need to look at what species would work well. We know it has the potential to increase margins for a producer, but we need some work to see how this is best achieved."

Perhaps a previous generation of forage and beef producers was content to follow a traditional gameplan. Rhyant sees a younger group emerging that wants to move forage production closer to its ultimate potential.

“So much has to do with attitude,” she says. “These are the kind of producers who made it through the drought intact and want to carry on. These guys are willing to learn and want to do things differently.”

More legumes, better soil

What would cattlemen in Graeme Finn's native Australia give to be ranching in Alberta? Plenty, he figures.

"In Australia, we don't have a lot of good soil," says Finn, who arrived in Alberta in 1993. "So we look after what we have."

Today, Finn operates a cow-calf and yearling operation on 4,000 rented acres in the Madden area. At any given time, he can have anywhere from 50 cows up to 1,000 yearlings on grass. While Alberta's soil portfolio may have a leg up on Australia's, Finn sees no reason to coast on that asset. He's a vigorous advocate for soil health and sees legumes playing an important role in soil improvement.

"Having legumes in the mix is way better than straight grass, so we use a lot of legumes in our pastures," he says. "There's a misconception out there about legumes and bloat. More legumes are now bloat-tolerant or even non-bloat. I'd say more information on legumes should be made available to cattlemen."

Looking beyond perennial forage production, Finn believes that annual crop producers could benefit hugely from the occasional forage. He sees a canola-wheat-barley-alfalfa rotation as a way to build organic matter, reduce nitrogen costs and improve overall soil health. The optimum rotation of cereals and oilseeds, including a forage legume component, is a worthy subject for research in his view.

As Finn sees it, keeping costs and labor down is the best way to remain profitable in farming. Along with his rented-only land base, Finn practices rotational and swath grazing year-round, with no supplemental feed brought to the cows. He'd like to see more research done on grazing standing corn, and more work on the ins and outs of swath grazing through the winter. These practices, in Finn's view, have the potential to control costs effectively.

"This can take a lot off your budget," says Finn. "You can easily save 50 cents to 70 cents per day per cow."

Multiple streams of value

What do you see when you look at a grass or legume pasture? Ian Murray sees multiple streams of value to nurture.

“There’s the value of the pasture, but there’s also the value of pounds of beef,” says Murray, who runs a 150-cow herd on 1,300 acres just west of Acme. “There’s also water retention, benefit to the soil and even carbon sequestration.”

In the past, grassland was land considered too poor or too dry to be annually cropped. Murray sees himself embodying a new way of thinking about forage resources. He'd like to see forage get the same research focus (and budgets) as other crops.

For example, while pea and lentil growers have long used inoculants to boost nitrogen fixation, Murray asks why forage producers don't have the same toolkit. Inoculants are available for alfalfa, but what about the clovers and milk vetch?

"These other legumes are just as good for soil and for cattle," he says.

Another value-related issue is on Murray's radar screen. He'd like to see forages retain more nutrient value longer into the fall or even winter. Alfalfa, for example, gets woody later in the season and loses a good deal of its feed value. Is there a forage variety that would keep going longer – milk vetch is one candidate, in Murray's view – and help keep feeding costs down?

This cattleman will tell you he's been on a journey of sorts over these many years. At first, his focus was the cows – intensively managing and busily fussing over them. More recently, he's realized that if his soil is healthy, the forage will be too. At that point, herd management gets easier.

"Forage has really developed into my prime focus and passion," he says. "If I look after the forage, the cows will look after themselves."

Cattleman seeks low-cost stand improvement

Today's high beef prices may have cattle producers wondering whether this is some kind of a 'new normal'. Herman Wyering hasn't forgotten what preceded this current run in prices.

"Before that, we had 10 meager years for beef cows," says Wyering, who raises 130 cows and calves on four quarter-sections of land west of Ponoka, all of it in hay or grass. These fields are rotationally grazed, with cows moved every two or three days. Winters, the herd feeds on pasture and is brought hay. The size of the land base makes it likely that Wyering will also buy some forage most years.

If forage research is on the drawing board, he recommends a focus on ways to improve existing forage stands, along with better plant varieties for annual and perennial forages.

As Wyering explains, some of his pastures are up to 40 years old. As a rule, most fields are only grazed twice in a season. Long rest periods in between are one factor that has kept these old pastures comparatively young. Still, he'd like to do even better, possibly by adding various types of legumes, and better varieties of orchardgrass or meadow brome, to energize these fields. He's looking for answers as to which species, or combination, would work best to boost a long-lived pasture.

"I'm always looking for ways to improve pasture with better varieties, by introducing new species into an existing stand," says Wyering. "But this is very difficult to successfully accomplish without breaking up the field."

To some, one approach is to start over and plant a high-performing modern alfalfa variety, for example. Here again, Wyering sounds a cautionary note regarding cost.

"If you seed a new field, the yield will be good but at a high cost," he says. "Apart from the last few months, the price of cattle has not kept up with all the costs related to reseeding."

To improve the soil, understand the soil

When Iain Aitken moved to Alberta from Scotland, he found the abundant land base and the wide-open spaces he was looking for. If there's one thing that surprised him, however, it was the methods used to manage grass pastures.

"A typical situation with grass is that it's been overgrazed for the past 40 or 50 years," says Aitken. "The roots will be an inch long, or an inch and a half if you're lucky. The ground is so compacted, the roots can't penetrate down."

Today, Aitken operates a cow-calf and purebred operation in the Rimbey area. His commercial herd is grass-fed and direct marketed. If researchers could solve one long-term headache for this cattleman, here it is.

"I'm trying to improve these pastures, but they've been grazed to death for years," says Aitken. "Is there a non-mechanical way to do that? How do you remedy root-bound pastures and compacted soils? There seems to be very little research on this."

Aitken advocates greater attention on the soil, particularly strategies for improving poorer soils. He sees salespeople touting the benefits of various soil amendments for pasture, ranging from calcium to compost tea. Is the science behind these innovations solid?

Overall, Aitken believes that a better mindset for managing grass for long-term productivity may be needed. Research would give producers answers about which practices will best meet this goal.

"It's not just about the age of the pasture, because in Europe there are pastures 80 to 100 years old and they get better every year. A greater knowledge of our soil is beneficial for the management of grass. To me, that's the next big thing in grass and forage management."

Forage for dairy production in Alberta

Dairy production is a difficult and complex process, involving bovine genetics, careful animal handling and the use of advanced technology to improve efficiency.

Even so, here's a little inside secret courtesy of Stettler-area dairy farmer Gert Schrijver: it's not *all* about the cows.

"The farmers with the best-producing herds are the best at growing forages," says Schrijver, who milks 250 cows and grows barley for silage on 900 acres of land. "If the forage quality is not there, you'll never get the milk production you want."

This dairy producer takes great care to grow barley so that it provides what his cows need for maximum production. Schrijver aims for high starch levels to control feed costs -- often achieving up to 28% -- and a high level of digestible fiber. Barley is often swathed higher up on the plant than would be conventional, in order to maintain high digestibility.

Accordingly, he is looking for research into barley varieties and production practices that will deliver the feeds he wants. He'd like barley researchers to consider how the characteristics of the crop are influenced by silage practices.

"Our energy levels are just as high as corn in a good year," he says. "There's more research in corn because it's worldwide, but there is not much research done on digestible fiber in barley. Because of growing barley so much, leaf diseases are a big issue for us as well."

Shorter-season corn, better silage technique

What's the best possible ration for dairy cows? Each dairy producer will give you a slightly different -- or very different -- answer to this question.

For Dineke and Arie Phillipsen, the ideal feed component is one that's difficult for Alberta dairy producers to grow for themselves.

"The perfect situation is corn silage, for energy, and alfalfa for protein," says Arie Phillipsen. "Unfortunately, this is just not possible with our short season. We feed our cows one-third corn silage, one-third barley and one-third alfalfa and other hay."

The Phillipsens currently milk 280 cows in the Lacombe area. Until recently, their own crop production was limited to two quarter-sections of land. Unhappy with the quality of corn, hay and alfalfa that's available for purchase, they bought five more quarter-sections of land and hope to move closer to meeting their own feed needs entirely.

Could Alberta-grown corn silage one day be a bigger part of the Phillipsens' feed ration? Not without a good deal of research into the corn component *and* the silage component.

In terms of corn, Arie Phillipsen believes many have overestimated the number of Corn Heat Units suitable for Central Alberta corn production. More research is needed, in his view, to get new hybrids 100- or 200- CHUs lower than conventional thinking suggests.

While silage is a widely practiced technique, Dineke Phillipsen believes that the practice is frequently mishandled. When they go to access silage in the winter, she says, the quality is often less than they need and expect. Thus, research and extension on silage and storage techniques could allow producers to capture more value from what they grow or buy.

"We think 50% of corn is not properly bagged," says Dineke Phillipsen. "You have a nice, beautiful corn crop and very often it is not silaged the right way. As a dairy farmer, you can't afford that."

Dairy producer seeks more natural approach

Ponoka-area dairy producer J.P. Brouwer has taken a thoughtful step back from conventional forage production and feeding practices. He'd sooner feed his 300 milking cows grass rather than grain, believing that grass is closer to the animal's intrinsically suitable diet.

The difficulty is, so much of forage production for dairy is geared around grain and alfalfa.

"Our main forage is a grass silage," says Brouwer. "We grow grass on 300 acres, and we're looking to expand that, and we also have 350 acres where we grow oats and barley for silage. We're able to get relatively high protein in our grass, up to 19% in many cases."

If Brouwer could set research priorities for forage production in dairy, he'd like to see grass-related matters get a fair shake. Specifically, he's looking for answers on the issue of optimum harvest timing. In his experience, harvesting grass on the early side means desirably higher protein, but typically lower yields. Harvesting later is associated with higher yields, but often lower energy. What's the best balance?

Fertilizer is another issue on Brouwer's forage research to-do list. He's looking to move away from synthetic fertilizers, without sacrificing plant nutrition.

"I feel our land should work in a cycle, the same as the water cycle," he explains. "To me that means not constantly applying huge amounts of fertilizer. We like to have our grass stands pure for feed consistency, but I'd like to explore clover-grass blends as the product appears to be healthy for cows and is nitrogen-fixing. The challenge would be to maintain a consistent clover-grass stand."

Like many forage producers, Brouwer is now looking below the level of plant production and is keenly focused on the issue of soil health. He suspects that salt-based synthetic fertilizers could negatively impact soil health. Research into soil issues as they impact forage production would be welcome.

“If you take good care of the soil, microbial life flourishes,” says Brouwer. “You get deeper roots, stronger plants, greater drought resistance and better nutrient intake by the plants.”