MANITOBA AGRICULTURE / SEPTEMBER 2025

Beef and Forage Technical Bulletin 18th Edition

Manitoba 2024 Pasture Feed Test Results

In 2024, Manitoba Agriculture conducted a pasture forage survey with producers across Manitoba to assess feed quality and the mineral status of forages. Sampling took place from late August to mid- September and included pastures under continuous, stockpiled, and rotational grazing systems. Forage quality ranged from mature stands to young regrowth, and included tame, native and grass-legume mixes. Variation in quality largely reflected differences in forage maturity at the time of sampling.

All results reported on a dry matter (DM) basis (Sampled late August-mid Sept)

There were 43 pastures surveyed

Sample Description	RFV	Protein%	TDN%	%P	%Ca	%K	%Mg	Cu (ppm)	Mn (ppm)	Mo (ppm)	Zn (ppm)
Tame Grass Pasture (10 samples)											
Average	94.7	13.3	59.4	.22	.54	1.8	.24	**4.17**	**52.8**	**4.1**	20.4
Range	79-121	9.7-22.6	54.3-68.9	.12-.31	.35-.81	1.45-2.55	.13-.35	2.55-6.35	26.5-88.1	1.19-11.7	12.4-36.7
Native Grass Pasture (18 samples)											
Average	87.8	9	57.6	.13	.48	1.25	.25	3.08	67.5	2.4	19.6
Range	74-102	6.2-15.3	53.1-65.3	.07-.33	.12-.74	.71-2.75	.09-.42	1.8-5.5	24.8-175.7	1.2-7.4	12.8-29.6
Grass/Legume Pasture (15 samples)											
Average	96.4	12	60.3	.22	.63	1.7	.25	4.5	55.9	4.2	19.5
Range	83-113	6.9-21.8	52.8-68.5	.1-.4	.33-1.12	1.05-2.69	.13-.35	1.93-8.23	22.4-137.1	1.4-11	10.2-29.7
Nutrient requirements for 1210 lb. Cow milking 17.6 lbs./day late lactation (5 months post calving)											
Minimum Requirement	DM 25.6 lb	9.9	60	.16	.24	0.70	0.20	10.0	40.0		30.0
Max. Conc.						3.0	0.40	100.0	1000	5.0	500.0
Nutrient Requirements for 550 lb. Large Frame Steer Calf 2.5 lb. ADG											
	12.6	15.7	75	.31	.64	0.6	0.1	10	40		30
Nutrient Requirements for 770 lbs. Large Frame Steer Calf 2.6 lb. ADG											
	18.3	11.3	70	.22	.43	0.6	0.1	10	40		30

Discussion

The livestock nutrient requirements cited in this report are from the Nutrient Requirements of Beef Cattle Eighth Edition. Forage samples were tested by wet chemistry at Central Testing Laboratories in Winnipeg.

The average dry matter content across all pastures was 39.2%, with crude protein averaging 11.1% and Total Digestible Nutrients (TDN) at 59%. However, 58% of the pastures fell below the 9.9% crude protein requirement for a late-lactation cow, and only 33% met or exceeded the energy requirement of 60% TDN.

Protein & Energy

Native pasture had the lowest overall forage quality, with crude protein at 9% and TDN at 57.6%. Tame grass had the highest protein content at 13.3% and 59.4% TDN, while grass-legume mixes averaged 12% protein and 60.3 % TDN. Overall, vegetative regrowth provided the highest feed quality, while stockpiled mature forage had the lowest.

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Calcium & Phosphorus

Calcium is the most abundant mineral in an animal's body, with approximately 98% stored in the bones and teeth, compared to about 80% of the body's phosphorus.

Calcium and phosphorus levels were highest on average in grass-legume pastures, at 0.63% and 0.22% respectively, and lowest in native pastures at 0.48% and 0.13%. All but one pasture met the calcium requirement of 0.24% for a cow in late gestation.

83% of native pastures did not meet the phosphorus requirement of 0.16%, compared to 30% of tame grass pastures and 20% of grass-legume pastures.

In general, legume forages contain the highest levels of calcium, followed by moderate levels in tame grasses, and the lowest levels in native forages.

Zinc

Zinc plays a vital role in growth rate, skin health, reproduction, skeletal development and the metabolism of protein, carbohydrates and fats. The recommended dietary allowance (RDA) is 30 mg/kg of dry matter (DM), or 30 ppm in the ration. Across all samples, the average zinc level was 19.74 ppm, with minimal variation among forage types. All but one pasture tested below the minimum zinc requirement.

Copper

Signs of copper deficiency include loss of hair pigmentation (such as a reddish tinge in black cattle), lameness, diarrhea and reduced production and reproductive performance. Recent research led by Dr. Cheryl Waldner at the Western College of Veterinary Medicine in Saskatoon, SK, found that 64% of mature beef cows in Western Canada and 59% in Eastern Canada had inadequate copper levels.

With an average copper level of 3.85 ppm, all pastures tested were below the recommended requirement. The dietary copper requirement is 10 mg/kg of dry matter (DM) and can be higher when excessive levels of sulfur or molybdenum are present, as these elements interfere with copper absorption. The maximum safe concentration of copper in the diet is 40 mg/kg to avoid toxicity. Copper levels were lowest in native pastures at 3.07 ppm, compared to 4.17 ppm in tame grass and 4.53 ppm in grass-legume pastures. **All pasture types fell short of meeting the minimum copper requirement.**

A copper (Cu) level of 10 mg/kg of DM is generally adequate if dietary molybdenum (Mo) is below 2 ppm. However, copper requirements increase when Mo levels are higher, as Mo interferes with copper absorption. Elevated sulfur (S) levels—above 0.25% of dietary DM—as well as high iron levels, also reduce copper absorption. In situations where Mo or S levels are elevated, consider using a chelated mineral source to improve copper availability.

Molybdenum

On average Molybdenum was 3.43 ppm across all pastures, with the highest levels found in grass-legume pastures (4.2 ppm) and the lowest in native grass pastures (2.4 ppm). The highest individual pasture tested at 11.7 ppm. Overall, 51% of the pastures exceeded the 2 ppm molybdenum threshold.

Manganese

Cattle require 40 mg/kg of manganese (Mn) in the diet on a dry matter basis. The overall average Mn level across all pastures was 59.9 ppm; however, 30 % of the pastures fell below the minimum requirement.

Other:

Potassium is the third most abundant mineral in the body. High potassium (K) levels may reduce magnesium (Mg) absorption.

High calcium (Ca) & phosphorous (P) in diet may increase manganese (Mn) requirements.

Summary

Given the low copper and zinc levels found in pasture forages, mineral supplementation is very important. Inconsistent free choice consumption on pasture can make this challenging. Using a mineral supplement with higher levels of copper and zinc, or a chelated blend for improved absorption, can help ensure adequate intake. Always read the label to verify content. Offering mineral more frequently can increase consumption, as livestock are more likely to eat it when it's fresh and palatable. Mixing mineral with salt may also encourage intake, provided high salinity isn't already an issue on the pasture. To prevent spoilage, use mineral tubs with covers to protect against weathering.

During winter feeding programs, it is easier to provide consistent mineral supplementation. Including minerals in a total mixed ration or mixed with grain or silage (force feeding) helps ensure cattle receive adequate levels to build body and liver reserves before going to pasture. This is especially important in the period leading up to and during the breeding season.

Fall forage quality was below the protein and energy requirements for a lactating cow in more than half of the pastures sampled. This indicates that supplementation may be necessary, or that pasture management strategies—such as rotational grazing—may help to maintain forage in a more vegetative, nutrient-rich state. Selective grazing by livestock can result in the consumption of higher-quality forage, but it may not fully compensate for overall low forage quality.

Thank-you to all the participants in the survey!

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Johne's Disease – An Old Disease Still Impacting the Beef Industry

Dr. Deanne Wilkinson – Animal Health Surveillance Veterinarian with MB Agriculture

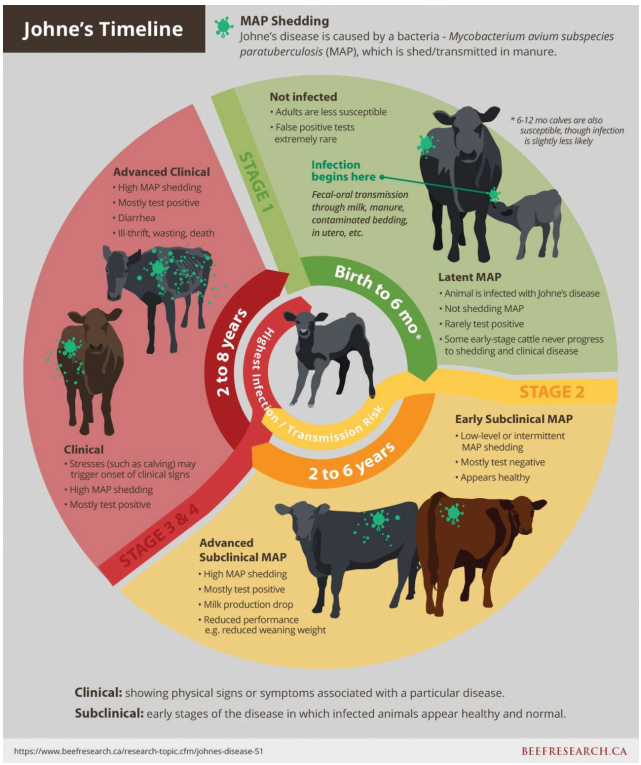
Although "Johne's disease" is not a new condition, with its identification dating back to 1895 in Europe, many producers may be unaware of its complexities and potential impact on beef production.

The bacterium causing "Johne's disease", Mycobacterium avium paratuberculosis (MAP), leads to chronic, permanent inflammation and thickening of the intestinal walls. MAP can only reproduce when living inside a host cell and is mainly found in a specific white blood cell (macrophage) in susceptible host species, such as cattle, bison, sheep, goats and deer, as well as some non-ruminant species, like rabbits, raccoons and foxes.

The intestinal thickening observed in a MAP infected bovine is very similar to the intestinal changes noted in humans diagnosed with Crohn's disease. The potential for MAP to cause disease in humans is a hotly debated subject with many unanswered questions. At this time, MAP has been documented to infect humans, but it is unknown whether this infection was the direct cause of disease.

MAP is mainly spread through the feces of an infected animal, although it can also be transferred through colostrum, milk and in-utero during advanced stages of the disease. Cattle are usually infected early in life, with their susceptibility to MAP being greatest during the first few months of life, though theoretically any age of animal can become infected.

Although infected animals may begin showing clinical disease as early as two years of age, most do not display the tell-tale signs until five years of age or later. The clinical course of this disease makes it very difficult to manage.



After animals are infected, the bacterium multiplies within macrophages in their intestines, leading to a thickening of the intestinal wall. This impairs water and nutrient absorption, which leads to muscle wasting, weight loss and extremely watery diarrhea in an animal that maintains a normal appetite.

Early in disease, infected cattle will sporadically shed the organism in their feces, with greater shedding occurring during times of stress, such as at calving. As the disease progresses, the infected animal will begin to have circulating antibodies to MAP, although they will be unable to clear the infection. At some point, the animal will begin to rapidly lose weight and watery diarrhea develops.

Cattle showing clinical signs will typically shed MAP more consistently in their feces, allowing for easier detection of MAP through diagnostic testing. The fact that infected animals sporadically shed the organism prior to demonstrating clinical signs allows for the potential infection of any calves that are in contact with their feces or contaminated water.

MAP is simply a challenging disease. In addition to the lack of effective treatments or vaccines, the organism can survive over a year in the environment and animal testing is imperfect. Two main testing options are available: one looks for antibodies to the organism (an enzyme-linked immunosorbent assay or ELISA test) in serum and the other identifies MAP DNA (polymerase chain reaction or PCR test) in feces. Antibody production occurs later in the course of disease, meaning an infected animal may have a negative ELISA test while still being positive. Due to the sporadic shedding of MAP in feces, an infected animal may also test negative on a fecal PCR. So, a negative test does not mean that animal is truly negative and they may test positive in the future.

As MAP has typically been considered a "dairy disease", many beef producers have not implemented herd-level MAP screening other than in areas where subsidized testing programs have been developed. Unless a herd has experienced one or more animals with wasting and watery diarrhea, it is not often on a beef producer's radar. But once a producer begins dealing with MAP in their herd, they understand that the clinical cow may just be the tip of the iceberg.

The following steps can be taken by producers to assess their risk and reduce impacts on their herd:

- Speak with their veterinarian or visit the Beef Cattle Research Council's (BCRC) Johne's Testing Decision Tool to determine if MAP testing is suitable for their herd
- Test any cattle with significant weight loss and watery diarrhea for MAP
- Consider testing the leaner cows and/or open cows in your herd, especially if a majority of the herd is in good body condition – producers who keep replacement females need to be more aggressive with their testing
- When purchasing cows and bulls, ask whether the herd of origin has experienced thin cows with watery diarrhea or has done any MAP screening – honesty and responsibility need to become a priority within the beef industry
- Seriously consider shipping or culling replacement females or bull calves from positive cows

Many other approaches can be implemented to deal with MAP once it's detected in a herd, but as every farm is unique, a MAP strategy for the operation must also be unique. Exceptions and creative plans may be applied to purebred herds with high value genetics, with the understanding that avoiding heavy culling still comes with the risk of not eliminating the disease. Producers should speak to their veterinarian or scan the QR code for the BCRC website.

Tax Planning From A Position of Strength

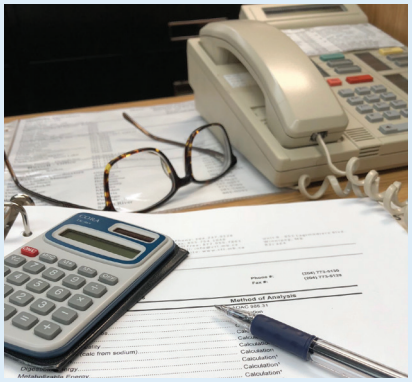
Wendy Durand, P.Ag.

Does it seem too early to start planning for taxes? If the farm business holds a December 31 year-end, perhaps not. When using the cash method to calculate your taxable income, an annual tax check-up should take place before your year-end and not the following year when your tax return is prepared – at that time it will be too late to implement tax planning strategies.

Even though calves may still be on pasture, and crops are mid-harvest or standing in the fields, September and October are excellent times to meet with a tax accountant and start looking ahead for tax and planning purposes. If the farm is incorporated with a different year-end date, know each tax situation is unique, so ask for a timeframe that works best for your operation.

Pre-tax planning allows producers to plan for upcoming income and expenses. Make or hold off on major equipment purchases, sell or wait to sell livestock and grain-tax planning will help avoid unforeseen tax implications of your decisions.

What should you do when planning a pre-tax meeting with your tax accountant?



- **Start early.** Set an appointment with your accountant. September and October will allow for time to make end-of-the-year decisions. Planning in advance is an advantage for cattle producers where 2025 sale cheques may be larger than historical averages.
- **Come prepared.** If the books are up to date, bring these to your pre-tax meeting. Any reports your farm financial software program may generate, share that information in advance in electronic format with your accountant.
- **Look ahead.** What are estimated future expenses? Will any additional income come in before December 31?
- Did you purchase or trade any equipment? Bring the purchase agreements/ trade papers for this year's equipment purchases.

After reviewing the numbers, if your operation has a surplus, what sound business decisions can you make with the profit?

- Maintenance and repairs. Schedule a time before the end of the year to repair equipment, buildings, or make land improvements, such as fences, waterers or control invasive species.
- Pay down debt, with a plan. Every situation is different, so ask your accountant about your financial position and most impactful payments.
- If purchasing goods for the farm business, know that there are Canada Revenue Agency (CRA) rules in place that must be complied with if an expenditure is going to be allowed as a deduction under the cash method of accounting.
- If considering downsizing or retiring, it's even more critical to reach out to your trusted professional advisors for advice on tax planning strategies.

With weaning around the corner and harvest in full swing, take the time to prepare and set up a pre-tax planning appointment with your tax accountant and trusted professional advisors. Advance planning from a position of knowledge will help ensure timely decisions are made for reaching short and long-term financial goals.

Options for Livestock Producers to Help Manage Dry Conditions

Below normal precipitation across much of the province may leave livestock producers short on winter feed or facing tight supplies, depending on how the season unfolds. Fortunately, cattle are adaptable and can be fed a wide variety of feedstuffs if the ration is properly balanced. Planning and exploring alternative feed options early is key for managing dry conditions.

Understanding Nutritional Needs and Feed Planning

Developing a sound feeding strategy starts with understanding the cow production cycle and anticipating changes in nutritional requirements. Feed testing is essential – especially when using alternative feeds- to ensure rations meet animal needs and to identify any risks such as nitrate accumulation, which can result from drought or frost stress in annual crops like oats, barley or millet.

Alternative feed options include tame or wild hay, off-quality grains, greenfeed, pellets, straw, screenings, silage, and even some vegetables. Proper ration balancing will ensure these feedstuffs are used safely and effectively.

Alternative Feed and Forage Options

Annual crops such as oats, barley, wheat, sorghum or millet can be harvested as greenfeed or silage. For optimal yield and quality, cut cereals during the early to soft dough stage. Crop residues like corn stover, cereal or pea straw can also be used; cattle tend to prefer oat or barley straw over wheat and one-year-old straw even more. When feeding high fibre feeds like straw, energy and protein must be supplemented with grain and other sources of protein like canola meal, or dried distillers' grains for example.

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Take Stock and Plan

If you haven't done so already, take inventory of your feed supplies and livestock. Determine the number and weight of animals, the expected feeding duration, and how much feed you have – this includes weighing bales if their weights are unknown. From there, assess whether your feed resources are adequate. If there's a shortfall, consider buying feed, selling livestock, or arranging custom feeding.

Feed Testing and Ration Balancing

Testing your feed is crucial for building an effective winter-feeding program. Contact your local Manitoba Agriculture or MASC office to arrange feed testing. Once results are available, specialists can help you balance rations using the CowBytes ration software to meet the specific needs of your herd – supporting both production and reproductive performance.

Manitoba Hay and Straw Listing Service

The Manitoba Hay and Straw Listing Service provides current listings for hay, straw and alternative feeds for sale and pasture for rent. If you have feed or land available, or are looking to buy feed or rent pasture, visit web31.gov.mb.ca/HayListCIntExtrnl/ or call 1-844-769-6224.

Additional Strategies for Managing Feed Supply

Supplementing cows on pasture

Providing supplemental grain – such as five pounds of barley or corn per cow per day – can extend the grazing period by boosting daily energy intake by 40-50% per pound of grain. This helps maintain cow body condition while continuing to utilize available forage.

Creep Feeding Calves

Creep feeding supplements calf nutrition when pasture or milk is insufficient. It promotes growth and weaning weight. Oats are a preferred feed, as they support growth without causing calves to become overly fleshy – a risk with higher -energy grains like corn or barley.

Early weaning

Weaning calves as early as 120 days can significantly reduce forage demand. At this age, calves rely less on milk, and removing them eases the nutritional demand on cows. Research shows cow intake can drop up to 40% post-weaning, easing pressure on limited feed resources.

Extended grazing to reduce winter feeding requirements

Extending the grazing season with stockpiled forage, swath grazing, stubble, chaff corn grazing, or bale grazing can reduce the need for harvested feed. This method returns nutrients directly to the land, reducing yardage, feeding, and manure management costs while benefitting future crop production.

Ammoniating forages improves feed quality

Ammoniation can enhance the feed value of low-quality and high-moisture forages. Ammonia (NH_3) improves digestibility by breaking down fiber, and acts as a preservative by killing molds and bacter improving feed quality under constrained conditions.

For assistance with feed testing, ration balancing or exploring alternative feeding options, contact your local Manitoba Agriculture office or visit the **Dry Conditions** web page at https://www.gov.mb.ca/agriculture/crops/moisture-drought.html

If you would like to be added to our information-sharing list, please email or text Juanita Kopp (Juanita.Kopp@gov.mb.ca, 204-825-4302). Your input or topic ideas are always welcome.

Contact us

- Go to manitoba.ca/agriculture
- Email us at agriculture@gov.mb.ca
- Follow us on X @MBGovAg.
- Visit your local Manitoba Agriculture Service Office