WesternBeef
DEVELOPMENT CENTRE

17th Annual
Summer Field Day
June 23, 2015

at the Termuende Research Ranch
Lanigan, Saskatchewan

Practices To Prevail in a Changing Industry

WBDC office located in Humboldt, SK
2215 - 8th Avenue (Highway 5 West)
Box 1150 S0K 2A0
Phone: 306-682-3139
Fax: 306-682-5080

Collaboratively linking lab and land for the competitiveness and sustainability of the cow-calf industry in Saskatchewan.

WesternBeef
DEVELOPMENT CENTRE

PRACTICES TO PREVAIL IN A CHANGING INDUSTRY

WBDC 2015 Summer Field Day

AGENDA

9:30 a.m.
REGISTRATION AND COFFEE

10:00 a.m.
WELCOMING REMARKS FROM:
Tracy Evans, Saskatchewan Ministry of Agriculture
David Gullacher, President and CEO of PAMI
Duane Thompson, WBDC Advisory Committee

10:15 a.m.
WHAT REALLY MATTERS IN GRAZING MANAGEMENT
Jim Gerrish, American GrazingLands Services, May, Idaho

11:30 a.m.
PRACTICES TO PREVAIL: COW-CALF SURVEY FINDINGS
Kathy Larson, Beef Economist, WBDC

12:00 p.m.
ANNOUNCEMENT OF THE "21-DAY CALVING CHALLENGE" WINNER
by the Saskatchewan Ministry of Agriculture

12:10 p.m.
LUNCH, TRADE SHOW AND NETWORKING

1:30 p.m.
BUS TOUR STOPS (20 to 30 minutes each)
Cicer Milkvetch for Stockpiled Forage: Dr. Paul Jefferson, WBDC
Selecting Cows for Feed Intake: Dr. Bart Lardner, WBDC
Zero-Till Opener Comparison for Sod Seeding: Nathan Gregg, PAMI
Supplementing 2nd Calvers for Breeding Success: Federico Anez, U of S
Evaluation of Annual Forages for Stockpiling: Dr. Bruce Coulman, U of S
Drone Demonstration: Courtesy of Farm World, Humboldt

4:00 p.m.
SASKATCHEWAN FORAGE COUNCIL ANNUAL GENERAL MEETING

5:30 p.m.
BBQ STEAK SUPPER ($10.00 tickets must be purchased at the registration desk)

6:30 p.m.
MAKING COST EFFECTIVE PASTURE IMPROVEMENTS
Jim Gerrish, American GrazingLands Services, May, Idaho

7:30 p.m.
CLOSING REMARKS

What Really Matters in Grazing Management

Jim Gerrish, American Grazing Lands Services
May, Idaho

Most pastures around the country are only producing at a quarter to half of their actual production potential due to failures in grazing management. Those that are producing at higher levels are often not doing so profitably because the operators have tried to substitute purchased inputs for sound management.

There are a few foundational principles that are the keys to successful and productive pasture management. Matching stocking rate to carrying capacity is the first key. Recognize that carrying capacity varies seasonally, so stocking rate must also be adjusted throughout the year. Trying to carry a fixed number of animals year-around almost always leads to degraded pastures and disappointing animal performance. Think in terms of a flexible stocking rate. Using high stock density as a management tool creates benefits too numerous to list here.

Virtually all negative aspects of grazing impact are associated with grazing stock for extended periods of time on the same pasture at low stock density. Shortening the time a pasture is exposed to livestock while increasing stock density is the most consistent route to improved pasture condition and productivity. Understanding the nuances of balancing pasture use with recovery time is the key to improving soil health and quality. Worldwide, the greatest cause of diminished pasture productivity and vigor is grazing too short and coming back to the pasture too frequently.

If you view pasture in the sense that grass feeds the grass, grass feeds the soil, and, then, grass feeds the livestock, the productivity of your pasture will increase tremendously. If you only see pasture as feeding the livestock, you will most likely be stuck in the rut of low pasture production and an ongoing need for supplementation or feeding stored forages even during the growing season.

Animal productivity comes from maintaining an appropriate level of nutrient intake by the livestock. Failure to ensure adequate intake results in disappointing animal performance and very often the inability to pay your bills. Understanding the interrelationship among these four factors is what really matters in grazing management.

Practices to Prevail: Cow-Calf Survey Findings

Kathy Larson, Beef Economist, WBDC

WCCCS
Western Canadian Cow-Calf Survey

You may recognize the above logo, you may not. The Western Canadian Cow-Calf Survey was a collaborative effort involving representatives from the Provincial Producer Associations, Provincial Ministry of Agriculture specialists, the Beef Cattle Research Council, Canfax and the Western Beef Development Centre to revive and expand a production survey last conducted in 1998 in Alberta.

The survey asked 58 questions about the 2014 calf crop as well as herd and grazing management practices. Just over 400 completed surveys were received with 49% from AB, 24% from SK, 18% from MB and 8% from BC, representing a little over 76,000 breeding females. The results below are aggregate results, in the coming months results by province, herd size, producer age and soil zone will be released. All findings will be made available at www.wbdc.sk.ca/wcccs.htm

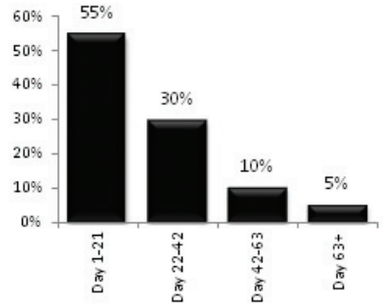
Avg Cow : Bull Ratio – 25 : 1

Avg Breeding Season Length – 93 d

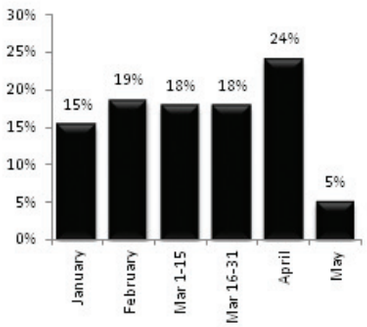
24% of question respondents followed the recommended target of 63 d or less

Open Rate 7%
Calving Rate 90%
Calf Death Loss 7%
Wean Rate 86%

WCCCS Avg Calving Distribution



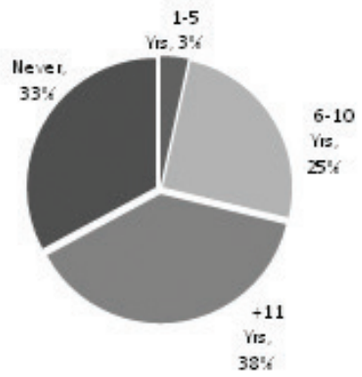
Most Common Calving Start Month: MARCH



TOP 3 Bull Selection Criteria:
Breed, Conformation & Birth Wt

60% Pregnancy Check
64% Semen Test Bulls
19% Body Condition Score
91% Vaccinate
24% Implant Calves

Pasture Rejuvenation



Stockpiled Forage Quality of New Cicer Milkvetch Varieties

Paul G. Jefferson, WBDC, Box 1150 Humboldt, SK S0K 2A0, Canada pjefferson.wbdc@pami.ca,
Bruce Coulman, U of S, 51 Campus Drive, Saskatoon, SK., and Surya Acharya, Agriculture and AgriFood Canada, Lethbridge Research Centre, Box 3000, Lethbridge AB T1J 4B1

Introduction: Cicer milkvetch (Astragalus cicer L.) (CMV) is a bloat safe legume with high forage quality for grazing during the growing season and as stockpiled forage for fall grazing (Loeppky et al. 1996). Oxley II and Veldt ar new cultivars of CMV have been released from the Lethbridge Research Centre (Acharya 2001; 2009). The objective of this project was to compare stockpiled forage quality of CMV cultivars in mixture with hybrid bromegrass (Bromus inermis x B. riparius).

Materials and Methods:

Entries:

1. Oxley CMV
2. Veldt CMV
3. Oxley II CMV
4. AC Grazeland alfalfa

Mixture: Knowles Hybrid bromegrass

Management Systems:

1. Hay and Stock-piled regrowth
2. Simulated grazing
3. Stockpiled year-long

Conclusions and Implications:

Oxley II and Veldt CMV cultivars exhibit similar forage quality as Oxley CMV when stockpiled for fall grazing.

References

Acharya S.N. 2001 . AC Oxley II cicer milkvetch. Can. J. Plant Sci. 81: 749-751.

Acharya S.N. 2009. Veldt cicer milkvetch. Can. J. Plant Sci. 89:511-513.

Loeppky, H.A., Bittman S., Hiltz M.R. and Frick B. 1996. Seasonal changes in yield and nutritional quality of cicer milkvetch and alfalfa in northeastern Saskatchewan. Can. J. Plant Sci. 76:441-446.

	Lethbridge		Saskatoon		Lanigan	
	2013	2014	2013	2014	2013	2014
			CP %			
Alfalfa	10.5	12.1	13.43	11.73	11.1	13.2
Oxley	14.8	16.2	12.15	9.18	13.8	14.2
Oxley 2	14.4	16.5	11.81	9.16	14.1	14.9
Veldt	13.3	14.2	11.93	9.93	12.6	15.0
LSD	1.98	2.05	0.87	0.39	ns	ns
Hay & Stockpile	14.1	16.2	9.42	10.91	14.8	14.9
Grazing	17.4	18.5	15.23	13.92	-	17.8
Stockpile	8.3	9.6	-	5.18	11.1	10.3
LSD	1.72	1.78	0.71	0.29	3.37	1.49
			TDN %			
Alfalfa	49.7	50.1	61.2	56.9	51.1	58.2
Oxley	60.1	60.6	61.6	56.8	62.1	60.1
Oxley 2	54.8	55.7	61.2	57.0	59.0	63.2
Veldt	54.8	55.6	61.4	57.5	59.2	60.3
LSD	1.22	1.59	ns	ns	ns	3.09
Hay & Stockpile	59.1	54.1	62.6	58.4	65.7	63.1
Grazing	55.0	58.0	60.1	60.2	-	65.2
Stockpile	50.5	54.4	-	52.5	50.0	53.0
LSD	1.05	1.38	0.64	0.46	7.53	2.92

TABLE 1. Crude Protein (CP) and Total Digestible Nutrients (TDN) concentrations in fall harvested forage of CMV varieties harvested at three sites and two years.

Evaluating Efficiency and Development in Beef Cattle

H.A. (Bart) Lardner, G.B. Penner, K. Larson and D. Damiran

COMPARISON OF FEED EFFICIENCY AND DEVELOPMENT SYSTEMS FOR HEIFERS

- Measures of efficiency include feed intake; feed conversion (DMI/ADG);
- Net feed efficiency or residual feed intake = difference between the actual feed intake and expected feed intake based on size and growth over a specified period.
- Evaluate heifers developed to 2 pre-breed weights in differing systems
- Do cattle naïve to extensive grazing - require adaptation period or learning period

OBJECTIVES

- Validate commercial marker panels currently available and determine correlation (relationship) between heifer (phenotypic) traits and panel marker (genotypic) scores
- Determine if re-ranking exists for feed efficiency (rfi) between 2 consecutive trials in animals fed same diet
- Develop heifers at two targeted pre-breed body weight (BW) in extensive vs intensive systems. Compare performance, reproductive efficiency and development costs.

MATERIALS AND METHODS

Trial 1 Over 3 yr, 210 heifers (initial BW=257 kg; initial rib fat=2.6 mm) were fed for a 21 d adaptation and 90 d data collection on a forage-based (80% processed grass-legume hay; 20% rolled barley) diet (11% CP; 66% TDN) in GrowSafe Intake Systems

- Individual animal DMI and feeding behavior was determined. The RFI was calculated for each animal using a model which included ADG, mid-metabolic BW, and DMI. Hair samples submitted and marker panel scores (Igenity) were determined for DMI, ADG
- Trial 2 Over 3 yr 190 heifers developed in bale graze or drylot at moderate (MG) or high gain (HG).
- Animals fed diet of mixed hay (9.8% CP; 57% TDN) and barley grain (12% CP; 85% TDN) over 202 d development period

RESULTS

- Trial 1 RFI was calculated for each period (P1 + P2) using models, which included ADG, mid-metabolic BW, and feed (DMI) intake
- Greatest DMI was for high RFI (8.7 kg/d), least ($P < 0.05$) for low RFI (7.3 kg/d) animals, and moderate RFI (8.1 kg/d).
- Residual feed intake was different ($P < 0.05$) and averaged -0.73, -0.02, and 0.73 kg/d for low-RFI, moderate-RFI, and high-RFI, respectively
- Low Spearman rank correlation ($r = 0.24$; $P < 0.001$) was observed between phenotypic RFI and Igenity panel RFI score.
- About 49% of heifers maintained their RFI rank; 51% had a different RFI rank in period 2
- Further, 28% of the heifers changed their RFI in period 2 by >-0.5 SD, whereas 72% of heifers changed by ≥0.5 SD. Results indicate that re-ranking exists for rfi, despite animals receiving the same diet in 2 feeding periods.
- Trial 2 MG heifers had lower (0.7 kg/d) ADG than HG heifers (1.0 kg/d) during development
- From summer breeding to fall pregnancy diagnosis, ADG was greater in MG heifers than HG heifers (0.9 vs. 0.6 kg/d).
- First-calf pregnancy rates were 86 and 88% for MG and HG heifers, respectively.
- Second- and third-calf pregnancy rates of cows, developed in either a MG or HG system as heifers, were not different (94.7 vs. 95.9% and 93.8 vs. 93.9%, respectively).
- Economic analysis revealed a $60 reduced development cost for MG heifers without a loss in reproductive performance

Summary

- Phenotype vs genotype study suggested that SNP's in marker score panels are less associated with economically relevant traits for beef cattle under western Canadian environmental conditions fed forage-based diets.
- Further studies are needed using western Canadian cattle breeds – the use with other selection tools such as performance data and expected progeny differences

Zero-Till Opener Comparison for Sod Seeding

Nathan Gregg, PAMI

Site: 50-year old stand of crested wheatgrass at Termuende

Rejuvenated with: AC Grazeland alfalfa pre-innoculated for N fixation

Seeding rate: 8 lb/ac **Seeding date:** May 31, 2011

Pre-seed burnoff? Half the plots received glyphosate application 2 weeks prior to seeding.

Equipment: Specialized 3 m wide plot drill with six commercially available seed-opener shank assemblies

1. ¾" (19 mm) knife – Narrow knife single-shoot opener places seed in a narrow row, with minimal soil disturbance.
2. Paired-Row (3/4" deep band) – Double shoot opener places 2 rows of seed 4" (10 cm) apart, with a fertilizer row centered between and ¾" below the seedbed, ensuring good fertilizer and seed separation.
3. Paired row (same plane) – Double shoot opener places 2 rows of seed 4" apart, with a fertilizer row down the centre and on the same plane as the seedbed.
4. Sideband (3/8" (9 mm) deep band) - Double shoot opener places seed on a shelf 1 ¾" (4.5 cm) to the side of a centre fertilizer row 3/8" below the seedbed.
5. Sideband (same plane) - Double shoot opener places seed to the side and on the same plane as a centre fertilizer row.
6. Twin Shank – Twin shank, double shoot opener places seed 1 ½" (3.8 cm) to the side of a centre fertilizer row 3/4" below the seedbed.

Weather: Near normal temperatures for entire growing season and above normal moisture for July at 4.5 inches, but below normal for August and September.

Results: No differences in soil disturbance, seedling establishment, forage yield or botanical composition between openers. Note: that these are one-year, one-site results. Glyphosate pre-seeding suppressed the grass, but did not kill it, which allowed for improved seedling counts and

Pre-Seeding Treatment	Seedlings per m row	DM forage yield kg/ha	Biomass % alfalfa
Glyphosate	52	3036	42
No Glyphosate	22	2358	1

Opener	Seedlings per m row	DM forage yield kg/ha	Biomass % alfalfa
1	51.6	3036	31.5
2	52.1	2712	31.2
3	37.7	2476	17.5
4	50.7	2807	31.4
5	46.6	2963	27.4
6	57.8	2533	32.1
P value	<0.01	0.40	<0.01

For more: Watch the YouTube video at https://youtu.be/35XOgQn__6g

Fig 1a. Plots with glyphosate pre-seeding

Fig 1b. Plots with NO glyphosate pre-seeding

Supplementing 2nd Calvers for Breeding Success

Federico Añez

- Many producers have difficulty getting young cows rebred, which is problematic because it typically takes 6 calves to recoup replacement heifer development costs (Larson 2012)
- Fat supplementation is one way to increase energy density of a ration and improve reproductive performance of breeding females
- Aim of study is to evaluate postpartum to pre-breeding supplementation to enhance the percentage of breeding females cycling, improving overall pregnancy rates in young cows, and shortening the calving season for a more uniform and heavier calf crop in a cost effective manner
- If pellet supplementation strategies have the potential to increase the number of 2nd calvers that get pregnant with their third calf, retention is improved thereby improving profitability
- 3-year study (2014-2016) looking at the supplementation of 2nd calvers grazing CWG pasture with pellets having different fat sources for 42 d prior to breeding season start
- Treatments (n=3) include: 1) CAN (canola for mono-unsaturatured fat source); FLX (flax for poly-unsaturated fat source), and; CON (control with no pellet supplementation)
- Animal measurements collected: weight, body condition score, resumption of cyclicity, pregnancy rate, and calving interval
- The table below has first year results, year 2 is in progress. Please note, three years of results are needed to draw conclusions on the supplementation strategies.

Reproductive performance of cows and birth weights of calves (mean ± sd)

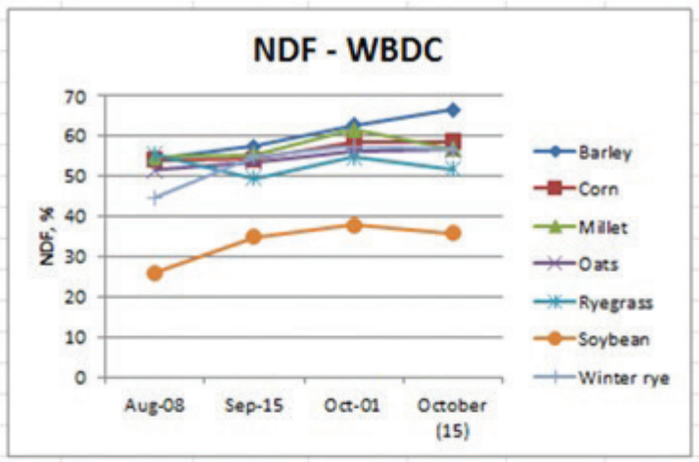
	Treatment[z]		
Item[y]	**CON**	**CAN**	**FLX**
Cyclicityx (%)			
T1	33.3 ± 14.4	33.3 ± 14.4	25.0 ± 25.0
T2	100 ± 0.0	91.7 ± 14.4	66.7 ± 14.4
Pregnancy rate (%)	91.7 ± 0.1	100.0 ± 0.0	100.0 ± 0.0
C-C (d)	380 ± 6	389 ± 6	382 ± 4
Birth weight (kg)	40.9 ± 3.5	41.7 ± 2.2	40.2 ± 2.1

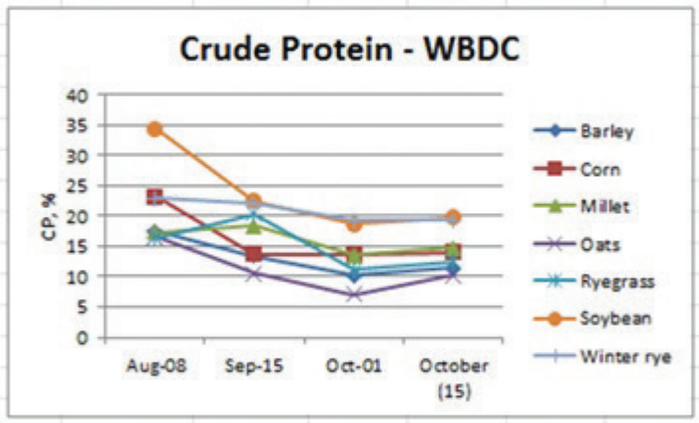
[z]**CON:** non-supplemented groups; **CAN:** supplemented groups with 8.8 kg/cow/d of canola seed based pellet; **FLX:** supplemented groups with 8.3 kg/cow/d of flaxseed based pellet. **T1** = start of supplementation period; **T2** = end of supplementation period and start of breeding season. [x]Percent of cows cycling within paddocks. [y]**C-C** = calving interval.

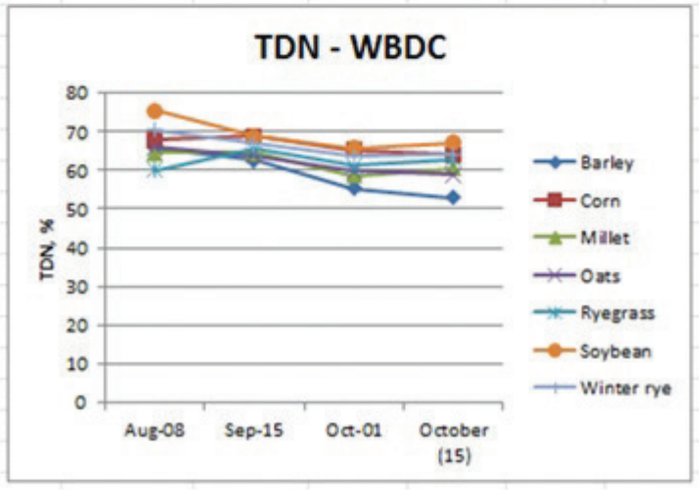
Evaluation of Annual Forages for Stockpiling

Dr. Bruce Coulman, University of Saskatchewan

2014 Results on annual forage quality at WBDC







Drone Demonstration

Drones or UAVs (unmanned aerial vehicle) are gaining popularity in the world of precision agriculture. We are pleased to have FarmWorld demonstrate a Precision Drone® (www.precisiondrone.com) at the 2015 Field Day.

Key Components of Precision Drone ®

- **Precision Vision** - Composite image overlay system that shows crop health. Photosynthesis efficiency in plants is detected using infrared imaging.
- **Geo-Referenced Scouting** – Walk directly to problems in the field. Drop geo-referenced pins on the map for identification or crop scouting. Re-inspect the same location.
- **Prescription-Based Solutions** – Apply chemical only where it is needed, decrease over-application on health areas, decrease the potential for run-off, increase yields.
- **Failsafe** - The Drone Flies Home - As an added safety net with the flip of a switch your Precision Drone® will return to its original takeoff location
- Kit Includes: PaceSetter drone, controller, Precision Vision System, Auto-pilot system, command centre, live feed and monitor, dual battery charger, 6 batteries, Two 16GB Micro SD cards, protective case

Drone use in livestock agriculture

The May 2015 issue of Canadian Cattlemen featured a story on Dr. John Church, Cattle Research Chair at Thompson Rivers University near Kamloops. Dr. Church is testing 10 different brands of drones, so far his favorite is the DJI Inspire 1 (www.dji.com).

Drone use by Saskatchewan producers

Trevor Scherman who farms near Battleford, SK has been using a DJI Phantom drone to take video and photos of his operation since last summer. To see some of the footage captured by Trevor – visit his YouTube Channel at https://www.youtube.com/user/tschermanacres. Extra batteries and prop guards were recommended purchases according to his wife Michelle.

The DJI Phantom 3 Advanced sells at Staples.

Transport Canada Regulations

In November 2014, Transport Canada released exemption requirements to fly drones without special permission. If the drone is 2 kg or less in weight, the following exemptions are required:

- Be safe, well trained and know the rules of the sky
- Be 18 years old, or at least 16 years old to conduct research under academic supervision
- Have at least $100,000 liability insurance
- Be alert—not tired or under the influence of alcohol or drugs
- Inspect your UAV and site before flight to ensure they are safe
- Get permission before you go onto private property
- Inform Air Traffic Services if your UAV enters controlled airspace
- Give right-of-way to manned aircraft
- Fly during daylight and in good weather
- Keep your aircraft in direct line of sight and always be able to see it with your own eyes
- Verify that radio frequencies/transmissions won't affect control of your UAV
- Have an emergency plan ahead of time
- Carry a copy of your UAV exemption, proof of liability insurance, contact information, and aircraft system limitations
- Follow the manufacturer's operating and emergency procedures, including those if the remote control loses contact with the aircraft
- Respect laws from all levels of government
- Operate only one UAV at a time, with a single remote control
- Immediately stop all operations if you can no longer meet the exemption requirements or if the safety of a person, property or other aircraft is at risk
- Stay at least 30 metres away from people, animals, buildings, structures, and vehicles not involved in the operation

For more visit: http://www.tc.gc.ca/eng/civilaviation/standards/general-recavi-uav-2265.htm

Making Cost-Effective Pasture Improvements

Jim Gerrish, American GrazingLands Services
May, Idaho

We all know there are management choices we can make with our pastures to increase their productivity, but very often we question the value or potential profit of these practices due to the added costs associated with most pasture improvement projects.

The first thing to understand is that you will always get what you manage for. If your pastures are thin and weedy with low carrying capacity and poor animal performance, you need to ask yourself why they are like that. If you have been managing this particular pasture for anything more than just a couple of years, the answer is most likely the management you have imposed on the pastures is the cause of the problem.

That might be a hard pill to swallow, but it is an accurate assessment. The first step towards pasture improvement is to end the management that created the problem. Generally the first improvement that needs to be made on most pastures is additional stock water development and subdivision fences that will allow you to manage the time of grazing exposure on every acre of pasture or rangeland. After that we can look at other practices such as nutrient management, species diversification, or even reseeding a pasture entirely. Note that 'nutrient management' is different from 'fertilization' which most farmers consider to be something done strictly with purchased commercial fertilizers.

Timing of when you graze a pasture, the stock density at which it is grazed, and decisions related to harvesting and feeding hays or silage are all parts of nutrient management. Diverse pastures containing a wide array of plant species including grasses, legumes, and forbs in both the annual and perennial categories have a wide array of benefits beyond what an N-fertilized grass monoculture or a simple grass-legume mix can provide. These benefits range from stimulating soil biology to enhancing the richness of flavor in grass-fed beef. It is rare that I encounter a pasture where complete reseeding is my choice for pasture improvement, but occasionally I do come across such a beast. When we do, seeding a multi-species pasture with grasses, legumes, and forbs will get you down the road toward reaping the benefits of diversity much more quickly than allowing natural diversity to develop over time.

Remember the first thing that needs to be done is change the grazing practices that created the problem pasture in the first place.

WesternBeef
DEVELOPMENT CENTRE

THANK YOU SPONSORS!

The Western Beef Development Centre is grateful for the generosity of this year's sponsors.

SPECIAL DISTINCTION
Termuende Trust Fund

GOLD

Blair's Crop & Livestock Solutions
CAN/SK Angus Association
Saskatchewan Stock Growers Association
Saskatchewan Cattlemen's Connection
Tru-Test Group
Western Producer

SILVER

AAFC
Boehringer-Ingelheim Canada Ltd.
Discovery Ford Sales Ltd.
Hergott Farm Equipment
Kelln Solar
Lamb Acres Electric Fencing
Merck Animal Health
RBC Royal Bank
Saskatchewan Charolais Association
Saskatchewan Simmental Association
SCIC (SK Crop Insurance Corp)
SeCan
T & L Seeds

WBDC acknowledges strategic support provided by Canada-Saskatchewan Agri-Food Innovation Fund

WBDC thanks its founding partners:
Cattle Marketing Deductions Fund, Horned Cattle Purchases Fund, Saskatchewan Ministry of Agriculture, Viterra, University of Saskatchewan

Collaboratively linking lab and land for the competitiveness and sustainability of the cow-calf industry in Saskatchewan.