WesternBeef
DEVELOPMENT CENTRE

15th Annual Summer Field Day June 25, 2013

at the

Termuende Research Ranch
Lanigan SK

RIDING TECHNOLOGY INTO THE FUTURE

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

RIDING TECHNOLOGY INTO THE FUTURE

WBDC Summer Field Day
Tuesday, June 25, 2013

9:30 a.m. (in Coverall)
REGISTRATION

10:00 a.m. (in Calving Barn)
WELCOME & OPENING REMARKS
VP WBDC Dr. Paul Jefferson, PAMI Board Chair Tim Oleksyn
SK Ministry of Agriculture representative,
Termuende Family representative

10:30 a.m.
Tools for Raising Successful Replacements
Dr. Colin Palmer, Western College of Veterinary Medicine,
University of Saskatchewan

11:15 a.m.
Producers' Challenges in Breeding Heifers and Young Cows
Colby Elford and Travis Peardon
Saskatchewan Ministry of Agriculture

11:45
Dryland Grass Breeding in Saskatchewan
Dr. Bruce Coulman
University of Saskatchewan

12:15
LUNCH & TRADESHOW

1:30 p.m.
(meet at Round Barn)
BUS RESEARCH TOURS
Stockpiled Perennial Forage Grazing—Dr Bart Lardner (WBDC)
Sainfoin for By-Pass Protein and Digestive Efficiency
Dr. Alan Iwaasa (SPARC)
RFID Tag Testing Results and Bio-Digester Results
Dr. Joy Agnew (PAMI)
A Post Mortem on Winter Feeding 2012-13
Murray Feist (Saskatchewan Ministry of Agriculture)
Absinthe Control in Pasture—Nadia Mori (Saskatchewan Ministry of Agriculture)
Painful Procedures and the Beef Code of Practice
Dr. John Campbell (WCVM)

5:00
CLOSING REMARKS

5:30
(in Coverall)
BBQ STEAK SUPPER ($10)

2013 Field Day Keynote Presentation
Tools for Raising Successful Replacements

Dr. Colin Palmer, Associate Professor
Large Animal Clinical Sciences, Western College of Veterinary Medicine

Dr. Colin Palmer is an Associate Professor at the Western College of Veterinary Medicine. Dr. Palmer is extensively involved in teaching undergraduate theriogenology and is primarily responsible for the palpation and obstetric labs. He is actively involved in providing clinical service in the Large Animal Clinic and Field Service areas. His primary clinical interest is food animals, especially cattle.

Originally from Nova Scotia, Dr. Palmer has worked in mixed practices in Ontario and British Columbia and owns/operates a practice in Saskatchewan. Dr. Palmer, along with his wife Kim and children Lauren, Emily, and Carter, run a herd of purebred Red Angus cattle under the KC Cattle Co. Name.

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TOOLS FOR RAISING SUCCESSFUL REPLACEMENTS

Dr. Colin Palmer, Western College of Veterinary Medicine

Goals

- Heifers bred at 13-15 months to calve at 22-24 months
- Herd calving interval of 12 months
- Cows should remain in the herd for seven-plus years

Puberty in heifers

- Marked by a single event – estrus behaviour and ovulation occurring at the same time
- Influenced by age, **body weight**, **genetics**, and possibly season of birth and bull exposure

Body Weight

- Should be 55 to **65%** of mature weight at breeding
- Feeding programs must be tailored to the type of cattle to achieve adequate body weight. Don't forget about minerals and vitamins

Genetics

- Crossbreeding can be used to decrease the age of puberty
- Scrotal circumference – bulls with larger scrotal circumferences sire daughters that reach puberty sooner and with greater lifetime fertility. Scrotal circumference is highly heritable, unlike other reproductive traits
- Herds using bulls with bigger scrotal circumferences have more calves born earlier in the calving season, and more pregnant cows
- Expected Progeny Differences (EPDs) are the most accurate way to rank animals on genetic merit for various traits. EPDs for scrotal circumference, stayability, and heifer pregnancy can be used in the selection of sires to produce replacements
- Remember to use EPDs to compare bulls within a given breed, not between breeds
- Match Genetics to the environment
- There is no correct breed/ type of cattle for all situations; however, your type of cattle must be able to achieve the aforementioned goals efficiently (feed, yardage, labour)

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PRODUCERS' CHALLENGES IN BREEDING HEIFERS AND YOUNG COWS

Colby Elford, Travis Peardon

Keys to Successful Breeding

- **Planning:**
  Set goals and make changes to meet those goals
- **Nutrition**:
  Animals in good condition are much more likely to breed
- **Minerals:**
  Trace minerals have an impact on fertility
- **Pull Bulls and Preg Check:**
  Set a finite breeding season and stick to it. Eliminate open cattle.

ADOPT: Estrus Synchronization and Artificial Insemination in Commercial Beef Production

Table 1: Cost of Natural Breeding

Cost of Bull	**$3,000**	**$4,000**	**$5,000**	**$6,000**
Salvage Value	$1,500	$1,500	$1,500	$1,500
Final Cost	**$1,500**	**$2,500**	**$3,500**	**$4,500**
Yardage, Feed Pasture $/year	$1,000	$1,000	$1,000	$1,000
Vet Costs $/year	$100	$100	$100	$100
Death Loss (10%/year*4years)	$1,200	$1,600	$2,000	$2,400
Total Cost (4 years)	**$7,100**	**$8,500**	**$9,900**	**$9,500**
# of calves sired	120	120	120	120
Bull cost/calf	**$59.17**	**$70.83**	**$82.50**	**$94.17**

Table 2: Cost of Estrus Synchronization and Artificial Insemination

Semen Cost	**$20**
Drug costs	$25.54
AI Tech	$20
Clean Up Bull Cost ($4000 bull)	$28.33 (40% * $70.83)
Total Cost	**$93.87**
Cost Without Tech	**$73.87**

Benefits of Estrus Synchronization and Artificial Insemination we have seen:

- more concentrated calving season
- more time for heifers to recover for next breeding season

Benefits of Estrus Synchronization and Artificial Insemination we expect:

- heavier weaning calves
- better replacement heifers
- more profit

Dryland Grass Breeding for the Canadian Prairies

Dr. Bruce Coulman

Tame forage grass breeding in western Canada is mainly carried out by the University of Saskatchewan/ AAFC collaborative program in Saskatoon and at AAFC Swift Current. The main species worked on in the Saskatoon program are the tame grasses meadow bromegrass, hybrid bromegrass and crested wheatgrass. A number of improved varieties have been released in all three grasses since 2000 and breeding for improved productivity continues.

A minor part of the Saskatoon program is devoted to the improvement of the tame species timothy, orchardgrass, tall fescue and intermediate wheatgrass. Native grass breeding is led by AAFC Swift Current with goal of developing genetically diverse, adapted seed sources of native Canadian species. Seed is now available for seven different species and breeding work continues on others, including northern wheatgrass, side-oats grama and bluebunch wheatgrass.

The University is also working on forage oat and barley with new varieties having been released for both species in the last two years. The recent announcement by the Saskatchewan Ministry of Agriculture of the creation of a forage breeding chair at the University of Saskatchewan will insure that forage breeding will continue into the future.

Stockpiled Perennial Forage Grazing

Dr. Bart Lardner

Background

Feeding costs represent 63 to 68% of the cost of raising a beef cow (Larson 2010). Producers are adopting extensive feeding systems due to costs associated with drylot pen feeding which can include increased labour, manure removal, and equipment usage. Grazing stockpiled perennial forages in field paddocks with minimal supplementation may be an alternative fall and winter extensive feeding system.

Objectives

To determine the effects of grazing stockpiled forage compared to feeding similar baled forage in drylot pens on beef cow performance and reproductive efficiency, forage biomass and quality, forage botanical composition, and system economics.

Materials and Methods

Three-year winter-feeding study conducted at WBDC's Termuende Research Ranch, Lanigan, Saskatchewan. A 24-ha field of meadow bromegrass (*B. riparius*)-alfalfa (*M. sativa*) was subdivided into six, 4-ha paddocks.

Two replicated (n=3) systems (treatments): (i) Grazing stockpiled perennial forages in field paddocks (SPF); and (ii) Drylot pen feeding round hay bales (DL). Each year, 60 dry, pregnant (120±30 d) Black Angus beef cows (BW=1430±15 lb) were randomly allocated to one of two replicated (n=3) wintering systems.

Cow data collected included BCS, rib fat, rump fat, DMI, and reproductive data. Forage data collected included forage biomass, forage quality, utilization, and botanical composition.

Table 1. Chemical composition of stockpiled forage and hay

	Treatments	
Item[z]	SPF	DL
CP (% DM)	8.5	8.4
ADF (% DM)	39.1	37.2
NDF (% DM)	65.1	59.3
TDN (% DM)	58.9	57.9

[z]CP = crude protein; ADF = acid detergent fibre; NDF = neutral detergent fibre; TDN = total digestible nutrients.

Table 2. Effect of winter feeding systems on forage yield and utilization

	Yield (lb/ acre)	Botanical composition (% DM)		Utilization (%)
		Grass	Legumes	
SPF	4339	80	20	75.0
DL	3845	77	23	93.0

Table 3. Effect of winter feeding system on cow performance

	ADG[z]	DMI	ΔBCS	ΔRib fat	ΔRump fat
	……. lb/hd/day …….			…… mm ……	
SPF	1.16	31.0	0.12	1.4	0.9
DL	1.41	26.7	0.06	1.0	1.0

[z]ADG = average daily gain; DMI= dry matter intake; ΔBCS= change in body condition score; ΔRib fat = change in rib fat; ΔRump fat= change in rump fat

Conclusions

Cow performance and reproductive efficiency was similar between cows grazing stockpiled perennial forages or feeding similar quality hay in drylot. Stockpile forage grazing costs were 13% lower compared to drylot feeding. Grazing animals on dormant pasture is potentially a more efficient system in terms of nutrient recycling.

GRAZING SAINFOIN FOR BY-PASS PROTEIN AND DIGESTIVE EFFICIENCY

Dr. Alan Iwaasa

Background

Cattle producers in western Canada are unable to maximize the potential benefits from the use of alfalfa as a feed source due to fear of pasture bloat. Researchers (AAFC-SPARC and LRC) have demonstrated that condensed tannin (CT) containing sainfoin does not cause pasture bloat when grazed directly by cattle, and can prevent bloat in alfalfa pasture even when present in low (about 15%) proportions. Sainfoin is best adapted on Brown, Dark Brown and Black soil zones and has the reputation of being drought-resistant, develops a deep branched taproot and hollow stems. Sainfoin begins to grow in the spring before other perennial legumes and starts blooming as much as two weeks before alfalfa. The potential benefits from the inclusion of sainfoin in alfalfa stands has not been realized because currently-available sainfoin varieties (Melrose and Nova) are unable to maintain stand density and yield beyond a three- to four-year time frame, as well as the re-growth of these varieties are very slow. Several new populations of sainfoin developed at LRC with a view to identify cultivars that contain ideal CT content, are capable of producing high biomass in pure stands and compete well in mixed stands with alfalfa.

Great Forage/Grazing Potential and Non-Bloating

Results in Lethbridge (three cuts) showed that the three newly-developed sainfoin populations (LRC05-3900, LRC053901 and LRC05-3902) produced higher biomass both in pure and mixed stands with alfalfa than Nova under simulated grazing conditions over three to four years. In contrast, results in SPARC (one to two cuts) showed the opposite, with Nova producing the higher biomass both in pure and mixed stands with alfalfa. Difference in observed results may be because of the fact that the stands at SPARC were harvested less and Nova is adapted to that condition. Under direct grazing of mixed alfalfa pasture, no incidence of bloat was observed in Swift Current over the three years. The new sainfoin populations and Nova did not differ in forage quality. All four sainfoin in mixed alfalfa stands produced similar (non-significant) average daily gains and total live production (178-268 kg per ha)] when grazed directly.

Figure 1. Dry matter proportion (%) of the mixed alfalfa + sainfoin sward that was made up by sainfoin after three years of grazing (2010-2012).

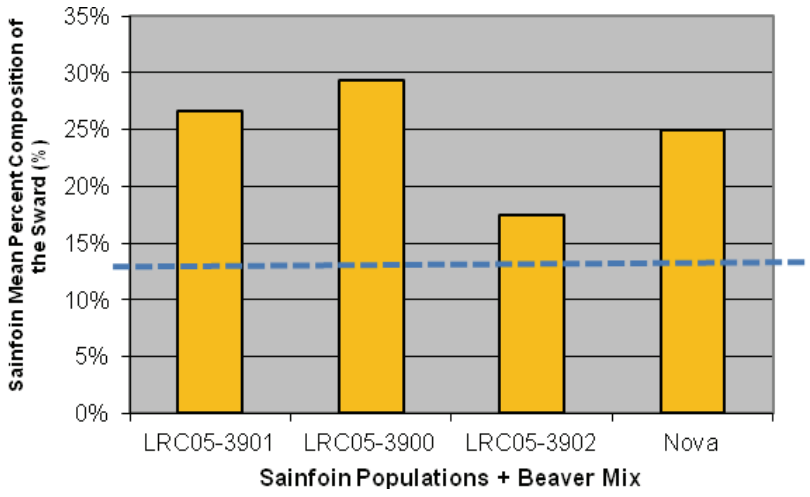
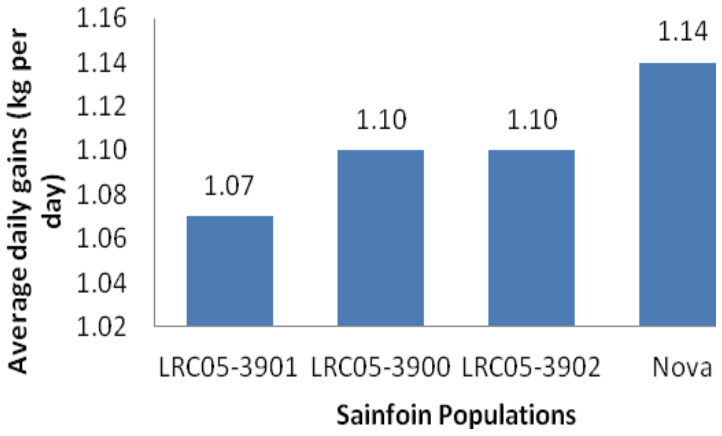


Figure 2. Average daily gains (kg/d) of commercial Red Angus steers on four sainfoin/alfalfa mixed pastures average over three years (2010 to 2012) at Swift Current, SK. (8.6 AU per ha).



Improved Nutritional Efficiency Benefits

The new sainfoin populations and Nova did not differ in forage quality. Sainfoin has the same nutritional value as alfalfa but does not cause bloating. Since its forage quality does not decline as rapidly, sainfoin can be grazed at full maturity. We also know that animal performance improved for diets containing CT's (monoculture or mixed with alfalfa) as compared to the pure alfalfa forage, due to enhanced N utilization attributable to the action of CT. When cattle consume highly-nutritional (high in fermentable carbohydrate and protein) forages, this high-quality protein is broken down in the rumen by micro-organisms and much of it is converted to ammonia and then converted to urea in the liver, which is then excreted in the urine.

Sometimes only 10% of the protein in the diet is available to the animal. In the case of sainfoin the CT associated with the protein prevents the micro-organisms from breaking down the protein and this becomes bypass protein, which travels to the small intestine where it is digested by enzymes and absorbed into the body as amino acid. Bypass protein in the form of essential amino acids has been shown to increase both the level and efficiency of animal production. Therefore, in summary, the N in sainfoin is retained and utilized by the animal more efficiently and this bypass protein has additional benefits leading to better animal performances, especially for high performing growing animals.

Ongoing research

Sainfoin research evaluating the three different newly-developed sainfoin populations (LRC05-3900, LRC053901 and LRC05-3902) compared to Nova as monocultures and mixtures with alfalfa at SPARC and Lethbridge under direct and simulating grazing will continue for four more years as a result of funding support from Saskatchewan ADF (2013-2017).

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POST MORTEM ON WINTER FEEDING 2012-13

Murray Feist, SK Ministry of Agriculture

Nutrient Values of Forage Crops in Saskatchewan, 2010 – 2013

	Crude Protein, % DM	Total Digestible Nutrients, % DM	Neutral Detergent Fibre, % DM
Alfalfa Hay			
2010	14.6	57.2	57.2
2011	17.2	58.3	51.1
2013	15.8	56.9	53.9
Alfalfa Grass Hay			
2010	12.7	56.9	62.4
2011	12.0	57.2	60.0
2013	11.7	55.1	62.2
Oat Hay (Greenfeed)			
2010	8.7	60.4	57.4
2011	10.4	60.1	58.8
2013	10.4	57.1	62.5
Barley Hay (Greenfeed)			
2010	11.3	63.0	46.1
2011	11.5	61.8	53.5
2013	11.6	58.7	59.7

Winter 2012/13 Feeding Issues

- Feed Quality
- Length of Feeding Season
- Hay quality poor
  - ⇒ late gestation/lactation
  - ⇒ Vitamin A deficiencies
  - ⇒ High Fibre = feed intake issues
- Alfalfa weevil
- Ergot / Mycotoxins

No Feed Test on Forages → Inaccurate Feeding Programs!!!!!

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Field Day Survey

Date of Field Day: June 25, 2013

Please help us make next year's Field Day even better by answering these few questions and turning it in. Please check off or mark the best response.

1. I heard about the Field Day:

☐On TV ☐On Radio ☐On the Internet/Website

☐By poster ☐Word of mouth ☐Invited by someone

2. I would prefer the Field Day on:

☐Monday ☐ Tuesday ☐ Wednesday ☐Thursday ☐Friday ☐Saturday

3. I would rate today's topics as: (please circle):

	Very Good	Good	Neutral	Poor	Very Poor
Tools for Raising Successful Replacements	5	4	3	2	1
Challenges in Breeding Heifers and Young Cows	5	4	3	2	1
Dryland Grass Breeding in Saskatchewan	5	4	3	2	1
Stockpiled Perennial Forage Grazing	5	4	3	2	1
Sainfoin for By-Pass Protein and Digestive Efficiency	5	4	3	2	1
RFID Tag Testing Results/Bio-Digester Results	5	4	3	2	1
Post Mortem on Winter Feeding 2012-13	5	4	3	2	1
Absinthe Control in Pasture	5	4	3	2	1
Painful Procedures and the Beef Code of Practice	5	4	3	2	1

5. One thing that I would change/suggest for next year is:

Enter to win a prize when you turn in the above survey:

Name: _____ Phone no.:_____

The Western Beef Development Centre would like to thank this year's sponsors

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Cattle Marketing Deductions Fund, Horned Cattle Purchases Fund
Saskatchewan Ministry of Agriculture, Viterra, University of Saskatchewan