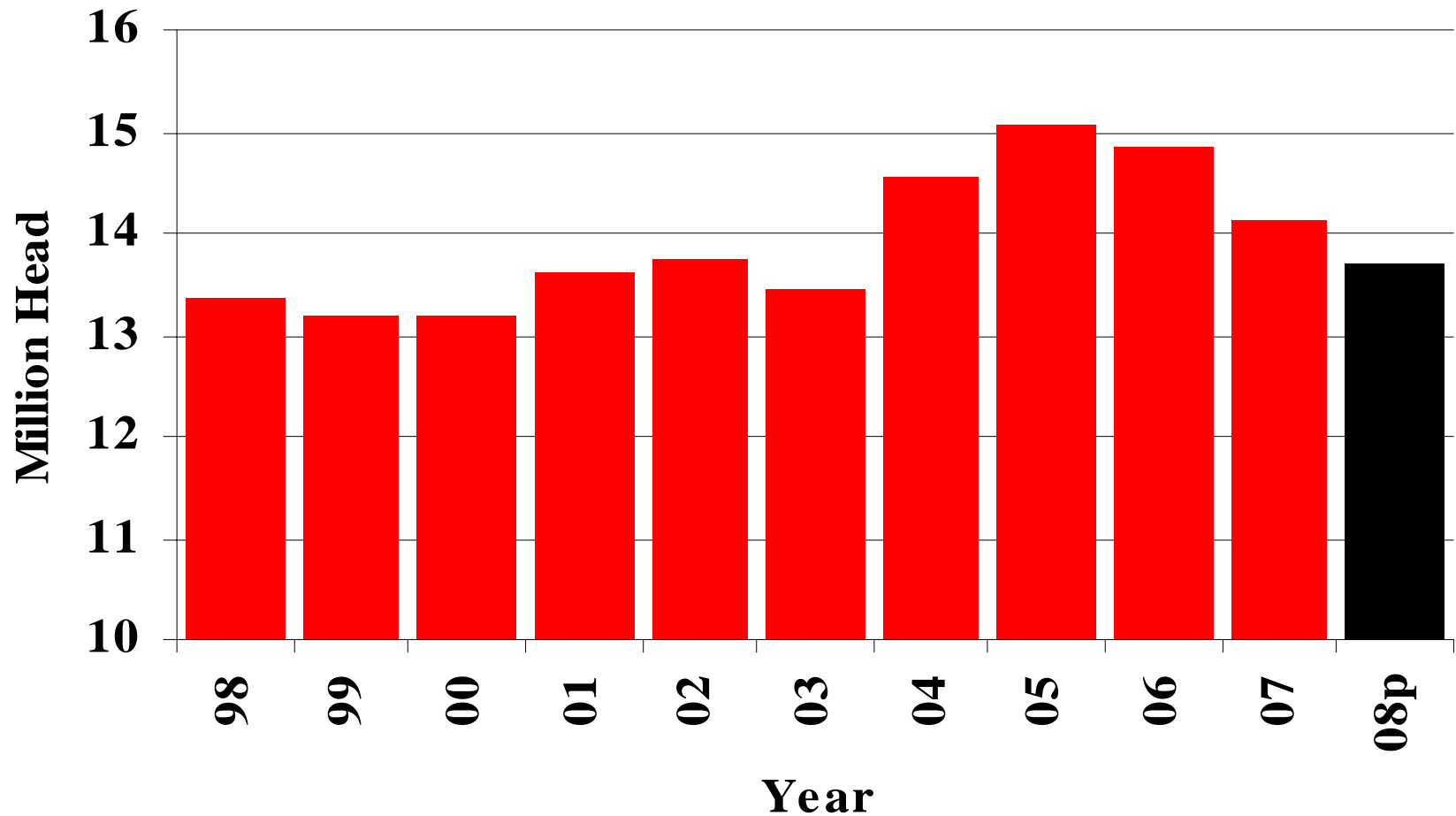


Canola Meal & The Beef Industry

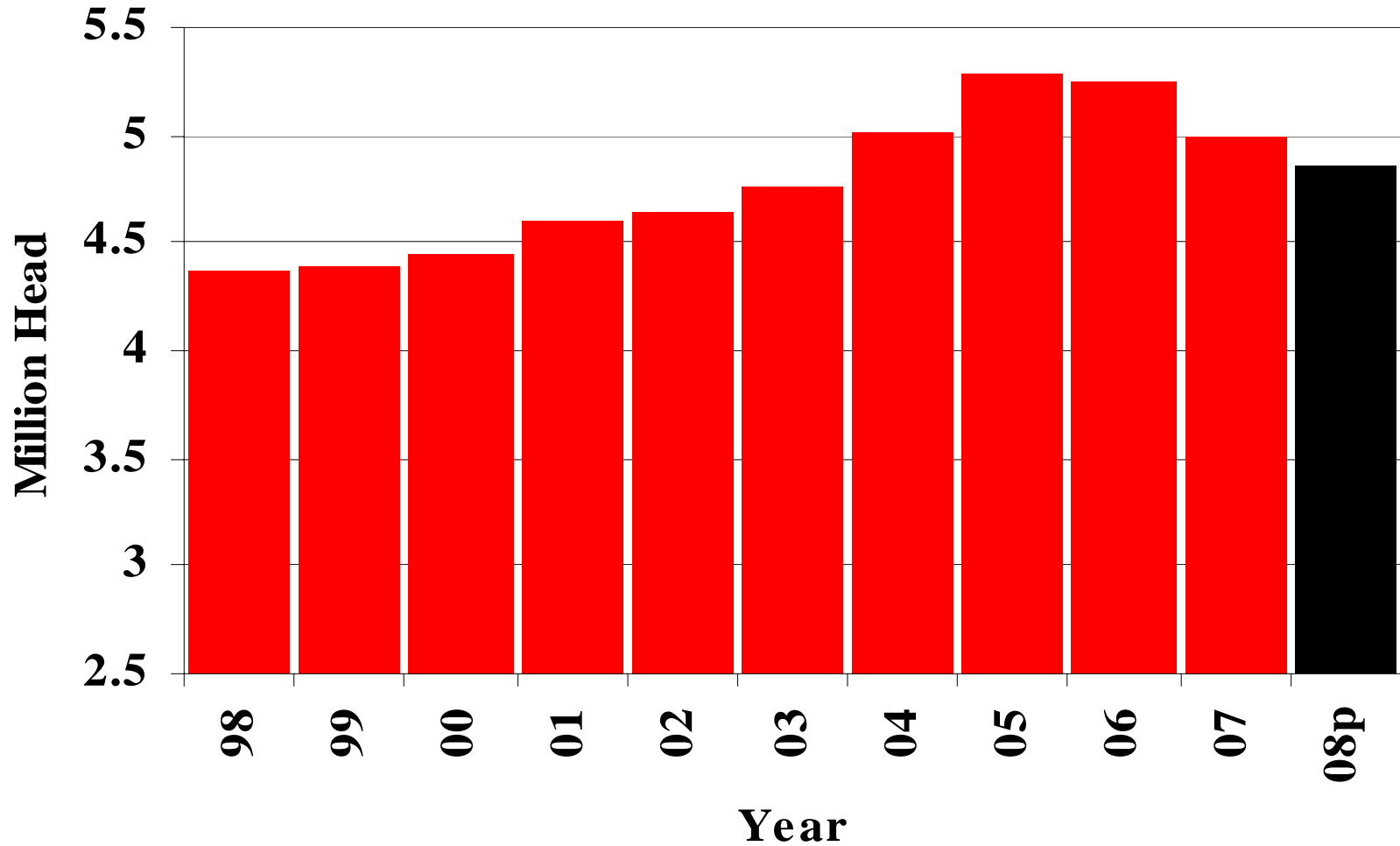
J. McKinnon & K. Wallburger
University of Saskatchewan
&
B. Doig
Saskatchewan Agriculture & Food

Canadian Total Cattle & Calves January 1 - 1998 to 2008P



Canadian Beef Cow Numbers

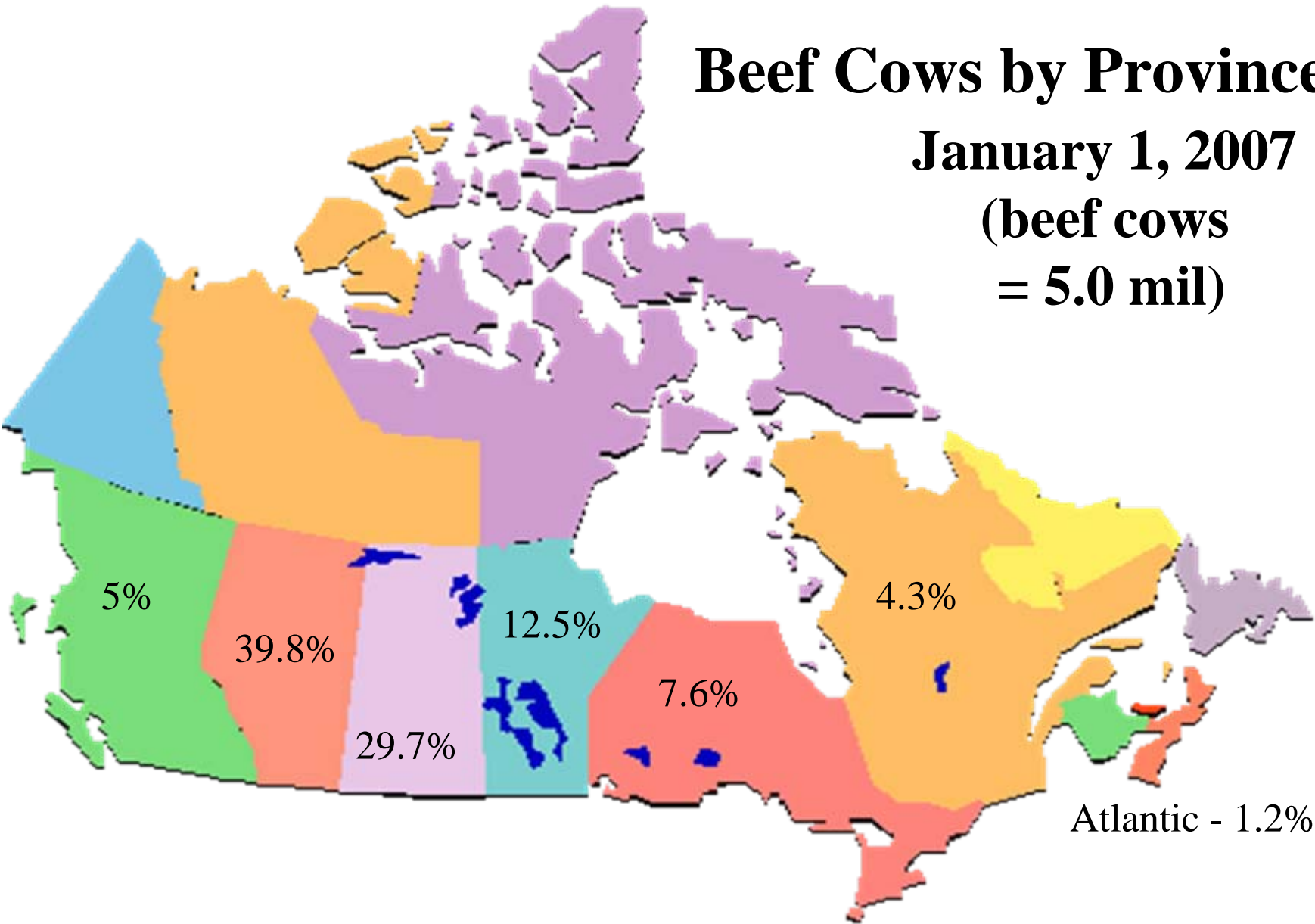
January 1 - 1998 to 2008P



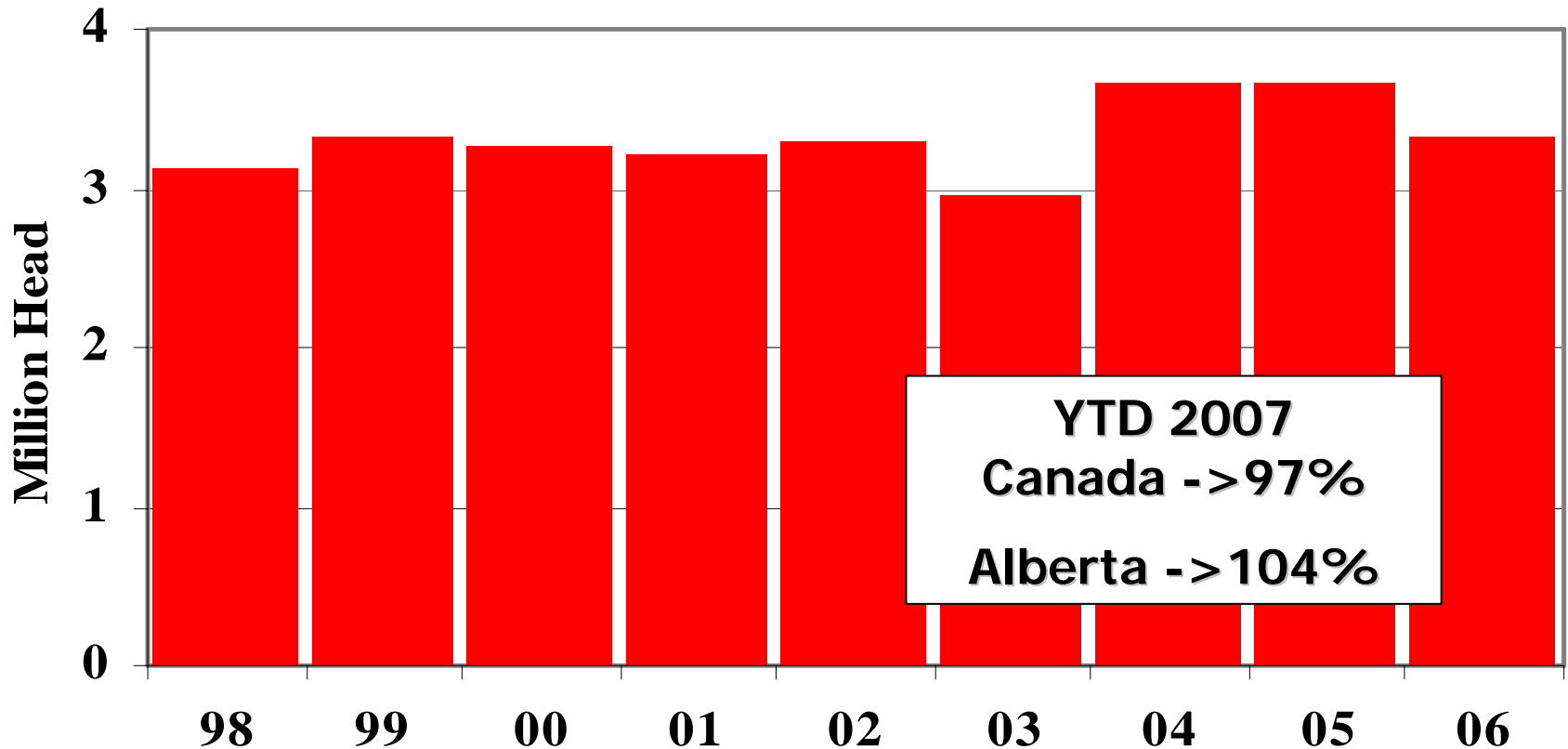
Beef Cows by Province

January 1, 2007

(beef cows
= 5.0 mil)



Canadian Cattle Slaughter (Federally Inspected Packing Plants)





3 Major Industry Sector

- Cow-Calf Sector
- Backgrounding Sector
- Finishing Sector

Energy & Protein Requirements of 250 kg growing steer (1.0 kg/day)

NE _m (Mcal/d)	4.8	
NE _g (Mcal/d)	3.2	
DIP (gm/d)	580	
MP (gm/d)	562	
		(NRC 2000)

Meeting requirements – Canola Meal

- Diet (7.4 kg DM /day)
 - 3.25 kg Brome hay
 - 1.75 kg Barley silage
 - 1.5 kg Barley grain
 - 0.1 kg 2:1 mineral
 - 0.6 kg Canola meal
 - Cost \$1.01 /d
- Supplies (/day)
 - 4.8 Mcal NEm
 - 3.2 Mcal NEg
 - 596 gms MP
 - 568 gms DIP
 - 11.5% CP
 - Predicted gain 1.05 kg/d

Meeting requirements – Wheat DDGS

- Diet (7.4 kg DM /day)
 - 3.25 kg Brome hay
 - 1.75 kg Barley silage
 - 1.5 kg Barley grain
 - 0.1 kg 2:1 mineral
 - 0.6 kg DDGS
 - Cost \$0.98 /day
- Supplies (/day)
 - 4.8 Mcal NEm
 - 3.4 Mcal NEg
 - 11.5% CP
 - 652 gms MP
 - 504 gms DIP
 - Predicted gain 1.1 kg/d

Meeting requirements – Wheat DDGS

- Diet (7.3 kg DM /day)
 - 3.25 kg Brome hay
 - 1.75 kg Barley silage
 - 2.0 kg DDGS
 - 0.1 kg 2:1 mineral
 - Cost \$0.93 / day
- Supplies (/day)
 - 4.8 Mcal NEm
 - 3.4 Mcal NEg
 - 846 gms MP
 - 586 gms DIP
 - 16.3 % CP
 - Predicted gain 1.04kg/d

Energy & Protein Requirements of 454 kg finishing steer (1.8 kg/day)

NE _m (Mcal/d)	7.6	
NE _g (Mcal/d)	9.1	
DIP (gm/d)	816	
MP (gm/d)	841	
		(NRC 2000)

Meeting requirements – Wheat DDGS

- Diet (10.6 kg DM /day)
 - 1.5 kg Barley silage
 - 9.0 kg Barley grain
 - 0.1 kg mineral
 - Cost \$2.35 / day
- Supplies (/day)
 - 7.6 Mcal NEm
 - 9.1 Mcal NEg
 - 827 gms MP
 - 871 gms DIP
 - 11.6 % CP
 - Predicted gain 1.86 kg/d

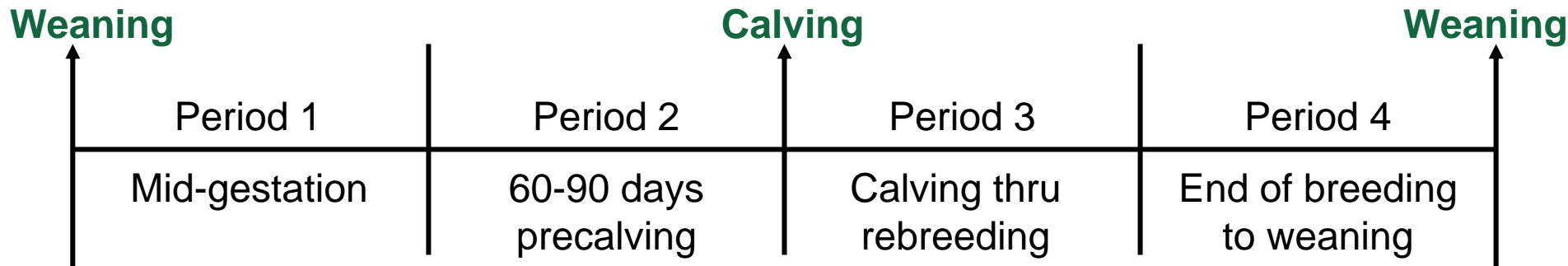
Fundamental Disconnect

- Beef Feeding Industry is looking for energy
- Canola meal is viewed / priced as a protein source
- Growth in ethanol (& bio-diesel ??) industry is changing dynamics of the protein market
- DDGS is being priced relative to barley (or at a discount) as an energy source
 - – protein content is limiting factor to inclusion rate

What about the Beef Cow?



Beef Cow Reproductive Cycle



Biological Functions During the Above Periods

Maintenance

Maintenance

+

Rapid Fetal Growth

+

Preparation for Lactation

Maintenance

+

Lactation

+

Regaining Weight Loss

+

Repair Repro Tract

+

Cycle & Conceive

Maintenance

+

Lactation

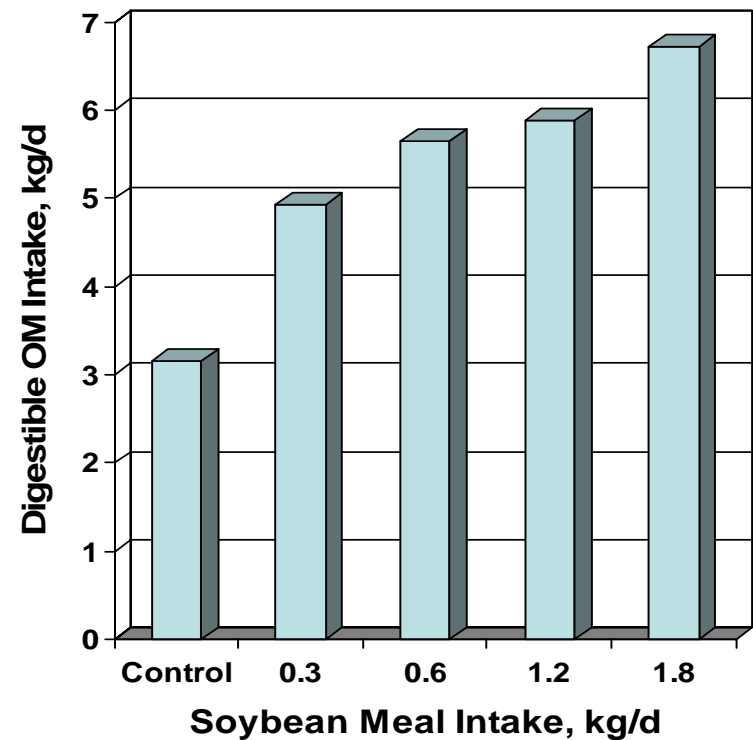
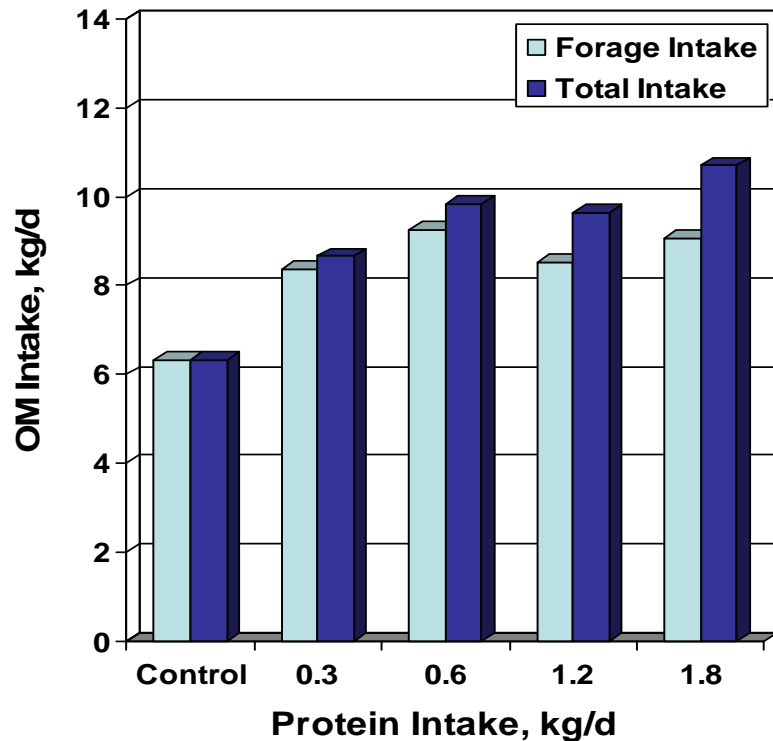
Supplementation of Pasture Forages

- Range and pasture forages are not able to meet the nutrient requirements of cattle at some time during the grazing season
- Dormant range forage is usually high in fibre and may be deficient in protein and energy, especially for cows in late gestation and lactation
(Turner and DelCurto 1991; Krysl and Hess 1993)
- Supplementation can exert a large impact on performance and can be costly

Protein Supplementation

- Below 6-8% CP pasture intake and digestibility will be depressed (Minson 1985; Mathis and Sawyer 2007)
- Intake and digestibility decline rapidly because of nitrogen deficiency limits microbial growth and activity
- Supplementation of low-quality forage diets with protein increases forage intake and forage digestibility
(Beaty et al. 1994; Mathis et al 1999, 2000; DelCurto and Olson 2000)

Protein Supplementation Influence on Low-Quality Forage Intake





What About Canola Meal?

- Is there an opportunity for pasture supplementation of a protein or protein/energy pellet based on canola meal?
- Is research required to look at the dynamics of pasture quality, protein availability and supplement source (combination of DIP vs. RUP)?

Canola Meal vs. Press Cake

Nutrient Profile

	Canola Meal	Canola Press Cake*
Moisture	10%	6-8%
Crude Protein	39%	38.3%
TDN – ruminant	70.0%	81.0%
Fat (E.E.)	3.9%	8.7%
ADF	19.1%	17.2%
NDF	23.8%	21.2%
Calcium	0.70%	0.63%
Phosphorus	1.16%	1.08%
Sulfur	0.94%	0.85%

(all values 100% Dry Matter)

*92 oil extraction, 8% residual oil



Canola Press Cake

A high quality feed suitable for dairy, beef, poultry and hogs.

As the Biodiesel Industry grows, large volumes of press cake will be available.

Low pricing could make this a low cost feedstuff for the livestock industry.

Meeting requirements – 544 kg cow 6 month pregnant

- Diet (10.7 kg DM /day)
 - 7.7 kg Barley straw
 - 2.0 kg Barley grain
 - 2.0 kg Canola Meal
 - 0.1 kg mineral

 - Cost \$0.81 / day
- Supplies (/day)
 - 11.2 Mcal NE_{tot}
 - 0.4 Mcal NE_g
 - 11.9%
 - 1270 gm of CP
supplied vs. 660 gms
required
 - 0.3% S

Meeting requirements – 544 kg cow 6 month pregnant

■ Diet (9.9 kg DM /day)

- 7.7 kg Barley straw
- 1.8 kg Barley grain
- 1.4 kg Canola Press Cake or DDG
- 0.1 kg mineral

- Cost \$0.73 / day

■ Supplies (/day)

- 11.0 Mcal NE_{tot}
- 10.1%
- 1000 gm of CP supplied vs. 660 gms required
- 0.25 – 0.3% S

Canola Meal / Press Cake Research with Beef Cows

- Little or no research carried out in Canada
 - Need to look at potential use as a strategic supplemental protein source for maintenance/gain of body condition under adverse pasture conditions
 - Potential beneficial effects of canola press cake on reproductive status → cycling/conception?

Summary

- Both beef cattle feeding and cow calf sectors have an emphasis on meeting energy requirements
- Energy sources are getting expensive & producers are looking for alternatives
 - Ethanol co-products
 - Grain/Canola Screenings
 - Other byproducts – oat hulls; condensed whey, etc.
 - US corn

Summary

- If we are going to increase canola meal's market share in the beef industry:
 - either adjust current pricing

or

 - demonstrate improvements in productivity from strategic supplementation
 - Pasture supplementation
 - Pre / post calving supplementation
 - Role of canola press-cake in beef cattle feeding programs