



Research  
Services

## Forage implications on Cow/calf Cost of Production

Canadian Forage & Grassland Association  
November 2016



# The Beef Cattle industry is a major user of Canadian forages

*80% of a beef animals diet over its lifetime comes from forages*

## Results Land Use

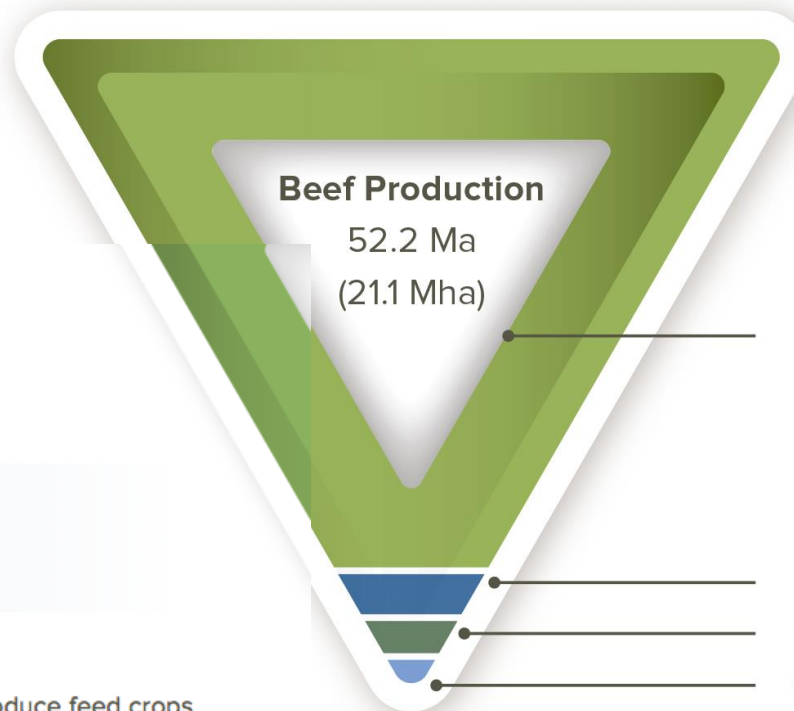
It takes between 37 square metres (m<sup>2</sup>) and 93 m<sup>2</sup> of land to produce one kg of live weight in Canada

**Figure 3**

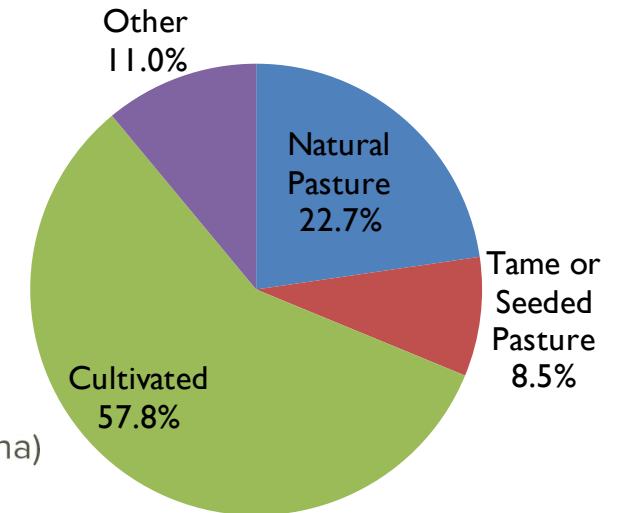
*Land used for beef production in Canada*

**Ma** Million acres  
**Mha** Million hectares

<sup>3</sup> Calculation based on area needed to produce feed crops for cattle, excluding natural land from pasture, divided by total available land in crops and summerfallow land in Canada.



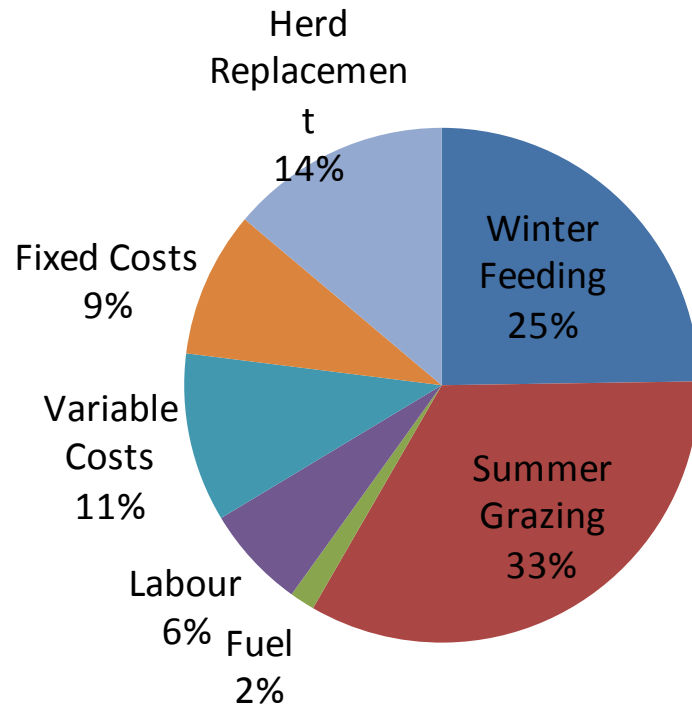
**There are 160 million acres of farmland in Canada**



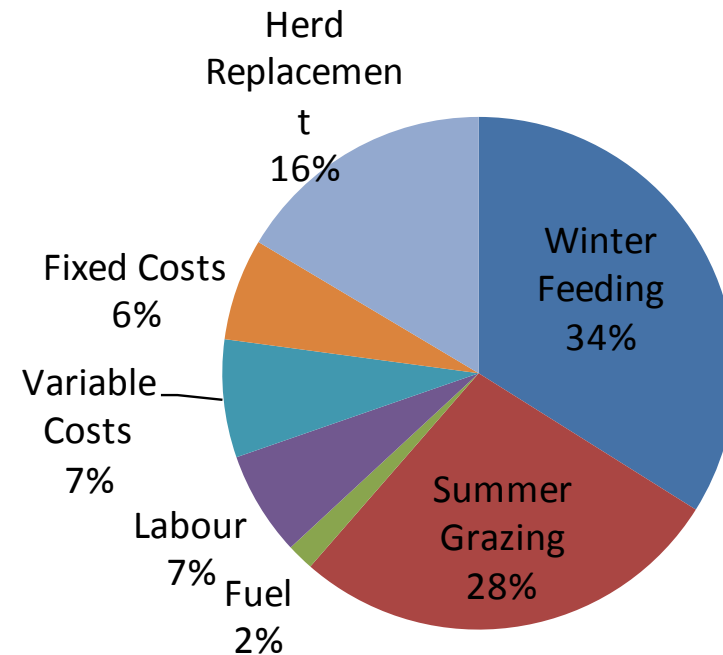
# Forages represent the majority of cow/calf cost of production

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**Cow/Calf Cost of Production 2000**



**Cow/Calf Cost of Production 2016p**



# Grazing Pasture is always the cheapest feed

## Extended grazing reduces costs

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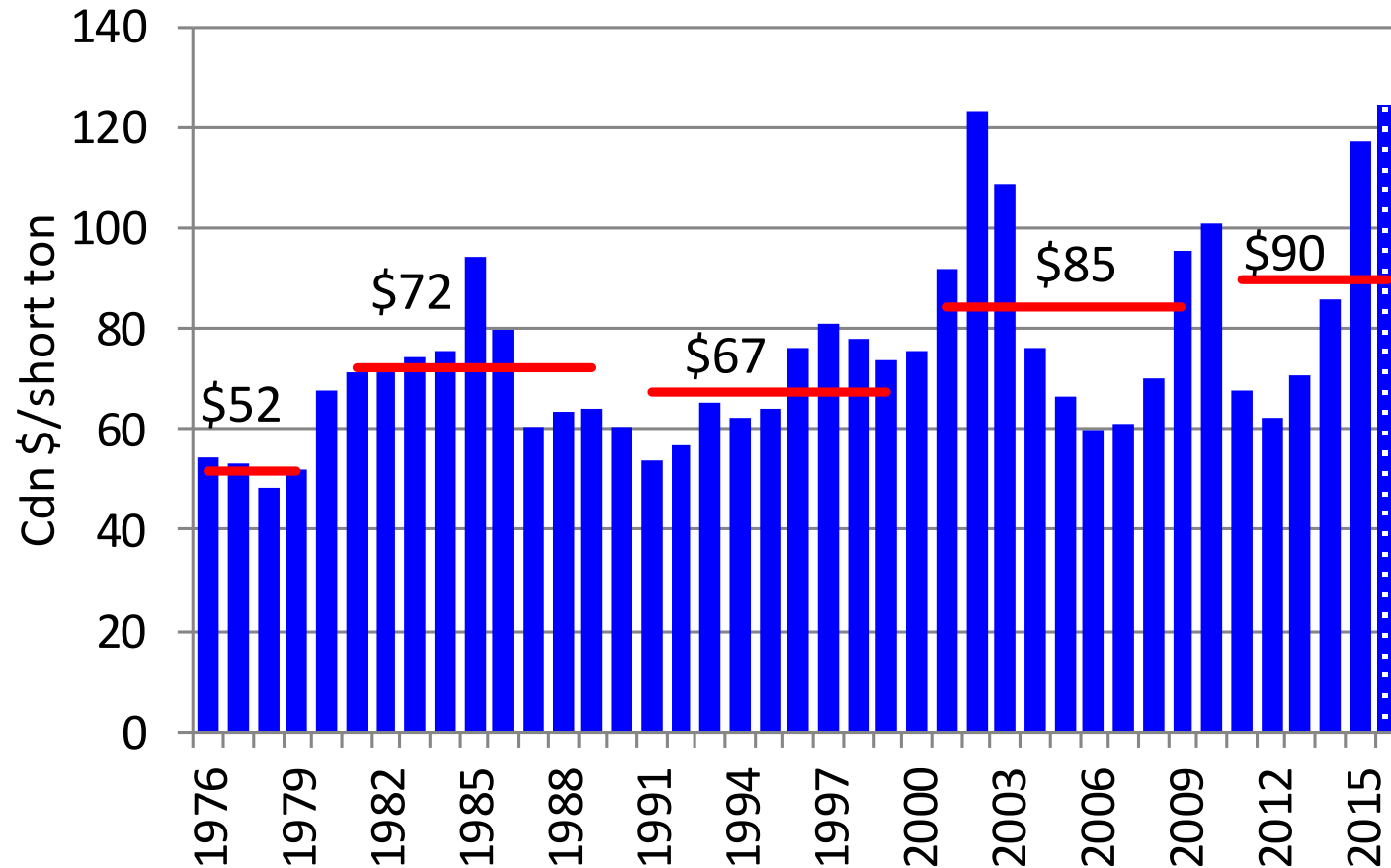


- **Oklahoma pasture rental**
  - Variety of pasture types (tame vs. native), rental rates, stocking rates and grazing season length
  - Once accounted for get consistent **1.5 cents per pound** of grazed forage, US\$30/ton standing
  - A 1500 lb cow eats 2% body weight or 30 lbs/day for **US\$0.45/head/day** (CDN\$0.60/hd/day)
  - Grazing season of 270 days for warm season grasses and can be extended with stockpiled warm/cool season pastures
- **Alberta Agriculture pasture rental CDN\$20-30/AUM**
  - CDN\$0.67/hd/day or 12% higher grazing cost in 2014/15



Since 2010, hay prices have averaged \$90/ton, up 6% from \$85/tonne in the 2000s and up 32% from \$67/ton in the 1990s.

## Alberta Hay Prices

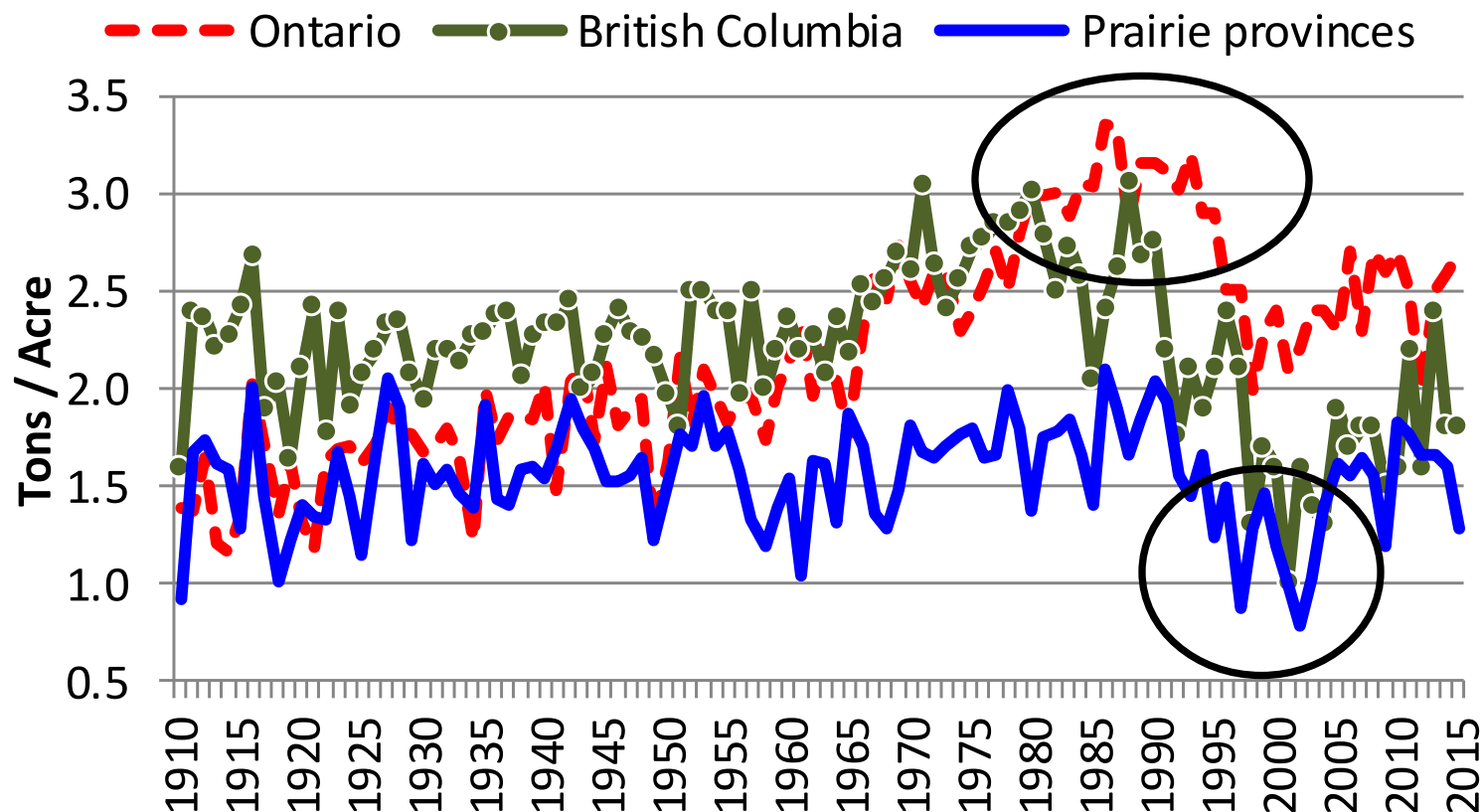


Source: Alberta Agriculture



# Hay Yields in 2010-15 avg 1.9 tons/acre up 17% from the 2000-10 low; but remain 14% below the 1980s peak

## Hay Yield by Province



Source: Statistics Canada

Hay yields dropped 27% from the 1980s to the 2000s.

The decline in hay yields from 1973-2003 represented a loss of \$145 million annually to producers (Sask Ag & Food)

Canadian hay yields averaged 1.9 tons/acre from 2010-15, this is 14% below the 2.2 tons/acre in the 1980s and steady with the 1990s.

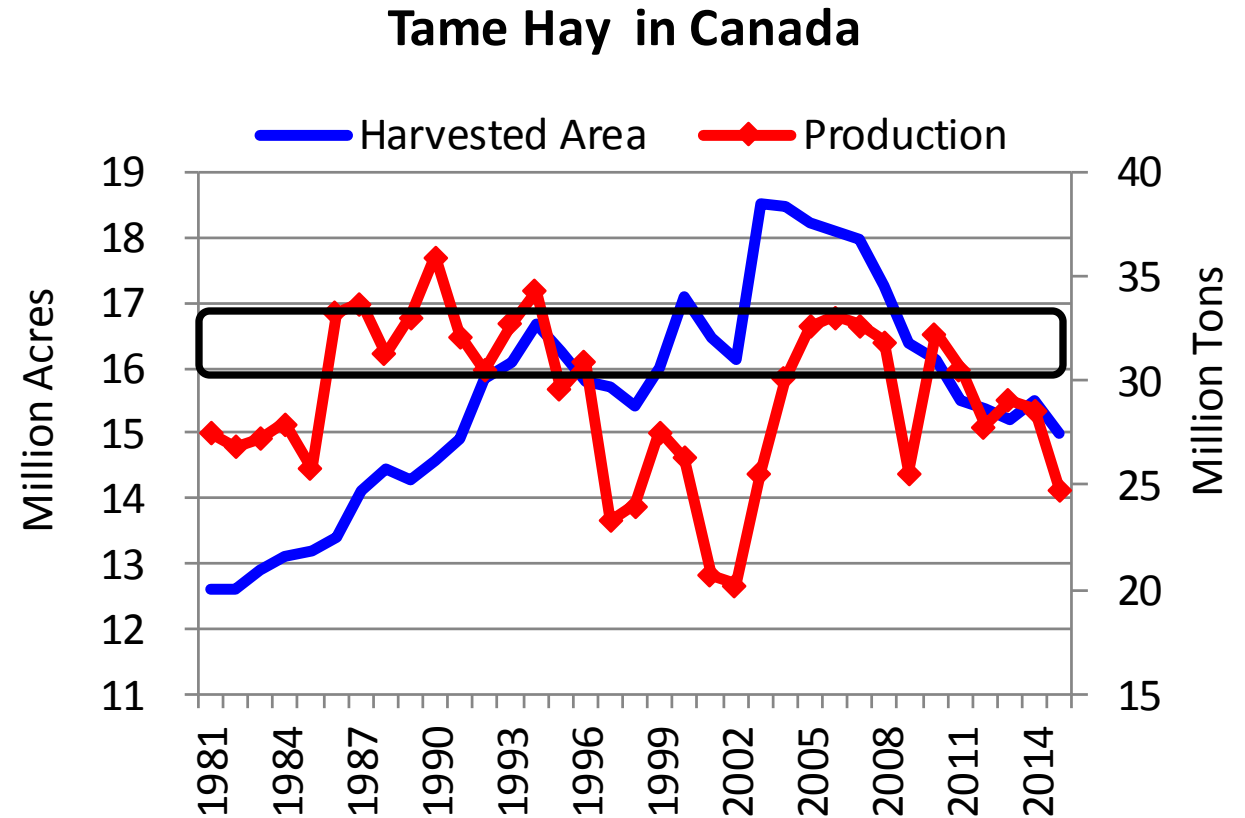
# Lower yields mean more acres are needed for the same production (tonnage)

## Competition with annual crops:

As annual crop acreages increase, producers grow forages on increasingly marginal land, which makes maintaining yield and productivity more difficult.

Productivity improvements and rejuvenation through fertilization are smaller on marginal land.

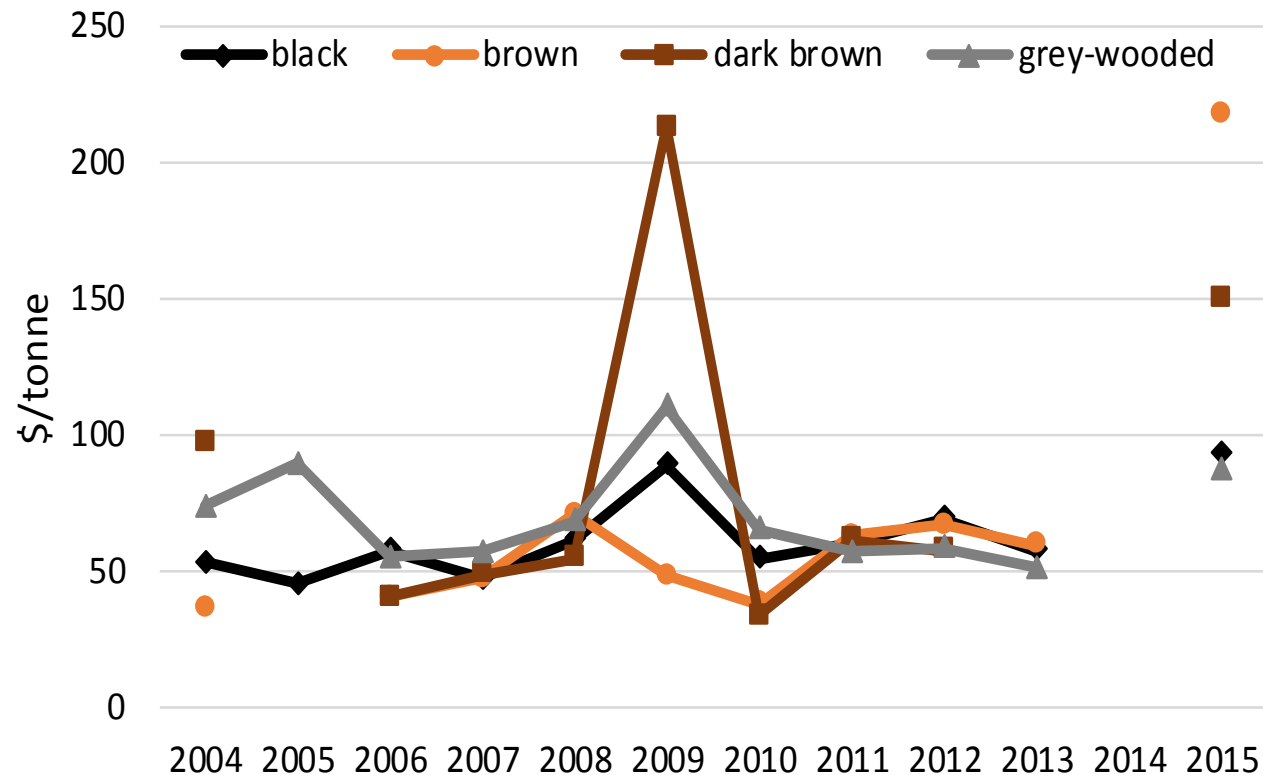
This applies adverse economic pressure to cow-calf operators.



Source: Statistics Canada

# How are we measuring success? *Alberta alfalfa/grass hay COP* *\$52-63/tonne (excluding weather years)*

## Alfafla/Grass Hay Cost of Production



Source: Alberta Agriculture AgriProfit\$

When cow/calf COP is typically measured, you put in an opportunity cost on if you sold that feed you raised.

This assumes that the cost of production is lower than the market price.

*Is that always the case? Do you know the cost of producing the forage you feed?*

Many decision are still based on cash costs. AB AG COP includes unpaid labour and depreciation on equipment and buildings.



# Buy or Grow Hay?



## BUY:

- Limited land resources to use for hay production
- Busy, limited time to devote to hay production
- Short on labor
- Must purchase hay equipment, update old equipment
- Set-up to handle by-product/alternative feeds
- Have access to reliable hay source
- Limited market for excess hay
- Unable to store and carryover hay with little waste
- Low acreage in hay that cannot self-support investment in equipment

## Grow:

- **Quality and Supply assurance**
- Land available for hay production
- Adequate time and flexible schedule to accommodate hay production
- Labor needs are adequate or labor can be sourced economically
- Some equipment costs can be shared with other enterprises
- Absolutely need to control harvest time and hay quality
- Lack of flexibility in feeding set-up, infrastructure is geared towards feeding hay
- Good demand for hay, potential diversification of farming business
- Can store excess hay, carryover hay with little waste
- Hay acreage supports equipment payment and regular update of equipment

# Reducing forage COP – yield, longevity, quality

**Table 1. Value of Forage Research Scenarios**

Scenarios based on 30 year averages

		Production <i>tonnes/acre</i>	Cost <i>\$/acre</i>	Per Unit Cost <i>\$/tonne</i>
Base Case - 6 yr		1.73	112.00	59.82
Variety - Yield +5%		1.82	112.00	56.97
Variety - Yield +10%		1.90	112.00	54.38
Variety - Yield +20%		2.08	112.00	49.85
Variety - Yield +30%		2.25	112.00	46.01
Reseed more often - 4 year	+4.6%	1.81	120.00	+6% 63.40
Delayed Reseeding - 8 year		1.65	104.00	59.65
Delayed Reseeding - 10 year		1.53	96.00	60.97
Longevity - 10 year (5% better)	-7.5%	1.60	96.00	-2% 58.56
Drought Resistance		1.75	112.00	59.25
Fertilizer with Seeding		1.73	117.00	62.83

Cost cannot be the only consideration as lower yields have been shown to be strongly correlated with reduced animal performance and revenue.

## Consequence of delayed re-seeding is longer time to see benefits of new varieties: 76 were registered between 2011 and January 2016

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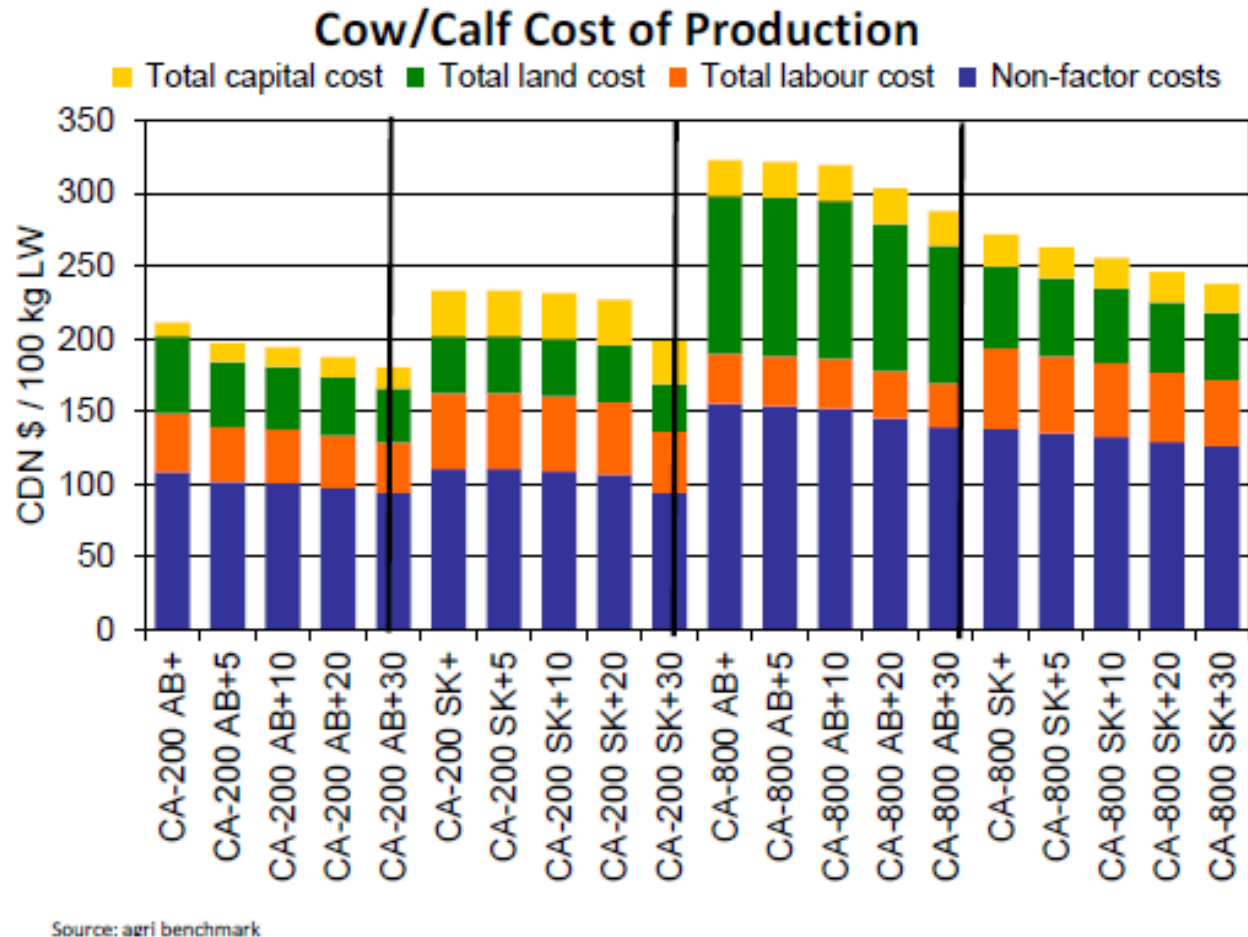


Type	Jan 2011	Jan 2016	+
<b>Total</b>	<b>687</b>	<b>786</b>	<b>+76</b>
Triticale	19	22	+3
Barley Varieties	252	265	+13
<b>Alfalfa</b>	<b>234</b>	<b>292</b>	<b>+35</b>
Bromegrass	20	21	+1
Ryegrass	46	58	+12
Clover	58	63	+5
Bird's-Food Trefoil	11	11	+0
Orchardgrass	47	54	+7

# LT COP -11-15% depending on % of hay in ration, days on feed and the proportion of feed that is purchased vs. homegrown

**Table 3. Long term costs incl. depreciation**

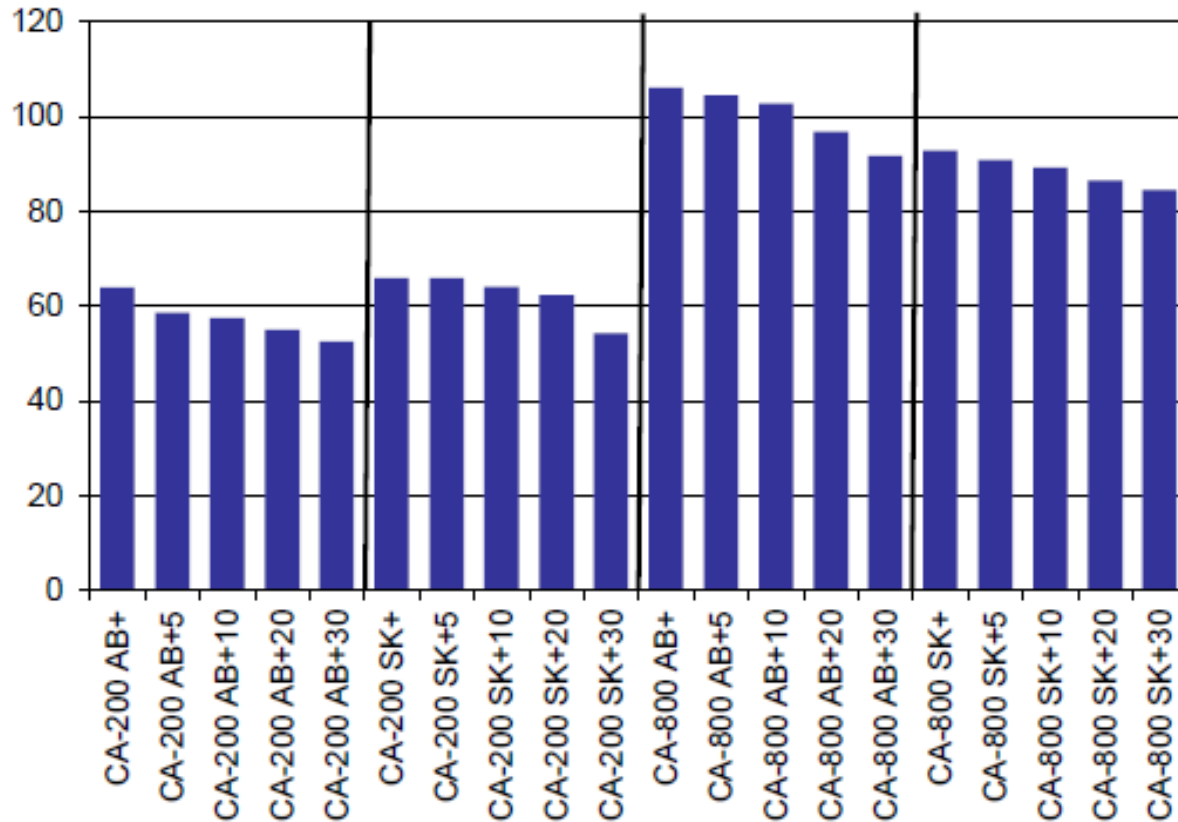
Forage Yield	200 AB	200 SK	800 AB	800 SK
Control	211	233	323	272
+5%	197	233	321	263
+10%	194	231	319	256
+20%	187	227	303	246
+30%	180	198	288	238
<b>% change in LT costs from control</b>				
+5%	-7%	0%	-1%	-3%
+10%	-8%	-1%	-1%	-6%
+20%	-11%	-3%	-6%	-10%
+30%	-15%	-15%	-11%	-12%





# Implications on the whole farm – herd size, crop revenue

■ Approx. of feed costs in non-factor costs - absolute values



Source: agri benchmark

**Table 2. Herd Changes with Yield Increases**

Forage Yield	200 AB	200 SK	800 AB	800 SK
Control	200	200	800	800
+5%	240	200	800	840
+10%	250	205	800	880
+20%	270	220	855	930
+30%	295	245	900	980
% change in Herd Size from control				
+5%	20%	0%	0%	5%
+10%	25%	2%	0%	10%
+20%	35%	10%	7%	16%
+30%	48%	23%	13%	23%



# Drought Resistance: A cash flow issue

## *Buying feed or selling cows?*

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Drought tolerant varieties that have a smaller reduction in yield during drought years is valuable to the beef industry. But less production in good/normal years, creates a cost.

Focus on higher yields will have the largest impact on a producers' bottom line the detrimental impact from drought must be balanced with the need for higher productive forages over time.



# Fertilizing Forages: Why or why not?

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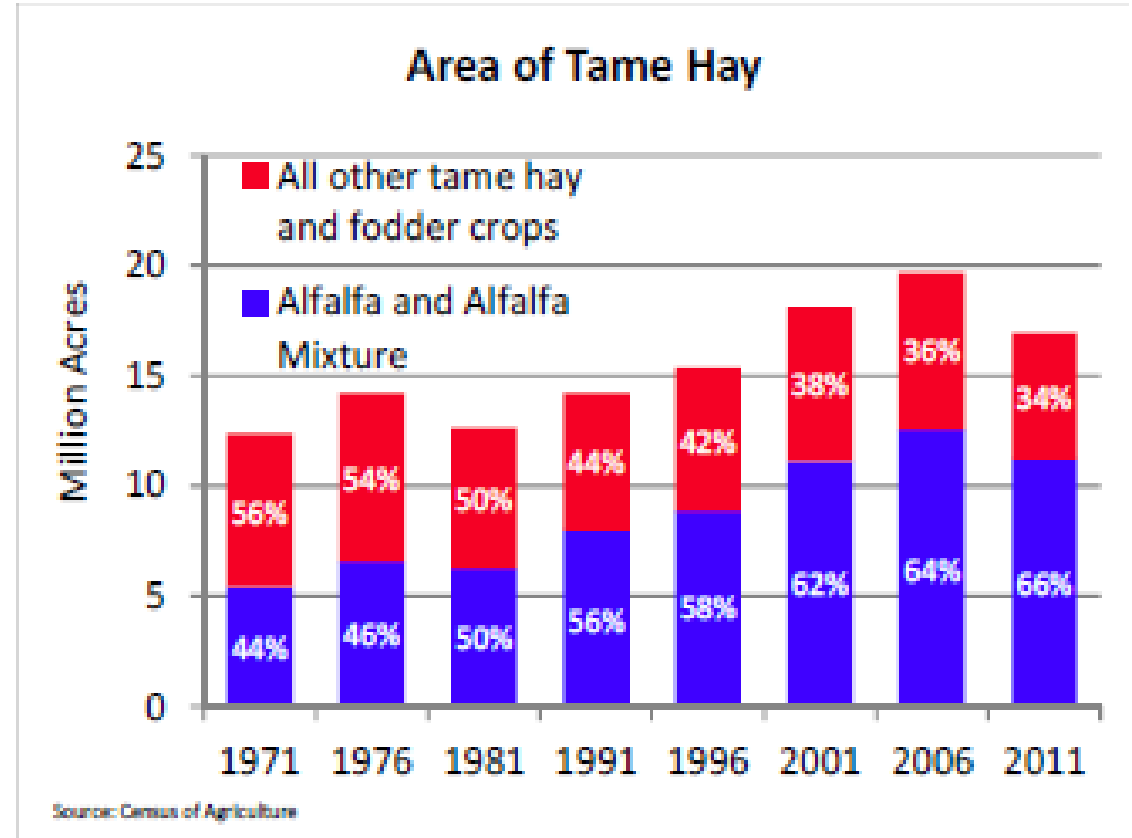


- Yield response is dependent on RAIN, increasing risk of added costs with little or no benefit if dry.
- Fertilizer is too expensive: higher fuel costs means it is more efficient to have a higher yield off fewer acres
- It is only worthwhile in year of high forage/beef prices.
- It is cheaper to buy more land
- It is cheaper to buy hay

# Alfalfa: The Queen of Forages for a Reason

*A grass-legume mix provides nitrogen fixing & lengthens stand life*

- Forage productivity and carrying capacity can also be improved by incorporating legumes.
- This represents less financial risk as it is less affected by weather and input prices but may increase the risk of bloat slightly.
- Alfalfa has been widely adopted across Canada with 66% of tame hay acres being an alfalfa or an alfalfa mixture.
- Adoption has been supported by innovation and grazing management that controls the risk of bloat.



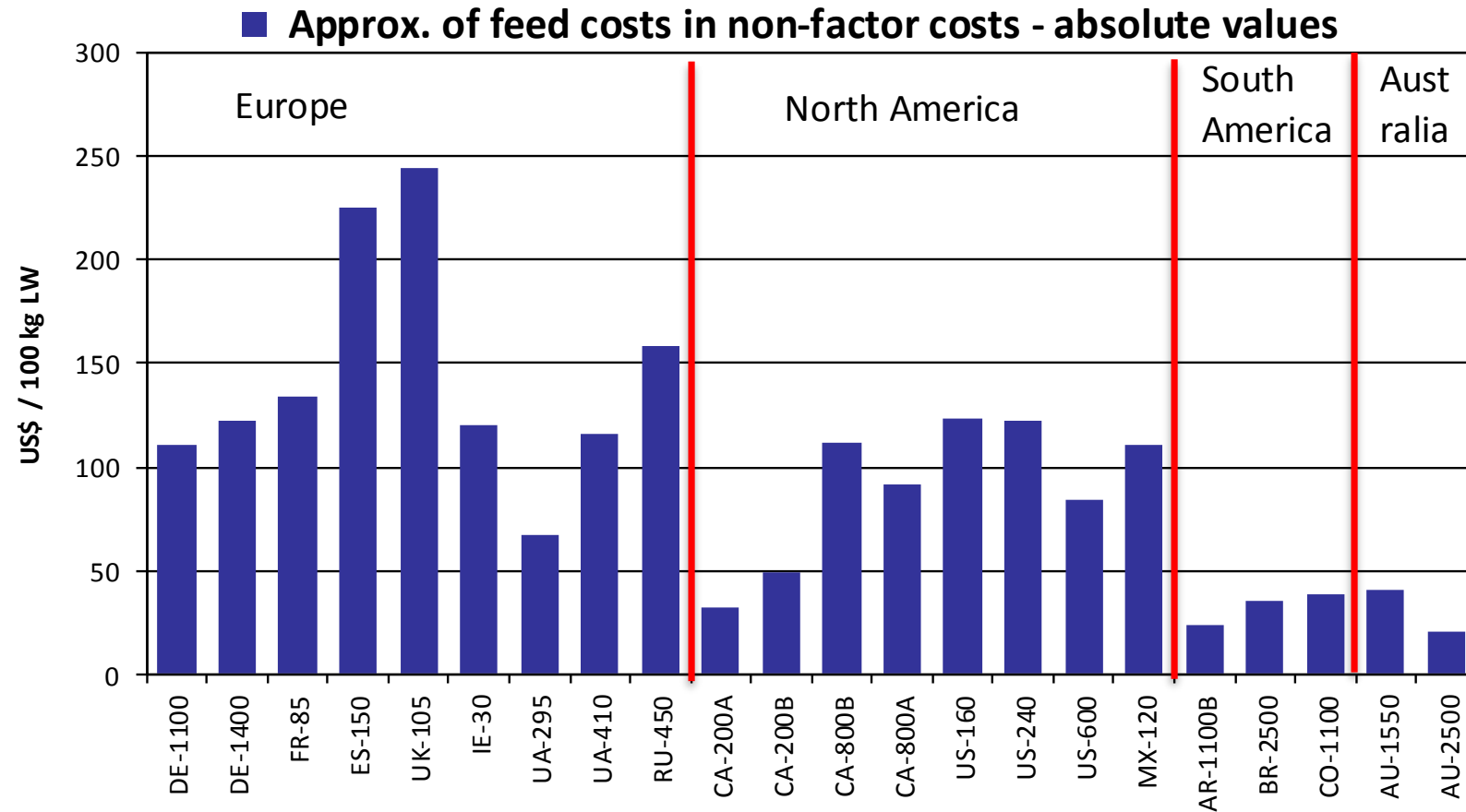
# Competitiveness of forages for extending the grazing season

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- In all regions of Canada, hay is the most common method for extending the grazing season: 76% of beef farms using hay in 2010/11
  - Bale grazing, in-field winter feeding
- But annual forages that reduce winter feeding costs, imply not all perennial forages are competitive
  - Greenfeed and barley silage (used by 35% of producers in Alberta) are also common sources of winter feed for the cow herd.



# Internationally Competitive – North America is half way between European and South American feed costs



source: agri benchmark





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