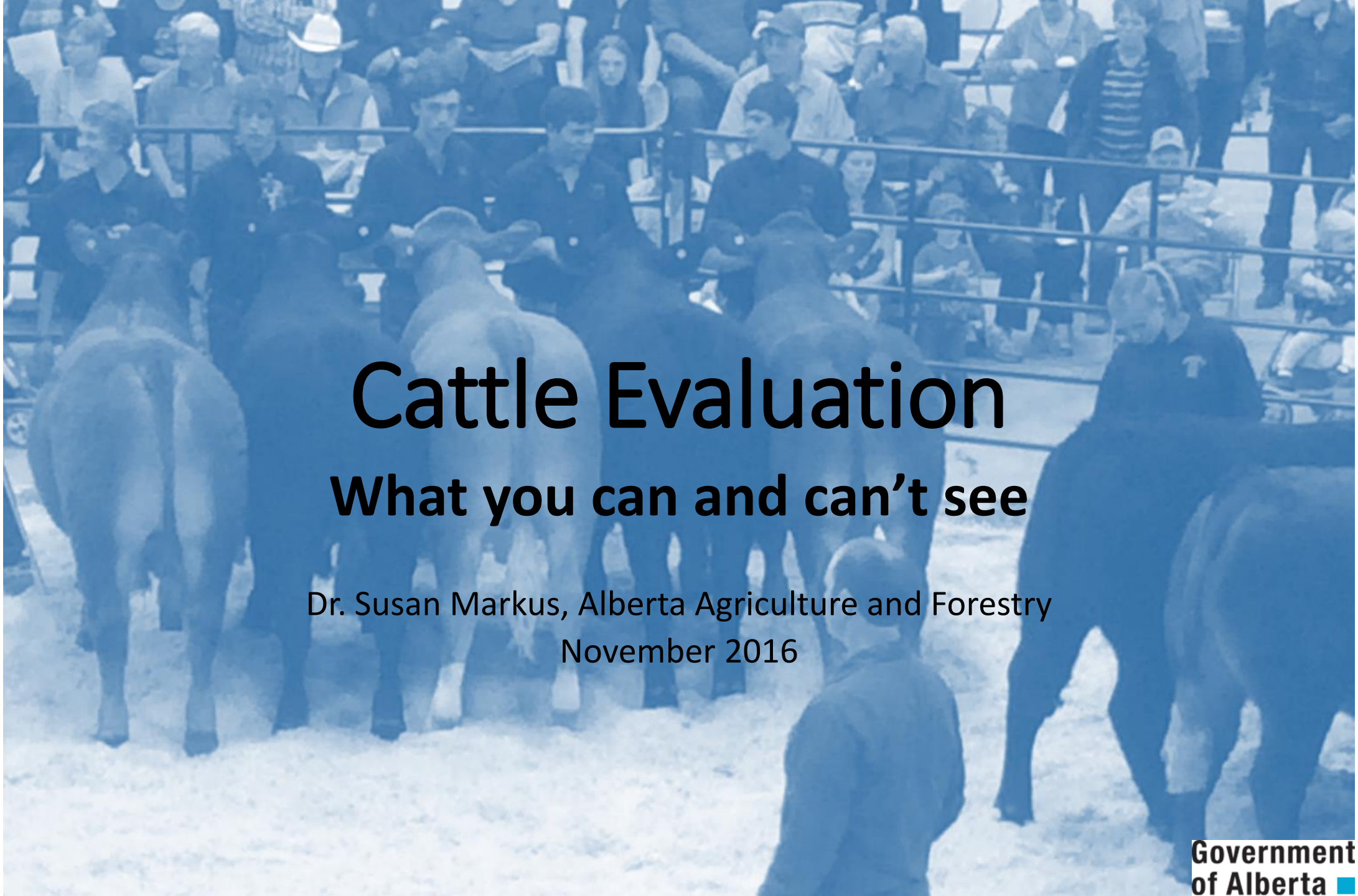


Cattle Evaluation

What you can and can't see

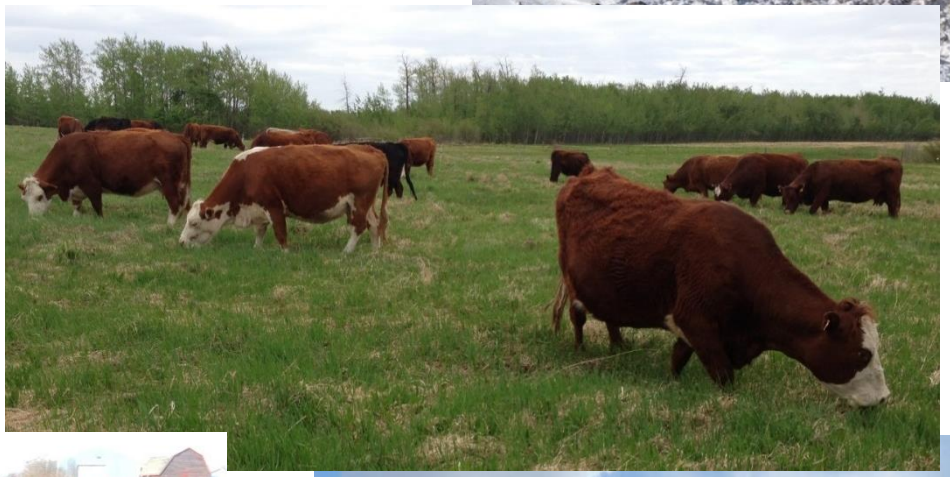
Dr. Susan Markus, Alberta Agriculture and Forestry

November 2016

Government of Alberta

Defining Efficiency and recognizing tools & technology to help

Inputs and outputs of production
Multiple traits
Sustainability
Longevity
Fertility
Structural Soundness
Feed Intake - RFI



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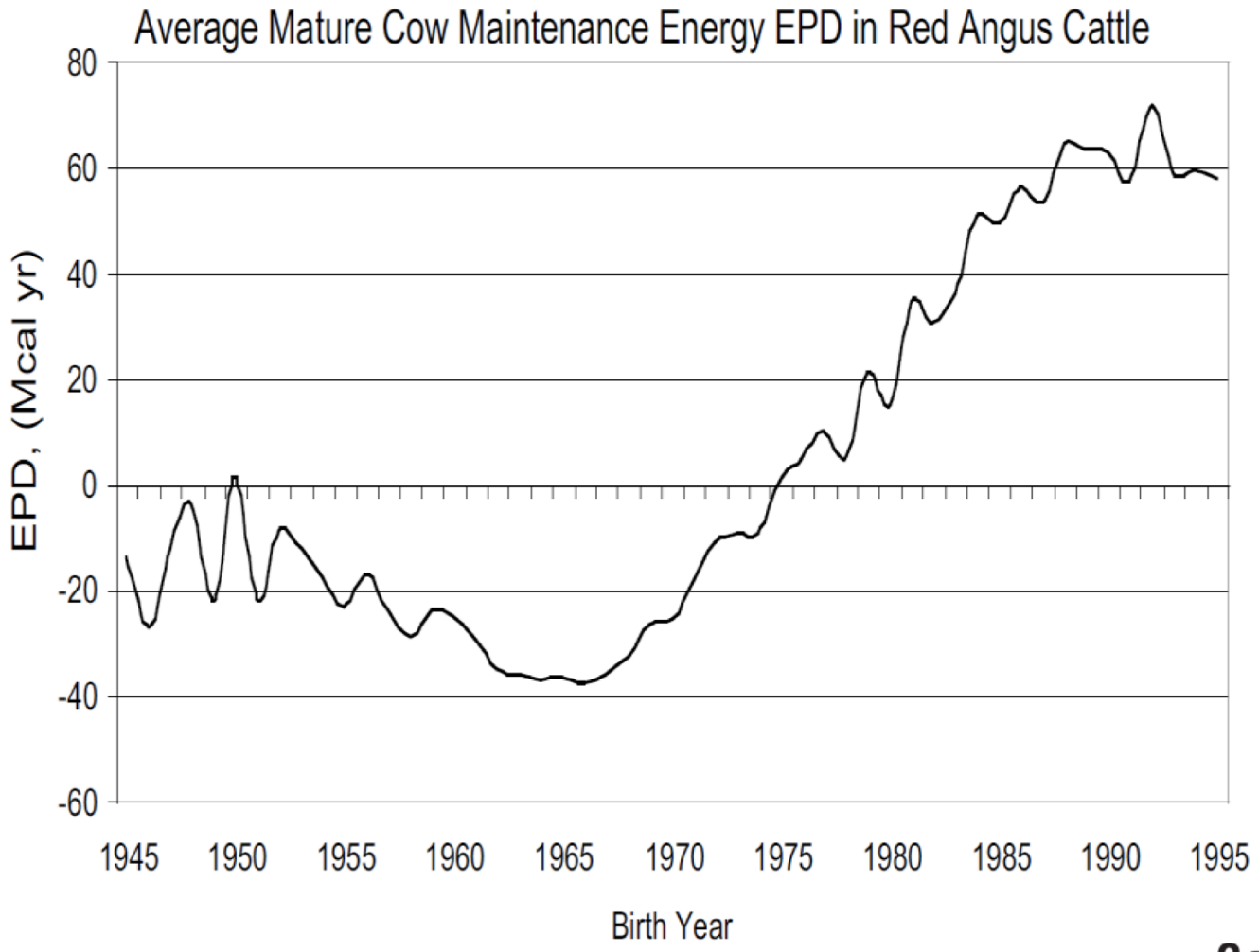
Red Angus Cow Size over 50 years



(Adapted from Evans et al. 2002)

1950’s, 70’s, 90’s and 2012

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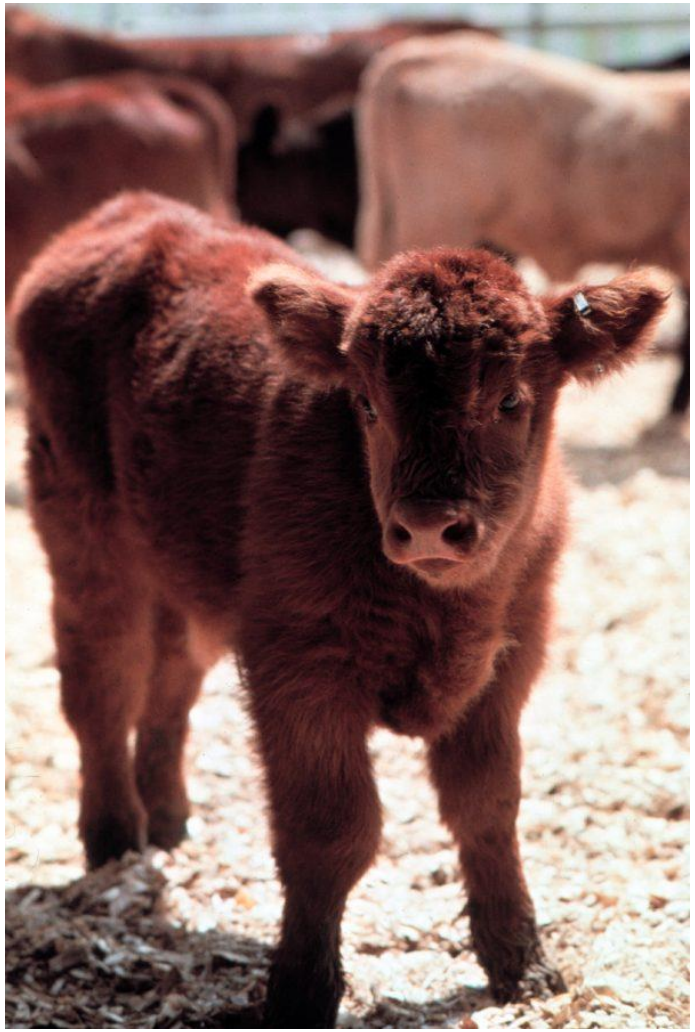
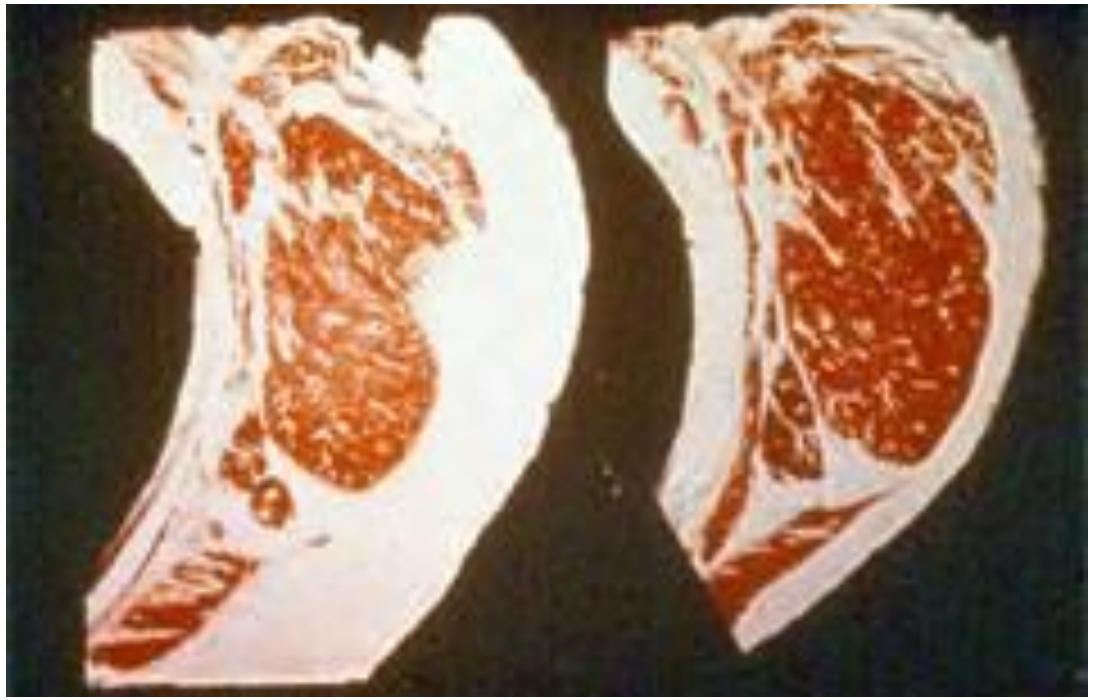
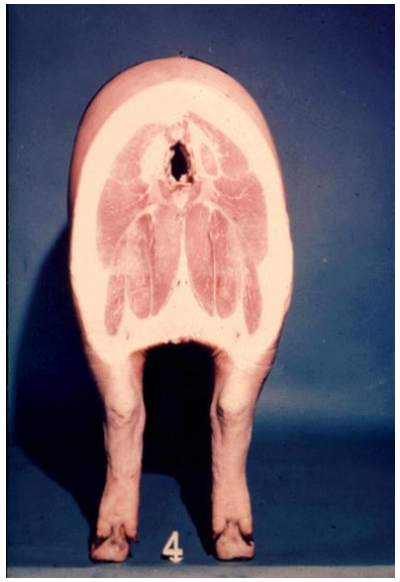
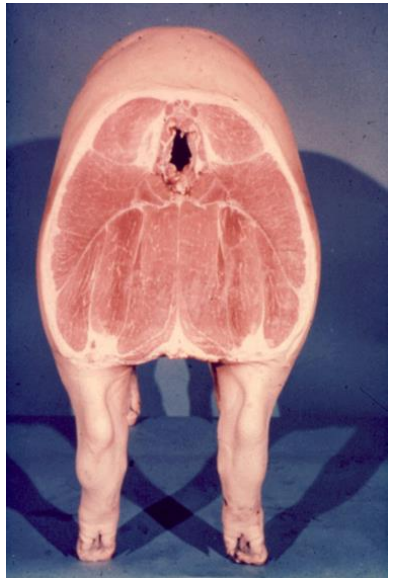
Low birth weight as a selection tool – what has it done?





Past Success in the Swine Industry





1980

2005

Courtesy of Todd See at NCSU (*Fix J. et al. 2010*)

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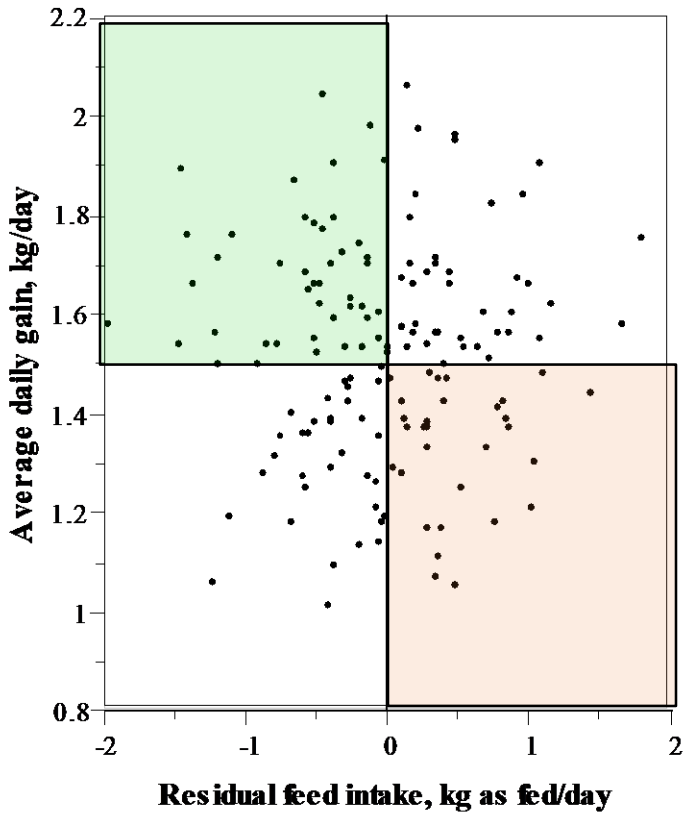
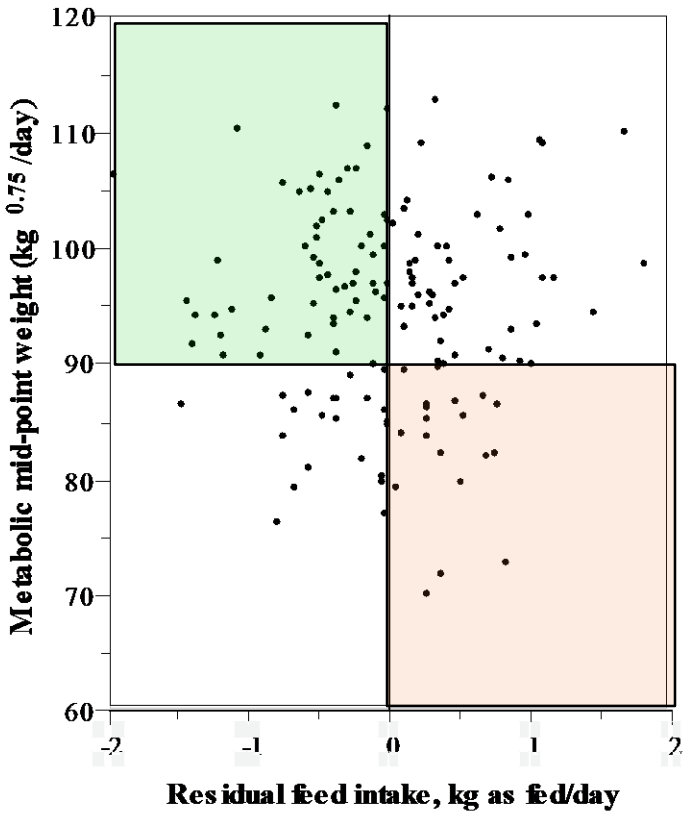
Selection for low RFI will:

Have no effect on growth & animal size





Correlations (r_p & r_g) are near zero

Arthur et al. 2001; Basarab et al. 2003; Crews et al. 2003; Jensen et al. 1992

Residual BW gain
Rg + RFI

148 steers from 5 genetic strains fed a finishing diet and gaining 1.52 kg/day . No relationship to slaughter weight, hip height and gain in hip height (Basarab et al. 2003).

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Cow Confessions on Feed Efficiency

Manitoba heifers speak out on costly weight and feed issues while on a retreat at the Lacombe AAFC beef unit

(identities have been altered to protect individuals)

"I just can't keep my weight down, no matter how much I eat, it goes straight to my hooks and pins"

"I eat all day long and barely gain anything; my brisket is so trim!"

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Tag #447 Sept 30, 2016 Wt.=1030 lbs.

Birthdate Apr. 28/15

Back fat= 0.67 cm

Rib Eye Area= 57.6 cm^2

190 d Weaning Weight= 515 lbs.

Avg Daily Gain=0.75 kg/d

Tag #412 Sept 30, 2016 Wt.= 995 lbs.

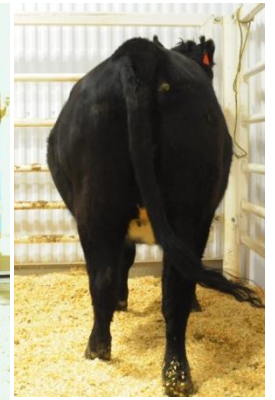
Birthdate Apr. 28/15

Backfat= 0.72 cm

Rib Eye Area= 56.5 cm^2

190 d Weaning Weight= 510 lbs.

Avg Daily Gain= 0.84 kg/d



Lakeland COLLEGE

$161.87 vs. $ 142.25 in winter ration feeding costs over 180 days.

RFI = +0.38 kg DM

RFI = -0.46 kg DM

Tag #134 Sept. 30, 2016 Wt.= 1060 lbs.

Birthdate Apr. 28/15

Backfat= 0.81 cm

Rib Eye Area= 66.2 cm^2

190 d Weaning Weight= 561 lbs.

Avg Daily Gain= 0.74 kg/d

Tag #109 Sept. 30, 2016 Wt.= 1095 lbs.

Birthdate Apr. 28/15

Backfat= 0.72 cm

Rib Eye Area= 56 cm^2

190 d Weaning Weight= 504 lbs.

Avg Daily Gain= 0.74 kg/d

Lakeland COLLEGE

$157.68 vs. $147.64 in winter ration feeding costs over 180 days

RFI= +0.20 kg DM

RFI= -0.23 kg DM

- RFI Inefficient +0.333 kgDM
- ADG 0.94 kg/day Adj Yearling Wt. 869 lbs.
- Backfat 2.86 mm
- REA 69.4 cm2
- FCR 9.3:1
- Red Angus x Shorthorn

- RFI Efficient -0.483 kgDM
- ADG 0.98 kg/d Adj Yearling Wt. 811 lbs.
- Backfat 6.69 mm
- REA 65.3 cm2
- FCR 7.4:1
- Shorthorn x Simmental

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RFI Efficient -0.581 kgDM

ADG 0.65 kg/d

Adj YearlingWt 828 lbs.

Backfat 3.39 mm

REA 60 cm2

FCR 10.8:1 kg

RedAngus x Shorthorn

RFI Inefficient +0.336 kgDM

ADG 0.58 kg/d

Adj Yearling Wt. 845 lbs.

Backfat 3.81 mm

REA 63.9 cm2

FCR 13.3:1 kg

Red Angus X Gelbvieh

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Performance under Resource Limitations

- The Easy-Keeper
- Weather
- Pasture conditions
- Stocking Rate
- Feed Quality

*(But you don’t know how much she ate to keep that condition on unless you measure RFI)

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DNA Parentage

- While you might know which bulls were mated to which groups of cows, you don’t know how many offspring each bull actually sired unless you match parentage.

Fitness traits related to Hybrid Vigour

- Longevity
- Feed Efficiency
- Reproduction
- Lack of diversity in breed composition may result in reduced performance & productivity

Phenotypes or Genotypes

- Data from molecular breeding values translates well for purebred cattle but has challenges for commercial crossbred cattle
- DNA Parentage matching and calculations of retained heterozygosity may be some of the puzzle pieces to improve breeding value accuracies