Inclusion of Dietary Co-products
Impact on Performance & Bottom Line

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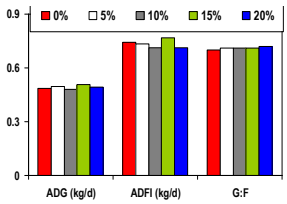
Weaned Pigs
Solvent-Extracted Canola Meal



Performance was not reduced when solvent-extract CM was included

Diets formulated to equal NE and SID AA

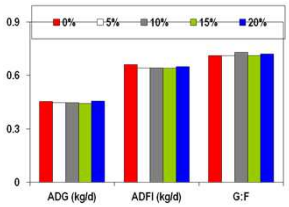
Wheat	57.9	57.8	56.7	56.1	55.5
L/PC/F	15	15	15	15	15
SBM	20	15	10	5	-
CM	-	5	10	15	20
Oil	3	3.5	4.0	4.5	5.0
L-Lys.	-	.08	.15	.23	.30

- L, lactose
- PC, soy protein concentrate
- F, fish meal

SE Canola meal: 3.84 µmol total glucosinolates/g
One diet; steam pelleted

(Landero et al., 2011)

Weaned Pigs
Expeller-Pressed Canola Meal



Performance was not reduced when expeller-pressed CM was included

Diets formulated to equal NE and SID AA

Wheat	55.9	56.2	56.6	57.0	57.4
L/PC/F	15	15	15	15	15
SBM	20	15	10	5	-
CM	-	5	10	15	20
Oil	5.0	4.5	4.0	3.5	3.0
L-Lys.	0.02	.09	.16	.22	.29

EP Canola meal: 10.87 µmol total glucosinolates/g
One diet; steam pelleted

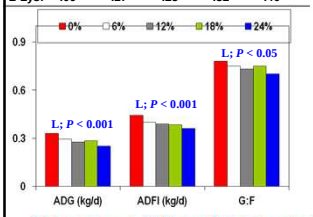
(Landero et al., 2012)

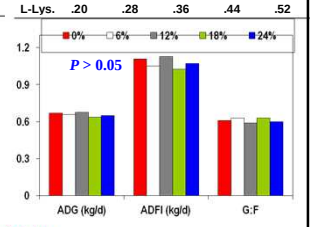
Weaned Pigs
Solvent-Extracted Juncea Canola Meal

Phase-2 and -3 diets formulated to equal NE and SID AA

Wheat	58.7	58.0	57.4	56.8	56.2
L/PC/F	10	10	10	10	10
SBM	24	18	12	6	-
CM	-	6	12	18	24
Oil	2.6	3.2	3.8	4.4	5.0
L-Lys.	.09	.17	.25	.32	.40

Wheat	69.2	68.6	68.0	67.3	66.7
L/PC/F	-	-	-	-	-
SBM	24	18	12	6	-
CM	-	6	12	18	24
Oil	2.0	2.6	3.2	3.8	4.4
L-Lys.	.20	.28	.36	.44	.52

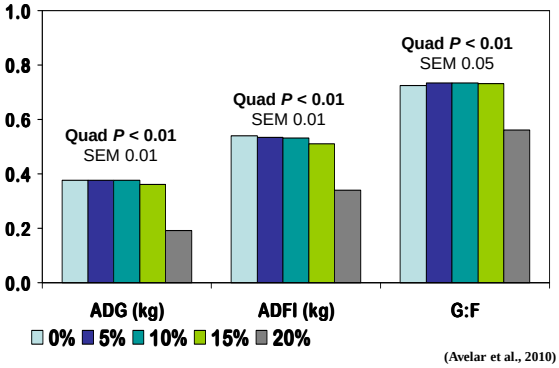




SE Juncea meal: 10.84 µmol total glucosinolates/g
Two diets; diet 1, cold pelleted; diet 2 steam-pelleted

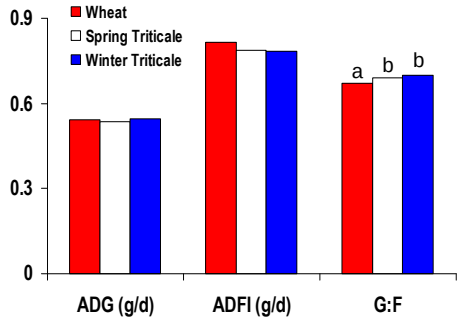
(Landero et al., 2013)

Weaned Pigs
Wheat Distillers Dried Grain with Solubles (DDGS)



(Avelar et al., 2010)

Weaned Pigs
Triticale

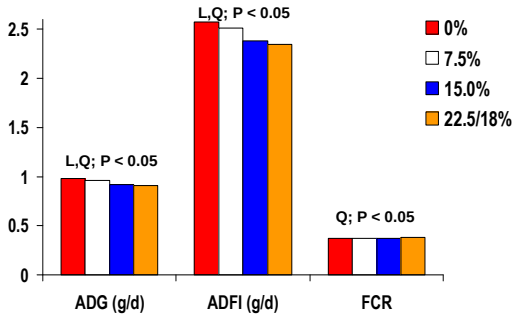


Triticale entirely replaced 66% wheat

(Beltranena et al. 2008)

Grower-Finisher Pigs

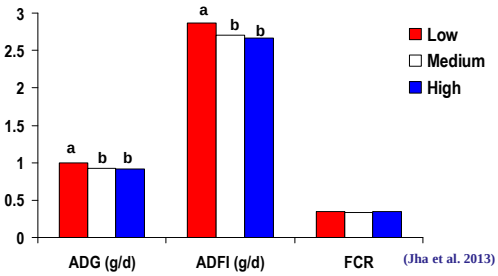
Expeller-pressed canola meal



(Seneviratne et al. 2009)

Validation studies

Grow-finish; co-product inclusion



(Jha et al. 2013)

Variable	Low	Medium	High
Feed costs, CDN$/kg gain	0.842 a	0.788 b	0.747 b
Income over feed, CDN$/pig	39.5 a	39.9 a	42.4 b

Take Home Message

- **Pigs can successfully convert a wide array of feedstuffs into pork**
- **Use modern feed evaluation**
- **Let economics drive your feed formulation**

Calibration equations – value of good calibration equations

"What to calibrate for, and why?"

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Range in DE content

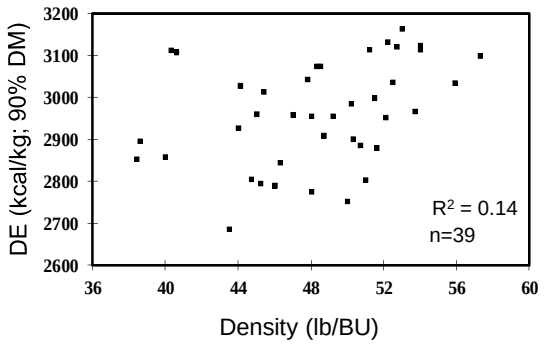
	DE (kcal/kg DM)
Barley	**2,980 - 3,480**
Wheat	**3,360 - 4,050**

- **There is a massive range in energy quality for feed grains**

(Van Barneveld et al., 1999; Fairbairn et al., 1999; Zijlstra et al., 1999)

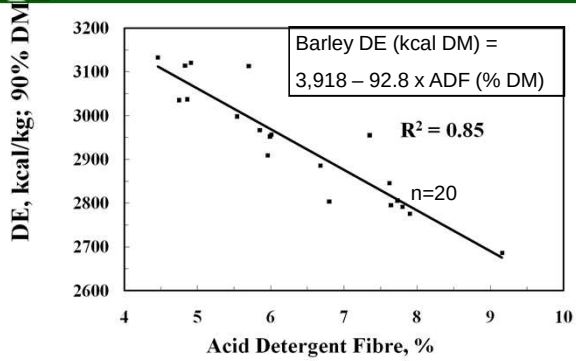
Problem

Old standard rapid but not accurate



(Zijlstra et al., 2011)

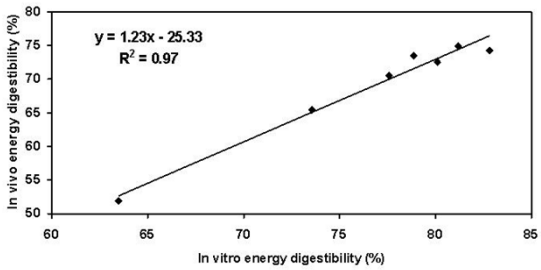
ADF and DE Content



(Fairbairn et al., 1999)

In vitro Predicts *In vivo*

well within feedstuff (barley)



(Regmi et al., 2008; JAS)

How to submit the samples

Rapid Feed Quality Analyses/ NIRS Services

Alberta

Take Home Message

- **We can predict the most important quality characteristics for feed barley and wheat accurately for pigs using NIRS**
- **We have reached out to provide access to NIRS technology**
- **What are your limitations for using this technology?**

Acknowledgments

- **Sponsors**
  - **ALMA**
  - **Alberta and Saskatchewan Canola Commission**
  - **Canadian International Grains Institute**
  - **Danisco, Provimi**