

Decreasing stocking density in a growing-finishing pig barn

Miranda Smit¹, Audrey Cameron²,
Murray Roeske², and Eduardo Beltranena¹

¹Alberta Agriculture and Rural Development

²Alberta Pork



Introduction

- ‘Proposed’ space allowance for growing-finishing pigs under revised pig Code of Practice
 - Calculated as $k \cdot BW^{0.667}$
 - $k=0.0335$
 - “Short-term (undefined time) decrease in space is allowed up to 15% (space or # of pigs???) as long as average daily gain, mortality are not affected
- What is the effect of decreased stocking density on pig performance, carcass traits, and economic impact?

Colony trial set-up

- Stocking density: 15, 18 or 24 pigs/pen
- Pens (8' x 17.5' or 2.4 x 5.3 m), which housed 24 pigs before trial
- Barrows or gilts

15 pigs/pen Barrows	15 pigs/pen Gilts
18 pigs/pen Barrows	18 pigs/pen Gilts
24 pigs/pen Barrows	24 pigs/pen Gilts

- 3 repeats of same trial
 - 18 pens, 6 per stocking density
- BW at start : ~70 kg
- BW at slaughter : ~118 kg
- Finisher phase 1 diet
- Slaughtered at Olymel, Red Deer

- Measured: body weight, feed disappearance, and carcass traits

Crowding

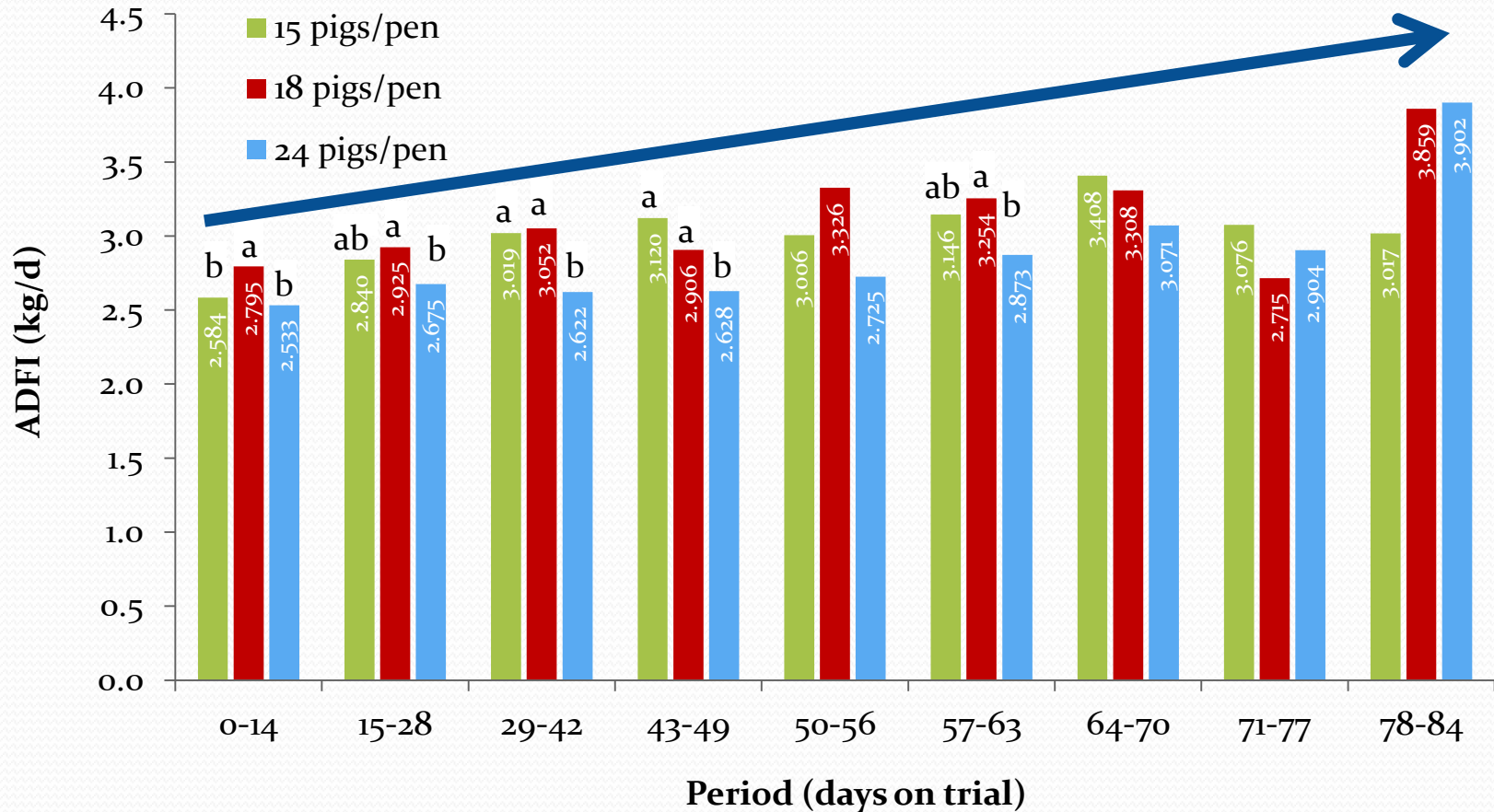
- Defined as more pigs in pen than allowed under revised pig Code of Practice
- Number of pens (out of 6 pens per stocking density) that experienced crowding during the trial:

	Days on trial									
Pigs/pen	0	14	28	42	49	56	63	70	77	84
15	0	0	0	0	0	0	0	0	0	0
18	0	0	1	6	4	0	0	0	0	0
24	6	6	6	6	6	5	3	1	0	0

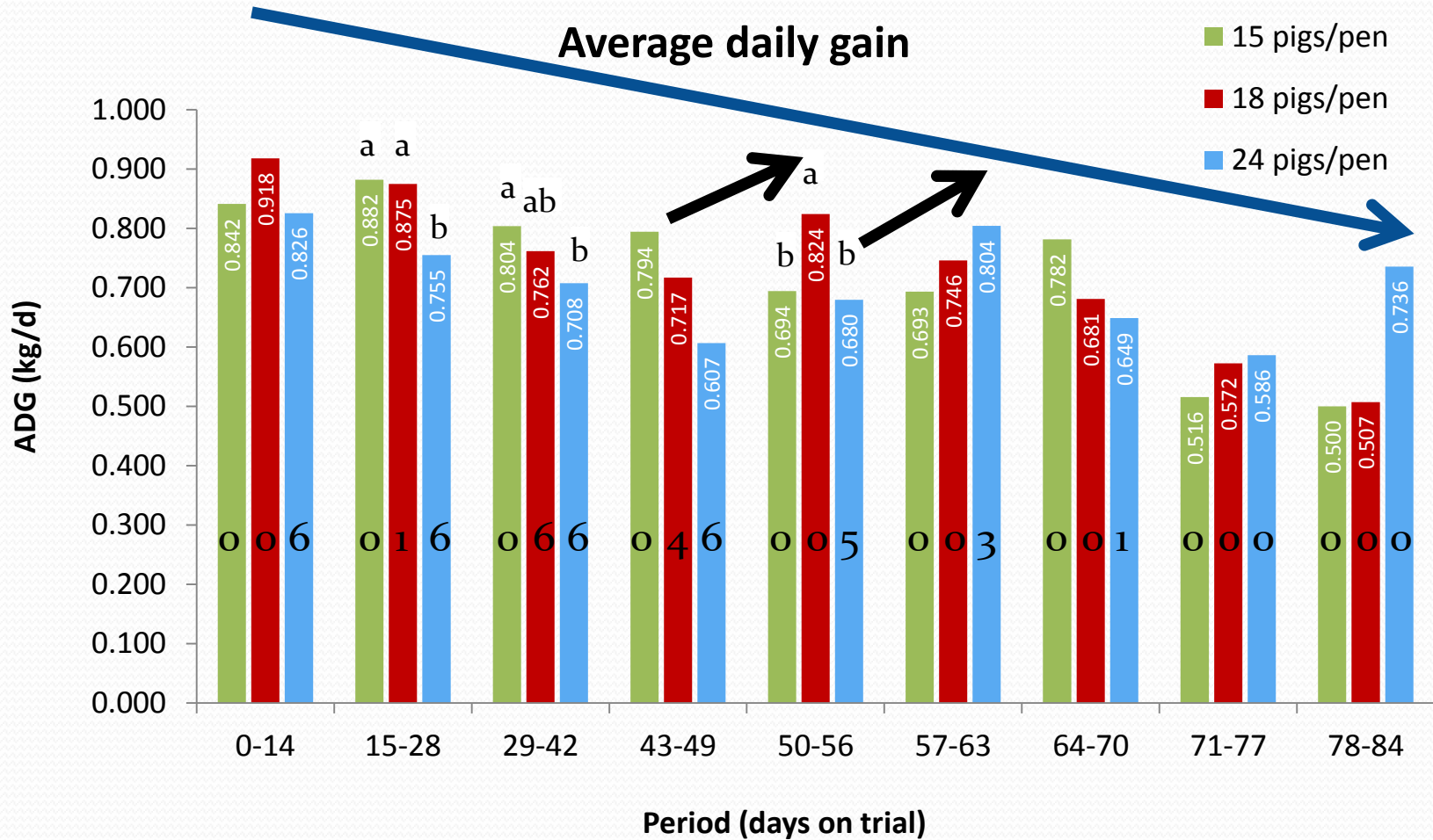
- First pull: d 43 for 15 and 18 pigs/pen, and d 50 for 24 pigs/pen

Live performance

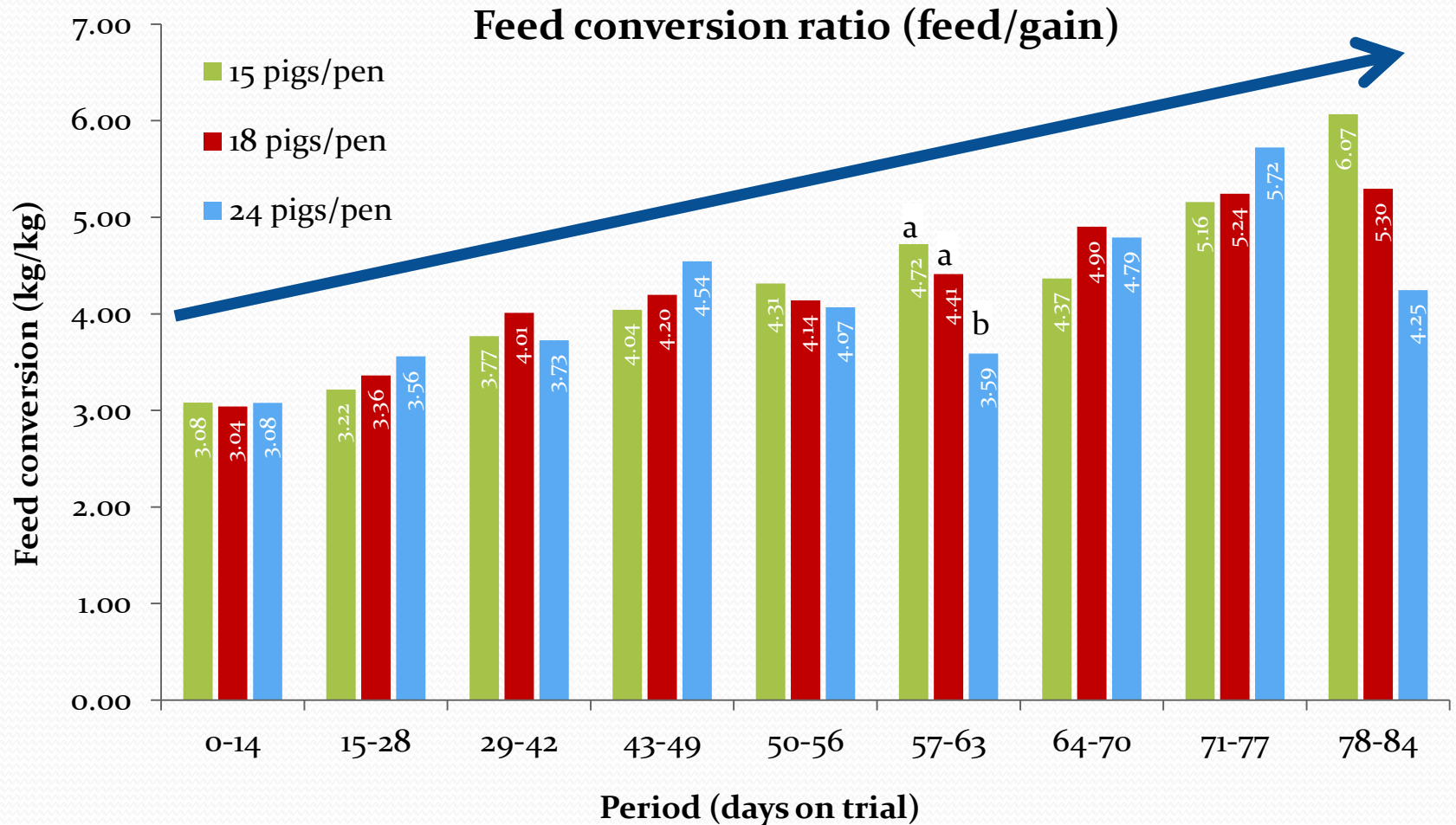
Average daily feed disappearance



Live performance



Live performance



Carcass traits

	15 pigs/pen	18 pigs/pen	24 pigs/pen	SEM	P-value
Days to slaughter	59.9 ^b	58.1 ^b	65.9 ^a	3.6	<0.01
Ship weight (kg)	117.7	117.9	117.2	0.2	NS
Carcass wt (kg)	95.8	95.9	95.5	0.6	NS
Dressing (%)	81.6	81.3	81.4	0.5	NS
Backfat (mm)	18.5 ^a	18.3 ^{ab}	17.1 ^b	0.6	0.08 *
Loin depth (mm)	62.6	63.2	62.2	0.9	NS
Lean yield (%)	60.8	61.0	61.4	0.3	NS
Index	110.8	112.5	112.4	1.0	NS
Loin bonus (\$)	2.25	2.78	2.87	0.60	NS

* Reduced backfat interpreted as a mild feed restriction. Loin depth maxed out. Higher backfat thickness is now preferred by packers.

Financial data

	15 pigs/pen	18 pigs/pen	24 pigs/pen	SEM	P-value
Income	175.11	178.03	177.27	1.81	NS
Feed cost pre-trial	83.55	83.55	83.55		
Feed cost trial	46.88	46.70	47.87	1.79	NS
Income-over-feed-cost	44.69	47.25	45.21	2.50	NS

- $\text{Income} = 1.651 * \text{index} * \text{slaughter weight}$
- Feed cost pre-trial: estimated to be 83.55 CAD/pig
- Feed cost during the trial = total feed intake/pig * 0.28 CAD/kg feed
- Income over feed cost = income – feed cost pre-trial – feed cost during trial

Economic impact

- Based on 80 finishing pens

	15 pigs/pen	18 pigs/pen	24 pigs/pen
Barn turns	5.7	5.8	5.2
# pigs slaughtered	6840	8352	9984
Fixed costs/year (*1000, \$)	79.6	79.6	79.6
Fixed costs/kg carc. Wt. (\$)	0.1216	0.0994	0.0835
Income/year (M \$)	1.20	1.49	1.77
IOFC/year (*1000 \$)	306	395	451
IOFFC/year (*1000 \$)	226	315	372

Red boxes:
current
farm
numbers
used for
calculations

Fixed costs
includes
land,
equipment
and
buildings

- IOFC = income-over-feed-cost
- IOFFC = income-over-feed and fixed cost

- Margin is \$ 57 000 smaller for a stocking density of 18 pigs/pen compared with 24 pigs/pen**

Conclusions

- Stocking density of 18 pigs/pen would be recommendable under revised pig Code of Practice
- Results in higher ADG and less days to market, but less pigs slaughtered per year
- Simple economic analysis shows a loss of margin of \$ 57,000





Questions?



Alberta  Agriculture and Rural Development