

March 12th

12:30 – 1:30 pm CT

Reducing Piglet Mortality in Alternative Systems



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Alternative Swine

WCROC

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The logo for PORKcast ONLINE SEMINARS. It features a stylized blue pig silhouette above the word "PORKcast" in a blue, sans-serif font. Below "PORKcast" is the phrase "ONLINE SEMINARS" in a larger, bold, blue, sans-serif font. The entire logo is set against a white background with a subtle blue glow.



Outlines

- An overview of alternative swine production
- Factors restricting alternative swine performance
- Alternative production system at WCROC
- Research on reducing pre-weaning mortality of piglets

An Overview of Alternative Swine Production

Item	Average*	Top farms*	Bottom farms*	WCROC	PigChamp
Born alive/litter	8.5	8.3	8.1	11.0	11.4
Pigs weaned per litter	6.3	6.5	5.1	9.2	10.0
Pre-weaning mortality, %	26	21	37	19	12
Litters weaned/sow/yr	1.5	1.8	1.3	2.3	2.3
Feed : Gain	4.42	3.78	5.24	3.16	2.97 ¹

*Kliebenstein et al. 2008. ¹. Pigs in confinement barns (Johnston et. al. 2005). PigChamp data were 2008 annual data.



Factors Restricting Performance of Alternative Production

- Number of piglets weaned/litter
 - Born alive litter size
 - Pre-weaning mortality
- Number of litter weaned/sow/yr
 - Seasonal effects
- Feed efficiency
 - Thermal environments
 - Large group sizes
 - Feed wastage



Alternative Swine at WCROC

- 60 sows farrow-to-finish unit
- Dam Line
 - Landrace and Yorkshire
- Sire Line
 - Dorac (terminal line)
 - Lanrace or Yorkshire (replacement gilts)



Alternative System at WCROC

- Group-gestation hoop barn
- Group farrowing barn
 - Swedish Model
- Hoop barns for finishing
 - Two hoops for 500 pigs
- All barns are bedded with wheat straw!

Gestation Hoop



Hoop Barn for Finisher Pigs



Group Farrowing Barn



A Farrowing Pen



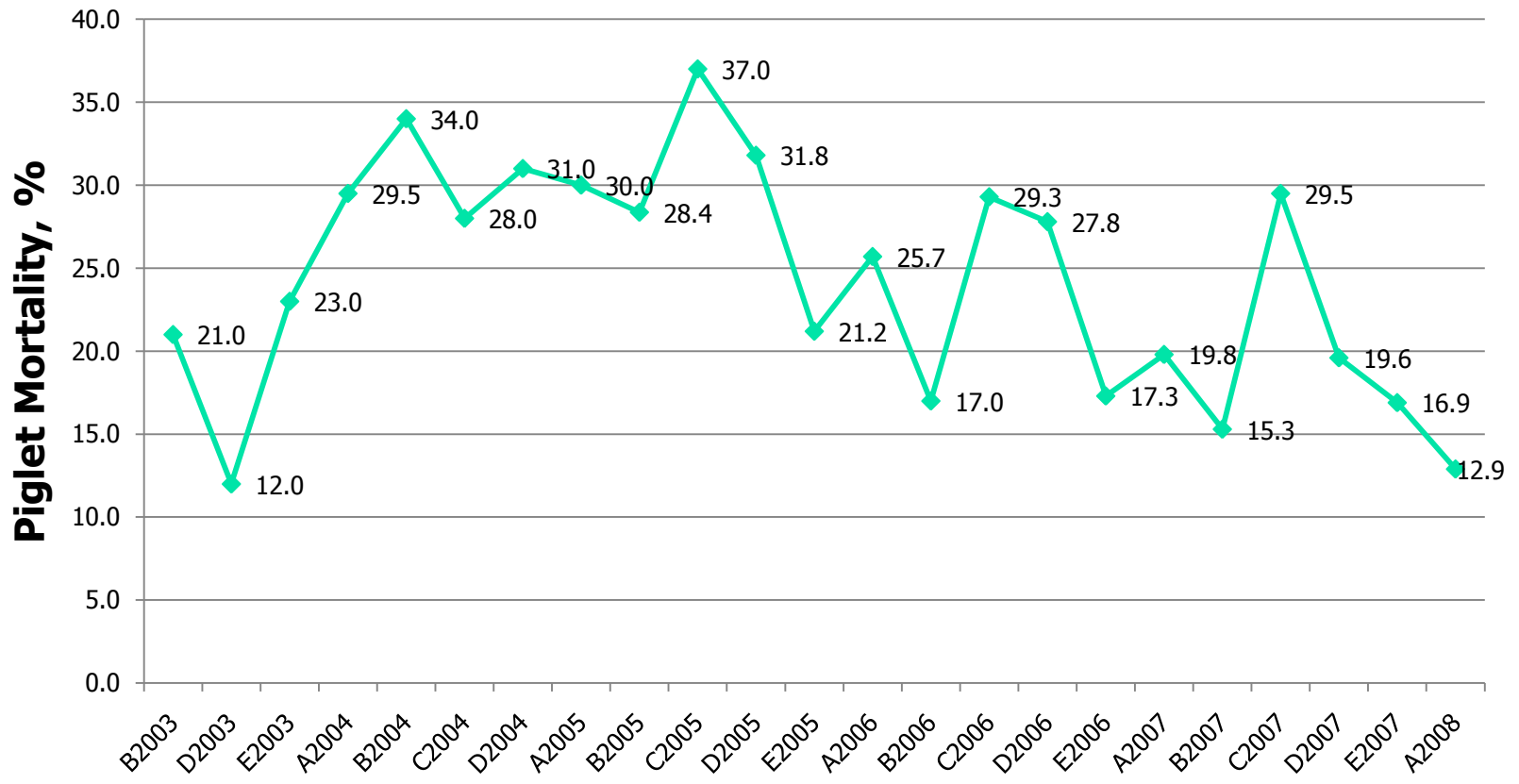
After Farrowing Pens Are Removed



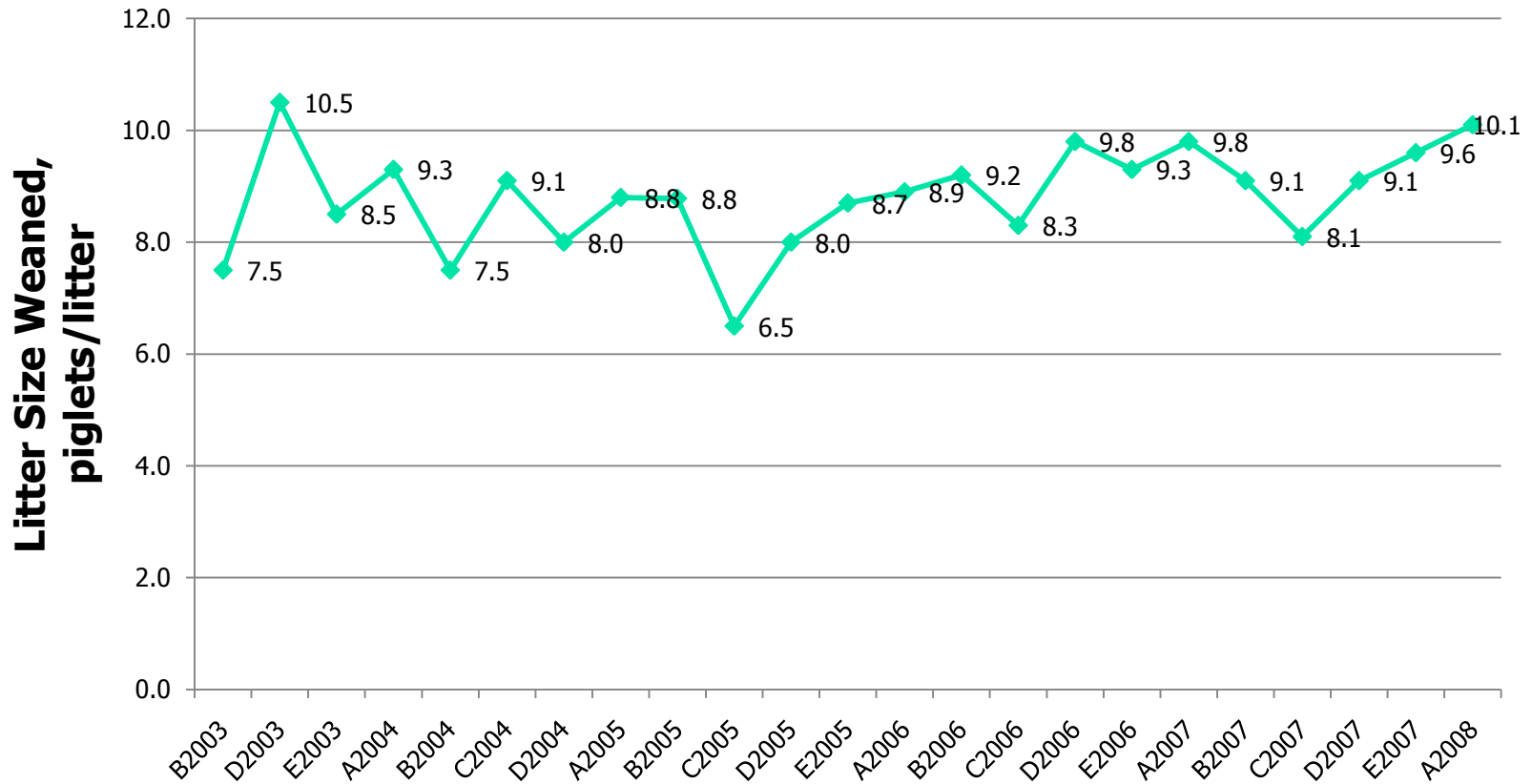
After Weaning



Piglet Mortality at WCROC



Litter Size Weaned During 5 Years

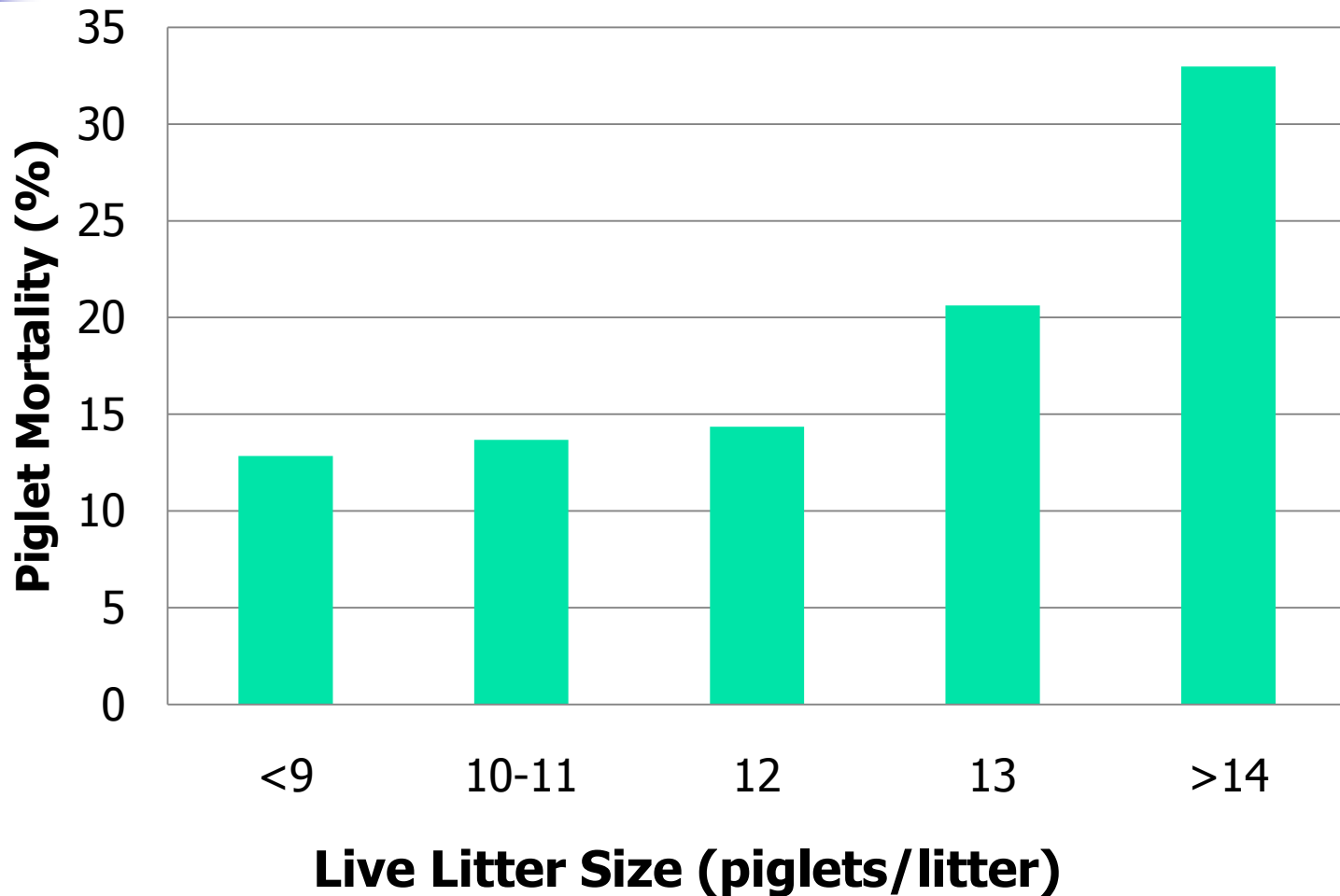




Research at WCROC

- Reducing piglet mortality
 - Sows
 - Litter size
 - Parity
 - Seasonal effects
 - Management
 - Piglets
 - Birth weight
 - Sex
 - Cross-foster

Effects of Live Litter Size on Piglet Mortality





Managing Litter Size

- When born alive litter size is larger than 12, piglet mortality increased dramatically.
 - Optimal litter size = 11-12 piglets/litter
 - Cross foster to avoid the large litter size.



Effects of Sow Parity

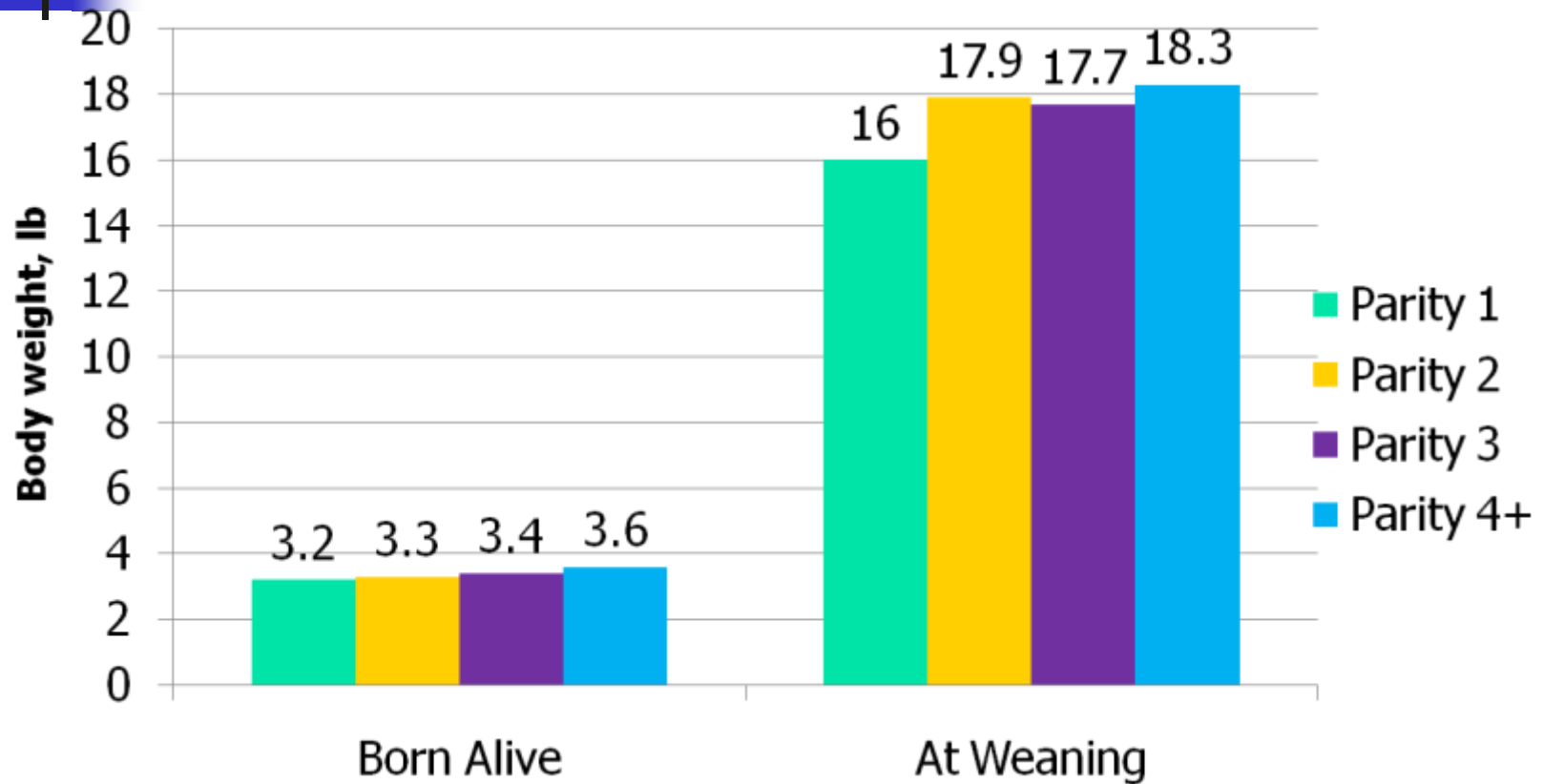
	Parity 1	Parity 2	Parity 3	Parity4+
# of litters	124	93	81	135
Litter size (piglets/litter)				
Born alive	11.8	11.1	12.2	11.1
Stillborn	0.6	0.5	0.8	1.0
Dead	2.4	2.2	3.5	3.6
Weaned	9.6	8.8	8.6	8.1
Mortality,%	19	19	28	29

Effects of Sow Parity

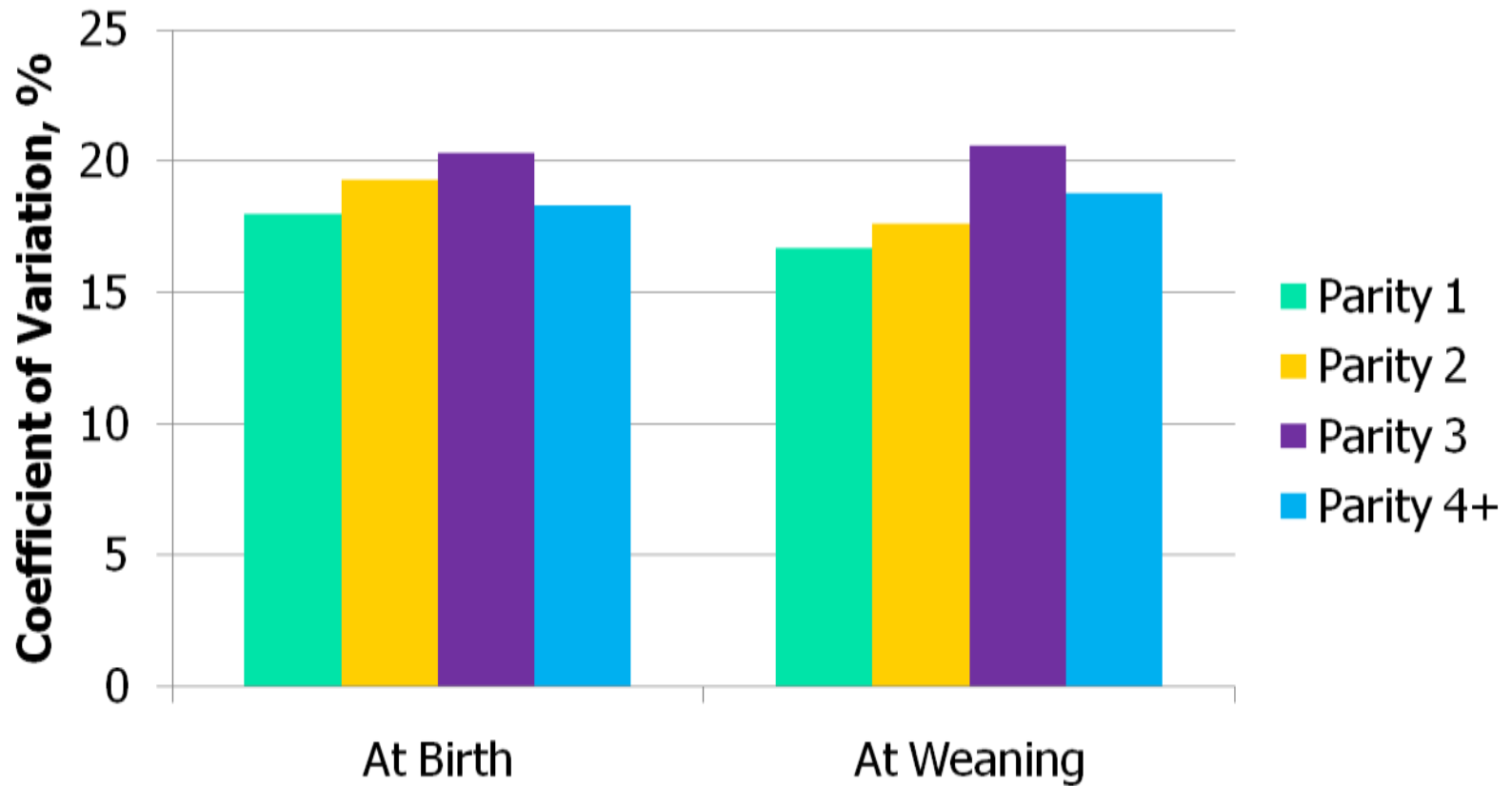
- When Litter Size Was Equalized

	Parity 1	Parity 2	Parity 3	Parity 4+
# of litters	35	21	22	41
Litter size (piglets/litter)				
Born alive	11.9	12.3	13.0	11.1
After foster	12.1	12.3	12.2	12.1
Stillborn	0.4	0.4	0.8	1.0
Dead	1.3	2.0	2.7	2.6
Weaned	10.8	10.2	9.5	9.5
Mortality,%	10.9	16.1	22.5	21.1

Body Weight of Piglets

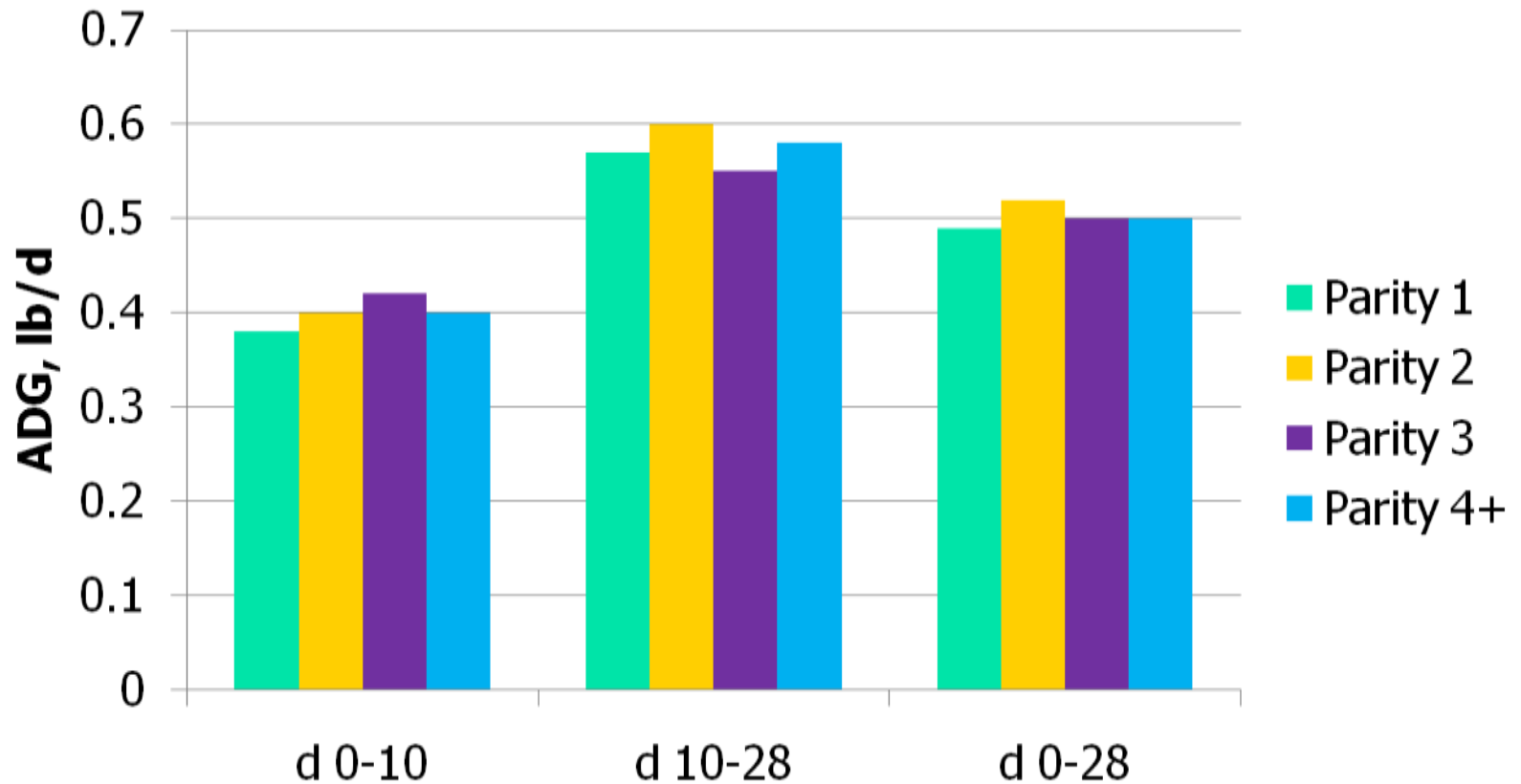


Variation in Birth Weight



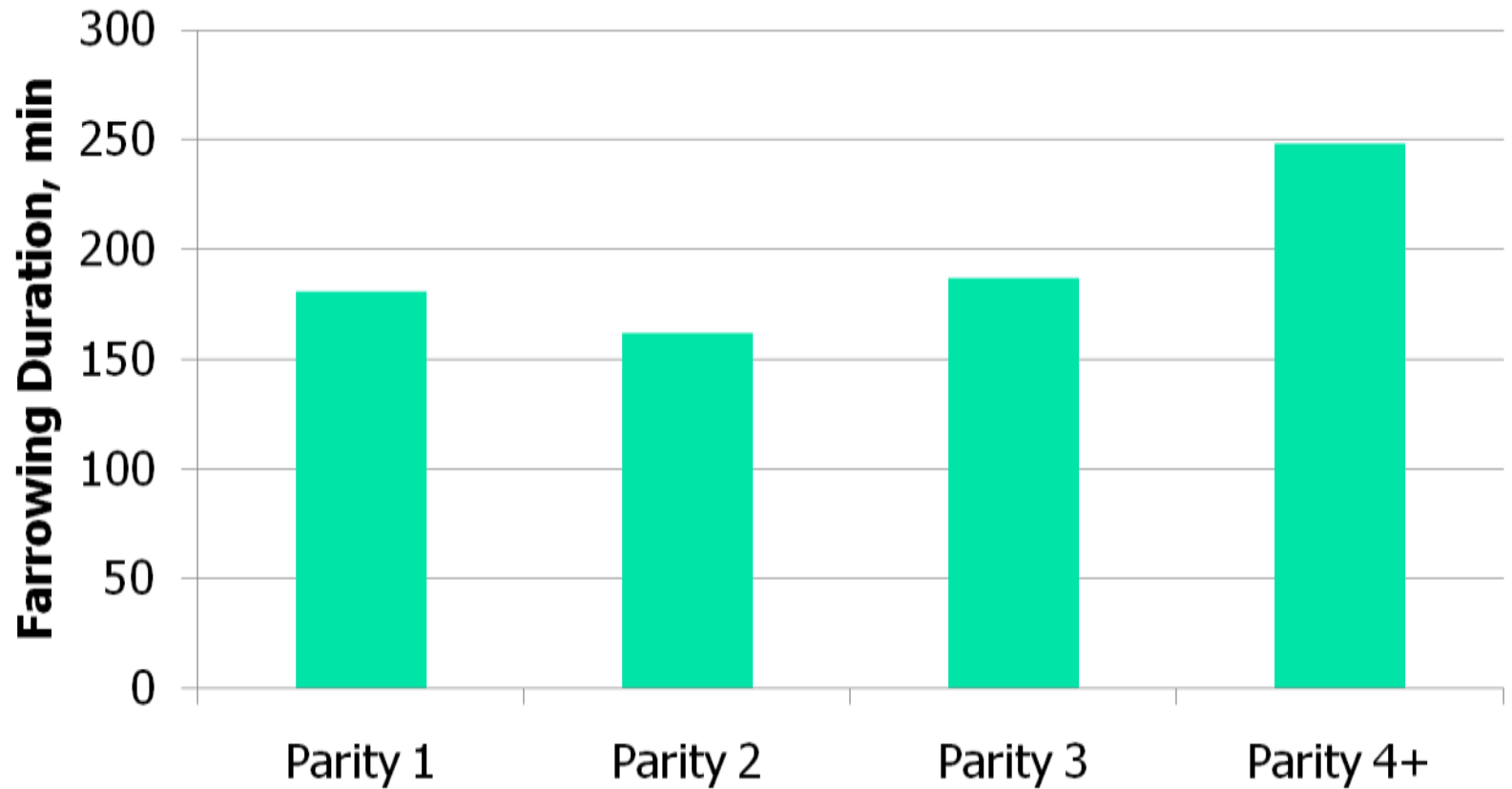


Average Daily Gain



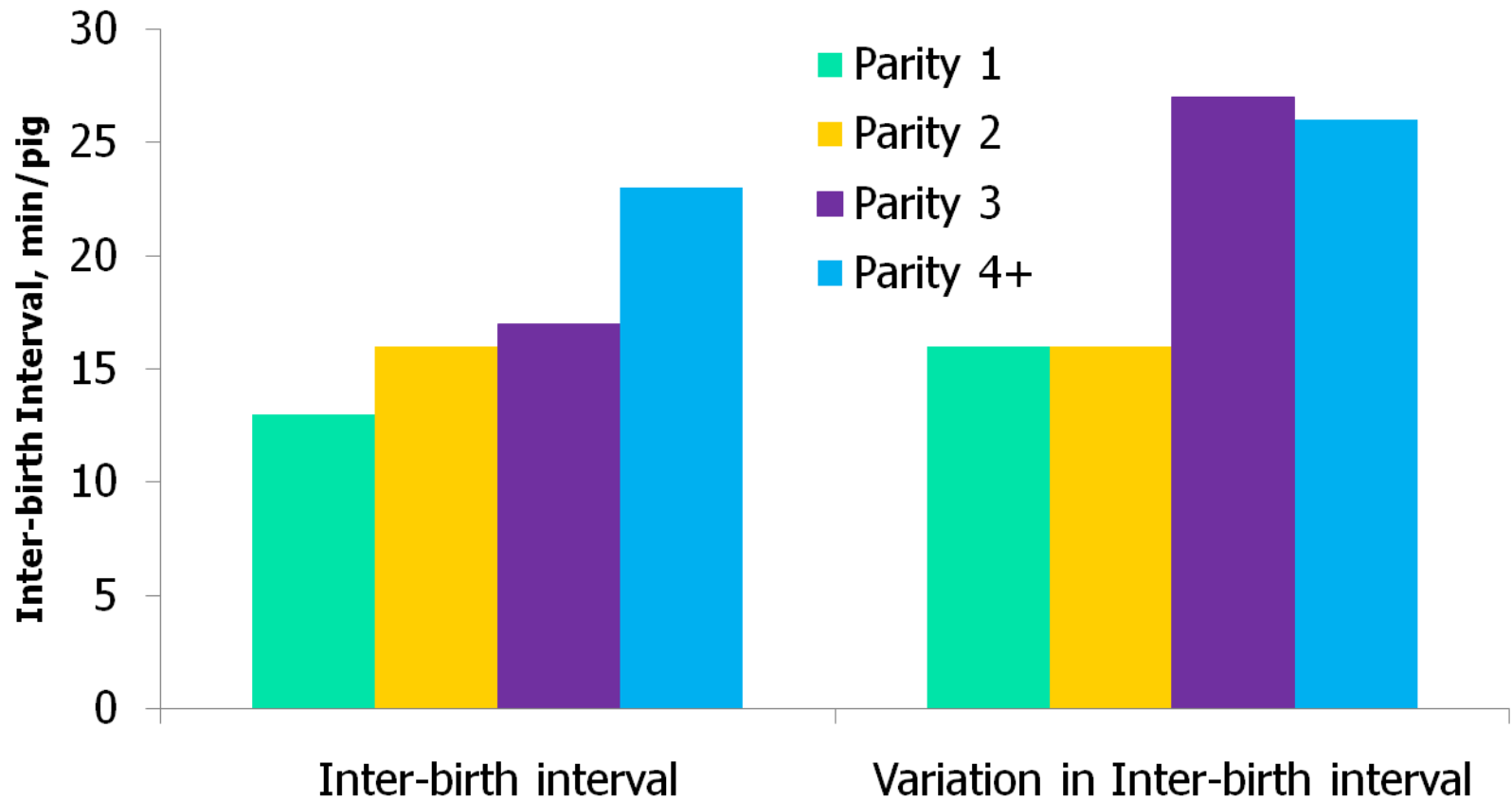


Farrowing Behavior

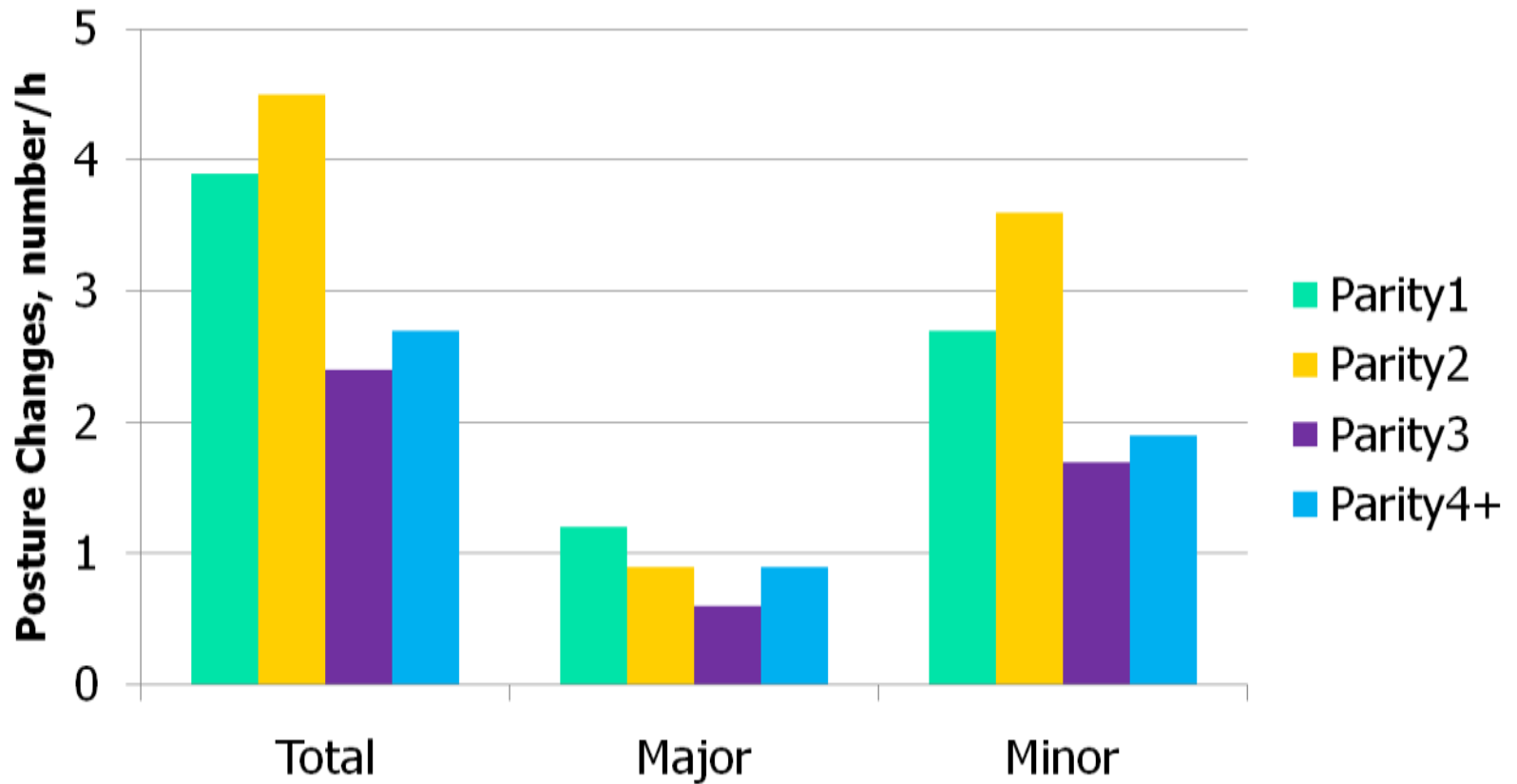




Inter-birth Intervals



Posture Changes During Farrowing





Managing Parity

- Piglet mortality increased with parity
 - Reduce the proportion of old sows
 - Select sows based on litter size weaned
 - Optimal live litter size at birth
 - Lower piglet mortality
 - Prolonged farrowing, large variation in inter-birth intervals and fewer posture changes during farrowing may be an indicator of difficult farrowing



Seasonal Effects

	Winter	Spring	Summer	Fall
# of litters	127	95	78	133
Mean parity	2.8	2.4	3.0	2.7
Litter size (piglets/litter)				
Born alive	12.0	11.2	11.5	11.5
Stillborn	0.6	0.7	1.0	0.5
Dead	2.7	2.7	3.6	2.7
Weaned	9.4	8.7	8.0	9.1
Mortality, %	21	22	30	22

Effects of Management

– Performance of 5 Years

	2003-4	2005	2006	2007-8
# of litters	72	100	119	142
Mean parity	2.7	2.7	2.7	2.9
Litter size (piglets/litter)				
Born alive	11.9	11.8	11.5	11.0
Stillborn	0.8	0.8	0.6	0.6
Dead	3.1	3.8	2.6	2.2
Weaned	8.9	8.1	9.0	9.2
Mortality, %	24	30	22	19



Improving Management Practice

- Move sows in 3 days before farrowing.
- Prevent piglets from getting out of pen during the first 10 days.
- Process piglets after all sows in a room farrowed.
- Identify and treat sick sows promptly
- Keep bedding dry.

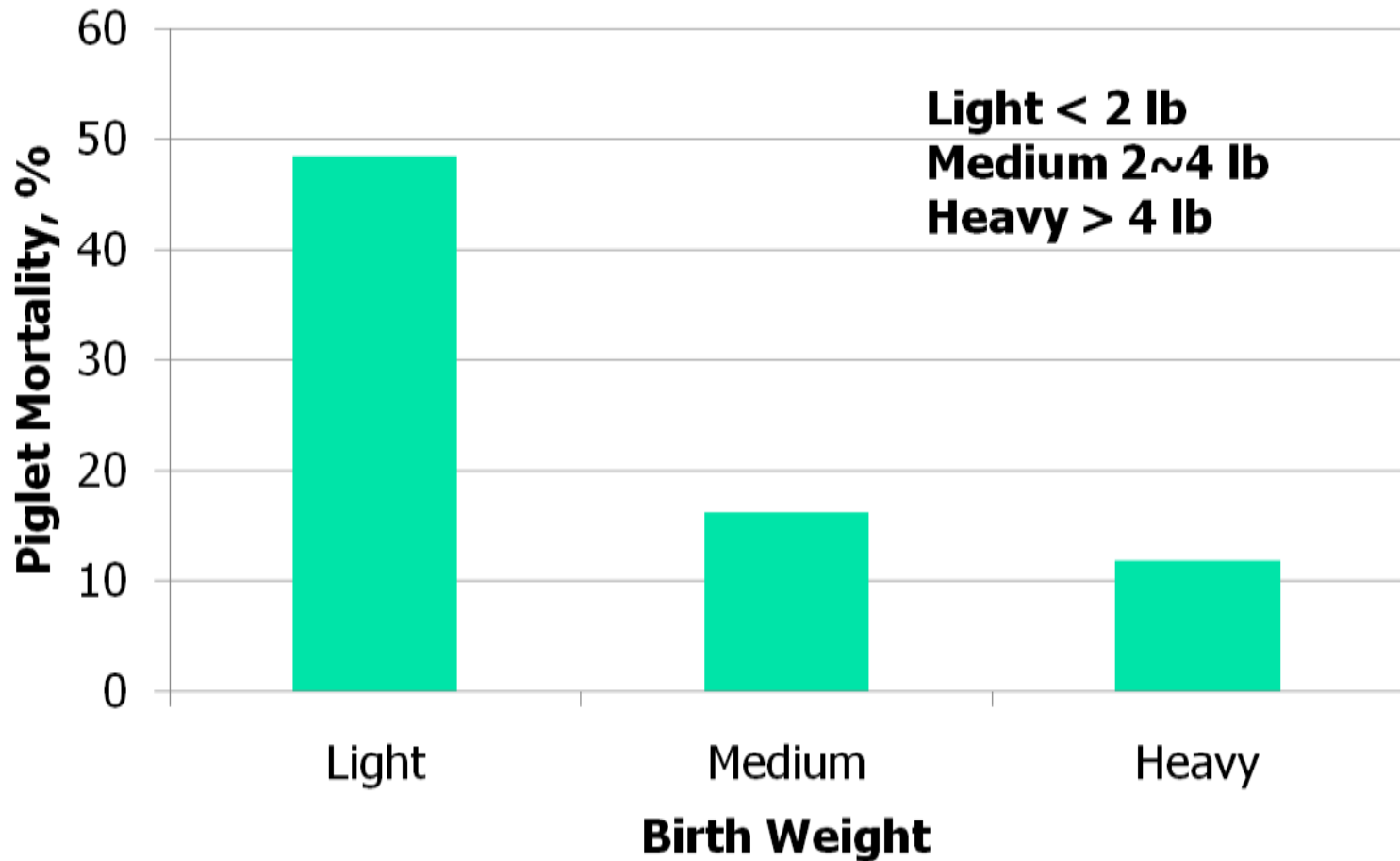


Effects of Piglets

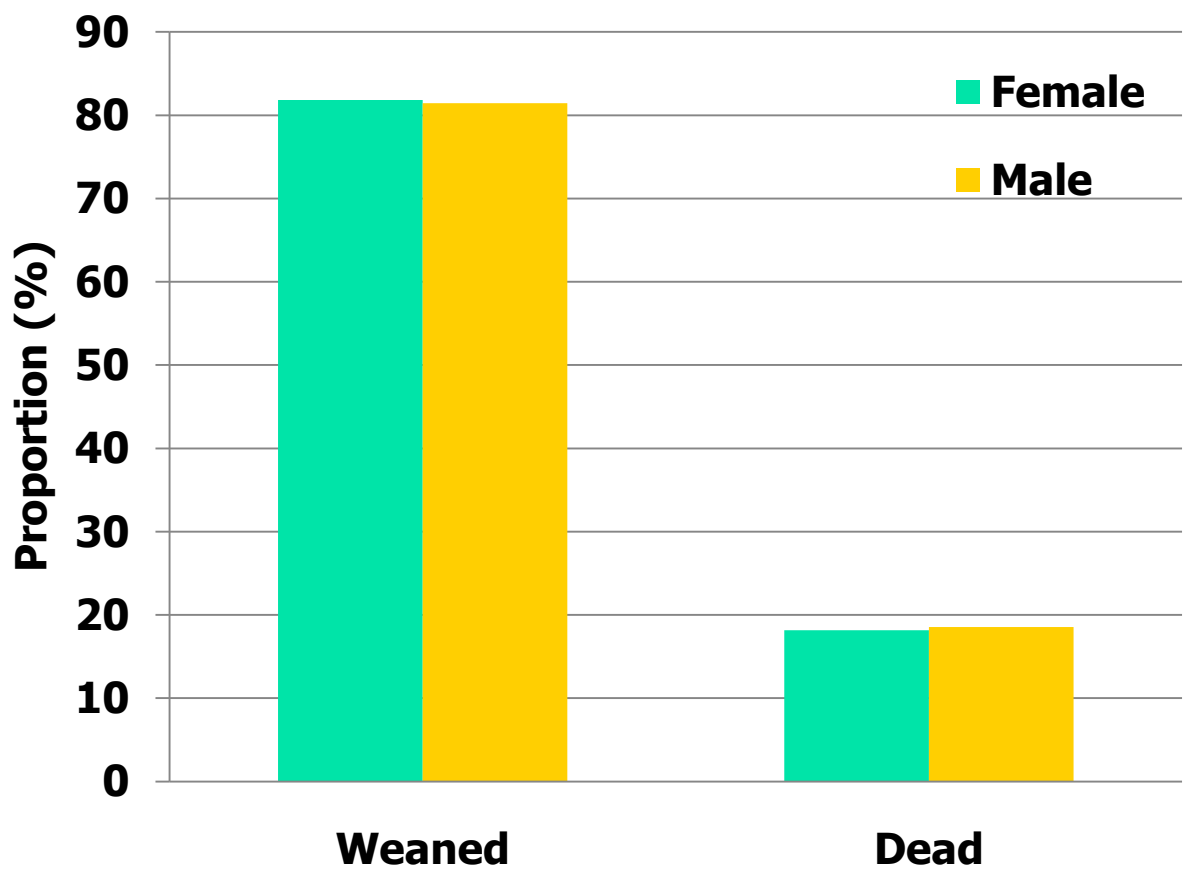
- Birth weight
- Sex
- Cross-foster



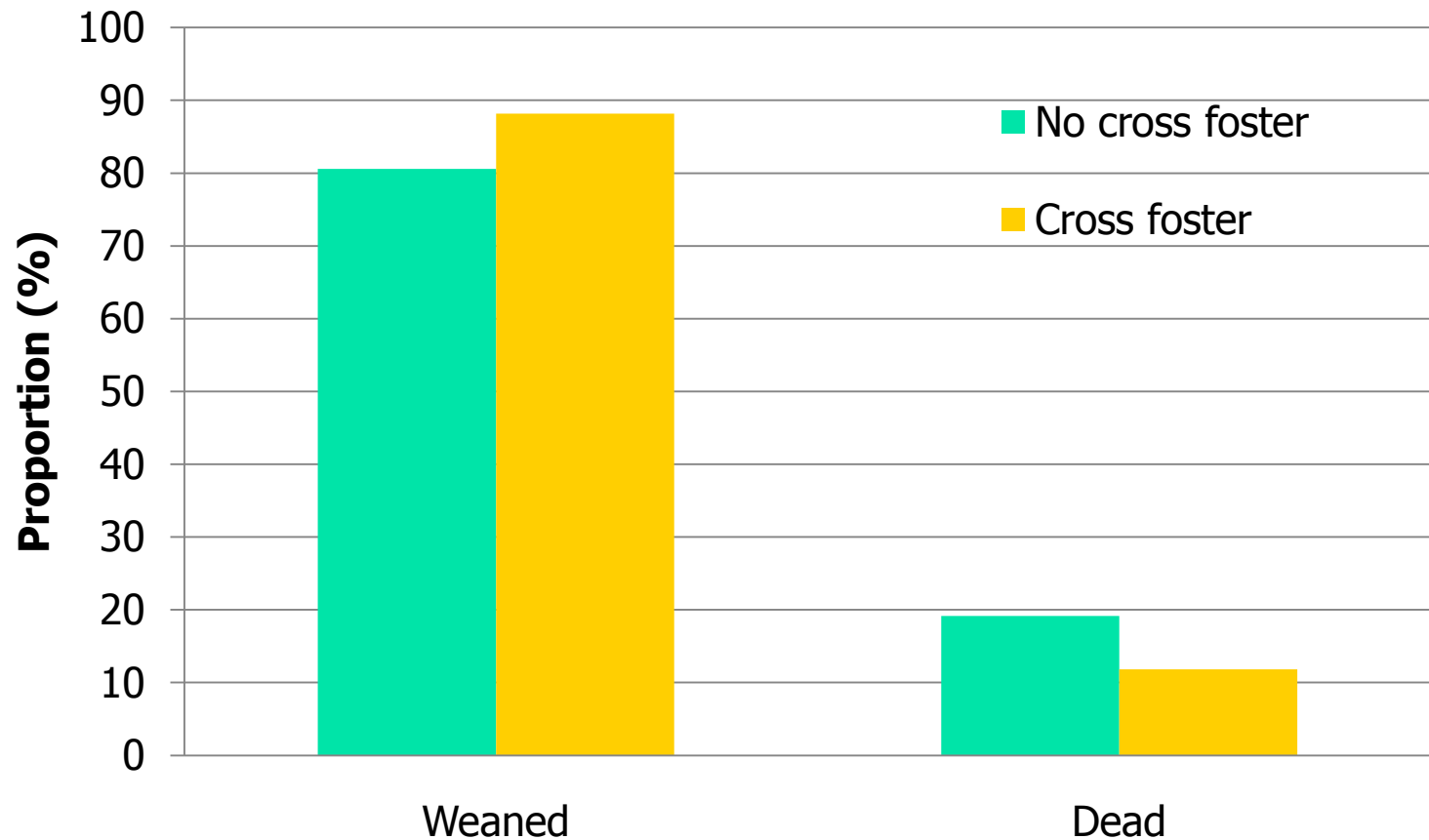
Effects of Birth Weight on Piglet Mortality



Effects of Sex on Piglet Mortality



Effects of Cross-Foster on Piglet Mortality





Summary

- Currently, pre-weaning mortality of piglets is 19% at WCROC.
- Piglet mortality is higher during summer than during other seasons.



Litter Size and Birth Weight

- Piglet mortality increased dramatically when:
 - Born alive litter size is larger than 12.
 - Birth weight of piglets is lighter than 2 lb.



Effect of Parity

- Young sows outperformed old sows.
 - had lower piglet mortality;
 - weaned more, but lighter piglets.
- Old sows tended to have prolonged farrowing duration, large variation in inter-birth interval, and few postural changes during farrowing than younger SOWS.



Management

- Piglet mortality can be reduced by good management practices.
 - Alleviate thermal stress
 - Cross-foster to avoid litter size larger than 12.
 - Cull old, poor performing sows.
 - Select sows based on litter size weaned
 - Special care of lighter piglets

Questions?

