

Effect of Weaning Age and Weight on Reproduction and Growth

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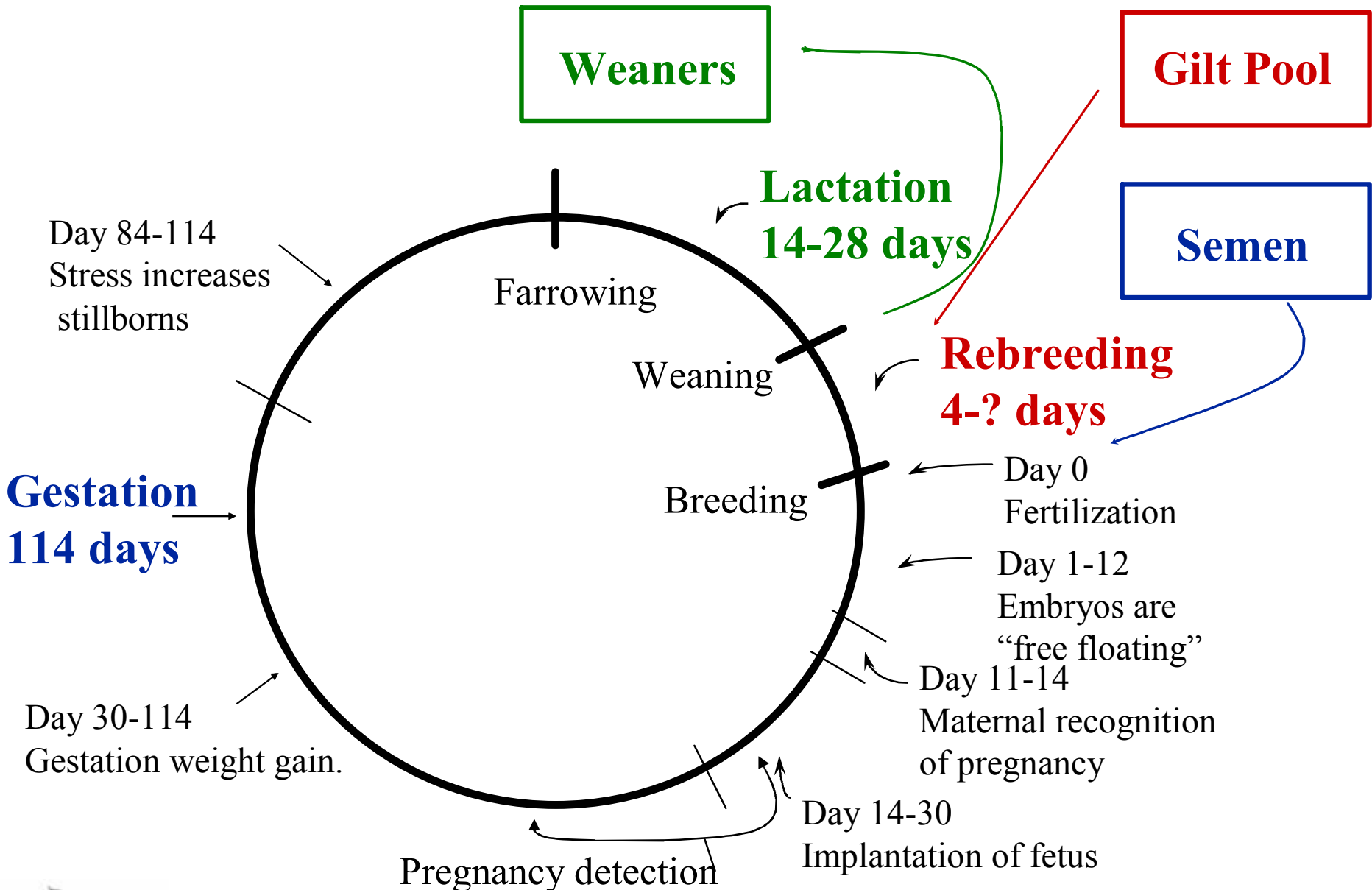
North Carolina State University



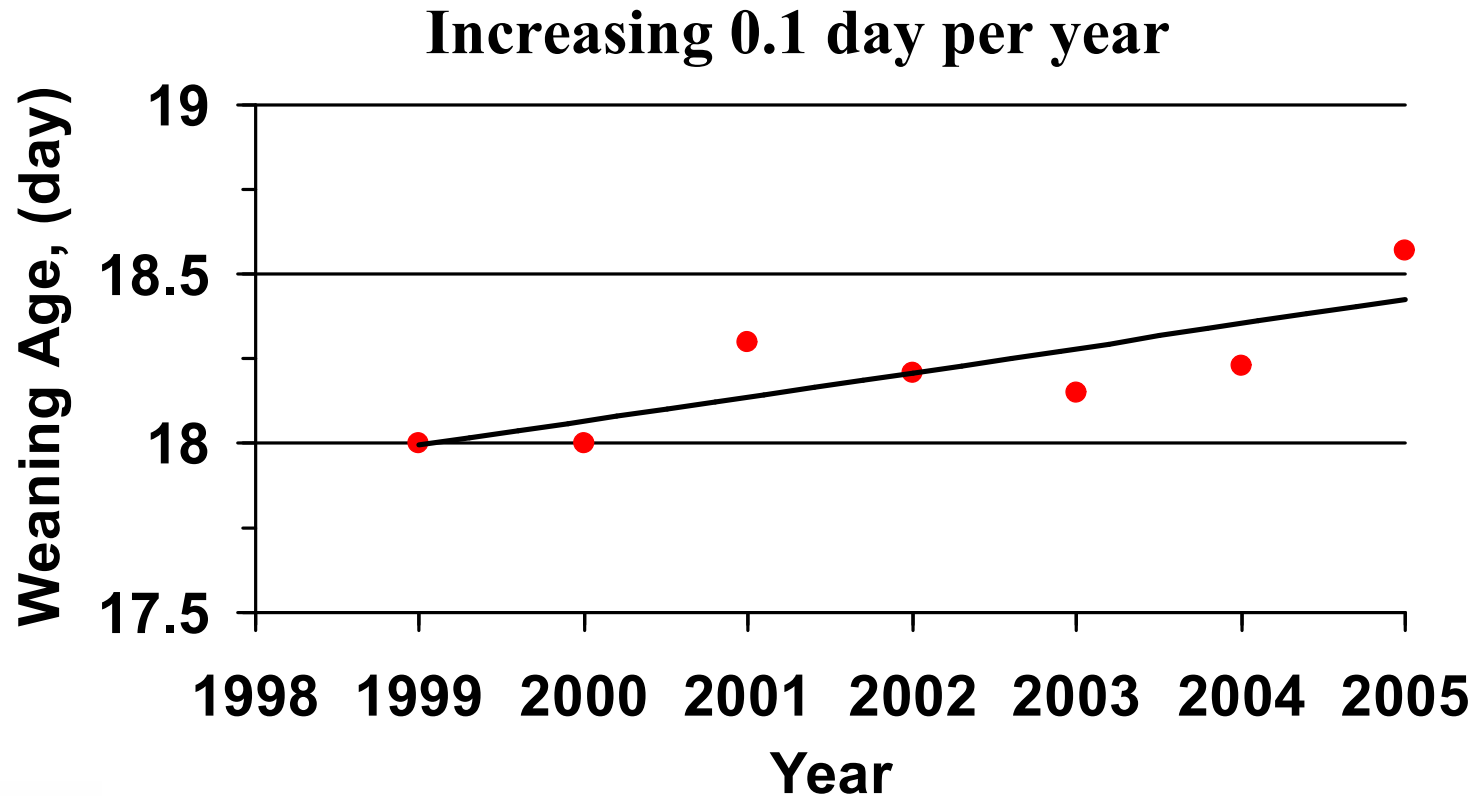
Outline

- ◆ Introduction
- ◆ Subsequent reproduction of sows
- ◆ Performance of weaned pigs
- ◆ Options for extending lactation length

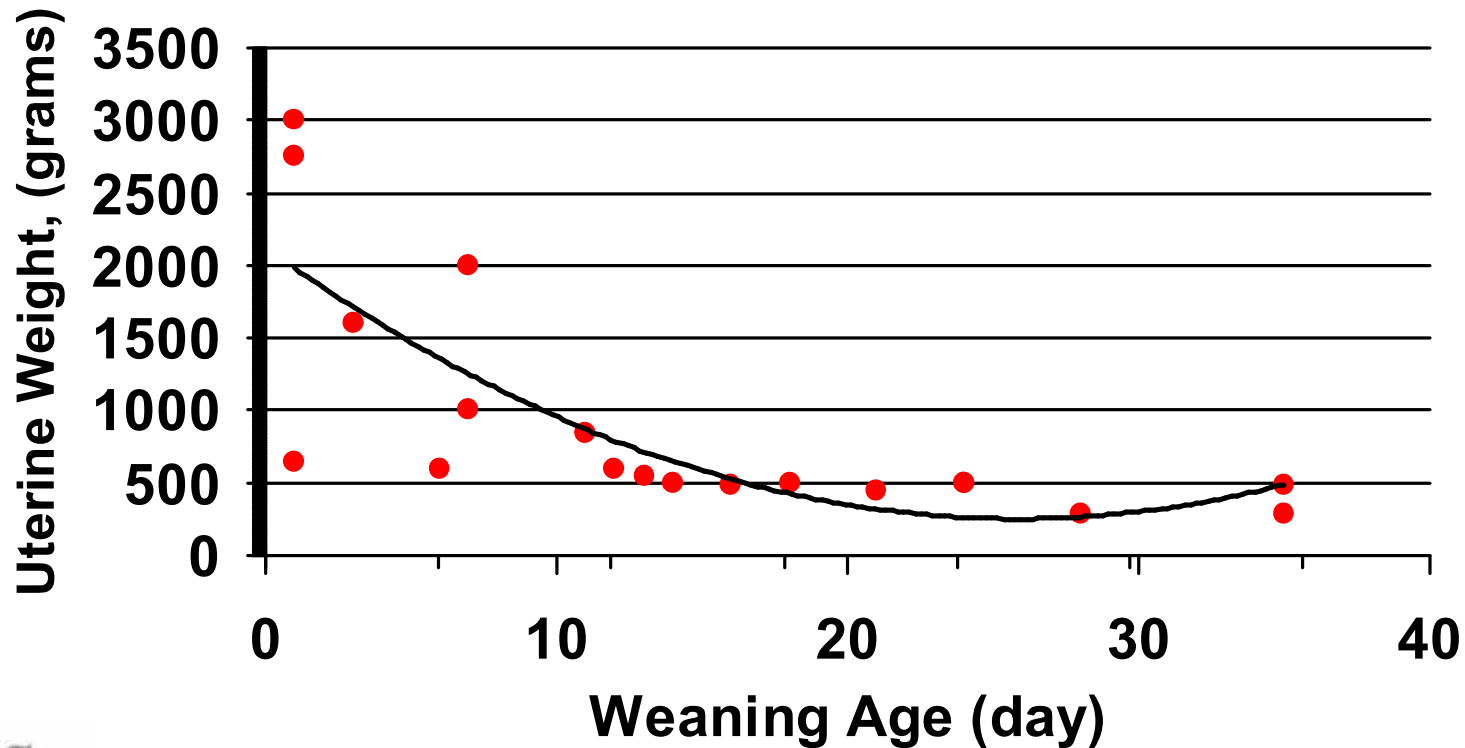




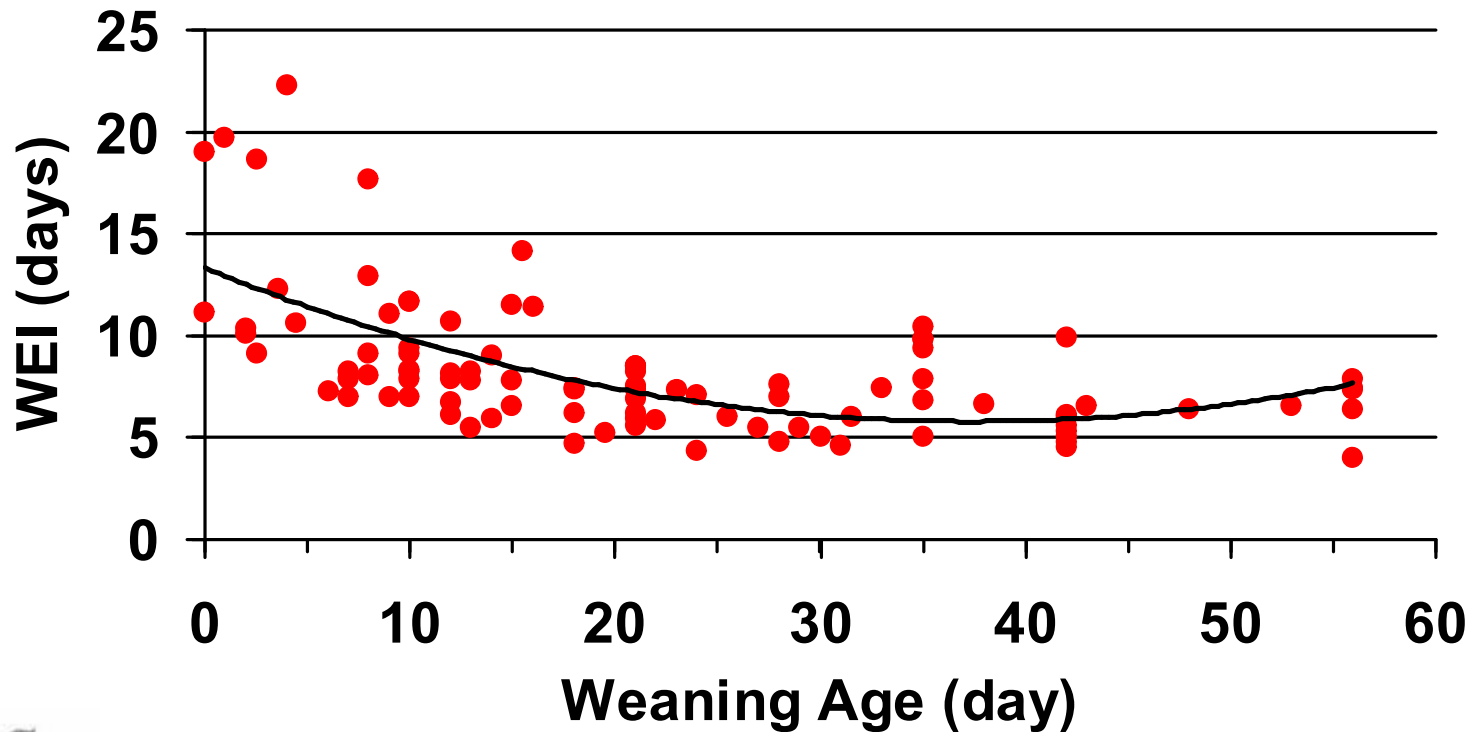
Annual PigCHAMP® benchmarking summaries for average age at weaning.



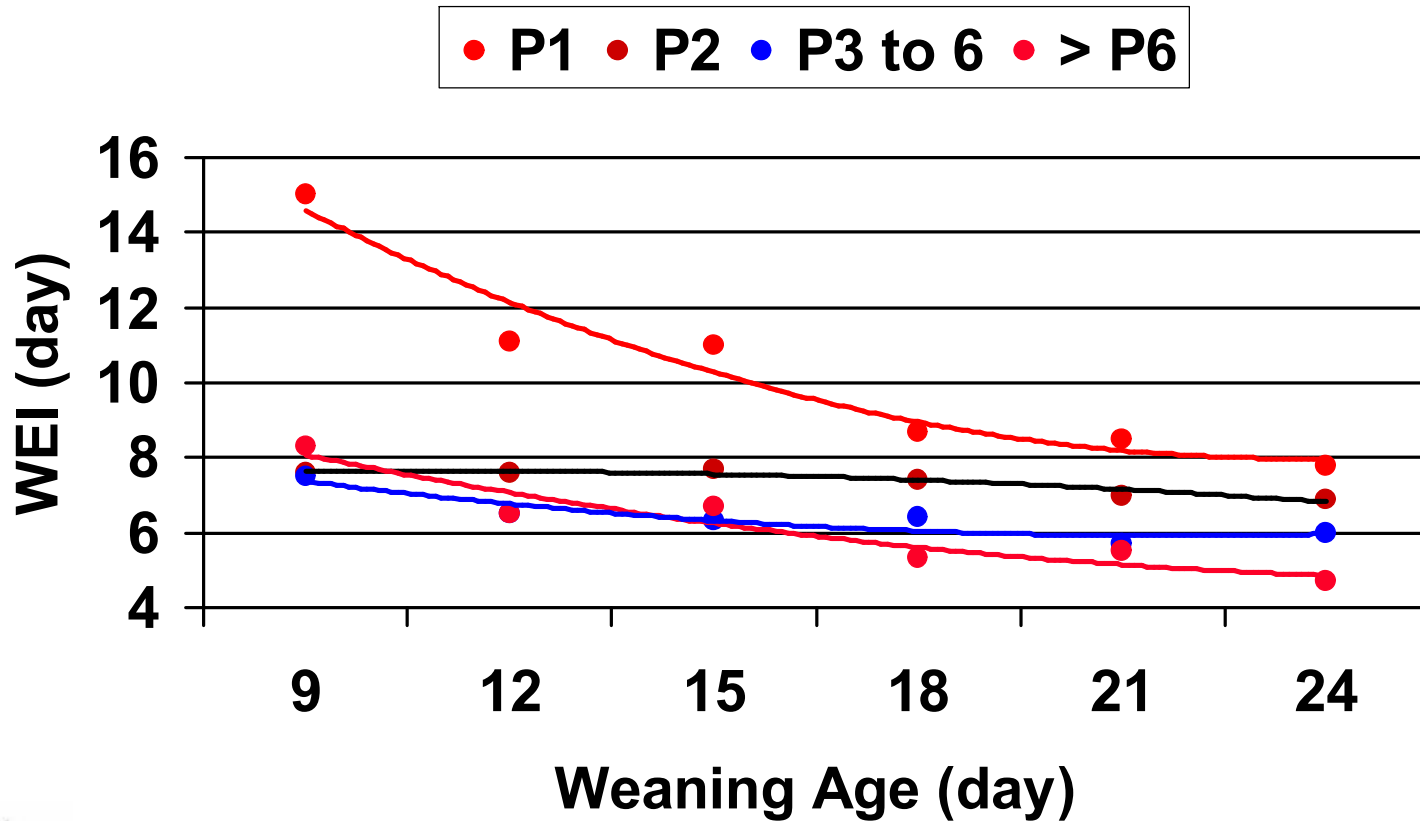
Influence of number of days after farrowing on uterine weight. Data from four experiments



Effect of weaning age on weaning to estrus interval (WEI)

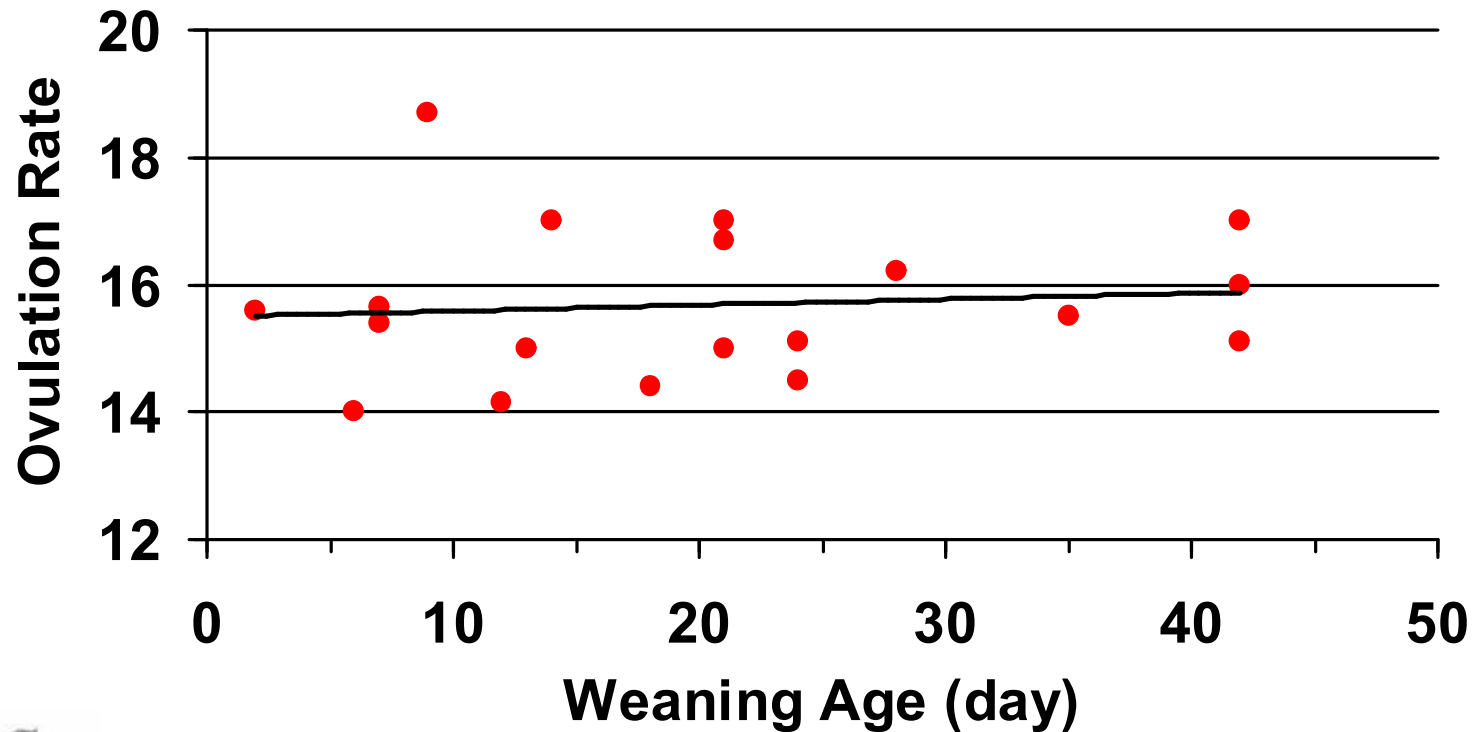


Effect of weaning age and parity on weaning to estrus interval (WEI)

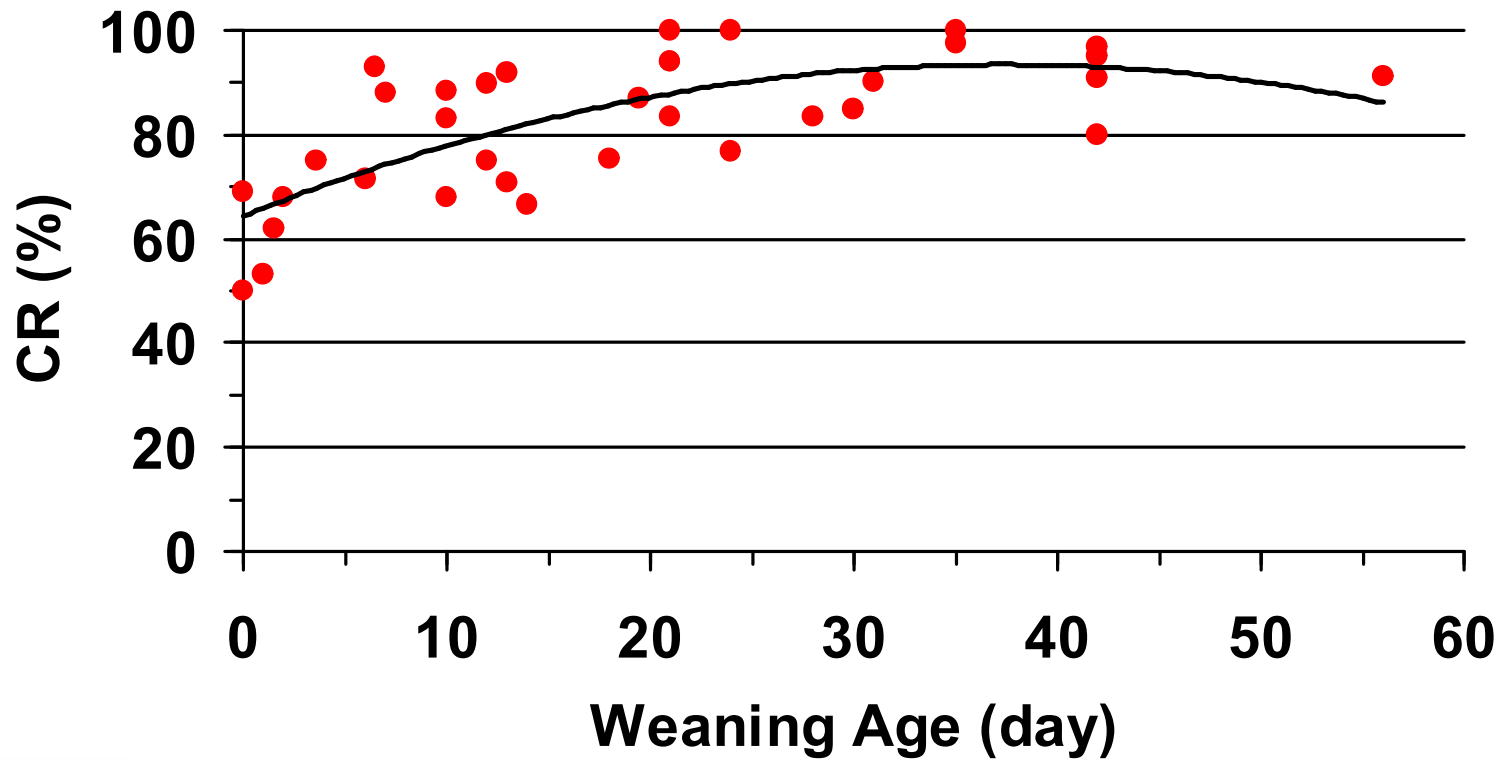


Effect of weaning age on ovulation rate.

Data from six studies.

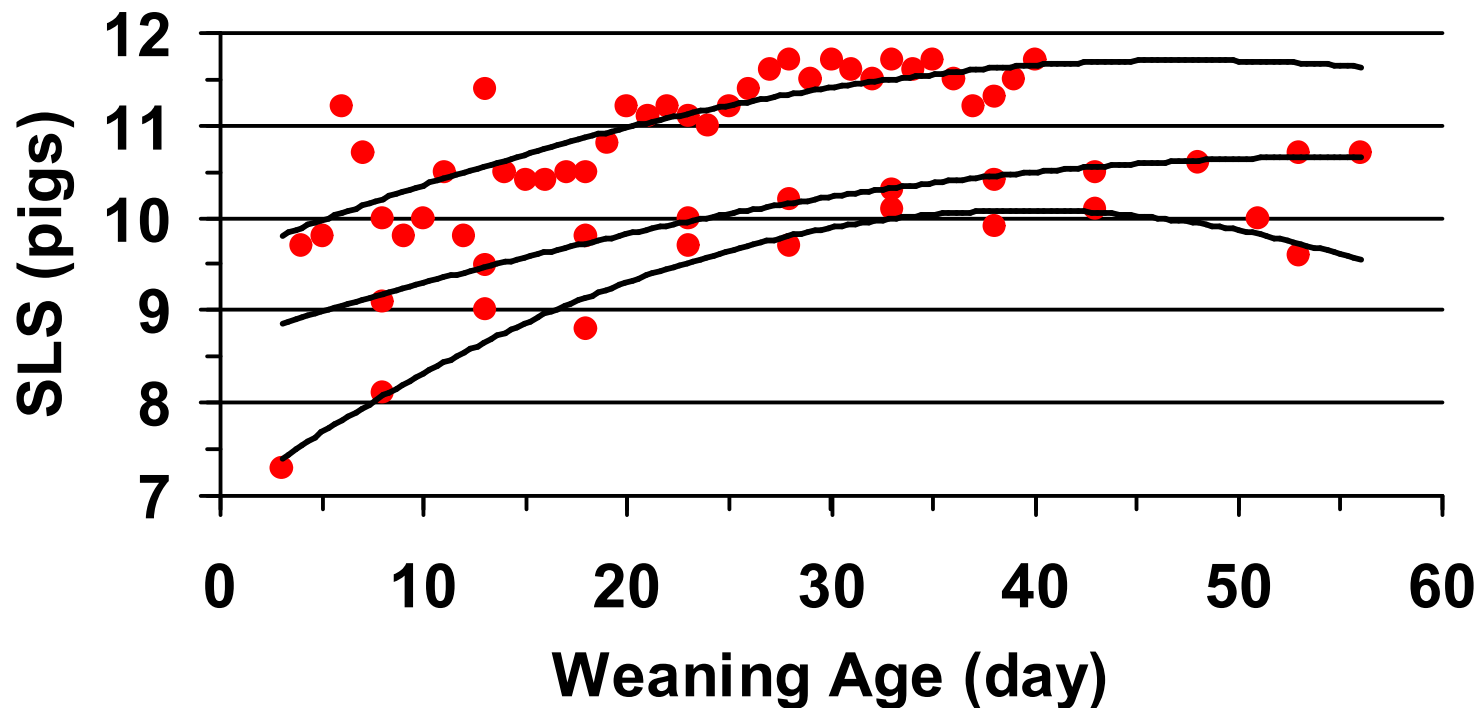


Effect of weaning age on conception rate.

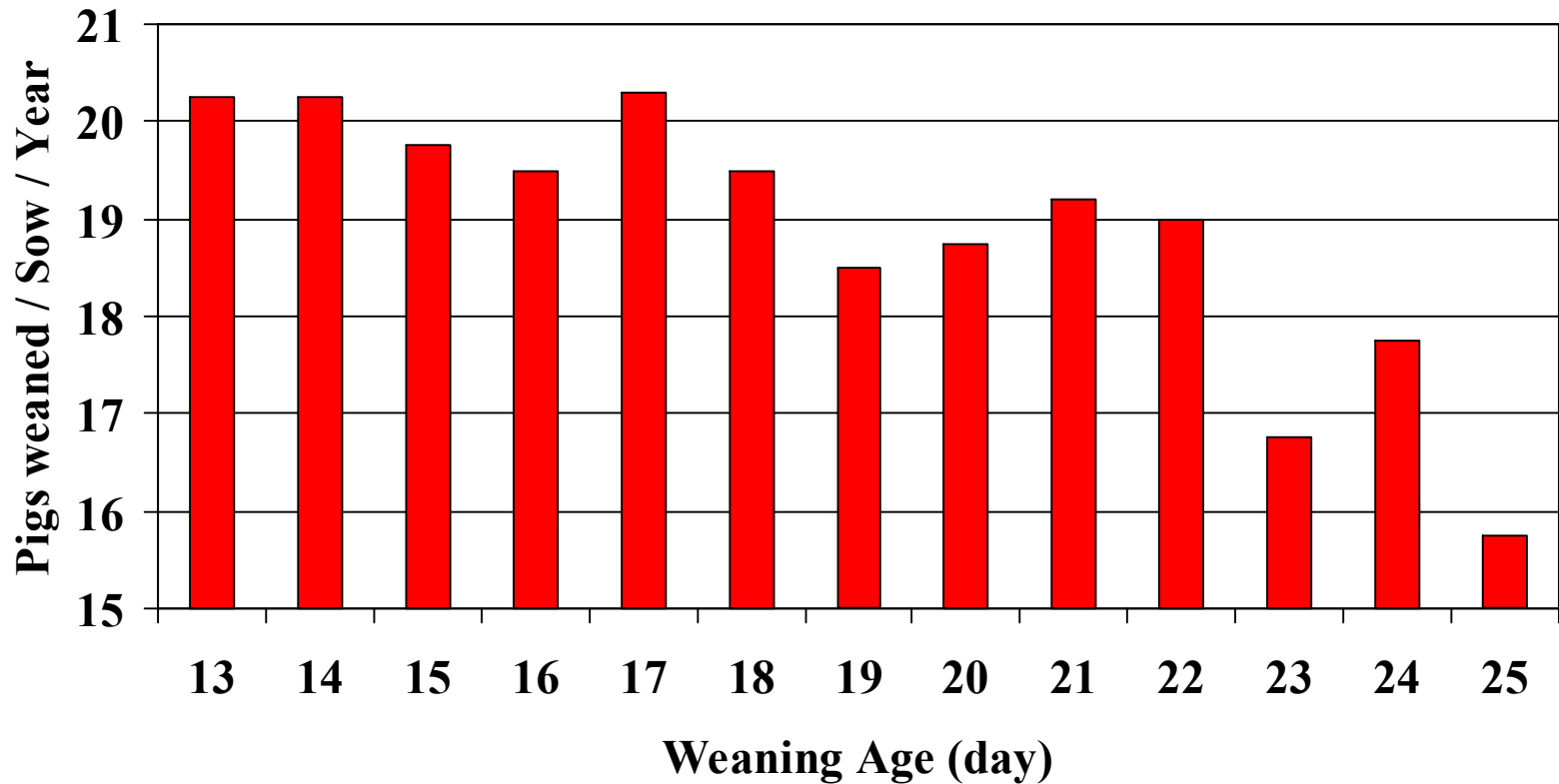


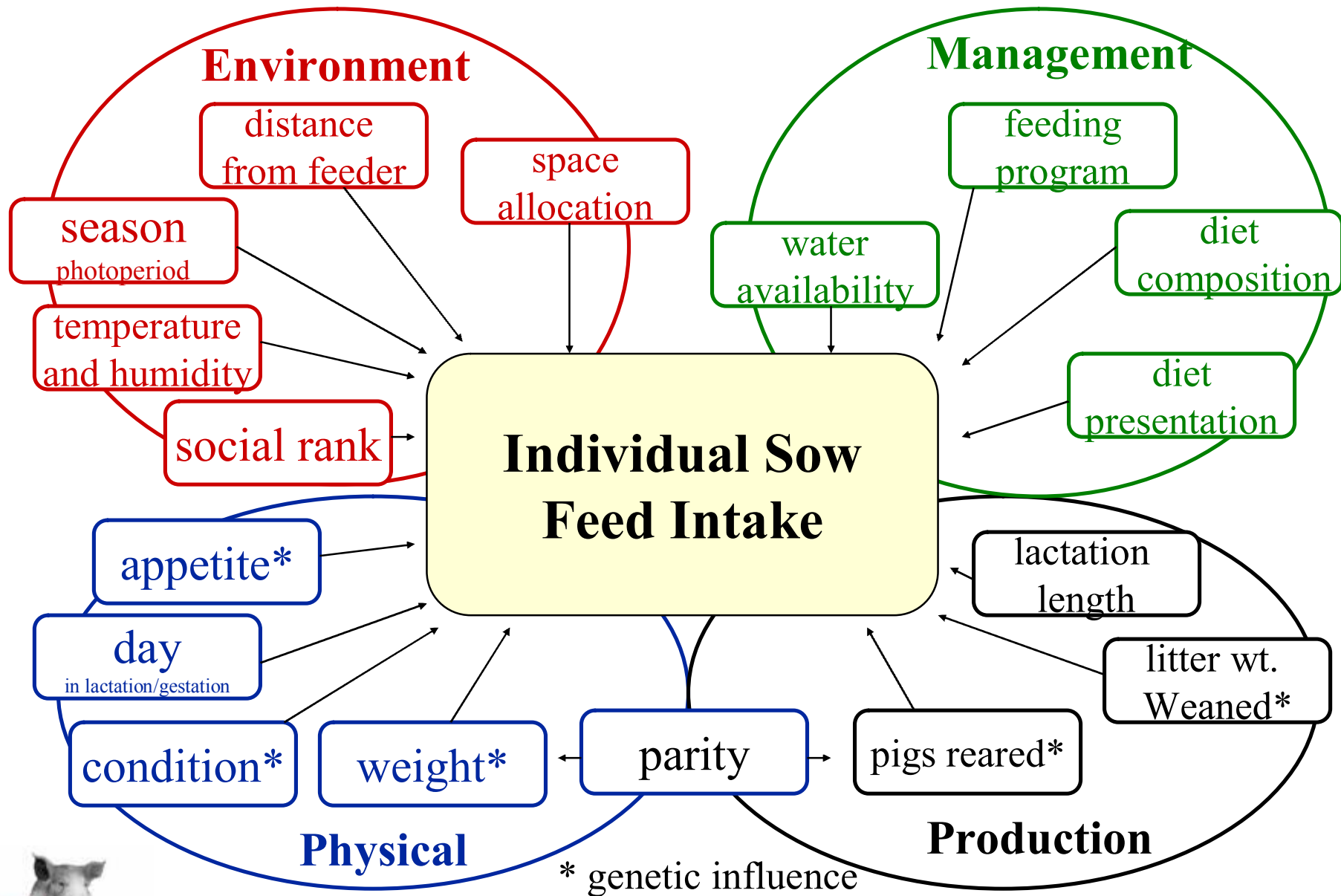
Effect of weaning age on subsequent litter size. Data from three studies.

Each day increase in lactation length increase SLS ~ 0.1 pig

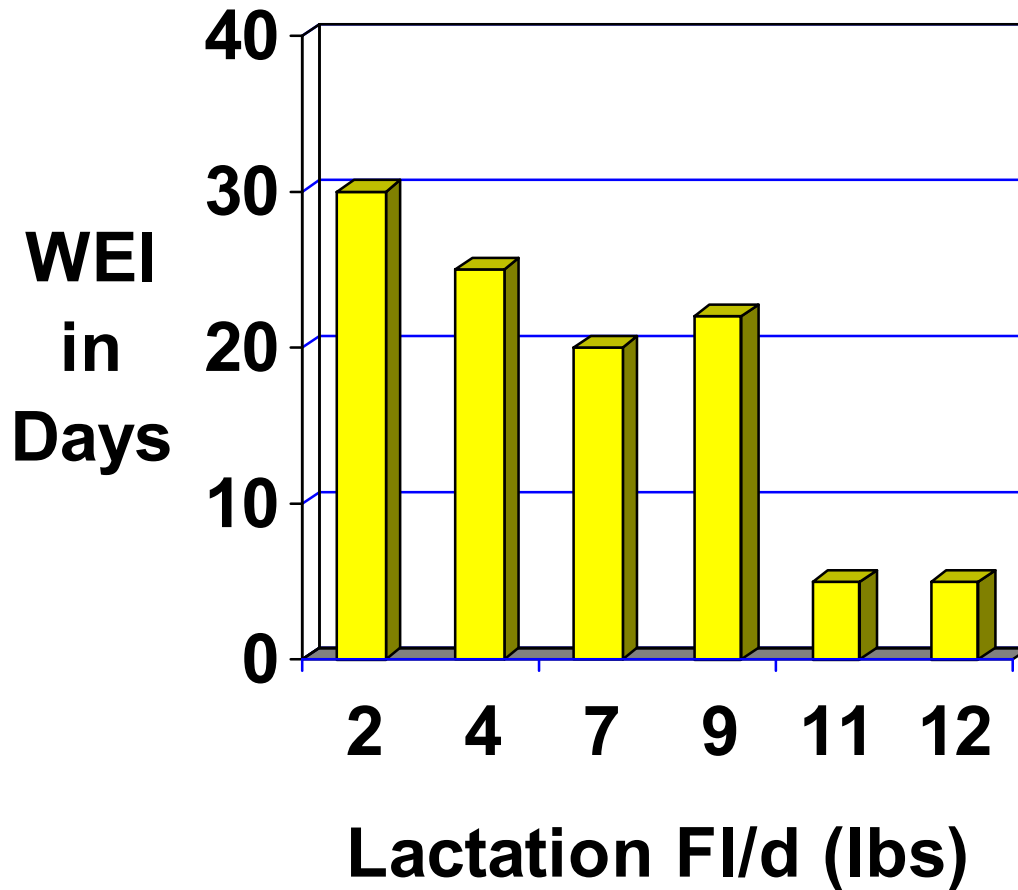


Influence of weaning age on number of pigs weaned per sow per year. (Dial et al, 1995)



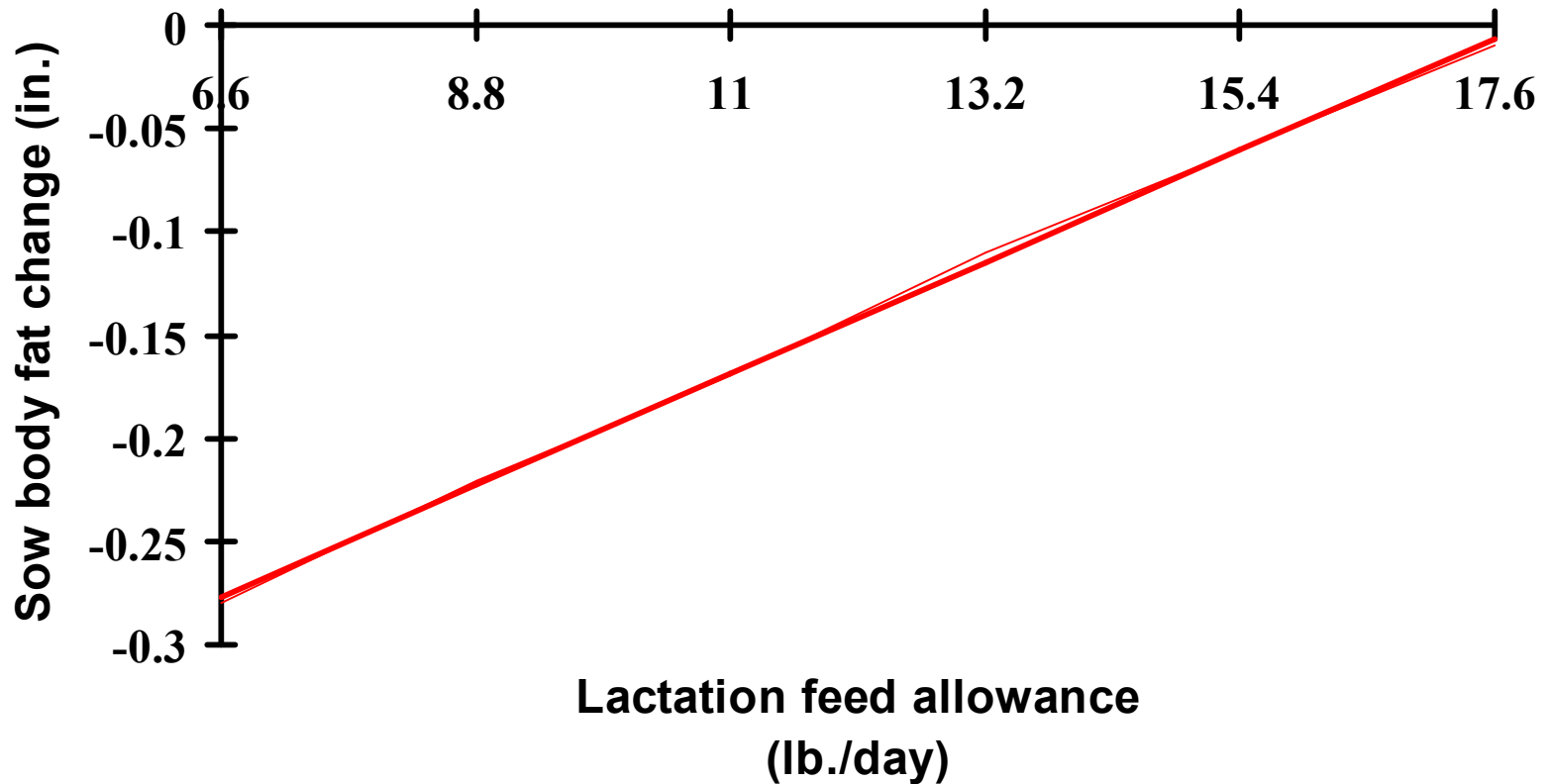


Effect of Daily Feed Intake During Lactation



Source: King and Duncan, 1986

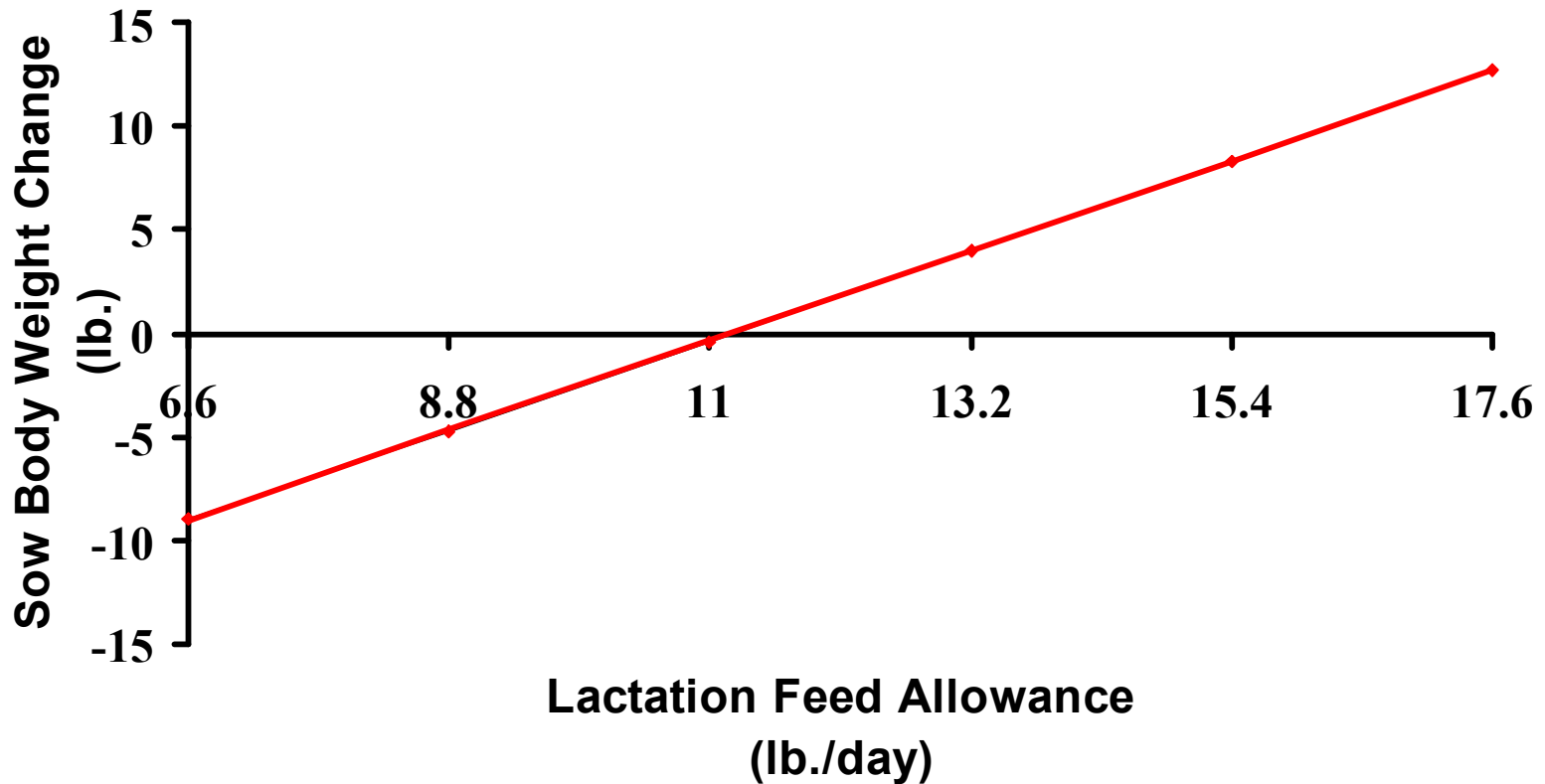
Influence of Lactation Feed Intake On Sow Body Fat Change



Sources: Whittemore, 1993



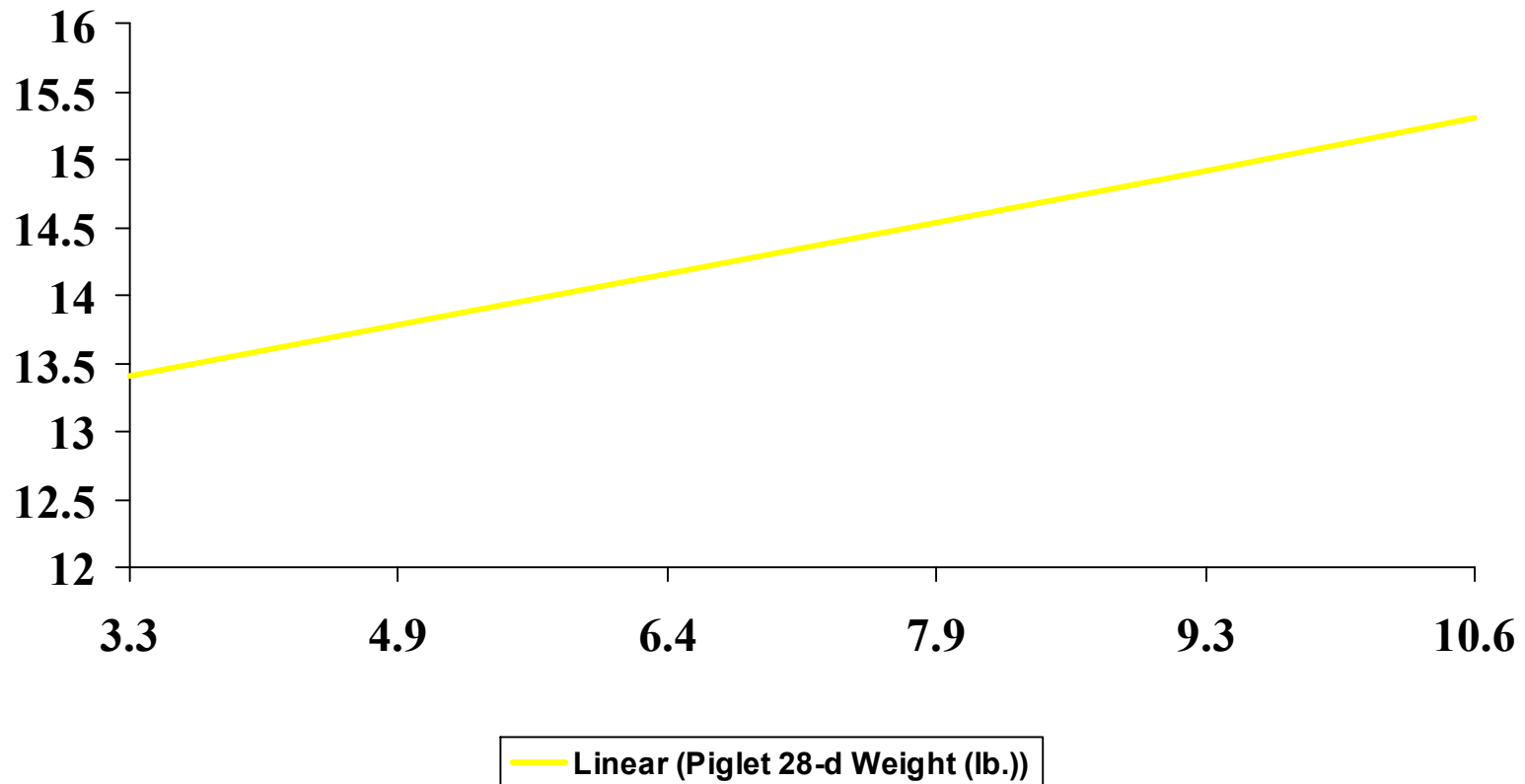
Influence of Lactation Feed Intake on Sow Weight Change



Sources: Whittemore, 1993



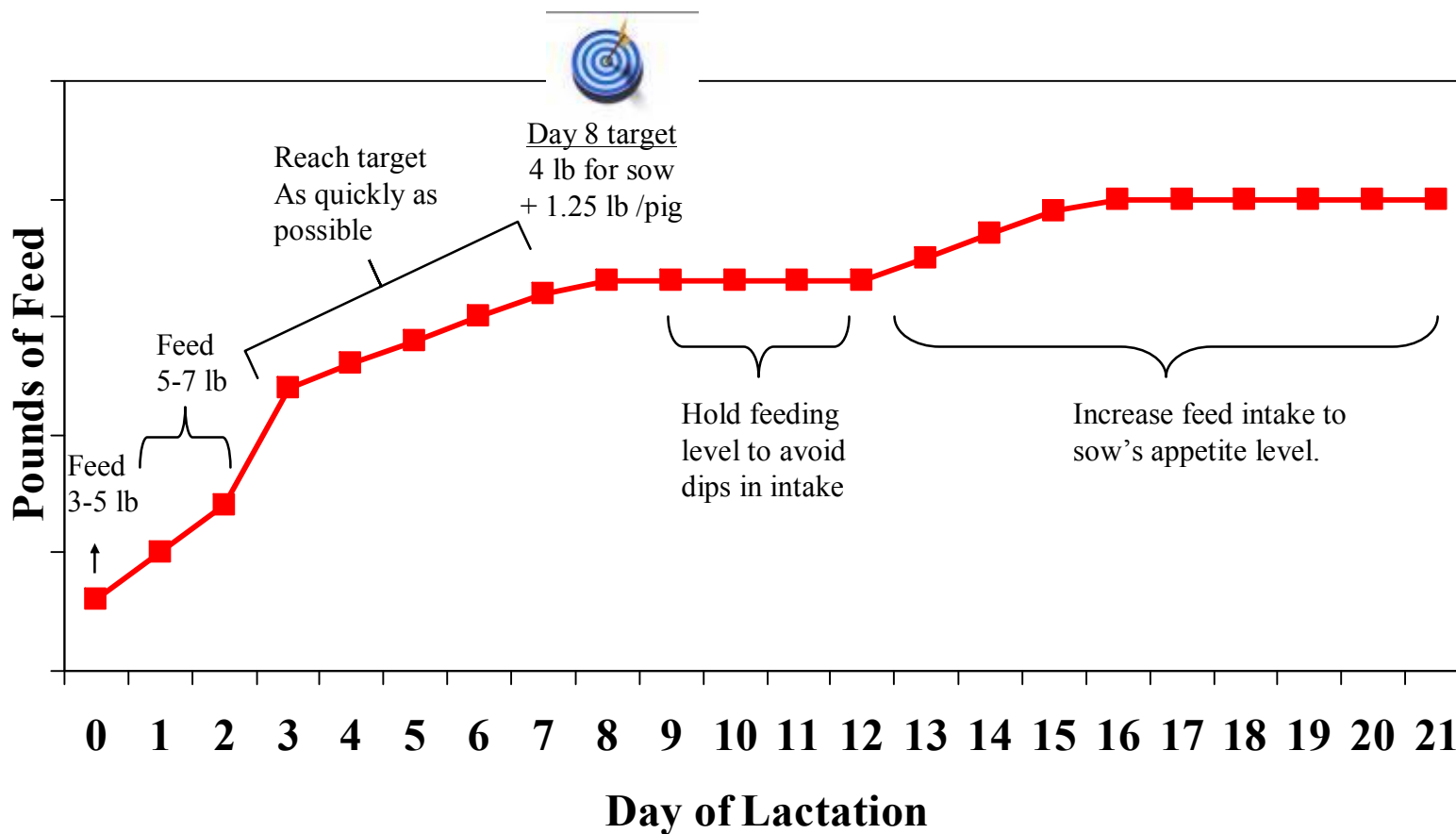
Influence of Lactation Feed Intake On Piglet Weight



Sources: Whittemore, 1993
King and Dunkin, 1986



Lactation Feeding Methods



Maximize Lactation Feed Intake

- ◆ For each 2.2 lb deficit in feeding requirement a sow will lose 1 lb of body weight
 - ❖ Increasing wean to service interval
 - ❖ Decreases litter weaning weights
 - ❖ Decreases subsequent reproductive performance
- ◆ If a lactating sows eat 4 lbs of feed for one day the odds of removal increase 50% (Deen, 2005)
- ◆ For each additional pound of feed consumed in lactation an additional 0.5 pigs were born at subsequent farrowing (Koketsu et al., 1996)



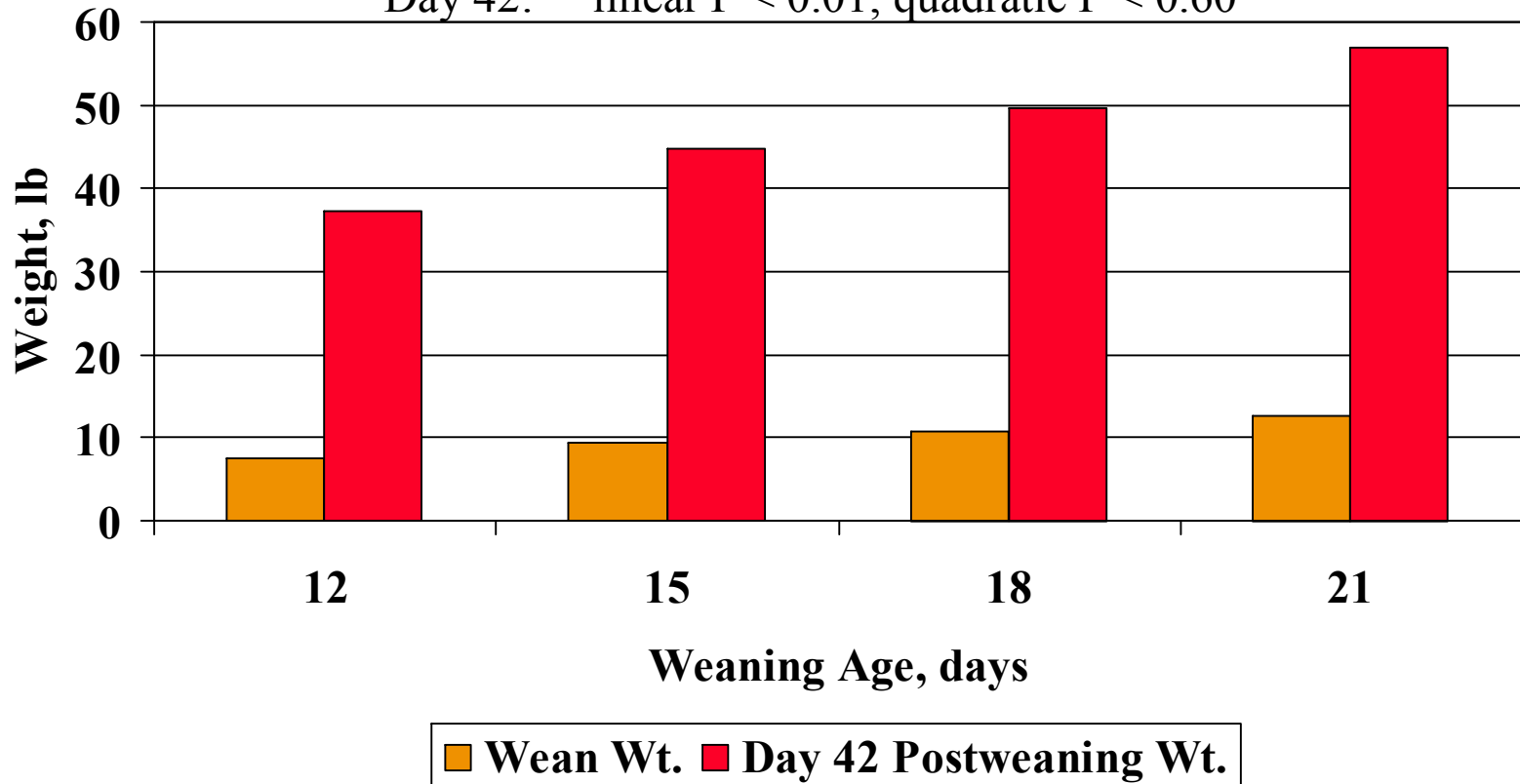
Let's Look at Pig Performance



Influence of weaning age on weaning weight and weight at 42 days post weaning

Weaning: linear $P < 0.01$; quadratic $P = 0.77$

Day 42: linear $P < 0.01$; quadratic $P < 0.60$

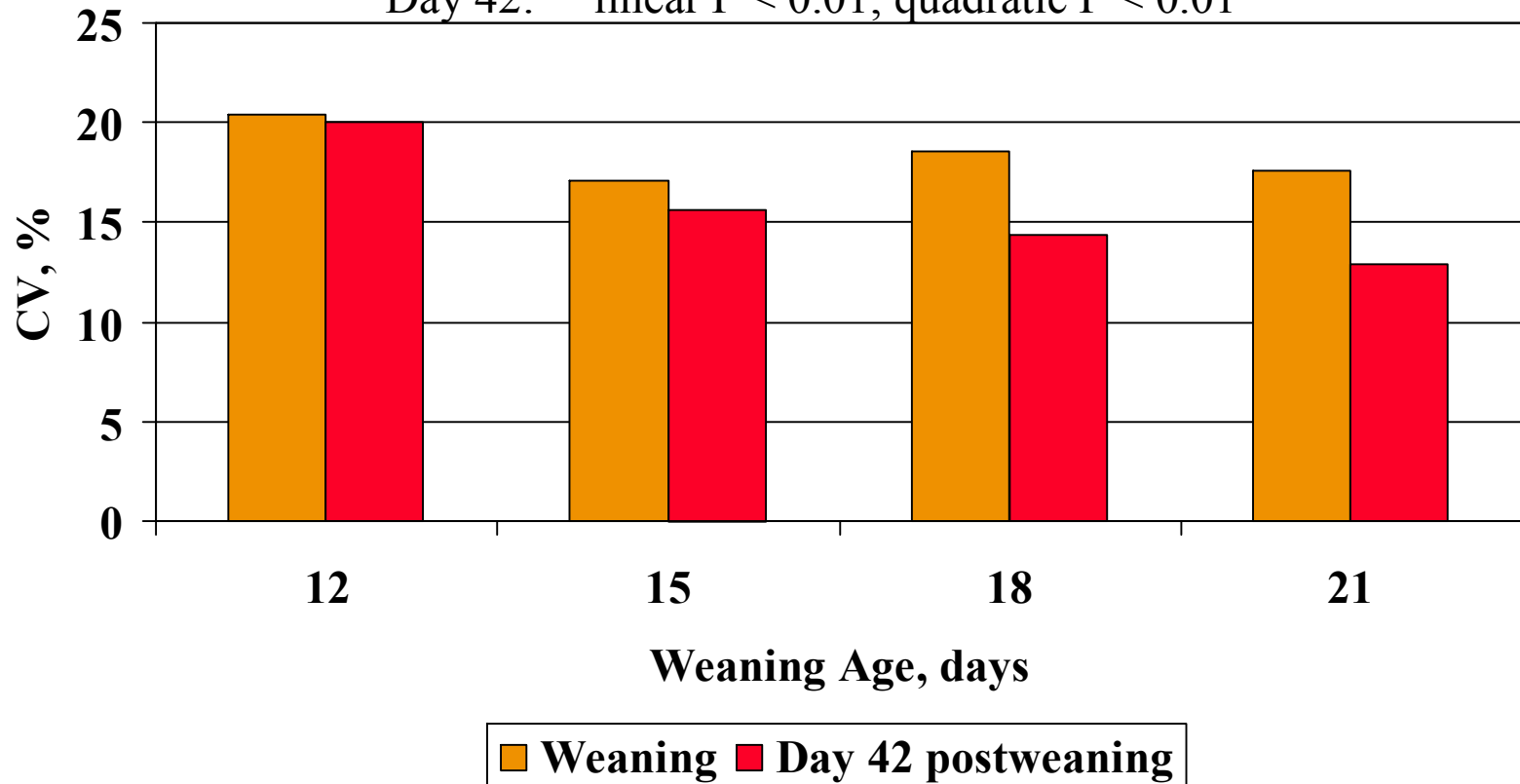


Source: Main et al., 2004

Influence of weaning age on variation in weaning weight and weight at 42 days post weaning

Weaning: linear $P < 0.01$; quadratic $P < 0.01$

Day 42: linear $P < 0.01$; quadratic $P < 0.01$

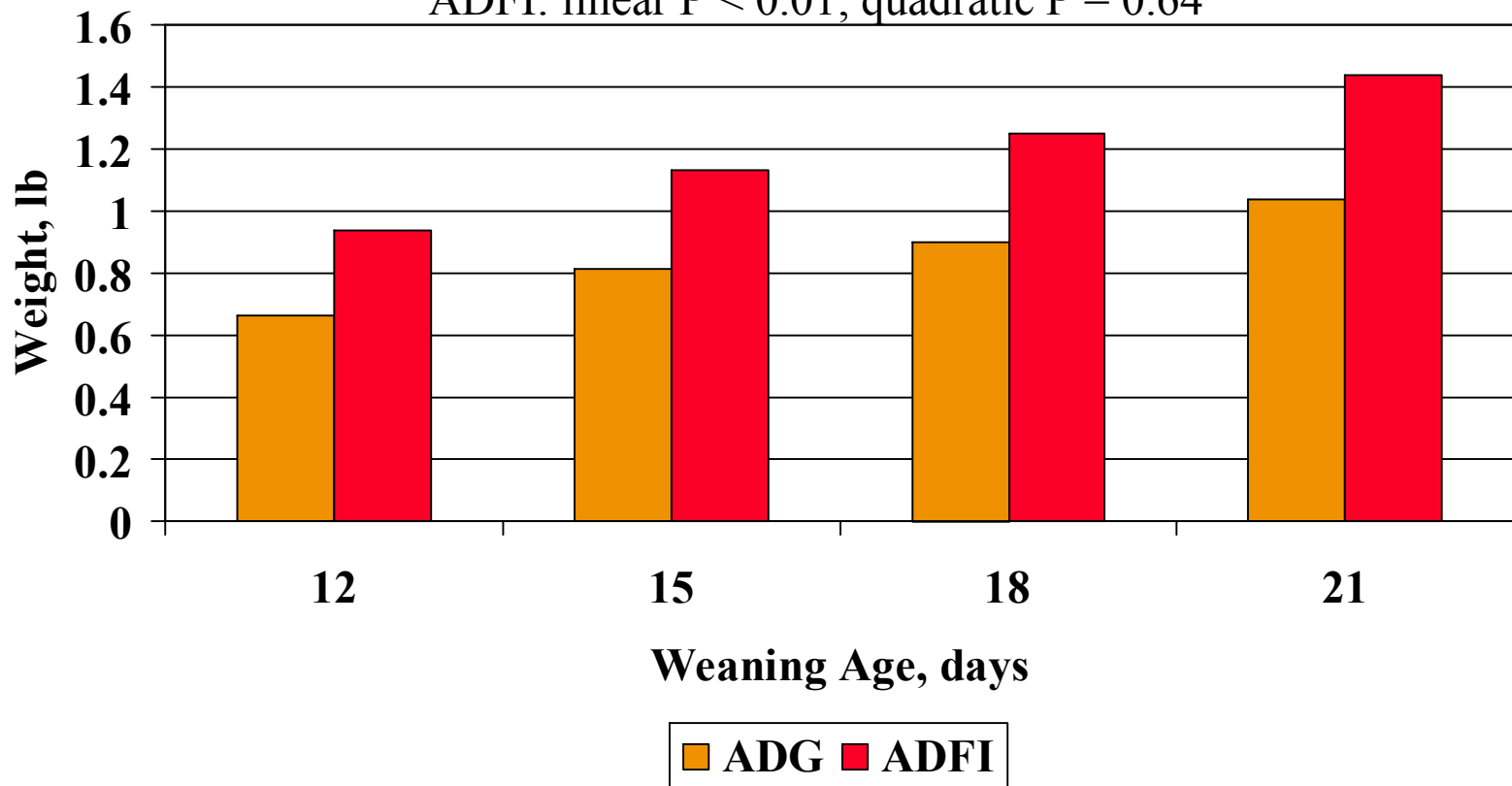


Source: Main et al., 2004

Influence of weaning age on nursery average daily gain and average daily feed intake

ADG: linear $P < 0.01$; quadratic $P = 0.66$

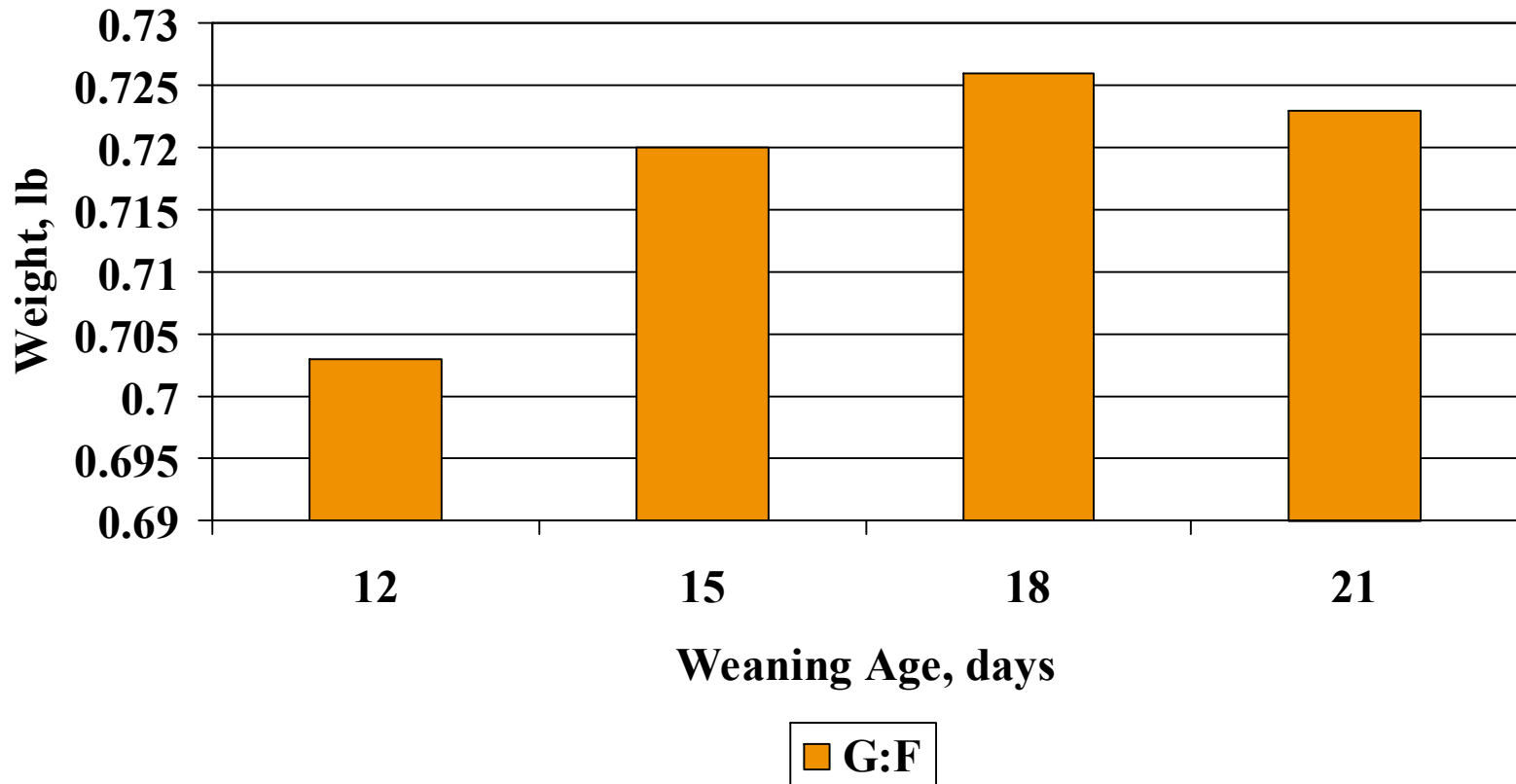
ADFI: linear $P < 0.01$; quadratic $P = 0.64$



Source: Main et al., 2004

Influence of weaning age on Nursery Gain:Feed

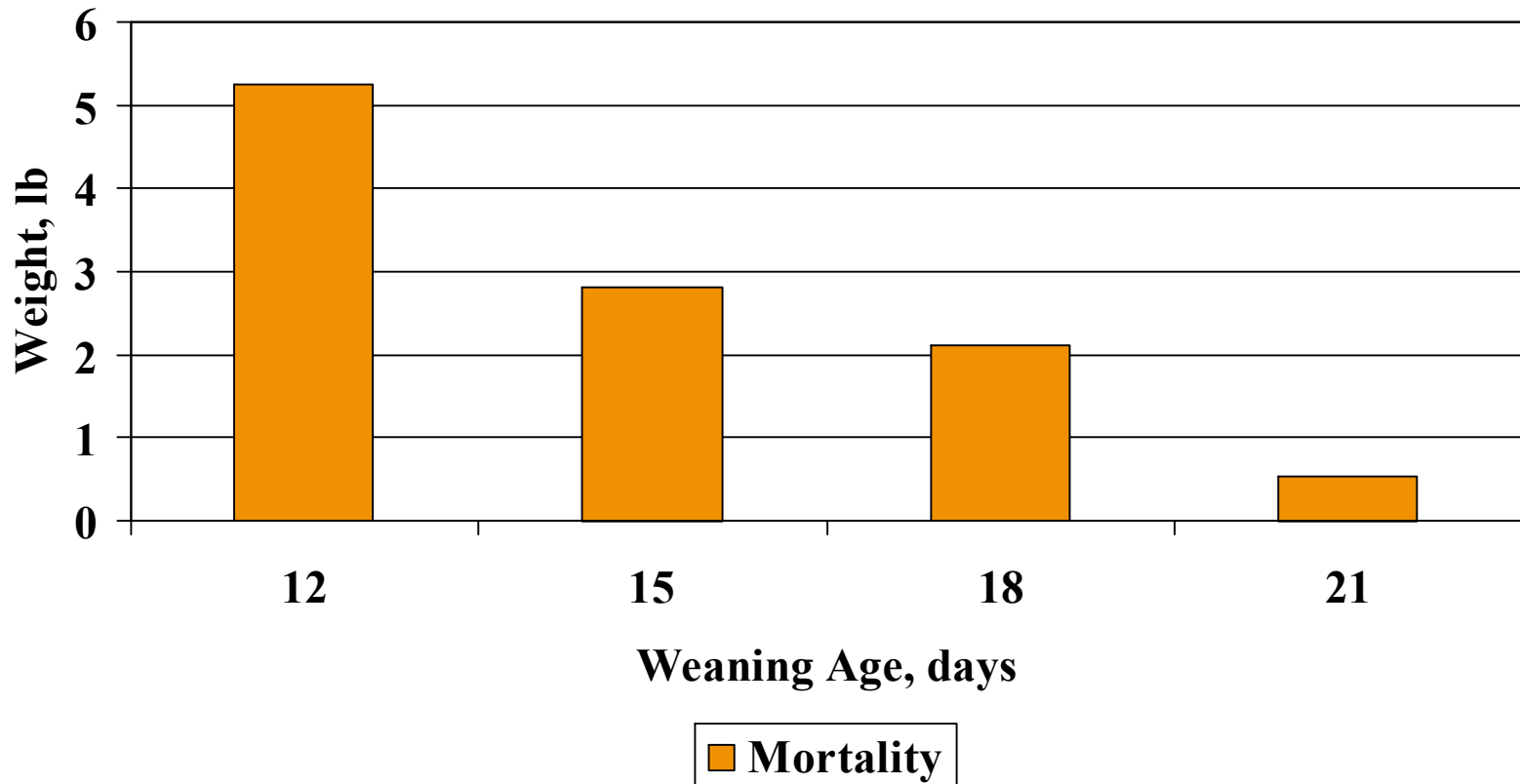
linear $P < 0.01$; quadratic $P < 0.05$



Source: Main et al., 2004

Influence of weaning age on nursery mortality

linear P = 0.01; quadratic P = 0.55

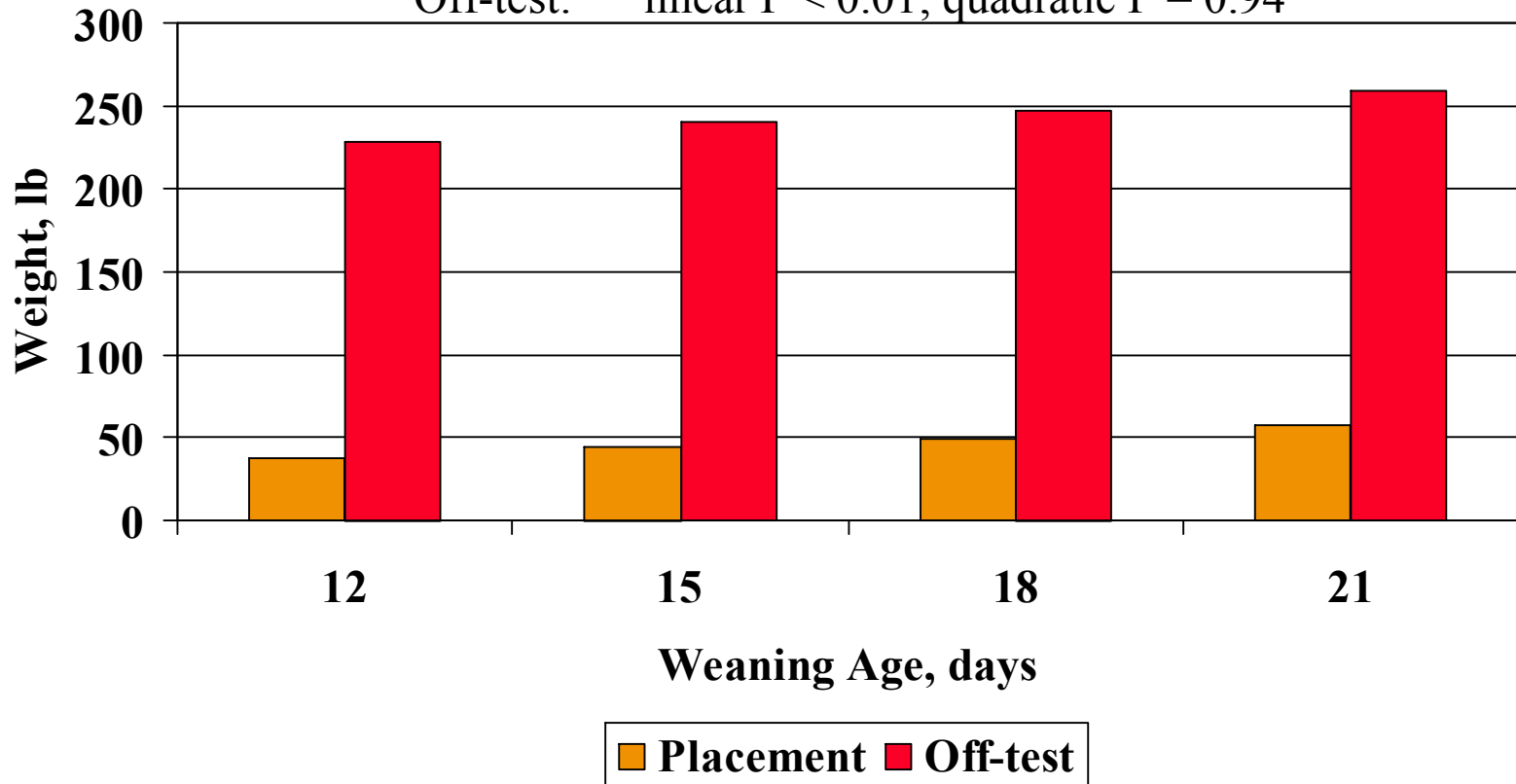


Source: Main et al., 2004

Influence of weaning age on finishing placement weight and off-test weight

Placement: linear $P < 0.01$; quadratic $P = 0.14$

Off-test: linear $P < 0.01$; quadratic $P = 0.94$

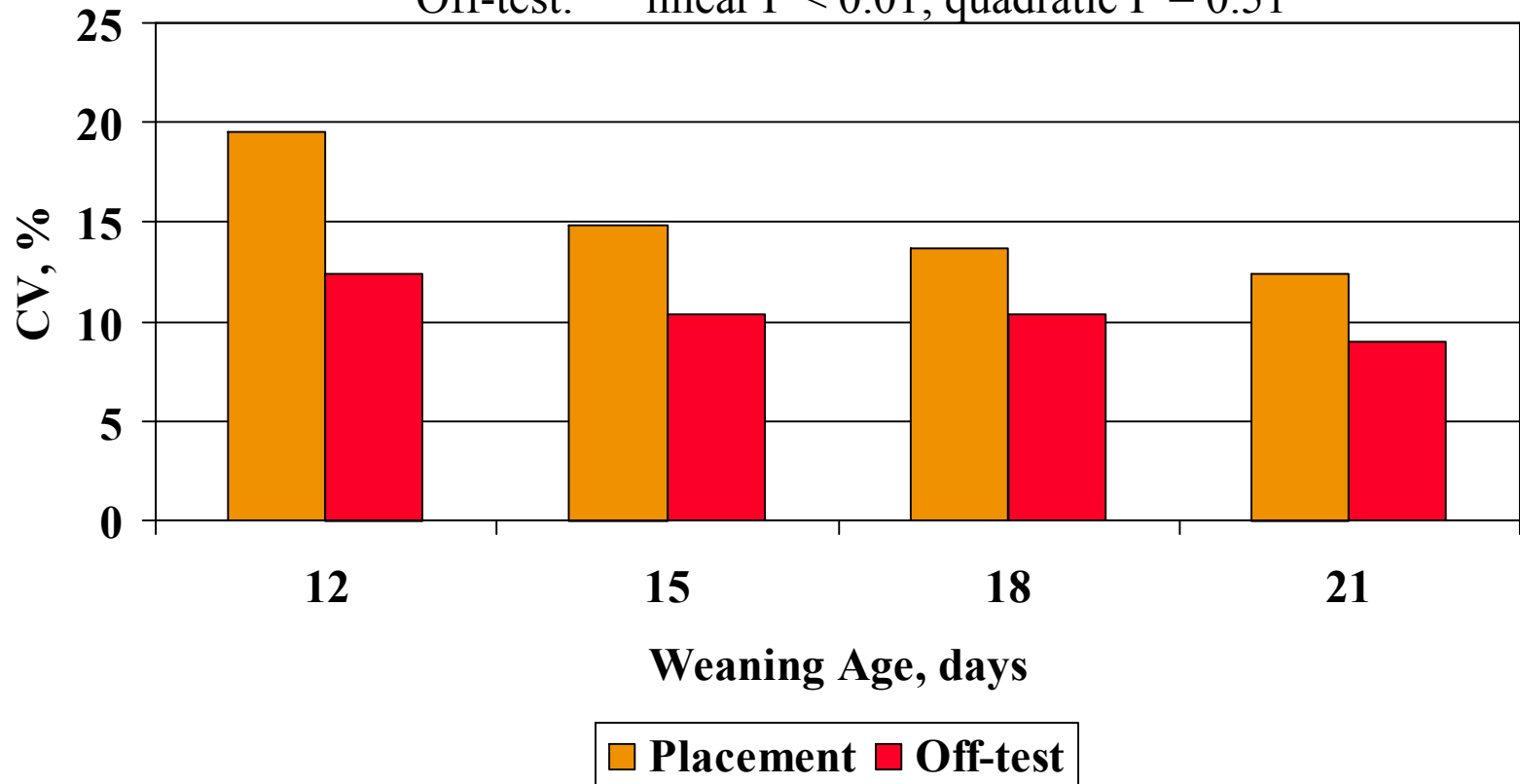


Source: Main et al., 2004

Influence of weaning age on variation in finishing placement weight and off-test weight

Placement: linear $P < 0.01$; quadratic $P < 0.01$

Off-test: linear $P < 0.01$; quadratic $P = 0.51$

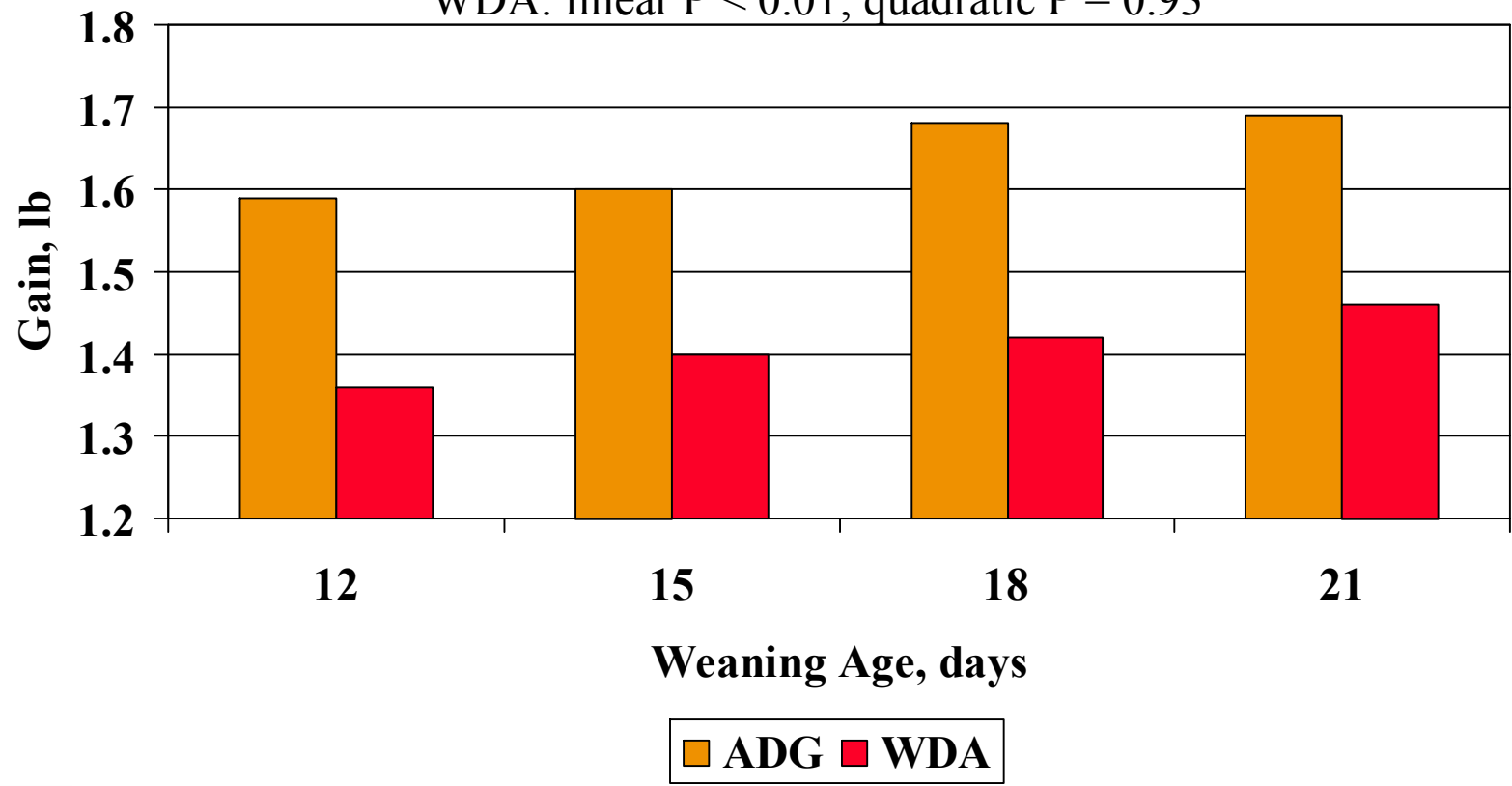


Source: Main et al., 2004

Influence of weaning age on finishing average daily gain and weight per day of age

ADG: linear $P < 0.01$; quadratic $P = 0.19$

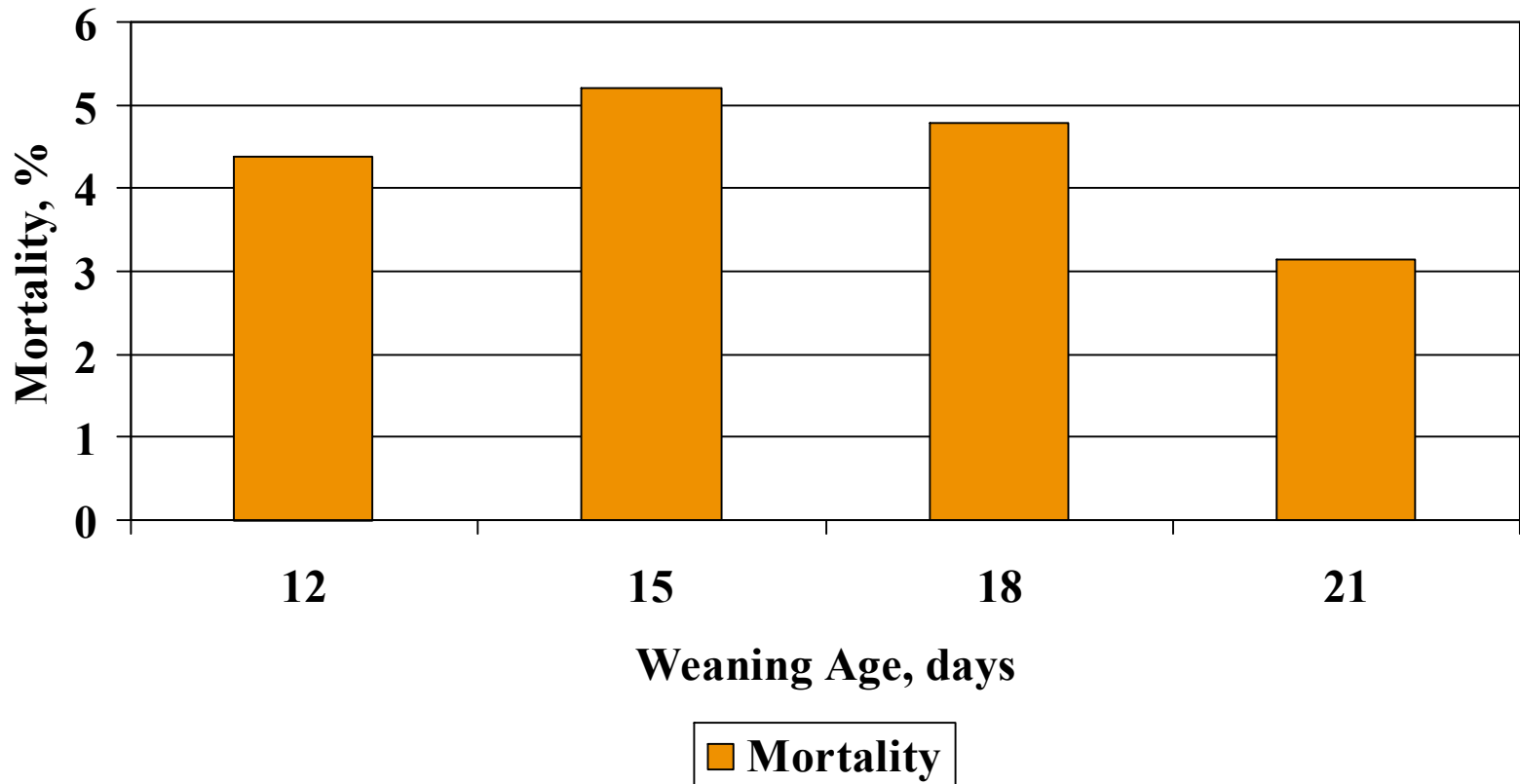
WDA: linear $P < 0.01$; quadratic $P = 0.93$



Source: Main et al., 2004

Influence of weaning age on finishing mortality

linear P = 0.32; quadratic P = 0.19



Source: Main et al., 2004

Rate of change per day observed as wean age increased from 12 to 21.5 days in two trials

◆ Weaning weight, lb	+0.6
◆ d 42 post-weaning weight, lb	+2.0
◆ Off-test weight, lb	+3.0
◆ Wean to finish ADG, lb	+0.02
◆ Wean to finish mortality, %	-0.5
◆ Weight sold per pig weaned, lb	+4.0



Options for Extending Lactation Length

- ◆ Reduce Sow Inventory
- ◆ Increase Farrowing Crate Utilization
- ◆ Add Farrowing Crates



Reducing Sow Inventory

- ◆ A 4% decrease in sow inventory adds 1 day in lactation length
 - ❖ 1,200 sows @ 23 psy = 1,152 sows @ 24psy
- ◆ A 20% decrease in sow inventory adds 6 days to lactation length
 - ❖ 1,200 sows @ 23 psy = 960 sows @ 32.5 psy
- ◆ Poor utilization of nursery and finishing space



Increasing Farrowing Crate Utilization

- ◆ Load crates closer to expected farrowing dates
- ◆ Clean and refill farrowing faster
- ◆ Wean on multiple days of the week
 - ◆ Reduces turnaround time
- ◆ Short-term option



Add Farrowing Crates

- ◆ To increase lactation length and maintain weekly targets, inventory must increase and farrowing crates are added.
- ◆ $1200 \text{ sows} \times 2.45 \text{ litters/sow/yr} = 8.05 \text{ sows farrowed/d}$

Lactation Length	Increase in Sow Inventory	Percent Increase
16	0	0
18	Add 16.1	1.34
20	Add 32.2	2.68
22	Add 48.3	4.02

- ◆ Can a 4% increase in weaned pig cost ($\$30 \times .04 = \$1.20/\text{pig}$) be captured in greater production?



Summary

- ◆ Reproduction
 - Increasing weaning age improves subsequent litter size, wean to service interval, and conception rate
- ◆ Growth
 - Increasing weaning age improves wean to finish performance.
 - Improvement largely occur in the initial 42 d post-weaning period with some ongoing improvement in growth
- ◆ How do we increase lactation length?
 - Adding crates and sow inventory is more economically feasible than decreasing inventory
 - In the short term improving the efficiency of farrowing crate utilization can be beneficial

