



Importance of weaning age on survival of wean-to-finish pigs

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TAKE HOME MESSAGES

- Wean-to-finish mortality decreases and growth rate increases linearly as weaning age increases.
- Other measures of pig well-being, such as percentage of pigs requiring antibiotic treatment, removal, belly nosing, or percentage that lose weight in the first week after weaning decrease as weaning age increases.

What is the influence of weaning age on wean-to-finish pig performance and mortality?

Large scale studies conducted under field conditions demonstrate that wean-to-finish performance improves linearly as weaning age increases from 12 days to at least 25 days of age. For example, weaning weight increases by 0.25 to 0.26 kg (0.55 to 0.60 lb) for each day increase in weaning age (Table 1). Final body weight on the same days post-weaning increases by approximately 1.35 kg (3 lb) for each day increase in weaning age.

Mortality rate also decreases as weaning age increases with the magnitude of effect depending on the health status of the pigs (Table 2). On average, wean-to-finish mortality decreases by approximately 0.5% for each day increase in weaning age. For production systems with low wean-to-finish mortality rates, a smaller response would be expected.

Table 1. Linear rate of change per day observed when weaning age increases from 12 to 21 (Main et. al, 2005) or 19 to 28 days (Faccin et. al, 2020)

	Main et al., 2005	Faccin et al., 2020
Item	12 to 21 days	19 to 28 days
Weaning weight, pounds	0.57	0.55
d 42 post-weaning, pounds	2.05	1.76
Final body weight, pounds	2.98	3.04
Wean-to-finish ADG, pounds	0.022	---
Weight sold per pig weaned, pounds		
Fixed days after weaning	3.97	4.87
Fixed days of age	---	2.67

Pigs weaned older deal better with weaning stress. The magnitude of benefit in mortality and growth rate is greater in the nursery phase than in the finisher; however, wean-to-market performance is still improved linearly. Because weaning age influences mortality, the weight sold per pig weaned is increased to a greater extent than market weight as weaning age increases. Research also demonstrates that increasing weaning age reduces the percentage of pigs that lose weight during the first week after weaning, the incidence of belly nosing behavior after weaning, and the percentage of pigs that require antibiotic injections.

What is the mode of action behind these benefits?

Thanks to the research led by Dr. Adam Moeser, the mode of action for the benefits of increasing weaning age are becoming understood. Their research demonstrates that increasing weaning age from 15 to 28 days of age reduces intestinal permeability to pathogens and improves intestinal immune barrier function after weaning. These changes in gut function are maintained to market weight, or beyond for pigs that are not marketed. Thus, pigs weaned at young ages have compromised immune response when challenged with pathogens or stressors later in life, whether that stressor occurs in the nursery or finisher.

Table 2. Reduction in wean-to-finish mortality for each day increased in weaning age

Study	Percentage
Main et al., 2005	
- 12 to 21 d	- 0.62
- 15.5 to 21.5 d	- 0.23
- Combined	-0.47
Faccin et. al, 2020	-0.77
Faccin et. al, 2019	-0.21
Rosero et al., 2016	
- Good health	-0.36
- Poor health	-0.67
- Average	-0.56

How do you increase weaning age?

The first step that all farms should evaluate is whether weaning age is being maximized with the existing farrowing facility space. Weaning age can often be increased by increasing the number of weaning events per week. Moving sows into farrowing facilities closer to their anticipated parturition date will reduce days that the sow occupies the farrowing space before farrowing and provides more actual nursing days. Only weaning piglets when the farrowing space is needed for the next sow can also increase weaning age. Cleaning and drying the farrowing space as quickly as possible to reduce downtime can also add to weaning age.

Besides optimizing use of existing space, additional farrowing capacity can be added to increase weaning age. Where permitting flexibility allows and lactation space availability is constraining lactation length, increasing weaning age by adding lactation spaces to an existing farrowing unit will most generally provide the greatest financial return. The comparatively large returns on the marginal investments associated with increasing lactation space occur because the biologic improvements in weaned pig performance and sow reproductive performance due to increasing lactation length (or weaning age) are realized on all weaned pigs and sows flowing through the system. These production improvements are not restricted to the pigs and sows using the added lactation space. Thus, the financial improvements are derived from all weaned pigs produced, while only incurring the costs of the marginal space added.

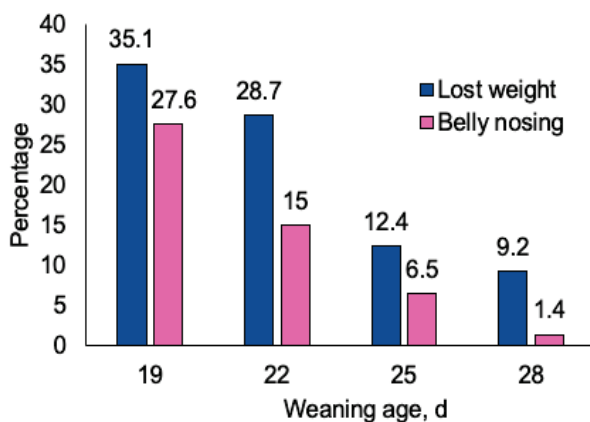


Figure 1. Effect of weaning age on percentage of pigs that lost weight during the first week after weaning and on prevalence of belly nosing after weaning. Adapted from Faccin et al., 2020.

Because of the cost of construction and permit limitations, this option may not be available in many situations. Finally, the sow population can be decreased to increase weaning age; however, reducing sow numbers will also reduce the number of pigs produced by the farm and, thus, may not be economically viable.

What is the optimal weaning age?

The optimal weaning age will depend on the facility constraints, market pig value, quality of wean-to-finish facilities, and health status of the farm. The research on weaning age has resulted in an increase in average weaning age from less than 18 days to over 22 days in the United States. Many swine operations are reaching the best balance between production rates, economics, and market demand with weaning ages at 24 days of age or greater.

Are there other factors to consider with increasing weaning age?

Increased weaning age also has other potential consequences that may need to be considered. The number of litters per sow per year will be reduced as lactation length increases. Pig size will increase as weaning age increases, thus size of the farrowing pen may need to increase in some farms. The value of creep feed and creep feed intake increases as weaning age increases. Because early growth rate has been shown to improve lifetime sow productivity, increasing weaning age may provide lifelong benefits for replacement gilts beyond the value for market pigs. As the demand for antibiotic-free pork increases, the value of weaning age also increases because of its impact on lowering antibiotic use and mortality.

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