

How Does Weaning Age Affect the Welfare of the Nursery Pig?

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Objectives

- Define natural weaning.
- Describe commercial weaning practices.
- How does weaning age affect behavior of pigs?
- Discuss the European Union's legislation on weaning age.
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Introduction

Weaning is a traumatic event for piglets regardless of their age. The change in nutrition from a largely milk based diet to a pelleted ration affects gut local immune status and gut microflora [1, 2]. In addition, changing the accommodation and mixing piglets can all have consequences on the piglet physical, nutritional [3, 4], immunological [5], and behavioral status [6, 7]. What is the “best” or “correct” age to wean the pig according to the scientific information?

Natural weaning in the pig

Natural weaning in swine is a gradual process that cannot be defined as a specific time period but is rather a shift from reliance on the sow's milk to a reliance on other food [8–11]. For sows in semi-natural environments this shift from milk to other food sources is seen when piglets are aged between 12 and 17 weeks [12-14]. We know from work with outdoor-kept lactating sows that sows spend increasing amounts of time away from their piglets [15]. This may indicate that sows find the piglets an increasing challenge as they grow. So even though the process of weaning may be stressful for piglets it might in some ways reduce stress on the sow.

Commercial weaning practices

Longer lactations decrease the number of litters produced per year as sows are restricted from coming into heat when she has a nursing litter. In North America, weaning age on commercial pig farms has been decreasing steadily, with some piglets now weaned between 21 and 34 days of age [16], and others choosing a younger weaning age ranging from 17 to 20 days of age [17]. In the past decade, segregated- and medicated-early-weaning (SEW and MEW [7 to 14 days of age] respectively) practices have been used by swine producers to optimize the health of their piglets [18] to improve feed efficiency and growth rate and therefore to improve economic efficiency [17, 19]. The primary economic advantage for early weaning is for the sow herd. The sow herd can turn over more pigs per sow per year with an average 17 day weaning window compared with 28 day weaning. The use of a separate facility is to potentially limit the transmission of pathogens from the sow herd to the piglet herd [18].

However, the reported disadvantages of early weaning management practices include inconsistent growth performance throughout the finisher stage [20], decreased post weaning gain [3] and abnormal feed intake [21,22]. In one study, piglets were weaned at 2, 3 or 4 weeks of age. Piglets that weaned at 4 week old had better Average Daily Gain (1.2 lb/day) compared to those weaned at 2 weeks of age (0.79 lb/day); however, 6 weeks after weaning, piglet body weights for

all groups were similar [3]. Physiological differences have also been observed among piglets weaned at different ages. For example, piglets weaned at 3 weeks of age had more cortisol, a hormone that is indicative of stress compared to those weaned at 8 weeks of age [23]. Furthermore, the immune system of these younger piglets was not as responsive to a disease challenge [24, 25].

Behavioral challenges and the age that a piglet is weaned

The age of weaning can also influence what behaviors piglets engage in after they are removed from their mother. For example, when piglets were weaned at 6 days of age compared to 28 days of age the younger piglets displayed more walking, vocalizing, belly nosing, and aggression combined with a growth check 15 vs. 18 lb (7 vs. 8 kg) after weaning. In another study piglets were weaned at 3, 4, and 5 weeks, and younger piglets vocalized more at weaning (average of 3.6 call/ minute) but the frequency for all groups fell by day 4 post weaning (1.6 call/ minute). Piglets can also increase “undesirable behaviors [16]. Undesirable behaviors can include tail chewing [26 - 28], ear sucking [29, 30], escape behaviors [28], flank and belly-nosing, flank rubbing, and persistent nose thrusting [28, 31, 32].

Recent work highlights a relationship with post- rather than pre-nursing behavior [33]. Belly-nosing is still considered to be indicative of compromised welfare for the performer but it can certainly have health and welfare implications (umbilical lesions) for those pigs that are recipients [34]. The amount of belly-nosing is related to age at weaning, being seen more frequently in piglets weaned at 1 to 2 weeks of age than in piglets weaned at 3 weeks of age or later [19, 28, 34, 35]. However, even looking among later-weaned piglets, more nosing was observed among piglets weaned at 3 weeks, compared to piglets weaned at 4 [36, 37], 5 [37], and 6 weeks [38]. Belly nosing behavior can be reduced by weaning into enriched pens [37, 39, 40] and by providing enrichment devices that are designed specifically to satisfy or attract nosing behavior [40]. Such examples could be the inclusion of straw, wood chips, or some other form of bedding in the environment or by providing the piglets with a bowl drinker rather than nipple drinkers [41]. Several theories have been proposed to explain why “nosing” develops. It may be due to udder seeking, or exploration through rooting behaviors, it may represent a copying mechanism as the piglets has been removed from a familiar and “safe” environment with their dam to an unfamiliar pen, full of “foreign” piglets [32]. Other behaviors that can be affected by weaning age are the time spent feeding. In one study, piglets were weaned at 7, 14 and 28 days. Piglets weaned at 7 days spent less than 1 % of their time at the feeder in the first 2 days following weaning, compared to 3 % for piglets weaned at 14 days and 5 % for those weaned at 28 days [28].

What does the European Union (EU) legislate in regards to age of weaning pigs?

In the European Union (EU) there are minimum welfare standards in place for pigs (EU Directive 91/630/EEC as amended by Directive 2001/88/EC and Directive 2001/93/EC). These directives note that “Piglets should not be weaned from the sow at less than three weeks of age unless the welfare of the sow or piglets would be adversely affected.” The EU 91/630/EEC directive has now been amended so that any new or re-built facility as of January 1, 2003 and all buildings as of January 1, 2013 will follow the following language; “No piglets shall be weaned from the sow at less than 28 days of age unless the welfare or health of the dam or the piglet would otherwise be adversely affected. However piglets may be weaned up to seven days earlier if they are moved into specialized housings which are emptied and thoroughly cleaned and disinfected before the introduction of a new group and which are separated from housings where sows are kept, in order to minimize the transmission of diseases to the piglets.” [42].

Summary

The biggest problem with addressing the issue of “age” and “welfare” is that researchers have invariably chosen to compare two or more weaning ages that are both “early” when compared with 3 to 4 months (natural weaning age of pigs). Some undesirable traits have been noticed in early weaned pigs including inconsistent growth rates, abnormal feed intake, higher plasma cortisol concentrations, decreased cellular immune reactivity, and undesirable behaviors. Weaning pigs at approximately 21 days has become a common practice in the U.S. Farm economics and productivity, sow and piglet welfare, and available facilities will dictate the best weaning age on a given farm.

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