After breeding, the reproductive happenings below that sow hide can be largely a mystery. Producers need to have an idea of what hallmarks of fetal development to look for during gestation when problems arise in their swine herd.

Fetal development occurs between attachment of fertilized embryos to the uterus, to the days right before parturition (birth). It is at this time, gestation, that piglets form and grow inside of the sow. Generally, the length of time a sow is pregnant, or gestating, is about 115 days, or 3 months, 3 weeks, and 3 days. During this time, the piglets go through different phases of development, which we will separate into 5 major phases: Day 0–15, Day 13–30, Day 30–77, Day 77–90, Day 90–114. We will touch on each of these phases in this article.

**Day 0–15**

The first sign of heat is considered Day 0 of the estrous cycle. Ovulation occurs within the first 24–48 hours after the start of heat. Fertilized embryos will elongate and migrate to find space in the uterus. During this time, sow fighting and trauma typically have little impact on embryo survival, because the embryos have yet to form attachments to the uterine wall. Any loss in embryos at this time is typically influenced by quality of the oocyte before ovulation, quality of the sperm, and/or disruptions in hormonal signaling before fertilization. Embryo attachment to the uterus occurs around Day 12–15. In swine, 4 or more viable embryos must establish an attachment to the uterine wall in order for the pregnancy to be viable and continue past this point. During the attachment phase, embryos begin aligning along the uterine horn.

If enough viable embryos attach, recognition of the pregnancy will occur by Day 11–12. Embryos that fail to attach to the uterine wall will not survive the pregnancy. If an insufficient number of embryos (less than 4) attach to the uterine wall, the pregnancy won’t be recognized, and the sow will return to heat by Day 21 post breeding. If the embryos successfully attach to the uterine wall, they will begin to form in their own placenta, as each piglet has their own placenta. Pigs have an epitheliochorial placenta, which means that the placenta does not invade the uterine tissue like other types of placenta. This type of placenta sits against uterine wall, and forms a grooved attachment, often compared to Velcro. Each piglet having its own placenta isolates each fetus from the rest of the litter and prevents the loss of one fetus from affecting the survival of the other fetal pigs. However, this also means each placenta needs adequate attachment to the uterus, and a lack of space can impact placental development for any pig. This means that the larger the litter, the less space for placental attachment, which can lead to smaller piglets.

**Day 13–30**

In this time range, the initial placental expansion begins. The expansion is rather quick and occurs between Day 27–40. Around day 30, which is in the middle of the expansion phase, sows can be checked for pregnancy via ultrasound. When using an ultrasound machine, fluid filled sacs indicate that a litter is developing properly. In group gestation housing systems, if sows were not housed together immediately after breeding, it is best to wait until after confirmed pregnancy to group sows together. By this time, placental attachment is considered sufficient to survive fighting that might occur between sows.
Day 30–77
During this time, noticeable organ development begins. Bones begin calcifying at Day 35–45. Sometimes, for a variety of reasons, individual fetal pigs will stop developing and die in the uterus. Fetal pigs that die during this time of gestation can lead to the presence of mummies at farrowing. A mummy is a fetus that died after calcification of bone has occurred, and therefore, cannot be reabsorbed. Rather, it decomposes and mummies in its placenta. For a pig producer, a litter that has many mummified fetuses found at farrowing can be a sign of trauma to the sow or developing offspring during the earlier stages of gestation. Trauma can include rough handling, poor nutrition, environmental stressors, or disease stress.

Day 77–90
Final placental expansion begins at Day 77. This is the in-utero hallmark of late gestation; however, late gestation is observed on the outside of the sow by visible mammary tissue expansion. At this time, colostrum and milk production are beginning in addition to continued fetal growth. At this time, “bump feeding” may be beneficial. Bump feeding is the practice of increasing the sow’s feed allowance by approximately 1kg/day. This is to help increase the amount of nutrients for sows for the final growth periods of both fetal and mammary tissues. Bump feeding has been shown to increase birth weights; however, it can be expensive and has not been seen to have any effect on final market weight of the piglets. Some believe the small advantage you get is not worth the cost of bump feeding. The benefits of bump feeding is somewhat controversial among swine nutritionists and economists, so producers should consider the economic and production benefits before applying this feed change in their own herd. The benefits of bump feeding might be stronger in sows that are not of ideal body condition going into lactation. So be sure to monitor the body condition of sows throughout gestation.

Day 90–114
These are the last few days prior to farrowing, as piglets are fully developed by Day 90 of gestation, though may not be viable outside of the uterus at this stage. Days 110–115 of fetal development are focused on storing energy for the piglets during farrowing and when lactation begins. In the final stages of gestation, mammary tissue development is being prioritized; milk secretion will indicate farrowing is very close. At this late stage of gestation, loss of piglets is fairly uncommon. Late-term pregnancy loss (abortion) can be a result of a physical trauma to the sow prior to farrowing, whereas individual piglets born still (dead) can be a result of trauma to the fetus during the farrowing process. These are different events and are typically unrelated in pig production, as still birth piglets can occur in perfectly healthy sows. Be sure to closely monitor the care of both sows and piglets during the late stages of gestation and farrowing process to minimize losses.

Carefully monitor sows during gestation to be successful
Although reproduction appears simple between breeding and farrowing, there are many times where hormone signaling, tissue development, or survival of piglets can go wrong. The communication that occurs between each gestating sow and developing fetal litter is a complex, yet carefully synchronized event that eventually leads to successful farrowing. Pig caretakers who work to improve their understanding of the developmental stages discussed in this article will better understand what is happening in their herd when reproductive problems arise, and ultimately improve their ability to communicate issues to their veterinarian or other experts in reproduction.