Factsheet

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Helping High-Risk Piglets in the Farrowing Room

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This factsheet will provide guidance on assisting high-risk piglets in the farrowing room, getting them off to a healthy start and reducing pre-weaning mortality rates on farm. Strategies discussed include environmental management, nutritional management (colostrum, milk replacers, gruel feeding, electrolytes, creep feeding) and practices such as cross-fostering, split-suckling and using raised decks.

In today's hog operations, sows are giving birth to continuously larger litters, and this trend does not seem to be slowing down (Figure 1). Early pig care, especially of high-risk (low-birth-weight) piglets is even more important as litter size steadily increases.

The sow's uterus has a specific capacity. This means that larger litters have the same amount of space as smaller litters, leading to decreased average piglet birth weights as litter size increases (Wiegert and Knauer, 2017).

Piglets born at a lower birth weight are automatically disadvantaged and continue to be so throughout development. Higher birth weight piglets grow at faster rates (Devillers et al., 2011), and for every 0.45-kg (1-lb) increase in birth weight, there is a 1.27-kg (2.8-lb) increase in weaning weight (Wiegert and Knauer, 2017). Low-birth-weight piglets and/or larger litters create a challenge for pork producers to successfully wean all the piglets.

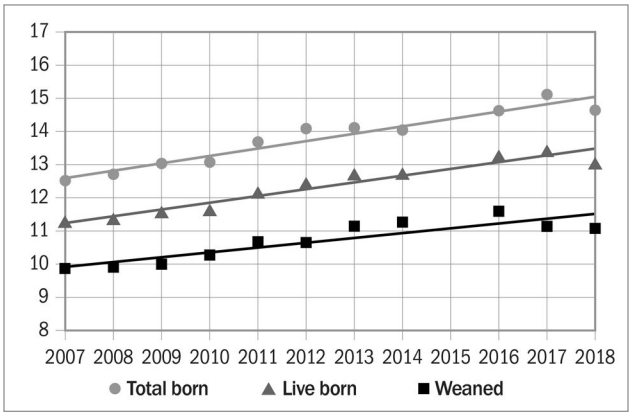

Figure 1. Average number of piglets born total, born alive and weaned per litter in Canada between 2007 and 2017 (2015 data not available).
Source: PigCHAMP Statistics (www.pigchamp.com).

Pre-weaning mortality (PWM) is a major contributor to total death loss from birth to market, and an important factor driving pigs/sow/year (Loula, 2012). In Canada, PWM has been steadily increasing in conjunction with increasing litter sizes. Farms are averaging just under 12%, with many farms approaching or surpassing 20% PWM. The following strategies are designed to help producers successfully wean these high-risk piglets and get them off to a healthy start.

ENVIRONMENT AND MANAGEMENT

The farrowing environment should be maintained to help minimize energy losses as much as possible in the first 48 hr of life (Blackwell, 2018). Newborn piglets have very low energy reserves and cold piglets spend their energy trying to raise their body temperature, instead of competing for a teat to consume colostrum (Panzardi et al., 2013). A heat lamp should be located behind the sow at farrowing, and piglets should be dried off with a drying powder or towels as soon as possible (Loula, 2012). Once piglets are dry, place them on a teat to decrease the birth-to-nurse interval and help them get a healthy dose of colostrum (Tenbergen and Metzger, 2018).

A well-designed creep area should be present in the farrowing crate or pen (Figure 2). These are designed to increase energy conservation and protect piglets from crushing. The floor of this area should be solid, and an overhead cover (hover) can help prevent drafts. A heat mat or heat lamp should be used to ensure the creep area is warm enough. The temperature in the creep area should be set so piglets lay in a "pig and a half pile," a good indicator that the temperature is neither too hot nor too cold (Blackwell, 2018). Piglets should be trained early on to use the creep area. Once all piglets are born, have been dried and have eaten, the heat lamp located at the back of the sow should be turned off to encourage piglets towards the heat source in the creep area.

Figure 2. Well-designed creep area with partial solid floor, a hover and a heat lamp. *Source:* Prairie Swine Centre Inc.

COLOSTRUM

Colostrum is the first milk the sow produces, which is especially rich in antibodies and other immune cells. Unlike in humans, antibodies cannot cross the placental membrane to the piglets during gestation, therefore piglets must consume colostrum after they are born in order to receive this essential immune protection from their mothers. Colostrum will transition to mature milk in the first 24–48 hr of lactation, with immunoglobulins decreasing by approximately half in the first 12 hr (Hurley, 2015). The ability of the piglet to absorb these antibodies decreases rapidly as soon as they are born. Piglets can only absorb antibodies in the first 24 hr of life and 6 hr after the initiation of suckling, their ability to absorb antibodies decreases by 50% (Klobasa et al., 1987). Therefore, a piglet initiating suckling and receiving colostrum as soon as possible is of the utmost importance. Without adequate colostrum intake, the piglet is left with insufficient immunity and will be unable to combat disease. Additionally, piglets that consume more colostrum not only have a better chance of survival but are heavier at weaning (Devillers et al., 2011).

Piglets need to consume at least 100 mL of colostrum. Research has shown that 60% of piglets do not survive if they consume less than 100 mL (Devillers et al., 2007). With large litters, piglets born later on in the birth order often do not get their fair share of colostrum. Human intervention by moving piglets to the udder can assist later birth order piglets in meeting their colostrum needs (Devillers et al., 2007). Additionally, if low-birth-weight piglets have not suckled after the first few hours of life, their energy stores quickly become depleted and they should be given an energy boost to assist them with suckling. A tube or syringe can be used to deliver (frozen/thawed) colostrum, an energy boost product or a milk replacer to the piglet, which should then be placed at the teat. Energy boost products may be sugar-based, which are fast acting but used up within the hour, or fat- and protein-based, which work more slowly but last several hours. Milk replacers provide 2–3 hr of energy.

CROSS-FOSTERING

Some sows have large litters that exceed their number of teats. These sows may not be able to feed their entire litter properly, and some piglets will be at risk of starvation. Other sows produce small litters and would be able to care for more piglets than just their own. Cross-fostering is the act of moving piglets from their birth dam onto an adoptive sow in order to ensure all piglets are fed (Cecchinato et al., 2008; Baxter et al., 2013). Do not cross-foster for the purpose of making each litter the same size. It should be done to ensure that piglets without a teat on their own mother have full access on another sow. Cross-fostering should be done within the first 24 hr of life. By 48 hr, piglets within a litter have established a firm teat order (Hemsworth et al., 1975). After this teat order is established, piglets will suckle on the same teat at each feeding for as long as they are with the sow.

There are a few rules to remember when cross-fostering piglets:

- Move the largest piglets in the litter to foster sows. The smaller piglets are more likely to thrive when left with their own sow.
- Try not to move piglets between rooms. Moving piglets between rooms aids in the spread of disease through the barn.
- Move as few piglets as possible. Piglets will do better when left with their own sow, therefore only cross-foster piglets when the sow will not be able to support all her piglets.
- Never add more piglets than there are teats available.
- Only foster piglets out once. Continuously moving litters around increases stress on both piglets and sows.
- If there is a large number of poor doers, foster them onto one sow so there is less competition.
- If smaller piglets must be moved, provide them with a dose of an energy product prior to moving.

SPLIT-SUCKLING

Split-suckling is generally used when cross-fostering is not an option. Split-suckling ensures that smaller piglets get equal access to milk, producing a more uniform litter. The first step in the split-suckling process is to divide the litter into two groups: large piglets and small piglets or strong piglets and weak piglets (Baxter et al., 2013). Mark one group with a livestock marker. Using a board or a box, move the larger piglets into the creep area, taking care that they do not become overheated. Allow the smaller group of piglets to remain with the sow and suckle. Leave the piglets separated for about an hour, after you have seen the piglets suckle (Baxter et al., 2013). Switch the groups around and allow the larger piglets to suckle for an hour as well. Remix the piglets once both groups have had a chance to suckle. Repeat throughout the day for as long as necessary.

RAISED DECKS

There are several commercially available raised decks on the market that act as a home for high-risk piglets (Baxter et al., 2013). The decks are made of fully slatted material and are heated and have lighting and a supply of artificial milk, water and, as the piglets age, creep feed (Baxter et al., 2013). They are mounted above farrowing crates, provide shelter for smaller (less competitive) piglets from their bigger litter mates and provide them with a non-competitive access to food and water, in order to give them a better start. Piglets from different litters can be combined to make a group for the deck. Depending on the manufacturer and size of the deck, they can typically hold between 10–15 piglets.

Piglets are typically moved to decks starting on day 3, after colostrum intake, and kept there until weaning (Baxter et al., 2013). By day 3 or 4, usually staff will have had lots of opportunity to determine which piglets are becoming disadvantaged and falling behind. Additionally, many producers prefer to move piglets when the litter is processed, to avoid handling a second time. The use of raised decks for piglets has been shown to reduce PWM by an average of 2%–3%.

MILK REPLACERS

Supplementing milk in litters where sows are unable to adequately feed all of their piglets can help save some of the higher-risk piglets (Wolter et al., 2002). There are several commercially available milk-replacer products and delivery systems on the market. These systems can be expensive and labour intensive, but they may be worth the investment if you are able to wean larger, more uniform litters. Milk replacers can also be added into standard creep feeders, or milk feeders can be constructed for a relatively low cost (Figure 3). Milk replacers should be used when cross-fostering is not an option. Regardless of the type of feeder being used, keep the milk fresh and the feeders clean to encourage intake. Piglets will quickly be turned off the milk product if it becomes dirty or spoiled.

GRUEL

Gruel is a liquid food composed of a mixture of warm milk replacer, or water, and feed. Gruel feeding aids in reducing starvation and dehydration in piglets and often uses high-quality creep/starter feed. Gruel feeding is very effective at increasing nutrient intake and keeping piglets healthy. However, like feeding milk replacers, it is very labour intensive to ensure the gruel is kept fresh and feeders kept clean. Automated transition feeder systems are available to help reduce the labour requirement, but a standard round creep feeder can work just as well. Gruel feeding can also be carried over into the nursery post-weaning, especially for the lower weight pens of piglets.

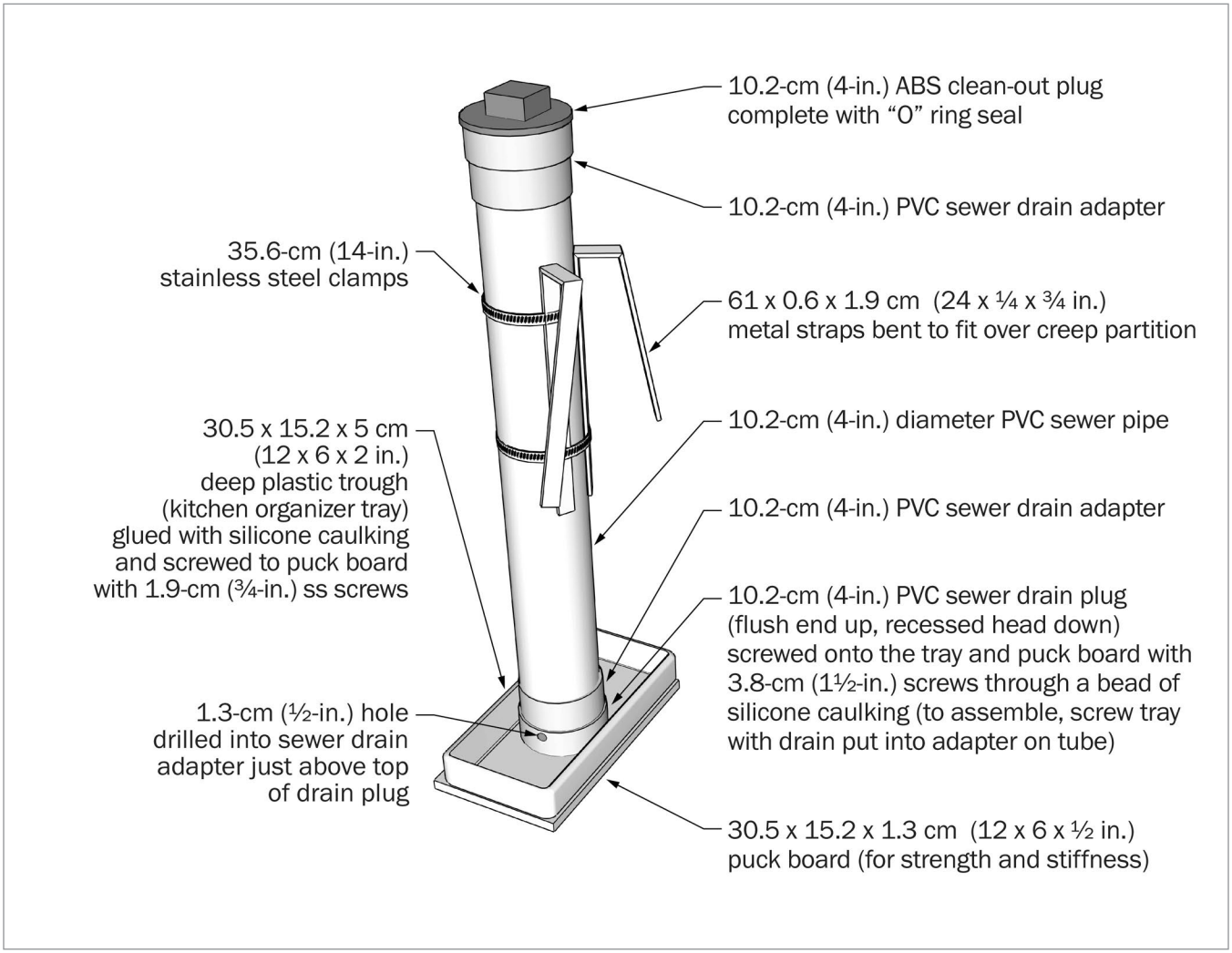

Figure 3. Design plans for a homemade milk feeder developed by Dr. Tim Blackwell, OMAFRA.

ELECTROLYTES

Young animals have a higher body weight percentage of water compared to mature animals (Lewis and Wamnes, 2006). The fluid balance of an animal is regulated through electrolytes, including sodium, chloride, potassium, hydrogen ions, bicarbonate, protein, calcium and magnesium. Fluid balance must be maintained in order to prevent dehydration and other health issues. If a piglet loses 15% of its water weight, mortality rates rapidly rise (Lewis and Wamnes, 2006). You can treat the symptoms of dehydration by providing commercially available electrolytes as a nutrient source in water (particularly in the nursery phase of production). This can be easily achieved by filling a round floor feeder with an electrolyte solution mixed per the manufacturer's instructions.

CREEP FEEDING

Creep feeding, offering high-quality, highly digestible feed to piglets prior to weaning, is another way to help piglets get off to a good start. Providing creep feed starting one week post-farrowing will help increase weaning weights and piglet survival. See the OMAFRA factsheet *Creep Feeding to Improve Piglet Performance* for information.

SUMMARY

As litter sizes continue to increase, so will the production of small, less competitive piglets. Often these are the smaller-birth-weight piglets, but with the right care immediately after birth, they can become full-value pigs. Remember that piglets have very few energy reserves when born. They need to get dry and suckle shortly after birth in order to thrive. Keep in mind that if a piglet doesn't suckle right away, and appears cold, it should be given an energy boost before being put under a heat lamp or on a heat pad. A good dose of colostrum is also very important for each and every piglet, as this is how they receive immunity from their mother. Cross-fostering, split-suckling, raised decks and nutritional management strategies can all be used as tools to increase the performance of these piglets. Strong neonatal management in the farrowing room can significantly decrease PWM rates, improving animal welfare, and increase the number of full-value pigs going to market.

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