

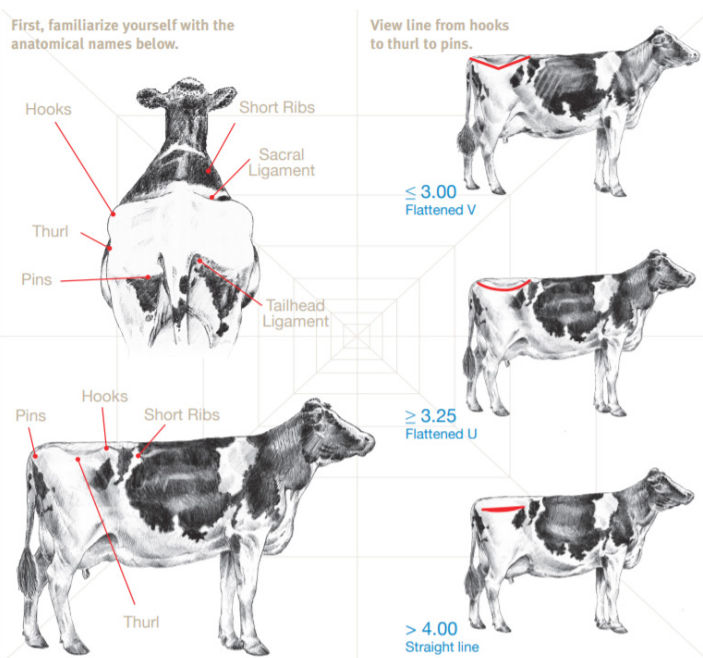
TECHNICAL TOPICS

VOLUME 4

REPRODUCTIVE EFFICIENCY AND BODY CONDITION SCORE: ARE YOU IN THE HIGH-FERTILITY CYCLE?

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KEY TAKEAWAYS

- Cows with higher BCS at dry-off or calving are more likely to lose BCS during transition.
- BCS loss during transition is associated with reduced reproductive efficiency.
- Attempts at altering BCS at calving to reduce BCS loss should not be substituted for impeccable transition cow management.
- Reduced variation between cows is a factor in entering a high-fertility cycle and a consequence of the high-fertility cycle.
- BCS will be reduced with increasing reproductive efficiency due to less time being spent in late lactation.
- In herds that are in a high-fertility cycle, efforts to raise BCS to previous recommendations are unnecessary and could result in some excessively heavy cows.
- In herds that intend on entering a high-fertility cycle, a focus on reproductive management and reduction of variation between animals can be accomplished by setting strict limits on days open or times bred.



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HIGH-FERTILITY CYCLE

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New research is shedding light on the effect body condition score (BCS) and particularly BCS change has on reproductive efficiency. Traditional recommendations for BCS scores at dry-off and calving have been a score of 3.5, with an assumed BCS loss of 0.5 -0.75 during early lactation until peak milk. Recent data and presentations by professors such as Paul Fricke and Milo Wiltbank are beginning to suggest significantly lower BCS may be optimal. However, when discussing this information with producers in southern Wisconsin as well as fellow nutritionists there is a heavy dose of skepticism at the prospect of cows calving with a BCS of 3.0 or less. This article will attempt to make sense of these recommendations and try to explain practical ways of entering the high-fertility cycle.

THE LOGIC

The logic surrounding this topic is pretty simple, but the conclusions are much less so. The logic proceeds as follows:

- Cows that are able to gain or maintain BCS through transition and/or from calving to 30 DIM are much more likely to conceive and maintain their pregnancy, compared to those that lose BCS (with greater loss in BCS associated with greater reduction in pregnancies per AI service (P/AI)).
- Cows that have greater BCS at dry-off or calving have a higher risk of losing BCS, and the amount of BCS change increased with increasing BCS.
- A BCS of >3.0 greatly increased the chances of losing BCS through transition.
- Therefore, cows should be managed to target an optimal BCS at calving around 3.0.

The first three points are very well supported and, in my view, unassailable. However, the conclusion and the point we as nutritionists and producers have control over is what I am most skeptical of. A recent paper from Michigan State University from the lab of Dr. Pursley, who along with Dr. Wiltbank are the original creators of Ovsynch, introduces the concept of the “high-fertility cycle”. The high-fertility cycle essentially states cows that get pregnant faster do not put on as much BCS. They then freshen at a lower BCS which reduces the amount of BCS loss in early lactation, which is associated with higher P/AI and less pregnancy loss, and the cycle repeats itself.

REDUCE VARIATION

The high-fertility cycle shows the benefits of striving for a tighter distribution of animals in your herd. For many herds, we develop protocols for a variety of applications that are utilized on all animals (synchronization programs, vaccination programs, fresh cow treatments, pen groupings, rations, etc.) and target some theoretical ideal or average animal. The wider the distribution of animals around that ideal target, the less successful the program will be, and



that reduced success will result in even more variation from the target. There are important variables related to management that are vital to both reducing variation and increasing reproductive success. Notably, transition cow management should always be a prominent focus on all dairies, as cows that are able to do well during that time are set up for success. Since BCS change after dry-off or calving is a larger factor than the BCS alone, it is important to recognize that stocking density pre- and post- fresh, cow comfort, cow movements, disease diagnosis and treatment, ingredients and rations all play a factor in how cows perform after freshening.

Every producer would like to be in a high-fertility cycle, and even though heifer prices are low and many are still dealing with excess heifers due to the success of programs like double-ovsynch and the use of sexed semen, it is still undeniable that reproductive success is a hallmark of a successful dairy business. So, the next logical question is: How do you enter the high-fertility cycle and is BCS a vital part of, or a consequence of being in the high-fertility cycle?

THE ROLE OF BCS

At this point, I think the evidence suggests that BCS is a response to reproductive management and milk yield rather than a cause of reproductive success or failure. For example, a cow that gets pregnant at 1st or 2nd AI after the VWP spends the end of her lactation with higher milk yield and less gain in BCS than a cow that gets pregnant on the 4th or 5th service. Basically, cows that don't get pregnant quickly spend much longer in late lactation where they put on substantial amounts of weight (i.e. body condition). The higher BCS makes it more likely they will lose excessive BCS in the following early lactation period, which in turn negatively impacts reproductive performance.

CONSIDERATIONS FOR OVERCROWDED FACILITIES

A recent article released by Penn State Extension (“Can You Make Overcrowding Work for You?”) discussed a number of key considerations when making the decision to overcrowd a dairy facility. With the last several years of dairy economics in mind, overcrowding has been a common and reasonable course of action as dairy producers attempt to maximize milk per stall and parlor efficiency. While overcrowding may make fiscal sense in some situations, the article examines several points regarding a dairy facilities’ existing structure and how specific repercussions of overcrowding may stretch their ability to support additional cows:

- The rule of 24 in/cow of bunk space will likely be broken in an overcrowding situation (especially in 3 and 6 row barns), so animal behavior must be considered as cows compete for eating time; mixed-parity pens and “boss cows” may limit eating time for some cows.
- Feed should be available for +21 hours/day with constant push-ups. Cows in overcrowded pens will be eating in “shifts”, as there likely will not be enough bunk space for all cows to eat at once.
- Naturally ventilated barns need 11 ft²/cow openings on sidewalls. Less than 8 to 9 ft²/cow is not enough for proper ventilation.
- Water is an essential component of milk production – cows need +3 in of linear waterer space/cow. Consider adding extra and/or larger waterers in overcrowded pens.
- Cow movement strategy at milking must be considered – larger pen numbers mean more time away from the pen at milking. Cows should not be away from the pen over 3 hours/day.

Read more at <https://extension.psu.edu/can-you-make-overcrowding-work-for-you>

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This concept makes the BCS recommendations of the past compared to newer recommendations make much more sense. 20 years ago, when pregnancy rates were in the mid-teens, and production was not as high, it was difficult to maintain a tight distribution of animals. As pregnancy and conception rates have increased, it has allowed for maintenance of groups of animals within much more tightly defined criteria and that will have an impact on BCS. If you are able to get animals pregnant sooner and in a shorter window of time, BCS on average will be reduced, and more cows will freshen at lower BCS than we are accustomed to. This is not a problem and it has benefits on subsequent reproductive performance. This concept gets at the heart of entering the high-fertility cycle, which is the fact that reproductive success breeds reproductive success. My recommendation is to enter the cycle from a reproductive management perspective, with the understanding that BCS will be reduced as a consequence. BCS does not need to be actively managed to hit certain goals, particularly the higher goals than have been recommended in the past.

HOW DO WE GET THERE?

The simplest method for reducing variation and entering the high-fertility cycle is to remove or DNB cows that do not fit your program. Working with your veterinarian and consultants to determine your target cull rate, number of replacements needed, and other goals on your dairy will allow your programs to supply enough heifers and set hard limits for days open or times bred before an animal is culled or put on a DNB list. We often bring subjective assessments of particular cows (i.e. favorites) into the culling equation. The more cows we give excessive opportunities to become pregnant, the more we introduce variation and reduce reproductive efficiency.

Additional research on this topic and how we can actively manage feeding and grouping of cows to facilitate entering and maintaining a high-fertility cycle are sure to continue in the years to come. As always, we should evaluate new information critically but with an open mind, realizing that rarely is a single paper or person 100% correct, but instead using all information available to implement the most appropriate recommendations for your dairy.

References are available upon request.

Standard Dairy Consultants (SDC) is a proven leader in providing innovative and customized solutions to dairy producers throughout the United States. As a part of this, we utilize a network of experienced consultants that work closely with clients to provide hands-on expertise and guidance with a wide range of customized consulting services designed to support business success and maximize herd health and productivity. For more information on the innovative solutions and expertise SDC provides the dairy industry, visit: www.standarddairyconsultants.com.



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