Weaning Strategies for Dairy Calves:

How Canadian Dairy Research Supports the Code of Practice

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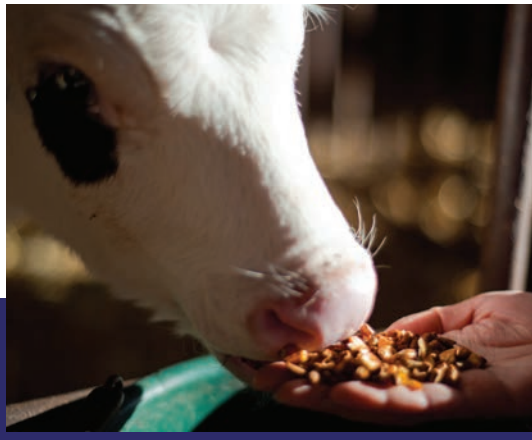
THE UNIVERSITY OF BRITISH COLUMBIA



Over the last 25 years, the University of British Columbia (UBC) Animal Welfare Program has conducted research that has led to the improvement of animal care and welfare in Canada and around the world. Dairy cattle welfare researchers, Dan Weary and Marina (Nina) von Keyserlingk, are key leaders in this program. Through their NSERC Industrial Research Chair (IRC) in Dairy Cattle Welfare, funded in part by the Dairy Farmers of Canada, they have been investigating novel approaches to addressing industry-wide topics, including weaning of calves from milk to solid feed.

What Does the Code Say?

The *Code of Practice for the Care and Handling of Dairy Cattle* (Code)[1] was updated in March of 2023. With this update came revisions to Canada-wide requirements for weaning strategies for dairy calves. Specifically:

- Transitioning calves from consuming milk to solid feed should be accomplished gradually over at least 5 days.
- Calves must be at least 8 weeks old before weaning is completed.

Though not a requirement, the Code recommends individual calves should consume at least 1.4 kg of starter feed for 3 consecutive days before initiating weaning and that calves be weaned over a period of at least 10 days.

Additional recommendations include to avoid performing painful procedures like castration and disbudding at the same time as other stressors (e.g., weaning).

Key Takeaways

When calves consume adequate solid feed in the preweaning period, they undergo less hunger and stress at weaning.

By reducing weaning stress, calves have a lower risk of developing disease, losing weight, and performing undesirable behaviours like cross-sucking.

Producers should gradually wean calves over a minimum 5-day period, ensuring they are at least 8 weeks old before weaning is completed.

In Canada, the proAction® program is implemented on all Canadian dairy farms and ensures that program requirements are aligned with the Code.

The DFC has committed to incorporating the new 2023 Code requirements into proAction. **This work is currently underway by proAction's Animal Care Technical Committee.**

Scan this QR code to visit the Code.

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What Does the Science Say?

Dairy farms across Canada use a range of weaning strategies, which can impact calf productivity and induce varying levels of stress. Calves that are weaned at an older age and experience a gradual reduction of milk allowance tend to transition more smoothly, exhibiting fewer behavioural signs of distress and demonstrating improved weight gain compared to calves weaned abruptly or at younger ages.

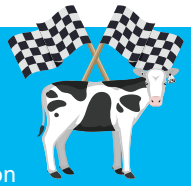
SO, HOW ARE CALVES IMPACTED BY WEANING?

In both a primary study[2] and a literature review[3] focused on understanding weaning distress, Dr. Weary and colleagues found that calves can exhibit:

- Increased vocalization[2,3]
- More activity[2,3]
- Abnormal behaviour like cross-sucking in response to weaning[3]

Calves may also experience reduced growth rates and increased risk of disease[4].

Available evidence emphasizes the importance of minimizing concurrent stressors, such as changes in social and physical environments, while promoting high feed intake in the preweaning period, to mitigate the negative effects of weaning on calf welfare and productivity[3].



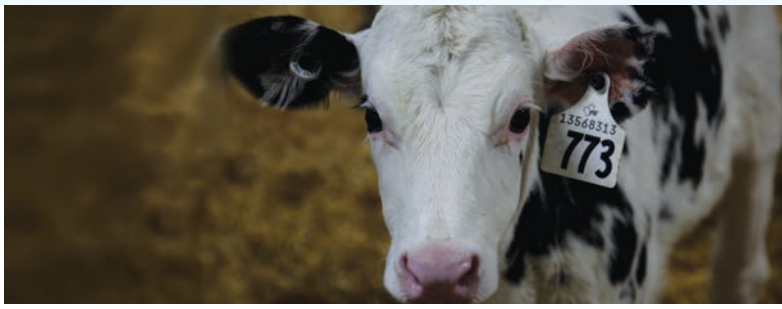
WHEN IS A CALF READY TO WEAN?

For calves that receive adequate milk nutrition in the first weeks of life, evidence suggests that weaning at 8 weeks of age or later can lead to:

- Higher productivity
- Better digestive tract development
- Fewer undesirable behaviours like cross sucking[4]

However, rather than relying on a fixed weaning age, research led by researchers Weary and von Keyserlingk has investigated weaning using a step-down process based on the calf's solid feed intake.

- **What did they do?** In a series of studies, UBC researchers weaned calves gradually beginning when calves were eating 200 to 225 grams of starter per day, with weaning being completed when calves consumed 1,150 to 1,300 grams per day[5,6,7].
- **Weight gain.** The studies found that calves can achieve similar weight gain while consuming less milk and more starter compared to calves weaned at a predetermined age[5,6].
- **Consumption of starter.** The research also found that, regardless of the weaning strategy, some calves consume little solid feed before weaning—a behaviour linked to certain personality traits and learning ability[7].
- **Benefits of weaning based on solid feed intake.** Overall, weaning calves based on their solid feed intake offers a chance to tailor weaning times to when calves are ready, and identify those that may struggle with the process early on.



WHAT IS THE BEST DURATION OF WEANING?

In calves with low solid feed intake, weaning milk gradually is especially beneficial to allow them time to adjust their consumption. One UBC study in calves fed 12 liters of milk per day found that weaning over either 10 days or 22 days resulted in increased energy intakes and prevented weight loss around weaning as compared to calves weaned abruptly[8]. Other work has found that weaning calves gradually, especially when weaning starts beyond six weeks of age, can reduce calf hunger and cross-sucking compared to abrupt weaning[4].

ARE THERE OTHER WEANING STRATEGIES TO CONSIDER?

To mitigate some of the challenges of weaning, work from UBC has investigated modifications to the weaning process. Other strategies include early social housing, which can promote solid feed intake before and after weaning[9], and ensuring calves are healthy.

WHAT ROLE CAN FORAGE CONSUMPTION PLAY IN WEANING SUCCESS?

The UBC researchers explored the role of milk and solid feed on rumen development and growth of dairy calves[10,11]. Drs Weary, von Keyserlingk, and Khan found that forage supplementation benefits calves that are fed adequate milk, but the form (e.g., chopped vs ground) and nutritional quality are critical. Other work has shown that providing certain types of chopped forage to preweaned calves can promote feed intake and reduce nonnutritive oral behaviours (licking surfaces, tongue rolling, or eating wood shavings)[12]. Producers should work with a nutritionist to optimize the use of forage in calf diets to promote feed intake, growth, and development.

How Can Producers Use This Information?

Producers can help set calves up for successful weaning by:

- Providing adequate milk nutrition during the first weeks of life.
- Promoting solid feed intake before weaning.
- Ensuring calves are at least 8 weeks old when weaning is complete.
- Weaning over a span of at least 5 days.

Measuring success

Producers often rely on observing calf outcomes including feed intake, health, growth, and behaviour (e.g., vocalizations)[13] to evaluate weaning success. These metrics are useful for monitoring the success of a weaning program.

Collaborating with a nutritionist

Collaborating with a nutritionist to optimize calf diets, while monitoring productivity (e.g., weight gain) and behaviour (e.g., vocalizations), can further support weaning success.

The Bottom Line

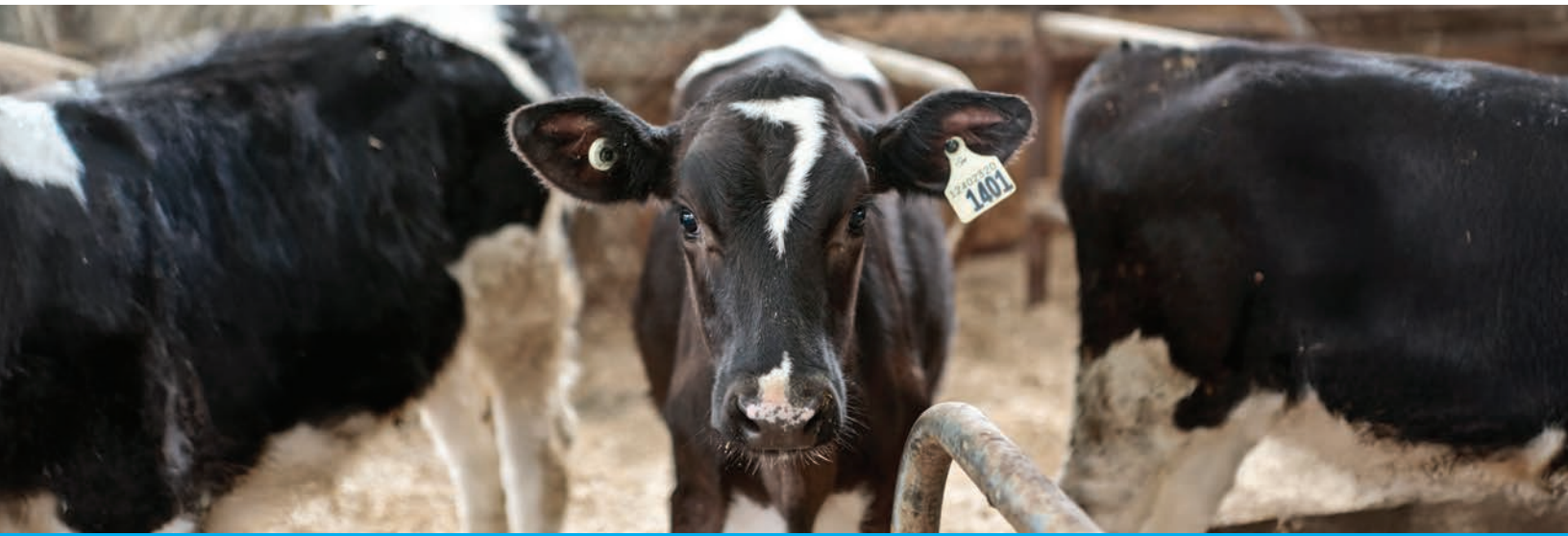
- **Weaning is a stressful transition** that can predispose calves to reduced weight gain, developing disease, and undesirable behaviours.
- **Weaning calves that are older,** especially when they are consuming adequate starter and some forage, will help them transition more smoothly.
- Using a gradual approach to reducing milk over at least 5 days **will encourage feed intake and reduce the stress response of calves to weaning.**

To meet updated Code requirements, producers should:

- **Optimize milk and starter feeding strategies** for preweaned calves.
- **Reduce the milk allowance over at least 5 days,** and ensure calves are at least 8 weeks old before fully withdrawing milk to facilitate a smooth transition.

Where is the Research Headed?

Future research is needed to refine weaning strategies for calves, particularly in group housing systems.



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