

Social Housing for Dairy Calves:

How Canadian Dairy Research Supports the Code of Practice

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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 (DFC), they have been investigating novel approaches to addressing industry-wide topics, including social housing for calves.

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 the social housing of calves. Specifically:



- ➔ Producers raising calves individually indoors must develop a plan to transition to calf rearing systems that use social housing.
- ➔ Indoor housed calves that are healthy, thriving, and compatible must be socially housed by 4 weeks of age beginning April 1, 2031.
- ➔ Calves housed outdoors must have physical contact with another calf.
- ➔ Calves housed in indoor systems must not be tethered as part of normal housing.
- ➔ Calves housed in outdoor hutches may be tethered if they are provided access to an area outside of the hutch.

Additional requirements for pre-weaned calf housing are available in the Code¹.

Key Takeaways

Social housing (i.e., group or pair housing) of calves **encourages the development of normal behaviors**, such as reduced fearfulness and improved ability to adapt to new circumstances.

Social housing **can increase calf growth compared to individual housing systems**, while maintaining similar health outcomes.

Weaning calves gradually and giving them the opportunity to suckle **can mitigate the risk of cross sucking in social housing systems**.

Producers should develop a plan to gradually implement pair or group housing for their calves, using evidence-based practices to mitigate potential challenges.

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



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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.**



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What Does the Science Say?

Dairy calves in Canada are housed in various systems, including individual pens or hutches, as well as group or pair arrangements. These practices affect calf health and well-being, raising concerns about the importance of social contact between calves.

WHAT ARE THE WELFARE BENEFITS OF SOCIAL HOUSING FOR CALVES?

Companionship is important for calves and likely helps them develop social skills for later in life. Research from researchers Weary and von Keyserlingk demonstrates this innate desire for companionship, and highlights the importance of social housing in supporting the normal development and social needs of dairy calves:

- ➔ **Desire to be together:** Their 2022 study showed that calves pushed more weight to access a pen with another calf than to access a similar, empty pen².
- ➔ **Signs of stress when apart.** A UBC review highlighted growing evidence that social housing reduces fearfulness and reactivity in calves compared to individual housing³. Further, in a 2010 study, UBC researchers observed more vocalizations after weaning individually housed calves compared to paired housed calves⁴.
- ➔ **What's going on here?** These differences could be from social buffering (comfort through companionship) that helped reduce distress from hunger, as well as social facilitation (companionship that encourages initiation of a behavior) that promoted eating, which together helped pair-housed calves adapt to their new circumstances^{3,4}.
- ➔ **Cognitive performance.** Additional UBC studies showed that socially housed calves outperformed individually housed ones in "reverse learning tasks," which assess the ability to remember and adapt to new information^{5,6}. This enhanced cognitive development could decrease anxiety and improve adaptability to novel situations (e.g., housing or handling facility changes) later in life.
- ➔ **Interest in feed.** Further experiments from the UBC team demonstrated that socially housed calves consume more unfamiliar feed sources⁷ and are more competitive when seeking milk⁸ compared to individually housed calves.



BUT WHAT ABOUT PRODUCTIVITY?

Researchers have studied various productivity outcomes of group housing, including calf health, feed intake, and weight gain. Weary and von Keyserlingk have reported similar or improved productivity in socially compared to individually housed calves, both in research and commercial settings^{7,9}. A review from Weary, von Keyserlingk, and Costa concluded that social housing can improve feed intake and growth before and after weaning compared to individual housing³.

- ➔ One UBC study reported that at 10 weeks of age calves, that were paired at approximately 6 days of age, ate an average of 2.2 kg of starter feed per day, while individually housed calves ate 1.3 kg per day⁹.
- ➔ Another study showed that after paired calves were weaned and mixed with other calves in group pens, they gained weight on the 2nd and 3rd days after mixing (0.5 kg and 0.8 kg gained, respectively) versus individually housed calves that lost 2.4 kg and 0.9 kg, respectively⁴. This likely related to feed intake, as individually housed calves consumed no starter during the first two days after mixing, while pair housed ate on the first day.

HOW IS CALF HEALTH IMPACTED?

The impacts of social housing on calf health are variable among studies, with some showing negative, positive, or neutral results for important calf conditions like diarrhea and respiratory disease³. The UBC team suggested that some of the variations in health impacts can be attributed to:

- ➔ Group size
- ➔ Milk provision (amount and delivery system)
- ➔ Bedding management

Regardless, good health is possible in social housing systems as demonstrated by an early UBC study comparing pair and individual housing that showed no differences in the number of days calves had diarrhea over the 58-day trial¹⁰.

Strategies for good outcomes. Other research has explored grouping strategies that promote good health outcomes like keeping group sizes to fewer than 6 to 8 calves per pen and using all-in/all-out management¹¹. In this approach, stable calf groups are assembled within a short period, and once all calves move to their next production stage, the facility is cleaned before the next group arrives.



CAN CHALLENGES LIKE FEED COMPETITION AND CROSS SUCKING BE MANAGED EFFECTIVELY?

Socially housed calves may compete for access to feed and might be displaced while eating or drinking. This can be especially problematic when calves are not compatible with their pen mates (e.g. sick, younger), and in cases where milk is not fed ad-libitum.

➔ **Feeder design and placement** is imperative, and sometimes simple solutions can overcome feeding competition challenges. For instance, research showed that a barrier between teat buckets can reduce competition among pair housed calves¹².

Another challenge associated with group housing is cross sucking and the potential subsequent reduction in milk production when it results in a blind quarter. Though there is no silver bullet for eliminating cross sucking, several strategies have been studied to mitigate the risk, such as:

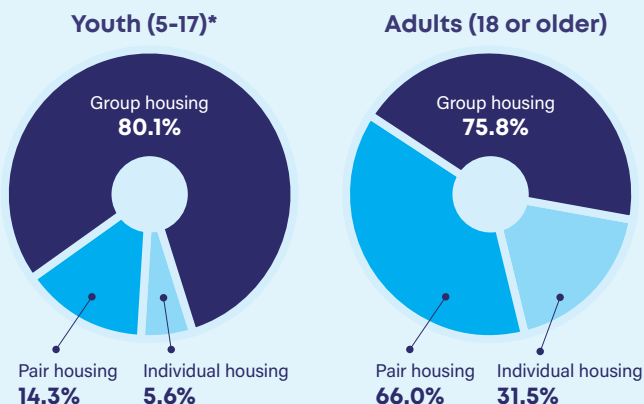
- ➔ Increasing the daily milk allowance
- ➔ Providing several larger milk meals
- ➔ Increasing meal length using teats that deliver a slow flow rate
- ➔ Providing a dry teat after feeding
- ➔ Avoiding abrupt weaning¹¹

WHAT DO THE PUBLIC THINK?

Over the past decade, research on public perspectives of dairy cattle housing practices has increased, helping the industry better align with societal expectations. A 2020 survey of American youth and adults found that group housing was preferable compared to pair or individual housing, with socialization and space cited as key benefits¹³. In contrast, a 2022 study found that American and Canadian participants had similar attitudes towards individual and group calf housing systems¹⁴.



Public preferences:



*Youth participants could only select 1 of the 3 options.

How Can Producers Use This Information?

➔ **Developing a plan.** Producers who have yet to implement social housing for their indoor-housed calves should develop a plan to incorporate pair or group housing that aligns with the Code and optimizes their success in calf rearing. Pair and group housing can both be viable, and the best system will depend on the specific conditions of the farm including location, space availability, labour resources and herd size¹¹.



➔ **Troubleshooting strategies.** Producers using social housing should continue doing so and focus on troubleshooting problems through well-researched management strategies related to health, nutrition, and environmental management. For help with transitioning to social housing systems and troubleshooting problems, producers should consider consulting with a qualified advisor.



Where is the Research Headed?

Further research is needed to understand how to optimize milk and feed delivery and maintain a healthy calf environment across different calf rearing systems to mitigate challenges like cross sucking and spread of infectious disease. Weary and von Keyserlingk will continue to investigate the barriers producers face in implementing social housing for calves.

The Bottom Line

Implementing social housing can result in benefits to farm productivity alongside the improvement to calf wellbeing and alignment with evolving societal values. Success can be optimized through management strategies that include:

- ➔ Ensuring calves are compatible in size and health status when grouping.
- ➔ Offering high amounts of milk in frequent meals and avoiding abrupt weaning.
- ➔ Providing an opportunity for calves to suckle.
- ➔ Maintaining pairs or small group sizes less than 6 to 8 calves per pen.
- ➔ Ensuring environmental cleanliness and using all-in/all-out management.

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