

Reproductive Efficiency Moves Forward

Handling Acclimation Practices Increase Pregnancy Rates in Heifers

Researchers at the Technology Access Centre for Livestock Production (TACLP) at Olds College of Agriculture & Technology have performed two years of research that shows adopting handling acclimation procedures leads to heifers having a greater pregnancy rate — results showed a 10.84 per cent increase. Reducing animal stress seems to be the key to improving reproductive efficiency.

Dr. Désirée Gellatly, Research Scientist at the TACLP, has gathered two years of data from back-to-back studies in 2020 and 2021 for the Heifer Acclimation project working alongside Neilson Cattle Development, a producer partner site near Stettler, Alta. This applied research confirmed that handling acclimation — a combination of repeated non-aversive handling and positive feed reinforcement prior to breeding — leads to calmer heifers and a greater pregnancy rate.

The TACLP conducted an initial study on handling acclimation prior to the breeding season in 2020 with a replicate study taking place in 2021. The reproductive performance and reactivity at handling were compared between heifers subjected to handling acclimation procedures against non-acclimated heifers, and Dr. Gellatly recently gathered the data in a final report.

“Studies show that calmly and gently handling cattle more regularly, with a small amount of feed reinforcement offered immediately after handling, can minimize the animal’s stress and anxiety during routine management procedures,” explains Dr. Gellatly. “The primary goal of a cow-calf operation is to produce one calf per cow a year. After conducting this research for two seasons, our results show acclimated heifers in the replicate study had a greater pregnancy rate of 10.84 per cent when compared to the control (non-acclimated) group.”

Research Results

Acclimated heifers had an increment in pregnancy rate of 10.84 per cent when compared to the control group independent of their ranch source. By adopting handling acclimation procedures, heifers were shown to have 7.5 times increased chances (representing a probability of 88.3%; $P = 0.06$) of becoming pregnant.



Treatment	Pregnant	Non-pregnant	P-value ¹
Acclimated Group	59 (98.33%)	1 (1.67%)	0.06
Control Group	55 (88.71%)	7 (11.29%)	
Increment on pregnancy rate (%) ² (Acclimated vs. Control)	10.84%		

¹ P-value considered significant at P < 0.10 (Fisher's exact test).

² Increment on pregnancy rate = [(pregnancy rate acclimated – pregnancy rate control/pregnancy rate control] × 100

Currently, the Neilson's operational capacity is approximately 1,000 head per year. Based on these findings, adopting the handling acclimation proposed by the TACLP would lead to an increase of 91 calves weaned per year which takes into account a percentage for preweaning mortality of 4.5 per cent described by Pearson et al. (2019).

The 2020 study showed an improvement of 2.23 per cent in the pregnancy rate for the acclimated group compared to the control group. The increment on pregnancy rate from 2.23 to 10.84 per cent in the replicate study is likely connected to the extended advising and training made by the TACLP to Neilson Cattle Development on basic low-stress handling techniques as well as cattle's perception and behaviour.

Study Details

During the two years of research, 322 heifers aged 13 to 14 months were assessed and evaluated following the same protocol. In the replicate study, there was also a mix of heifers raised at Neilson's operation and heifers purchased from external ranch sources.

Heifers were ranked by initial body weight prior to the breeding season, and equally allocated to four groups with two groups per treatment. Each group was in a separate feedlot pen and was randomly assigned to acclimated group (heifers subjected to handling acclimation procedures prior to the breeding season) or control group (non-acclimated heifers).

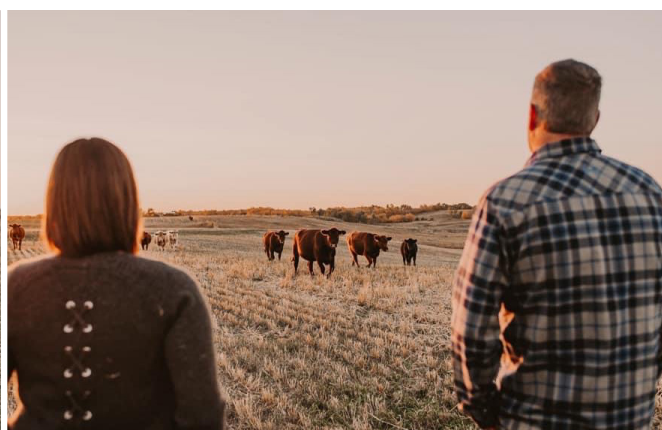
Heifers in the **acclimated groups** had a person familiar to the animals walk inside the feedlot pens — every other day for a two-week period — talking softly while pail feeding the heifers with a small feed supplement (approximately 100 grams per heifer as-fed basis) while their regular diet was offered daily by feed truck. Additionally, the heifers were run through the chute on three separate days with feed rewards immediately after handling (positive reinforcement).

Heifers in the **control groups** were fed by feed truck without any human interaction, and were not exposed to handling acclimation procedures prior to breeding.

This research shows that calmly and gently handling cattle more regularly can minimize the animal's stress and anxiety during routine management procedures. This also helps address the challenge of cattle showing excitable behaviour during routine handling, which usually results in heifers injuring themselves, handlers and/or other animals.

Overwhelmingly positive results from the combined studies means the TACLP is able to use this research to recommend acclimation practices to increase reproductive efficiency, improve overall animal welfare, and increase the profitability and sustainability of cow-calf operations. Read more about this research at oldscollege.ca/TACLP.

Literature cited: Pearson JM, EA Pajor, NA Caulkett, M Levy, JR Campbell, MC Windeyer. Benchmarking calving management practices on Western Canada cow-calf operations, *Translational Animal Science*, Volume 3, Issue 4, July 2019, Pages 1446–1459.



Heifers in the acclimated groups getting pail fed by a person familiar to them.

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