



Technology Access Centre for Livestock Production (TACLP)

2020 Summary: Handling acclimation procedures prior to breeding improved reproductive performance, handling reactivity and stress in beef heifers

This 2020 study aimed to confirm if handling acclimation – a combination of repeated non-aversive handling and positive feed reinforcement prior to breeding – would lead to calmer heifers and a greater pregnancy rate. Research funded by Natural Sciences and Engineering Research Council of Canada (NSERC).

INTRODUCTION

The TACLP is working alongside Neilson Cattle Development to improve herd efficiency and address the challenge of cattle showing an excitable temperament during routine handling, which usually results in heifers injuring themselves, handlers and/or other animals.

The primary goal of a cow-calf operation is to produce one calf per cow a year. Studies show that calmly and gently handling cattle more regularly can minimize the animal's stress and anxiety during routine management procedures.

OBJECTIVES

- Study the association between reactivity measurements at handling and a physiological indicator of stress.
- Assess the effect of handling acclimation on pregnancy rate and reactivity at handling.

STUDY DETAILS

- Performed from May 7 to Oct. 2, 2020 at Neilson Cattle Development in Stettler, AB.
- 200 heifers aged 13-14 months were assessed.
- Heifers were ranked prior to the breeding season for baseline measurement and allocated to 4 groups (2 groups per treatment). Each group was hosted in a separate feedlot pen and was randomly assigned to “acclimated group” or “control group”.
- Heifers in the acclimated groups were talked to softly while being fed daily, and every other day offered a small additional feed supplement in the feedlot pen (approx. 100 grams per heifer). Additionally, they were run through the chute on 3 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.
- Pregnancy rate was evaluated via ultrasonography after the end of breeding season.
- Saliva samples were collected to assess the salivary cortisol concentration, a physiological indicator of acute stress.

RESULTS

- Acclimated heifers had lower ($P < 0.05$) salivary cortisol concentration than the control group, which indicates acclimated heifers were less stressed than the control group during and after breeding season.
- Findings indicate heifers categorized as calm and excitable in the baseline measurement on average remained calm or reduced their excitability after being acclimated, which lasted for 4 weeks. Only extremely excitable heifers remained the same.
- Acclimated heifers had a numerically greater pregnancy rate (increment of 2.23%) when compared to control group.

FUTURE RESEARCH

The TACLP is performing a replicate study in 2021 using new heifers to increase the total number of animals assessed and improve statistical results. The TACLP is also studying the same heifers from last year's study – cows going to their second calving – to see if the acclimation procedures need to be repeated every year or not.

Expected results of the combined studies will provide recommended acclimation practices to increase reproductive efficiency, improve overall animal welfare, and increase the profitability and sustainability of cow-calf operations.

Treatment	Pregnant	Non-pregnant	P-value ¹
Acclimated group	96	3	0.491
	96.97 %	3.03 %	
Control group	90	5	0.491
	94.74 %	5.26 %	

¹Significance for comparison of distribution in columns (Fisher's exact test)



Images: Neilson Cattle Development

Learn more at oldscollege.ca/TACLP.