Use and Effectiveness of the Frostfree Nosepump for Cattle Watering

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INTRODUCTION

The Frostfree Nosepump (FFNP) is an energy-free and low-cost solution to cattle watering requirements. It is a down-hole piston pump that brings up water with each stroke of the nose pad by the animal. Construction and operation of the FFNP is simple and energy free, other than the energy required by the cow to operate the lever.

This low-cost, year round watering facility can improve access to areas that previously were not considered for livestock watering because of the cost or unavailability of an energy source.

Double Frostfree Nosepump

OBJECTIVES

FFNP Ltd. and Olds College initiated a research and demonstration project in the fall of 2005 to verify:

- **the effectiveness of the technology in Canadian winters with no supplemental energy,**
- **the ability to train cattle to use the FFNP,**
- **the ability of cows to train their calves to use the FFNP and**
- **the weight gain differences among calves raised on pasture land equipped with a FFNP to a similar group of calves raised on pasture land with a standard stock water trough.**

MATERIALS AND METHODS

Winter Experiment *(Jan.–May 2006)*

A total of 69 cow/calf pairs were turned out into a winter pasture site where the only source of water was a double FFNP. Pairs were turned out at a rate of 11-16 pairs at a time.

Staff adhered to the protocol designed by the owners of FFNP entitled ***"Hints to train your livestock to use the FFNP"*** to achieve training success. All project details were documented including time and effort required for training, weather temperature data, incidences of icing and any problems or concerns noted with pump operation or livestock condition. Cattle were fed the standard ration used by Olds College.

Summer Experiment *(June–Sept. 2006)*

Cow/calf pairs were then split into two groups: a test group consisting of 26 cow/calf pairs on pasture with a FFNP and a control group of 26 pairs on the same mixed grass and legume pasture with a standard stock water trough.

Groups were balanced for breed and genetic differences. All animals were weighed before the trial began in June and again in September once the trial was completed.

RESULTS

Winter Experiment

During the project, the cows quickly learned to operate the FFNP and also trained their calves. There were no concerns with the cattle's ability to learn how to operate the FFNP when the recommended training instructions were followed. The FFNP performed well at temperatures between 0 and -30˚C though icing did occur during nights when temperatures fell below -20˚C.

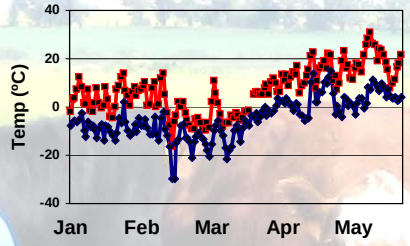

Figure 1. Daily maximum and minimum temperatures recorded during the winter.

Although the temperatures during the trial were relatively mild, there were some instances where cold, windy weather conditions at night resulted in ice buildup on the pump. This ice was removed according to the supplier's instructions with little effort during daily routine chores.

It is anticipated that the pump has the capacity to support a larger herd of 50 pairs per pump as recommended by the supplier. However, the project was limited by the number of cow/calf pairs available at Olds College during this time.

RESULTS

Summer Experiment

There was no difference in June and September calf weights and average daily gain between calves using the FFNP (3.20lb/day) and the standard watering system (3.24lb/day) during the summer experiment.

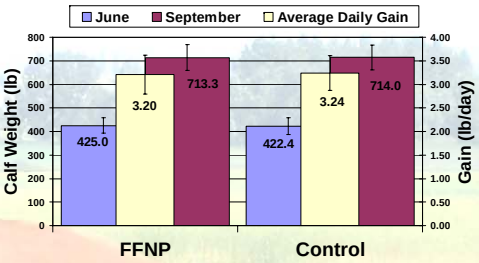

Figure 2. Calf weights and average daily gain between FFNP and the standard watering system groups during the summer.

CONCLUSIONS

The FFNP had the capacity to successfully support 69 cow/calf pairs on a winter pasture site where it served as the only source of water. Daily inspections of the functioning and icing of the FFNP, particularly in cold wind conditions, is recommended to ensure adequate water availability.

The FFNP also demonstrated its effectiveness in supporting the growth and maintenance of 26 cow/calf pairs during the summer.

The FFNP has proven itself at Olds College as a simple to use and install, low-cost and effective technology for energy-free and environmentally sustainable cattle watering.

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