Bringing The Water Back

Case Study Series

Supported by LOR FOUNDATION

Snow Fencing for Cattle Water

Vilicus Farms with support from with The LOR Foundation

Snapshot:

Vilicus Farms is a 12,500 acre organic dryland crop farm located north of Havre MT. They have integrated a custom grazing business and own a small Highlander cattle herd which are grazed on cover crops in the summer months.

Natural water access is very limited in this area meaning that much of the water that the cattle rely on must be trucked in. Vilicus Farms' project was to install snow fences near dugouts or ponds that serve as water sources for cattle. This would catch snow over the

winter and increase runoff into the dugouts in spring, reducing the need for water to be trucked into these sites.

The snow fence was successfully installed in fall 2023 and has caught a notable amount of snow over the winter despite the relatively warm and dry winter conditions. At the time of this study the snow has not melted but it appears that when it does, runoff will accumulate as desired in the dugouts.

The challenge:

Vilicus Farms integrates cover crop grazing into their crop plan in order to mimic the historical presence of roaming grazers in this ecosystem. Grazing livestock enriches the soil with nutrients, benefiting both the cropping enterprise as well as the natural environment. Grazing is also utilized at Vilicus Farms as a method of cover crop termination, reducing the need for labor and equipment use.

Water sources for livestock drinking water at Vilicus Farms are dugouts and ponds that rely on captured snowmelt and rainfall. This area sees an average of 11” of annual precipitation and the region faces heightened variability due to changing climate conditions. The groundwater supply is extremely deep and of poor quality. Wells are not an economical or healthy option for stock water. Much of the water for the cattle must be brought in by truck, which is costly, time consuming, and inefficient.

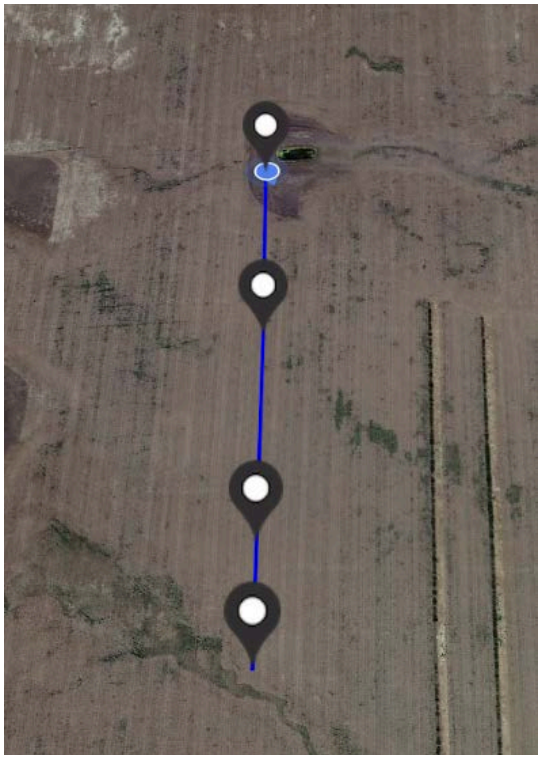
Increasing the availability of water for livestock at the farm would allow cattle to stay longer on the fields and allow for the potential expansion of the grazing operation to larger herds or different types of livestock.

The project:

Inspiration

Vilicus was inspired for the design of this project by a project on the Blackfeet reservation in Western Montana in which fencing was used to increase moisture on the landscape. Snow fences are commonly utilized by highway departments to prevent snow buildup on roads. By installing snow fences in strategic areas that have more capacity for water holding the farm could increase the accessibility of water for grazing cattle allowing cattle to stay on the landscape for longer periods of time.

Design and Planning



The planning process began with selecting a suitable location for the snow fence and determining its positioning relative to the dugout and the prevailing wind. Originally the team planned to install fencing at multiple watering sites however, due to the material costs, labor demands, and timeline the scope was scaled back to just one site for the initial project.

Snow fences can be purchased in plastic net or wood slat varieties. Although they are more expensive, opting for a wood slat snow fence offered numerous advantages, including durability for prolonged use over multiple seasons, and concerns about the potential spread of microplastics into the environment over time.

Execution

The fencing, totaling 3750 feet in length with 4-foot height sections, was procured from a Great Falls-based company at a total cost of $5,175 for materials. Approximately half of the material was used for this initial project.

The team installed the snow fence on the western side of the selected site over the course of a week in October 2023. A minimum of three individuals were needed for the installation process. The team used a post pounder to install the fence posts.

The results:

Evaluation

Observations thus far reveal significant snow accumulation on the fence. However, as the snow has not yet melted it is too soon to see results in the water levels of the dugouts.

In order to assess the success of the project the team will take measurements of the depth and length of snow banks along the newly installed fence and extrapolate approximate water volume yield. They will also estimate the total volume of water in ponds in the fall of 2023, then again after implementation to assess how much of the snow catch resulted in retained water. Vilicus Farms plans to partner with Montana Freshwater Resources to conduct measurements later in the season.

In addition to increased water levels the team will be looking for increased growth in the vicinity of the project site as a visual indicator of heightened moisture levels. Over the next several years the team will also be monitoring the fence to determine the longevity of the material and assess the need for maintenance, repairs, or replacement over time.

Reflections

Given the high likelihood of positive impact as a result of this project, Vilicus Farms hopes to continue installing snow fences around other water sources on the farm. In future installations the team will consider experimenting with various fence placements and determining the necessary lengths of sections required. The team will also experiment with installing the fencing at different times of the year with consideration for labor availability and soil moisture levels at the time of installation.

Given the prevailing drought conditions in the region, enhancing moisture retention can have widespread applicability and benefits across various scenarios and operational setups, serving as a potential drought resilience measure. Embracing and leveraging increased water availability can foster and support life in natural ecosystems, presenting a straightforward solution to align with nature's inherent cycles.

Support for the Bringing Back the Water case study series was provided by the LOR Foundation.
***About the LOR Foundation**: LOR works with rural communities in the Mountain West to enhance livability and prosperity while preserving the character that makes each community unique.*