



MISTY ACRES FARM AT MISTY ACRES: THE BORWELL PRESERVE

Demonstrating Natural Solutions to Climate Change

October, 2024

Love the land. Pass it on. 

Spanning over 600 acres with impressive frontage along the Betsie River, Misty Acres: The Borwell Preserve encompasses diverse wetlands, forests and wildlife habitat. It is also home to the Misty Acres Farm, a beautiful 75-acre farm on the Manistee/Benzie County line.

This land, along with its equipment, buildings and belted galloway cattle, was bequeathed to the Grand Traverse Regional Land Conservancy (GTRLC) in 2010 by Naomi Borwell, who inspired GTRLC to bring to life her vision for “a model farm for education and research.” The property offers opportunities to integrate agriculture with conservation goals and demonstrate techniques that balance these mutually beneficial goals.

In the spirit of Naomi’s vision, the Conservancy is enhancing sustainable practices at the farm while improving its existing infrastructure. Today, we farm at Misty Acres to demonstrate natural solutions to climate change.

REGENERATIVE GRAZING PRACTICES

Livestock, especially cattle, produce methane during their digestive processes, contributing an estimated 14.5% of global greenhouse gas emissions (according to data from the United Nations). Yet the grasslands they graze on can store these gasses and prevent their release into the atmosphere. At Misty Acres, the Conservancy uses regenerative grazing practices to demonstrate a way livestock farmers can mitigate and adapt to the impacts of climate change.

Regenerative grazing, also called rotational grazing, involves frequently moving livestock between pastures, allowing plants to recover and enhancing their natural

carbon sequestration abilities. During rest periods, grasses use photosynthesis to convert light, water and carbon dioxide into energy and sugar, and release oxygen into the atmosphere. As grasses draw carbon from the air into the soil, it is distributed to soil organisms, promoting healthier plants and deeper root systems. The deeper their roots, the more carbon they store.

In contrast, continuous grazing can lead cattle to eat grass to the ground, disturbing carbon stores and creating bare spots that are compacted and vulnerable to erosion.

Regenerative grazing also improves the land’s water infiltration capacity. Healthy, deep root systems capture water and nutrients more efficiently, and the cattle’s hoof action, which presses organic material into the soil with pointed pressure, prepares the ground to act as a sponge. This helps reduce runoff and increase groundwater recharge, enhancing the land’s resilience to extreme conditions like drought and flooding. This process also enriches the soil with organic matter, such as hay and manure, improving soil structure and fertility, increasing habitat for wildlife, enhancing carbon sequestration, and reducing the need for chemical fertilizers.

In addition, regenerative grazing provides access to better-quality forage and reduces the risk of parasites, leading to healthier, happier cattle. Grass-fed beef is also healthier for humans, offering more beneficial fatty acids, including Omega-3 and linoleic acid, less saturated fat, fewer calories, and no hormones, antibiotics or other drugs.



NUTRIENT MANAGEMENT & COMPOSTING

GTRLC's nutrient management system is designed to handle manure in a way that minimizes methane emissions and enhances soil health. Manure is stored in covered facilities to retain moisture and limit runoff, safeguarding water quality. It is also used to amend pastures in place, reducing the need for chemical fertilizers, and with proper management, limiting carbon emissions.

GTRLC conducts soil sampling every three years to monitor changes in organic matter and water-holding capacity. Additionally, Michigan State University Extension performs an Ecological Outcome Verification monitoring every year, which is an above-ground way of checking organic matter, water cycling and nutrient cycling processes. MSU-E also conducts a deep core soil sample test from the property every five years.

So far, data collected over several years indicate increased organic matter and higher forage yields. During the summer of 2023, the farm's pastures endured a prolonged drought with minimal watering. As this program progresses, the Conservancy plans to expand its composting efforts to further improve soil quality and reduce emissions.

POLLINATOR PLANTINGS

Thanks to funding from the NRCS Conservation Stewardship Program (CSP), the Conservancy is transforming 8.5 acres at Misty Acres into high-quality habitat for pollinator species by restoring the landscape with native plants. These plantings aim to promote biodiversity, control erosion, manage invasive species and reduce the need for chemical inputs.

GOATS FOR INVASIVE SPECIES CONTROL

In addition to cattle, Misty Acres is home to a small herd of goats used to combat invasive species on GTRLC's protected lands. The herd primarily works at Trapp Farm, one of the first properties protected by GTRLC, which was heavily used for agriculture before the wetlands were restored. The property had become largely overtaken by invasive plants such as autumn olive, honeysuckle and multiflora rose. The goats have stripped many of the plants of their leaves, effectively killing them and allowing native plants a chance to grow.

PRESERVING OLD GROWTH FORESTS

Farms often include forestlands for their myriad benefits, including water regulation, reducing soil erosion, supporting biodiversity, providing habitat for pollinators and beneficial insects, carbon sequestration and more.

Misty Acres is home to an old-growth forest that serves as a significant carbon sink. These ancient trees have been accumulating carbon for centuries, and store large quantities of it in their live woody tissues and the slowly decomposing organic matter in litter and soil. This forest's protection helps to mitigate climate change and preserve biodiversity. However, if disturbed, much of this carbon, including that in the soil, would likely be released back into the atmosphere.

MAEAP VERIFICATION

The Michigan Agriculture Environment Assurance Program (MAEAP), administered by the Michigan Department of Agriculture and Rural Development (MDARD), demonstrates how environmental sustainability and economic development can coexist. This multi-year program helps producers evaluate and mitigate the environmental risks of their operations while achieving individual objectives and optimizing resources.

The farm at Misty Acres has earned MAEAP verification in three key areas: Cropping, Farmstead, and Livestock Systems. This recognition highlights the farm's implementation of effective pollution prevention practices and sustainable agricultural techniques. By adhering to these verified systems, the farm demonstrates responsible farming practices that improve soil health, safeguard water quality and reduce greenhouse gas emissions.

COMMUNITY PARTNERSHIPS

In collaboration with the Northwest Food Coalition, which includes roughly 70 pantries and meal sites in Benzie, Grand Traverse and Antrim Counties, we are able to provide grass-fed beef at minimal cost to provide affordable, nutritious food to those in need. Additionally, we have formed partnerships with the Crosshatch Center for Art and Ecology, the Benzie and Manistee Conservation Districts, and local garden clubs hosting educational tours of the farm and nature preserve.

Photo descriptions clockwise from top left 1) Old growth forest at Misty Acres 2) Invasive species control goat herd at work 3) Monarch butterfly in a pollinator planting 4) Cattle grazing on fresh, nutrient rich pastures in the rotational grazing program.



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