Halifax County Improving Pastures
Project Demonstration
I would like to thank the following people who have made the Grazing Demonstration in Halifax County possible;

Michelle Lovejoy, N.C. Foundation for Soil and Water Conservation
Ben Winslow, Farmer
David Inscoe, Caledonia Farm Manager & Staff, Correctional Enterprises
The Fishing Creek Soil & Water Conservation District, Supervisors & Staff
Beth Burchell, Halifax County Cooperative Extension, Livestock Agent
Byron Currin, Vance County Soil & Water Conservation District
North Carolina ADFP Trust Fund
North Carolina Farm Bureau
North Carolina Cattlemen’s Association
NC State University Amazing Grazing Program

Will Mann
Fishing Creek SWCD
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The purpose of this Demonstration is to show that there is an opportunity to improve the quality of our grazing land and livestock in North Carolina. The systems that are being looked at are based on efficiency, simplicity, and time savings.

As a caretaker of the creation that has been provided to us, it is in our best interest to investigate what has taken place, what challenges we are currently facing, and how to prepare for the future.

Our soils are the starting place for all our traditional Agriculture Enterprises. It is our responsibility to recognize their condition, understand the need for improvement, and capitalize our Agricultural Enterprise through the process.

The availability of forage is key to capitalize on any livestock enterprise. The goal of our cattle grazing demonstration is to display a working example of how a traditionally managed system can be converted into an intensive managed grazing system. We hope that the field demonstration and this early report will offer both education and encouragement to those who are looking for change.

When the Ranch is in peace, no other life is more perfect.

Charles Goodnight, Father of the Texas Panhandle
Timeline

April 3, 2018    Initial Meeting at Caledonia to discuss the project
May 21          Fencing supplies arrived
May 22          Started establishing temporary fence
May 29          Herd consolidation and began grazing rotation
June 19         Temporary Water line arrived
July 3          Water line and first temporary tank installed
Below is the initial fence layout that we wanted for our demonstration. The map was designed in May. As the temperatures increased and the high percentage of Maturing Tall Fescue caused us to change this design. Changes were needed to provide shade for the cattle as well as rotating them off the Fescue.
Below is the revised map showing our new design. This map was developed in mid June. This is currently what we are following in the field. The cattle are currently grazing only the East side of the Permanent Fence that divides the pasture. The swing fence is an extension of the Poly Wire temporary fence to allow for access to shade and water.
Farm

Our demonstration is taking place at Caledonia State Farm. The farm is part of Correction Enterprises here in North Carolina. Caledonia has a history as a plantation dating back to 1713 and was purchased by the state of North Carolina for a correctional facility in the late 1800s. The farm consists of approximately 8,000 acres of cropland, hay land and pasture.

The pasture where our demonstration is taking place is 150 acres in size. Based on old aerial photos the area has been in pasture since the late 1970s. The pasture is predominately cool season grass mainly Tall Fescue with some Bluegrass. There is some Common Bermudagrass as well as Crabgrass found in the pasture. A variety of Ladino Clover is the only legume found in the pasture. Horse Nettle, Pokeweed, Pigweed, Dog Fennel, and Cocklebur are the predominately weed species found.

The soil types that make up our pasture demonstration include State Fine Sandy loam (StA,StB), Chastain and Bibb (CbA) and Altavista Fine Sandy loam (AaA). The State soil type is one of our highest productive soils in Halifax County. We are very fortunate to have this as the predominate soil in our demonstration area.

There is an existing fence around the perimeter of the pasture and a permanent fence that splits the pasture in half. Both fences consist of Woven Wire with two strands of Barbed Wire on top.

Farmer

Several years ago Caledonia liquated their cattle herd and started leasing their pastures. Dr. Ben Winslow is the farmer who is currently leasing the pasture. He is a forth generation farmer as well as a large animal veterinarian. He has a commercial cow herd that is comprised of large continental breeds such as Simmental, composite breeds such as Balancer, and English breeds such as Angus. His cattle operation is located throughout the southeastern portion of Halifax County. We are grateful that Dr. Winslow provided us with an opportunity to work with him and his cattle.

Objective

Through the Pasture Improvement Program administered by the N.C. Foundation for Soil and Water Conservation we wanted to demonstrate that a temporary, rotational based system could be implemented in an existing pasture system. Forage Utilization was the number one objective. We wanted to show that throughout weather changes and seasons, we could manage to have enough forage on site to maintain the 60 +/- cow herd.

Through the management or rotation of the animals we want to manipulate the species of grasses found as well as offer an alternative for weed control. By extending the rest periods by moving the cows off the paddocks, provides an opportunity for grass recovery as well as taking advantage of weather pattern changes. We also hope that this type of management will make an impact on Soil Health in the long term.
Planning the layout of the paddocks is the first step in a grazing system. To properly plan, you must know the number of animals you have on the farm which is your stocking rate, how many acres of available forage you have, how many animals you will have in each paddock that is your stocking density and how long the animals will be there to determine rest periods.

As we have said before in this report, we have 150 acres of pasture and 60 +/- head of cattle. We started with aerial photos to sketch out the paddocks where each one of them would be equal in acreage. We have included our preliminary map in this report. After multiple visits to the field and acknowledging the need to access shade and water, we decided to reduce the number of paddocks. When we reduced the number of paddocks we also changed the layout to take advantage of shade and the establishment of water.

To make our demonstration as applicable as possible we decided to go with a once a week move. The majority of our farmers who own cattle also have a row-crop operation that they typically view as first priority over the cattle. Many have told us in the past that Rotational Grazing takes too much time out of their schedules. We want to change that mindset with this demonstration.

To be sure the cattle were adjusting to the electric fence and to troubleshoot any other concerns we are currently visiting the pasture more than once a week.

We have included our map with our grazing schedule written on it. We would encourage anyone to develop a map and grazing schedule, but to keep it flexible with regards to Forage Development, the Weather, and changes in herd numbers.

At the time of establishing the grazing demonstration the Tall Fescue was reaching maturity and developing a seed head. Since the Tall Fescue has been established for many years there is a greater need to carefully manage the Endophyte toxicity and the overall health of the cattle.

Since the east side of the Permanent Fence that divides the pasture offers shade and more diversity in the forage we decided to move the cattle in early June. After the cattle were moved from the west side of the pasture, Dr. Winslow hayed approximately 35 acres and mowed the remaining acreage.
We had a very wet May as this photo shows from May 25th. This was an old hay feeding site on the West side of the pasture. You can see where the heavy use of the area had an impact on the growth of the Fescue.
Herd on May 29, 2018

This is one of the two Concrete water tanks that are on the farm

Soil Compaction Reading on the West Side of the Pasture
Some of the lower elevations of this pasture had a larger percentage of weeds present than the higher elevation. Mr. Winslow had Nitrogen and a Herbicide custom applied to the pasture earlier this year. We only can assume that the Nitrogen and the Herbicide was not applied to the lower areas due to the wet nature of the soils.

There has been a great amount of discussion about adjusting the stocking density of animals to impact weed populations. To test this we moved the cow herd into a 5 acre paddock that had a large amount of Cocklebur, Dog Fennel, and Pigweed for one week. After one week the cattle had done a good job at controlling the weeds. There was little impact on the Dog Fennel. If we had an opportunity to add sheep or goats to the demonstration we may have had a larger impact on the Dog Fennel.
More photos of impacts from cattle grazing

July 10, 2018

July 20, 2018

(Tank was moved into place on July 10)
Photos taken on July 17, 2018 of the west side of the Pasture. After the cattle moved to the left side, Mr. Winslow cut approximately 35 acres of the remaining Fescue for Hay. He was able to produce 70 bales from the acreage. The yields were good when you take into consideration that the Fescue had been continuous grazed all year and we had Rotational Grazed the pasture from May 29 through June 26.
As we moved the cattle from this area we had not received any rain in almost two weeks. The lack of rain combined with daily temperatures above 90 degrees Fahrenheit, the grass that was remaining looked very tough. On the week of July 23 we started to receive rain on the site.

On July 30, the paddock had started to green up and the vegetation was showing signs of growth. At midday that site received more than 2 inches of rain. The soil had become saturated to the point that there was some runoff. Though the runoff was clear, there are some concerns regarding the Infiltration Rates of the soil. At this time there have been no soil health measurements made on the site. We hope to at some point make measurements to see where we can make improvements.

*Shade can be important in the layout of the grazing paddocks*
Impacts from Cattle Grazing & herd on July 26, 2018

Grazing Impacts after one week on a drain in the Southeast corner of the Pasture
Grazing Schedule
Fencing

To help implement the rotational grazing system, temporary fencing needed to be established. We chose to go with a Poly Wire—Maximum Voltage from Pasture Management.

Aside from the Poly Wire we chose Fiberglass Posts for corners and where there is an elevation change. For the line posts we chose the Heavy Duty Yellow Tread In Post.

Pictured Left to Right: Tread In, 11/16 in x 60 in Fiberglass, & 7/8 in x 60 in Fiberglass

Energizer we are currently using Stafix STX SXS solar unit with battery
Two types of Fence testers available

*StaFix Fault Finder*                  *Economical Light Fence Tester*

It is recommended to have a good testing device for your electric fence system. They are well worth the money to help troubleshoot current flow in the fence.

Two types of Poly Wire Reels available

*Geared 3:1 Fence Reel with Insulated Hook*                  *1:1 Ratio Fence Reel*

The reels have been great in order to move a Poly Wire fence from one location to the other. The Geared reel offers a smoother operation and has a guide that the Poly Wire feeds through which reduces the risk of the wire wrapping outside of the reel.

*Screw In Insulator to tie in the Poly Wire to the Permanent Fence. The Poly Wire runs through the Fiber-glass Post for additional support*
Permanent Fence that splits the pasture

Using Poly Wire to fence out drain on Southwest Corner

Poly Wire used at Drain Crossing
Poly Wire Fence Layout June 5, 2018

Poly Wire Fence Layout July 10, 2018

Poly Wire Fence used as boundary for cattle trail
There are two existing concrete tanks located on the pasture. The location of the two tanks are not conducive with the grazing layout, so a temporary water system is needed. The lack of water or how to establish water at various locations across a pasture are two common reasons we hear as to why someone does not do Rotational Grazing. We have spent time focusing and learning on how to make this component effective and economical in our demonstration.

We are fortunate that there is an existing water supply valve that was available to tap into. The supply line we chose is a 3/4 inch Micro-Irrigation Round Supply hose. This was chosen because of its ability to lay flat on the soil surface as well as it was a more economical choice. Based on its cost, the irrigation supply hose is one third the cost of the traditional roll black pipe. Currently, the pipe is laid throughout a portion of the pasture on the soil surface. As we get closer to the Fall and Winter months, we have discussed the possibility of burying the pipe. After some discussion with various suppliers the hose does offer some advantages in not freezing as quickly as traditional pipe, but that is something we will need to experience first hand to know for sure. The pipe has shown tremendous durability from cattle walking on it to the pickup crossing over.

A word of caution—the pipe does pinch or kink very easily. A recommendation is to connect the pipe to a water source and as pressure builds in the line, start walking from the water source to the outlet to remove any pinch or kinks.

The pipe comes in either 500 or 1,000 foot rolls. Neither size roll is very heavy, so carrying the pipe is not a challenge.
Unrolling the pipe is a tremendous challenge. The 500 foot roll is preferred for installation due to the unrolling challenge. As the 1,000 foot roll unravels it can become a tangled mess with many kinks knotting up more pipe becoming even a greater problem to unroll.

The connections in the line are accomplished through the use of 3/4 inch Barbed type fittings and Stainless Steel Hose Clamps. Both the fittings and hose clamps can be picked up at any hardware store. Thread tape is very important in all connections where there is a threaded connection. It is not needed on a Barbed connection.

*From top clockwise: Thread tape, Stainless Steel Hose Clamp, and Barbed type fittings*
The connection from the water supply hose to the stock tanks was accomplished through the use of 3/4 inch Quick Connect Valve and Risers.

![Quick Connect Valve and Riser](image)

Quick Connect Valve          Quick Connect Riser

The connectors have proven to be very durable, quick and easy to use. They can tolerate muddy conditions without any problems as the photos below show.

Where the valve and riser were found, the herd had gotten out of the fence and trampled them. Nothing broken was found and the valve was able to reconnect with the riser without any problems. We would highly recommend these connectors.

Connecting the water supply to the tank was accomplished by a 6 foot rubber Washing Machine Supply line. We had tried to use a small piece of the 3/4 inch Irrigation supply hose to connect the stock tank to the valve, but due to the lack of rigid construction in the hose, it eventually developed a split where it had kinked and started to leak. The Washing Machine supply line we chose was the cheapest one that we could find. Most plumbing supply companies as well as hardware stores carry them. If someone uses a Washing Machine supply hose, a word of caution, on some types of hoses there are two types of threads found. A pipe thread and a hose thread. The difference between the two is that the hose thread is a coarser thread.
And the threads are spaced further apart than the pipe thread. We learned this the hard way. Our supply line did not fasten securely to the Jobe Valve in our water tank, which eventually leaked. When the cows were able to get to the supply line, they pulled it off the valve causing a small pond in the pasture! We were able to fix the problem with a Brass coupling that connects the Hose thread on our supply line to the pipe thread on the Jobe Valve in the stock tank.
Photo above shows before and after what will happen when the waterline is not securely fitted and the cattle have free access for two days. This also shows the need for Heavy Use protection for areas that have long term use.

Stock Tanks

We chose 100 gallon plastic stock tanks for our demonstration. Though some may think they are undersized for the size of the herd we have, they have proven to be sufficient so far. The water consumption by the cattle has easily maintained a constant level of clean and clear water. When we first received the tanks there were some concerns regarding the stability of the tanks in the pasture and how to move them from one place to the next.

There were many designs as well as materials that were looked at for the construction of some type of base for the tanks. We decided to go with a frame that is constructed with Treated 4 x 6 and 4 x 4 timbers, fastened with 3/8 inch Galvanized Carriage Bolts. The reason we went with the wood construction is that anyone who has an interest in the demonstration can take the idea and construct something similar with simple carpentry tools and skill.

To fasten the stock tanks to the wooden skid we used Eye Bolts on one and Large Hooks on another that are fasten to the Treated 4 x 6 skids. There are two methods of holding the stock tank to the wood skid that we are looking at. One has 4 metal straps holding the tank and has 4 Eye Bolts so that you can tie a small piece of rope to either end and drag the tank. The other skid we attached to large hooks to the 4 x 6 runner to fasten a Nylon Ratchet strap to. Both types of fasteners have worked so far.

A lesson we learned using the Ratchet Straps is that it is best to place the tank at least half way beneath the Poly Wire fence. If the cattle are given full access, they will flip the tank eventually loosening the tank from the skid.
Tank fastened with Nylon Ratchet Straps. Note: Float of the Jobe Megaflow valve is near the rim of the tank. Also the Poly Wire is half the width of the tank. You can also see how we have the portable Energizer and Ground Rod set up on opposite side of Permanent Division Fence.

Tank fastened with Metal Straps. Skid construction is the same for both this tank and the one with the Ratchet straps. Holes were drilled in the rim and two 5/16 inch treadered rods extend across the top to hold the tank.
This tank was flipped by the cattle. No damage found.

The tank that is held with the metal strips was flipped by the cattle. We had a wire go down and the cattle damaged the water supply line. The cattle gained full access to the tank, they flipped the tank and emptied the tank as a result.

Where to place the Jobe Megaflow valve in the tank has been challenging. In our first attempt the valve was placed too high and the ball float would not shut off the valve before the water would spill over the edge. There is a string that comes with the valve that attaches the valve with the ball float. We tied the string as close to the ball float as possible, but this did not help the situation. In our second attempt we moved the valve below the half way point of the tank and on the side rather than the end as we did previously. This has worked so far. We have had some further discussions regarding moving the valve further down in the tank. By moving the valve further down the tank it will reduce the possibility of the tank running over and reduce the possibility of it freezing during the winter months.
Moving Forward

We have received over 6 inches of rain at the demonstration site in the last two weeks. There should be sufficient moisture for the summer annuals like Crabgrass and perennials like Common Bermuda to provide us with forage for the remaining portion of the summer.

We have plans to set aside paddocks in early September to go ahead and start allowing the Cool Season grasses to grow to provide us with stockpiled forage for the winter.

In September we also plan to get some weight measurements on the cattle. At this time we have not done anything to gather information and document the cattle’s performance.

We would also like to do measurements for Soil Health as well as for Forage Quality.
### Parts Inventory—Pasture Management Systems

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**Items from NC Foundation for Soil & Water**

### Parts Inventory—Berry Hill Irrigation

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**Fishing Creek SWCD Does NOT Endorse any Company or Brand of Product**
**Parts Inventory— Lowes**

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