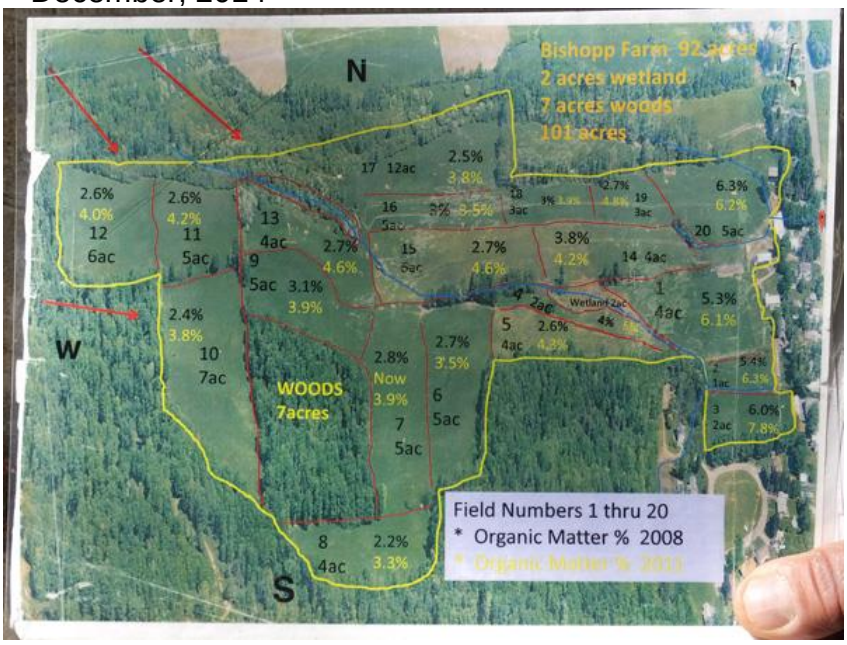
Grazing Success Through Observation and Planning at Bishopp Family Farm

Jack Kittredge · December, 2014



This aerial photo is Troy's home farm. The road runs up and down on the right edge and the land rises as you proceed to the left, or westward. Photo by Jack Kittredge

Agriculture is still one of the largest industries in New York state. It contributes 5.7 billion dollars to the economy each year, and occupies almost a quarter of the land area. That importance is obvious as one travels through central New York along the Mohawk River and the route of the old Erie Canal and sees the gently rolling hills, large fields, and occasional barns and farmhouses.

Troy Bishopp is privileged to be a fifth generation farmer at one of these farms, Bishopp Family Farm in Deansboro, southwest of Utica. The farm, once a dairy operation like so many in New York, boasts 101 acres – most of them lush pasture sitting on a limestone hill. Several springs in the middle of his land have been piped to fill tubs that water animals, providing an excellent year-round gravity fed plumbing system. The paddocks containing the tubs are left open so that animals in nearby paddocks can always have access to water.

With 20 years of experience grazing cows, Bishopp was hired by the county Soil and Water Conservation District as a grazing specialist. He talks, writes, and dreams about grass, and is working to be the world's best grass farmer.

One of techniques he uses is meticulous record keeping to help him build soil organic matter in his pastures. You can see some of his careful work on the aerial photo of his land, on which he has superimposed yellow lines showing the high tensile boundary fence, red lines showing the paddock fences, and text describing the land, giving paddock acreage and listing percentages of organic matter in 2008 and 2011.

“In 2008,” he says, “when we started doing planned grazing and keeping good records, we took soil samples. Those numbers are in black on the map. Then in 2011 I took samples again to see if the mob grazing, longer rest periods, hay out on the land, rolled bales, and other things I did had made a difference. Those numbers are on the map in yellow. Just a week ago I took new samples for 2014 and I’m interested to see how the farm is doing.”

Right now Troy is grazing animals on contract for people who don’t have enough land of their own. Besides his own acres of pasture that are divided into 20 paddocks, he rents another 60 acres locally – divided into 7 paddocks. These he grazes in short, intense bursts with long recovery periods. In the winter he feeds hay once the snow and ice make it impossible for the cattle to get at the grass. This hay he buys in, but charges the owner of the herd for, and considers a major resource for building his land’s fertility.

“I have those soil tests in all my paddocks,” he relates, “so I know where to have the cows when I feed that hay. It will bring the fertility up. I’ve been grazing these fields for 18 years and I’d like to double my organic matter. Over the whole farm it averages 4.6%. Near the barn, is where all the manure was spread by my grandparents when this was a dairy, so that is where the high fertility is. Those fields are pushing 7% to 8% organic matter. At the top of the farm, on the hill where they cows are now, it is more like 4% — but it used to be 2% or 3%. We were always saying ‘It’s easier to spread closer’ and weren’t in the mode of thinking of fertility as our main goal. I started thinking that way when I got into holistic management. I woke up then and we started outwintering, bale grazing, stockpiling!”

With his new soil tests Bishopp wants to find out the results of all his efforts at mob stocking, fallowing, manuring, and sending that hay back into the soil. He paid special attention to field six this year — cutting it into 6 strips so all the cows were concentrated on just one-sixth of the field each day. His goal was for them to eat grass, sure, but also do a lot of trampling, to get soil/seed contact and bring up the organic matter in the soil. But in other fields he shoots for more eating and better animal performance.

“It is basically the management of fencing,” he says, “that gives me the effect I’m looking for. The beauty here is there is no back fence. If the cows want to regraze some of this they can. I try to keep leapfrogging fences so if I’m out of town or can’t be here I’ll have several days of fences set up. My wife can come up here, take a fence down, and that is all she needs to do. This is what I do every night after work. It’s no different if it is wintertime or summertime. I just take fences down and give them growing grass. That’s pretty much the extent of it.”

“That is how grasslands evolved,” he continues, “with a concentration of grazing animals. There was no control other than wolves. We want to get this organic matter up because when we do we sequester more carbon and more water.”

For years Troy had his own cattle, but eventually sold them. Then he had a client who raised beef and counted on Bishopp to grass-finish the animals. But that client died.

“Now I’m a contract grazer,” he says. “That is our claim to fame. This is a grass farm. My reputation is what makes things roll. We’ve grazed every kind of animal. I’ve had

conventional heifers here from a CAFO farm, but today we're grazing organic dairy heifers — I'm certified organic by PCO (Pennsylvania Certified Organic). Tomorrow it could be beef, or anything. We have morphed in various directions as we needed to. I have a standing order. If something bad happens, I pick up the phone and I'll have customers."

The heifers currently on the farm come from an organic dairy in Pennsylvania. Troy has been working with that dairy for three years. They don't have enough land and were feeding hay as early as October because they ran out of pasture. Using Troy's land is a way they can keep their animals on pasture longer and feed less hay, for a significant cost saving. Bishopp will ship the heifers back to Pennsylvania in January before their March calving date, and on the return trip will receive a load of 55 to 60 weanlings. The young ones will have been on grass until the trip, but are on hay at his farm for three months. They are only half the size of the heifers and therefore eat half the hay.

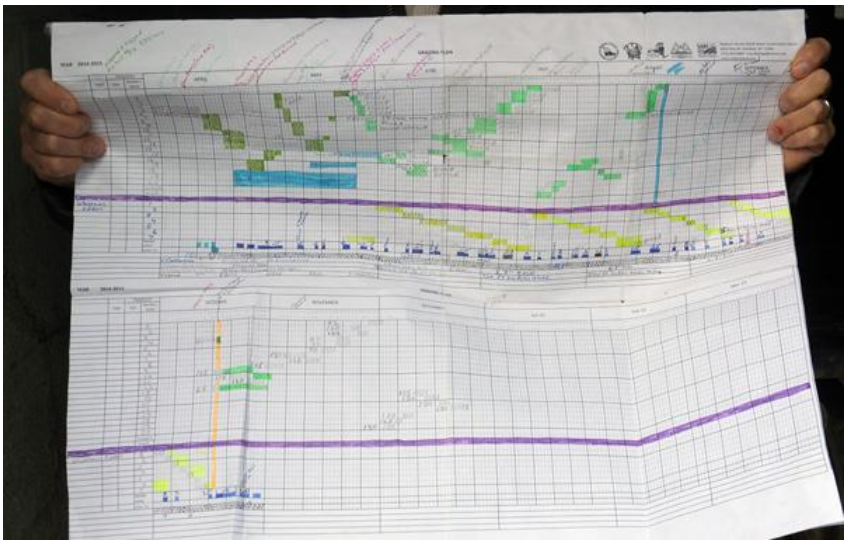
Troy is pleased with the contract grazing arrangements.

"We're following a program with these heifers," he explains, "and it is working well for both of us. I'm working with organic milk companies that want to have grassfed milk and they want the grass utilized even farther into the season. I charge $1.20 per head per day. If I graze 60 head at $1.20 a day I'm making $72 a day. So for ten minutes I come up here, move the fence, walk away, and get $72. That's not bad. Of course, there is a heck of a lot of planning that goes into doing extended grazing.

"Then in the winter," he continues, "I charge around $1000 a month to get out of bed, start the tractor, and feed the hay. That comes from another certified organic grower. Everything is paid for by the guy in Pennsylvania. I'm essentially a paid babysitter. I have to make sure the cows are healthy and if there are problems I have to deal with it. But he pays the vet bill, if needed."

And, of course another benefit to Troy is the hay he gets trucked in from another farm. He figures that in each ton of hay there is about $50 of fertility – organic matter and nutrients. His goal is to increase fertility and if he can do that in part with free hay, great. He made the mistake a couple times of making hay on halves. It was his land and he would get half the hay, but the other half got shipped off. That was his fertility leaving his land! The way to stay ahead, he figures, is to always be bringing in fertility. He sends some off on the backs of these animals he ships out, he admits. But he says you need to figure in the cost of replacing those nutrients.

"Part of Holistic Planned Grazing," Bishopp explains, "is that you plan your fields individually, as a whole. So you try to get the maximum fertility on your low producing fields – you feed hay there, then let livestock graze. You also pick a fallow field where you spread all your manure and let everything there grow like prairie. Then you finally use it when you go on vacation. There is enough feed there by then that it is four or five feet tall. When we do that we strip graze it and the cows eat all the seeds and understory and pummel the rest into the ground. Then my dad comes up and mows it so it is really great grazing when the grass comes back.



This chart shows Bishopp's grazing plan for 2014, and the way it actually worked out, paddock by paddock and day by day. Combined with the aerial photo of the farm, these tools provide a close look at Troy's land management strategy. Photo by Jack Kittredge

"There are a thousand ways to graze this land," he continues. "You could cut it up more, or into quarters or halves of paddocks. You could just open the gate and let them graze it all. It depends on what you want. If you want to go away, let them graze a lot. If you want efficiency, graze in small amounts. I'm into getting the most out of this land to make the days of grazing last longer so they last into January. And I want concentrated poop in certain areas. I've spent my entire summer making this grass. I want to be careful how I dish it out. For every day they stay here I make money. When I get on that tractor to feed the hay I don't make any money. I don't even like it."

To help him plan his grazing for the coming year, Troy uses a grazing chart. The paddocks are listed down the side, first the home 20, then the rented 7. Across the top are the months, divided into groups of 5 or so days, with each small vertical line being a day. There is also room on it to note things like rainfall, manure spreading, planned days away, etc. Each X is what Troy has planned for grazing that day. Before a group of Xs starts in a paddock he writes the number of days that forage has been growing back without grazing. Each cell filled with green is what was actually grazed. So he planned to get some grazing done in early April in paddocks 4, 5 and 6, for instance, but didn't get the cattle out grazing until mid-April. Most of his planning, however, was right on.

"Here we are on October 30," Bishopp shows me on his chart. "The heifers came off the rental farm and got back here October 17. They grazed one day on paddock 4, then I walked them up to this paddock 13, and number 10 which 13 waters. I had planned on there being enough feed there for 5 days, but there was enough for 9 days. So I'm ahead. I underestimated the ability of the forage. Now they are in paddock 11. I may be a little ahead there, too.

"I plan out my moves," he continues, "based on what I've seen and what I measure of the grass. I planned this period back on September 20 based on what I saw. On my website I have a video I took then showing pictures of every field, 1 through 20. I may not have got everything right, but it shows any farmer how to plan. It is not hard. You

have an inventory of grass and hay, you dole it out according to weather and feeding demand, and you get to this point. But most farmers don't plan, they just do. Of course I have to factor in seasons and frosts and how fast fields will grow back based on a number of factors. I figured a killing frost October 10, but we will probably get it Friday night, the 31st. So that is 20 more days of growth. The grass has been sitting in those fields growing all summer. We will graze if off now, but it will still be healthy and grow more grass in the spring. I haven't done anything input-wise. All I am doing is managing the animals according to the growth rates I see in my pasture. I'm working with nature."

Troy says his organic certifiers love the chart. It is a great verification tool. He has it on his website for free, downloadable as a pdf. To get it large enough for a big operation you have to take it to a printer and have it blown up – he did his for about $4. He also works with people at to get grazing information our to the public.
Troy is into what he calls 'stockpile grazing'. The grass in most of his paddocks has been resting for 60 to 130 days, to be grazed until early January. It's on the ground and is like having money in the bank. But managing it is all about the weather. He knows how much feed is there on the ground and can calculate how much the stock is going to eat. But eventually the cold and the snow freeze on the ground and keep them from eating what is there.

So all this grass has been stockpiled and is sitting here since August. It is very healthy and when spring hits, the grass is strong. As soon as it is decent weather he can put stock out and he ends up usually two to three weeks ahead of everyone else.

"I take care of my grass," he stresses. "If you graze the hell out of it before the frost, pound it to get every bit of grass, then you have weak plants going into winter and weak plants coming out. The ultimate goal is to graze 365 days a year. But that doesn't happen in the northeast. So livestock are not grazing in January and February when they can't get at it, and March is usually mud and not good for grazing. So we feed hay then. We go back to pasture as soon as we can. One year it was as early as April 6. That doesn't happen much, that early. Last year it was almost the end of April.

"Part of leaving a paddock to rest," he continues, "is giving all the plants in the sward a chance to regrow and express themselves. That's the way nature does it. If I wanted to get more legumes in here it's easy – I just take the grass out. I graze it tighter. Whatever grazing technique you use favors one plant over the other. I like to have it all. But if I leave it too tall I lose some of my legumes because they are shaded out and don't get the sun they need. If I graze too tight I get too much legume and not enough grass, therefore not enough tonnage, not enough dry matter per acre."

The problem for most people in grazing, he says, is they have too many cows. Using his system you can calculate how much feed you have and how much you can produce. That will then tell you the number of animals you can support. But another consideration in a dairy operation is that the animals are always short of energy, not protein. On average a dairy animal only wants about 16 to 17 percent of protein in their diet, and that is already in most forage. So you need to manage your sward accordingly.

In Holistic Planned Grazing, Bishopp adds, you use some mechanical tools. One is a bush hog mower. Troy goes in after the cows are out to cut the weeds that the cows

didn’t eat. If he does a really good job grazing, he says, he doesn’t have to mow — he’ll manage the animals to eat and trample what he wants. Sometimes if he wants to get rid of a particular weed he will wait until it has gone to flower and seed — that provides a source of food for the bees. Then he’ll mow it because at that point the least energy is left in the roots.

Part of Troy’s strategy in the fall is to get the cows off the top of the hill before the big snows hit. Those are paddocks 10, 11, and especially 12. If there would be a hard winter storm with them there, he’d worry about their exposure. He’d worry a lot less if they were halfway down the hill where the winds aren’t so strong. So his plan is to get the top grazed off before December. It took about 120 days to make the grass in those paddocks, and that resource has to be managed.

“You can’t just let them have the whole thing,” he insists. “They will shit on it, walk on it, they won’t eat it efficiently. It would be like putting a bunch of hay out without feeders and they would just wreck it. So if I want more efficiency I move them more often and give them a smaller area to graze. You get a better manure distribution.”

Bishopp reels up a strip fence to open up an alley so that the cows at the top of his hill can return to the strip they got out of. Photo by Jack Kittredge

During my visit Bishopp was strip grazing paddock 12 to make it more efficient by cutting it into 6 strips with portable fencing. Unfortunately, about half the herd somehow got past the portable fencing and was grazing an area reserved for later. I watched Troy deal with getting them back together in the right area.

He was pretty calm: “The cows are out of the strips I set up! I wonder how they did that. This is not good at all. They’re not where they are supposed to be. They’re supposed to be in the strips so they graze one strip each day until they get to the top of the hill. I’m not very happy right now. I’m going to have to get them back to where they were.”

Fortunately, or perhaps born of the wisdom of much experience, he had turned off the fencer at the barn before we drove up to the top of the hill. So he proceeded to take

down enough strip fencing to make a way for the cows who had somehow gotten past the fence line to come back.

“Around the perimeter of the farm,” he said, “is a three strand high tensile fence so I’m not worried about cows getting out onto other people’s property. Hear those cows that got into the wrong strip — they’re not happy. They want to be with their buddies. That is a way for me to manage them. I want my animals under my control, not going where they choose.”

Once the strip fences were down, the trespassing cows quickly returned to the others in the proper strip and Troy reset the fences. The whole thing took maybe 15 minutes.

“I have a full time job,” Bishopp observes, “and this normally takes me 10 minutes. It pays well for that, even if it took me 15 today! I like it up here, too, sometimes I’ll have a beer. It is exciting. How many people can feed 60 animals in 10 minutes?”

Bishopp feels strongly that you need to let your pasture go to seed occasionally.

“If you graze without adequate rest,” he insists, “you never let your grass go to seed. There used to be this mentality to always graze it at 8 or 10 inches and never let it get a seed head. But that is not really the right approach. I need seed heads in certain fields. You have to rotate so each field gets to reseed itself. If I manage my pastures to reseed themselves, I don’t have to buy seed and do it mechanically. Maybe if we bung up and let a pasture get muddy, sure we can throw seed in there. There may be reasons to reseed your pasture, but on this farm if we manage correctly they will reseed themselves. Farming is about money and management. If you don’t have money you can’t pay your taxes or even keep your farm.”
Troy rations out what forage he wants the herd to eat in a day. If he has calculated it right, he says, they eat what he wants and leave what he wants.

“There is a certain amount of dry feed equivalent in a pasture,” he explains. “If it is fairly dense there are about 300 pounds of dry feed per inch of height in an acre of growing forage. There are almost two feet of forage in this paddock here. So, conservatively, if there are 16 inches of grazeable grass here, times 300 pounds per inch, that is 4800 pounds of dry hay equivalent in an acre of this ground. This herd will eat 3 to 3½ % of their body weight in feed per day. If they each weigh 900 pounds they’ll eat 32 pounds or thereabouts of feed. A herd this size, 60 animals, will eat 1800 to 2000 pounds of dry equivalent per day. So that 4800 pounds per acre, divided by the amount they need per day, 2000, gives you a number — 2.4 — of days they can be on an acre at this height.

Troy shows off some of his dense pasture grass. Photo by Jack Kittredge

“Generally,” he continues, “I figure for grass at 12 inches this herd can eat down roughly 0.6 acres a day. This strip is 300 feet wide by about 80 feet. That is 24,000 square feet, somewhere in the vicinity of 50 to 60 percent of an acre, give or take, so it is about right for a day. I’d call this a dense pasture. If you can’t see the ground then you have a lot of forage and it is dense. If it is not as dense then maybe you can’t give it as high a score and you are at 250 or 200 pounds per inch. Maybe you have only 10 inches. Then you have to give them more area. It is all relative.”

One of the things Bishopp stresses is the value of diversity in the plant mix. Diversity gives you growth no matter the season, or whether it is wet or dry, warm or cold. But diversity is also crucial as grass will provide certain nutrients whereas forbs and other plants have different chemicals and minerals to enable a more diverse meal. Instead of going to the salad bar and eating only lettuce, he wants the cows to get a whole salad!

“I’ve been doing this 20 some years”, he says. “I can look at this pasture and say ‘Yeah, there are so many pounds of feed in there’. I know what I’m doing. But now that I’m a teacher I’m trying to tell people how I do it. I want to be the world’s best grass farmer. I want to sequester carbon, I want to sequester water, I want to build organic matter. I want to be the best — and that keeps me driven!”