

Testimony of Curtis E. Sayles, Owner & Manager, CSF Farms - Seibert, CO

U.S. Senate Committee on Agriculture, Subcommittee on Climate, Conservation, Forestry, and Natural Resources

Hearing on: High Plains: Combating Drought with Innovation

June 26, 2024

Chairman Bennet, Ranking Member Marshall, and Members of the Subcommittee:

Thank you for letting me speak to you today on the tools and processes we've been incorporating over the years to combat the erratic weather patterns that seem to be becoming the norm. Our farm is entirely "dryland". This means we do not irrigate any of our crops so we're completely at the mercy of nature for our moisture. The more erratic the weather, obviously, the more erratic the results of our farming endeavors. Obviously to weather these erratic conditions one needs to build resilience into the system.

I'm a fourth generation farmer from Seibert, Colorado just 30 minutes west of where we are today. Most of my family's farming history began in eastern Kansas. My father diverted from that by first going to southeast Kansas, Alberta, Canada and finally eastern Colorado. I was not going to be a farmer. I didn't want to spend the rest of my life "polishing a tractor seat" as it seemed I would. This was a youngster's perspective. Nevertheless, after going off to college and a brief engineering career in the oil industry in Houston Texas, I returned to my farming roots. My father was wanting to expand, and although I enjoyed my engineering work, I didn't care for the big city lifestyle. I returned to help my father in 1980. I married my beautiful wife in 1982. We have three lovely daughters, two great son's-in-law and six charming grandchildren.

We purchased our first farm in 1985. By that time we had already decided to practice "conservation tillage" meaning leaving as much residue on the surface as possible. In addition, we moved to a 2 crop in three year system in a traditionally wheat-fallow area. By 1997, our farm had grown to a point that we needed to hire more help and/or buy more machinery. About this time, Monsanto was sponsoring a conference called "The Main Event". Combine that with a farm tour that included the Dakota Lakes Research Farm, I told my wife that I thought we should pursue the new no-till "thing". It wasn't really new but reintroduced in our area. So, in 1997 we sold all our tillage equipment, bought a sprayer and no-till drill and started continuous crop zero-till. Our crops at that time were wheat, sunflower and millet. Shortly after, we added dryland corn to the rotation. We were noticing some good things in our system. Soil tests indicated that we'd increased our soil organic matter from less than 1% to 2%. That doesn't sound like much but bear in mind that each percent represents 20,000 gallon per acre moisture holding capacity. The soil tests also indicated that our need for added phosphate was decreasing. Even to the point of no recommended addition on some crops. This suggested that the promised nutrient cycling was in fact happening. Water rarely ran out of our fields although it would pour out of the adjacent tilled fields. We had increased our infiltration tremendously. We were starting to build drought resilience in our system. Also, I was so proud that I could take you out into my field and show multiple years of crop residue. There would be wheat stubble, corn stalks and sunflower stalks. I really knew what I was doing.

Unfortunately, there were some bad things going on in our system as well. Our organic matter had plateaued. We struggled to break the 2% barrier. We also had increased our risk by, routinely spending in more than \$100,000 in both chemicals and fertilizer. This all came to a head in 2012. The extreme

dry year, high chemical and fertilizer bill and inadequate crop insurance payment was a sobering indication that we didn't have the resilience that we needed. Luckily, we'd built enough equity to get ourselves out of the predicament, but the lesson was learned. About this time, my nephew, who sat on the No-Till on the Plains board, told me I needed to get to that conference. They were talking about this new soil health movement called "Regenerative Agriculture". The conference was in year three of this movement, so the caliber of speaker was beyond beginner. It was much like trying to swallow the water out of a firehose. Not only extremely humbling to a guy who was supposed to "know it all" but mind blowing to learn about how much was going on in the soil biologically and what it could do for our cropping system. In 2014 we decided to adopt the principles of Regenerative Ag. We were already utilizing minimum soil disturbance and leaving the ground covered. Now we started incorporating cover crops and integration of livestock into the rotation. At the same time, we increased our crop diversity by adding cereal rye, oats, buckwheat and safflower to our arsenal. We now utilize polyculture instead of monoculture when possible. About this time, we were introduced to Dr. Meagan Schipanski, a researcher from Colorado State University. She wanted to study the holistic system that we were building from a system-based approach instead of the traditional research model. From this research we learned that the residue I was so proud of was an indicator that our soil was biologically dead. The organic matter plateau was a function of the fallow periods imbedded in our continuous crop zero-till system. Her research showed that the cover crops and grazing were decreasing our bulk modulus, an indicator of increased infiltration, and increasing our soil organic matter. Our organic matter now routinely scores in the upper 2% with some fields breaking 3%. Utilization of the Haney and PLFA soil tests indicate that our soil biological populations are increasing with a corresponding nutrient credit being created. This is pretty much where we stand today.

We didn't get here by ourselves. We've had some government help along the way. In 2015 we enrolled in the Conservation Stewardship Program. The enhancements that were detailed were exactly what we were attempting to employ. Unfortunately, we soon discovered the program was not patterned for large scale utilization. It, at that time, was more designed for small demonstration size projects and not incorporation into a 5000-acre farm. We were forced to withdraw from the program because it was unworkable on our scale. On the other hand, I've heard of numerous examples of people having good luck. The Schipanski research, on the other hand, was invaluable. Not only did we learn, but we received proven verification that our system was performing like we had planned. Following this project we enrolled in the Farmers Advancing Regenerative Management Systems program, FARMS for short that was funded by a USDA-NRCS grant. This program supported producers who were building comprehensive soil health management systems on their farms. The program enrolled growers from the Colorado, Kansas and Nebraska area. This put everyone in contact with a broad range of experience, soil type, rainfall and enthusiasm. The most unique trait of the program was the mentor/mentee format in which new adopters had access to long term practitioners for information, advice and, most importantly, support. This program created long term lasting support for Regenerative Agriculture and the techniques learned. Last year we were asked to participate in a Western SARE grant funded project called FARMS Beyond Yield, helping indigenous and black farmers understand and utilize regenerative techniques. Lastly, we've recently enrolled part of our farm into the NRCS Transitional Organic program. This is a three-year program to assist producers during the three-year organic transition period. If successful, we hope to have a regenerative organic acreage in three years.

It's no secret that agriculture is one of the riskier businesses in the U.S. Increasing land prices, increasing input costs, high machinery costs and persistently low commodity prices continuously ratchet up this risk. Earlier this spring, Dr. Jerry Hatfield, Agricultural Research Service Senior Researcher, addressed the 2024 High Plains No-Till Conference and shared that most, if not all, farmers in our region are now farming the soil "B" horizon. To quickly explain, the soil is divided into layers, known

as horizons. The “A” horizon is more commonly known as topsoil, while the “B” horizon is a more basic substrate and so on. The topsoil is the rich, high-carbon layer of soil built up over eons of natural processes, long before man started tilling the soil. The topsoil layer functions as a whole ecosystem, the foundation of which is soil carbon. Tillage exposes this soil carbon to the atmosphere, and triggers its loss as carbon dioxide into the atmosphere. In the High Plains, the intact shortgrass prairie had more than 5% soil organic matter. In the 100 years since the prairie was broke, tillage agriculture has reduced levels of soil organic matter to less than one percent. For many years, conventional tillage was the normal cropping system. It still is for many farmers today. However, tilling the ground is a consumptive system. Meaning the system is always being used up without the ability to rebuilding the resource. I think I’ve always known this fact but hearing it articulated by Dr. Hatfield really hit a note with me and likely resonates with other farmers who grow crops in the former Dust Bowl region. Also, this indicates why sustainable agriculture is not an option. We can’t profitability sustain a degraded resource. If we want to pass on a usable resource, we will need to regenerate it.

I’d like to preface my final comments by saying that I firmly believe that few farmers are intentionally harming the soil. Some may be influenced by tradition, “this is the way we’ve always done it and it works”. It does work, as indicated by the successful producers in agriculture. But at what long term cost. If we keep treating the soil like a growing medium without thought of regenerating it, we’ll be locked into a spiral of increasing fertilizer and chemical usage. Without carbon in the soil, we’re never going to have the resilience to moderate a changing climate. This has to be a philosophical change. I would like my legacy to be a farm where I watch my grandchildren grow up healthy. I’d like not to worry about them, around the farm, getting into something and I’d really like to pass on a farm that is not yoked to chemicals and fertilizers for profitability.

So, I think farmers first must understand that they have a problem. Big items like algae blooms in the Great Lakes and Gulf of Mexico have to be recognized as failures of modern agriculture. I recently read erosion silt is being deposited in the Gulf of Mexico at a rate of two tons per second. I don't know how accurate that is but we’ve all seen the Mississippi. Closer to home we’ve had recent dust bowl day magnitude wind erosion events and adjacent fields washing out the county road with silt because of a one mile, unobstructed erosion run. This is accepted as a cost of doing business instead of something bad that should be avoided.

Traditionally, farmers are long on problems and short on solutions. I may not be any better, but I do have some ideas that I would like to put forward. First, we’ve got to maintain and enhance the main risk tool available to farmers, Federal Crop Insurance. It has to be recognized that crop insurance companies are “for profit companies” and that profit has to be maintained or they leave the arena. As I see it, the first problem with crop insurance is, if you use it, your APH or proven yield goes down (this would be comparable with your auto coverage going down) at the same time your premium goes up. This is a double whammy. If climate change is wide spread across American agriculture, this will be a diminishing risk tool. We experienced this during the 2000 to 2005 drought in our area. Our APH’s have never recovered. Some counties in Colorado cannot continuous crop for some arbitrary reason. The insurance focuses on the immediate crop. This does not fit well with regenerative practices. I may plant a cover crop that adversely impacts the immediate cash crop but provides benefits several years in the future. Sometimes cover crops need to be terminated at an arbitrary date to not impact the cash crop but you loose the advantage of the cover crop. The two entities are fighting each other. Another problem is diverse crop coverage. Currently, non-mainstream crops are not covered by crop insurance. This stifles utilization or forces the grower to utilize NAP insurance. We’ve tried to use NAP and found it to be inadequate. Diversification of crop rotation and risk protection are necessary for widespread adoption of regenerative practices.

Additional research is necessary. However, this research cannot follow the traditional research model. Dr. Schipanski and the research done by CSU showed this. Unfortunately her research term only lasted three years. Regenerative processes take longer. Seven years would be a minimum. The model needs to be holistic long term, system based research. On farm, in the real world is the most realistic.

A Regenerative Produced Standard, much like Organic, needs to be adopted. We are currently working with the Soil Carbon Initiative as they work toward this goal. Their model utilizes a scoring system based on soil health monitoring, continuing education and utilization of regenerative principles. After the participant reaches a certain numeric level they can apply for certification. I would like to note that participation in any government sponsored program supporting regenerative agriculture should require continuing education. There are many conferences across the country that would offer this education and exposure. Many times people enroll in a program for the money, don't know why they're doing it except for the money and abandon the principles once they leave the program. Hopefully continuing education would combat that issue.

One of the potential advantages of regeneratively grown production is increased nutrient density. To my knowledge, a study was done in the 1940's and again in the 1990's. The latter study showed dramatic reductions in trace elements in both grain and meat. I would like to see independent research done on regeneratively grown crops and meat. If this is a fact, the consumer and ag producers need to know.

Finally, markets and infrastructure needs to be developed for regeneratively produced products. At this time, much that is produced regeneratively has to be dumped into the commodity pipeline and the identity is lost. I don't think this is an area that the government should be picking winners and losers. However, a grant system for farmer groups or individual entrepreneurs, who demonstrate genuine regenerative processes, would allow this development. In addition, many times regulations are patterned to advantage large scale producers and processors. If wide spread adoption of regenerative agriculture is the goal, then getting the production to the consumer is paramount. General Mills and King Arthur Flour are just two examples of companies attempting to take advantage of the consumers desire for this type of production.

In conclusion, Regenerative Agriculture is a farmer driven movement. That is why I think it will succeed. I'm cautious to suggest the government jump in the middle of the progress. However, if society wants to go this way, government has a responsibility to assist. If our environment continues to track toward the erratic, farmers are going to have to adjust to protect the soil to continue to produce. That is the resilience we must foster. Drought resilience, economic resilience and agronomic resilience must all be pursued.

Thank you for letting me testify about a movement that I'm passionate about. I've thrown a lot on the table. Maybe I haven't provided solutions but hope I've suggested places to start looking. I look forward to watching the results of this hearing.