

Northwest Panhandle Crop Notes

April 2022

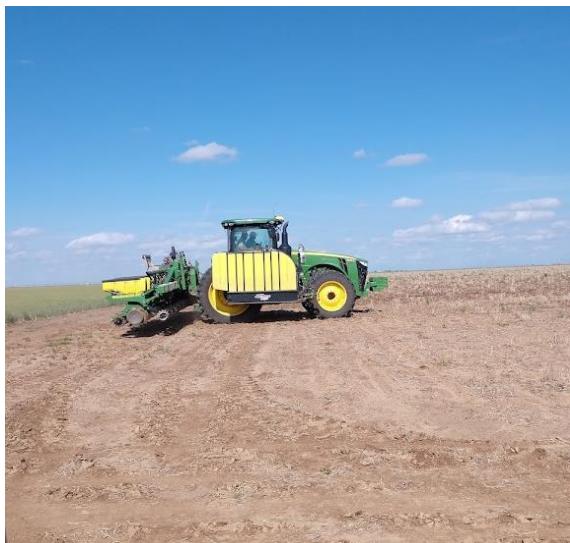
Dennis Coker, Ph.D.

Extension Agent – Agronomy

Dallam, Hartley, Moore and Sherman Counties

Needing a Change in Weather Pattern

February and March showed no shortage of wind across our landscape and some of the same effects have continued in April. The calm days (with moderate wind speeds) were and are appreciated. Unfortunately, much of our area continues to experience extreme or exceptional drought as indicated in updated Water Weekly maps <https://waterdatafortexas.org/drought/twdb-reports>. But on another note, let there be more of the same type of storm system that passed through part of the northwest Panhandle this past Wednesday evening. Not long after dark, we had lightning followed by rain shower events, even a short period of small hail. I have been hearing reports of rainfall in Moore county that ranged from one to three inches. Events like this help make a difference toward restoring needed soil moisture. Would like to think this will mark the beginning of a change from the long, dry cycle we've been in since last fall. Rainfall received now does have a positive impact on planted and/or soon to be planted crop commodities. We might even need to delay planting a day or two for the rain to soak in along with sufficient drying on the soil surface. That is in fact, the current situation in a lot of fields including those for dryland production. Good problem to have.



Northwest Panhandle Ag Conferences and Producer Program

Our calendar year got off to a great start with two, prime educational events targeted to growers, consultants, and ag industry on January 20th in Dumas and January 27th in Dalhart. Meetings this year were held in-person with lunch provided, included vendor displays and we highly appreciate the support from sponsors. Programming consisted of seven or eight speakers depending on location. Irrigation efficiency, value of conservation measures, improved management of dryland cropping systems, integrated pest management, production of alternate

commodities, update on herbicide management, and emerging economics due to high input costs and market outlook were some of the topics covered.

On March 1, thirty-six producers attended our Crop Producers Program at Frank Phillips College campus in Dalhart. Event was sponsored by Sklyand Grain LLC. This program offered five CEU's to private applicators including one hour of Auxin training. Coverage of topics included how to save input cost of fertilizer and soil fertility management, effective weed control management in summer crops and pest control options in organic corn. Due to significant increase of input cost in 2022 producers need to look at opportunities to be efficient and save costs when it benefits production. For example, deep soil testing makes it possible to credit, in some cases, significant amounts of nitrogen that growers would otherwise have to purchase.

Soil Carbon Assessment

Soil organic carbon is the fundamental building block of soil physical, chemical, and biological processes. Soil carbon is extremely dynamic in nature and easily influenced by soil characteristics, environmental conditions, farming practices, and crop selection. Thus, soil organic carbon can vary drastically between farms and soil types. Marcel and Dennis coordinated with nine growers in Moore, Sherman, Dallam and Hartley counties to collect soil samples at interval depths from fields that involved corn, cotton and grain sorghum cropping systems under both conventional and conservation tillage. These efforts will improve our understanding of how soil organic carbon reacts to management practices. Grower cooperators will be able to compare their baseline levels of soil organic carbon to that measured on other farms throughout the northwest Panhandle and to other parts of Texas.



Can Tillage Affect Soil Health?

I hadn't planned the order of sections ahead, but it seems appropriate that this next section would follow the update above on our recent efforts to accomplish some on-farm assessments of soil carbon. Soil health is a lot about soil carbon and soil physical, chemical and biological properties are integral to soil health. How well a soil functions as a living system to support the productivity of planted crops, maintains, or improves environmental quality and promotes diverse communities of soil organisms all describe soil health. Management inputs that benefit or help to increase soil carbon will also be beneficial for soil health. Any opportunity we have to promote the health of our soils will improve crop yields, stabilize nutrient cycling, increase the

infiltration of water, and reduce the detrimental effects of erosion. Long term, these benefits are important to the sustainability of agricultural production in the northwest Texas Panhandle.



Tillage is a management tool and represents varying degrees of soil disturbance (seen above and below) that can affect changes in all three soil properties mentioned above, therefore influencing the status of soil health. For some production systems and in certain situations where time is limited, additional tillage may be necessary to effectively deal with pressing concerns such as heavy residue at planting, increasing or resistant weed pressure, and hardpan due to various causes of compaction such as wheel traffic or livestock. There may be other reasons not included here. However, tweaks along the way that make it possible to reduce tillage or eliminate additional tillage passes will lead to improvements in soil properties, gradually build soil carbon and promote healthier soils. Long story short, tillage heavily affects soil health.



Preplant Soil Moisture

Healthy soils contain greater amounts of carbon which behaves like a sponge to soak up rainfall and store it for crops. Having a better reserve of soil moisture is highly beneficial come planting

time. As seed are dropped into an opened furrow and covered, we want the soil profile nearest that point of maximum water holding capacity, especially in the case of dryland cotton production. Suitable preplant soil moisture ensures that good seed to soil contact happens during the planter operation. More specifically, this will occur due to a properly shaped furrow and consistent soil firming around the seed provided by the rear press wheels.

Adequate soil moisture in the upper profile and seed zone at planting time is critical for quickest seed germination, seedling emergence and arrival at the cotyledon stage. Dr. Seth Byrd pointed out in his post <https://agrilife.org/texasrowcrops/2016/05/06/considerations-for-cotton-planting-and-early-season-growth/> that water and temperature are primary drivers of cotton growth, early stages and throughout the season. Cotton doesn't require a big supply of water for growth early in the season; however, sowing seed into adequate moisture is critical planted seed to imbibe water and for the germination process to get underway.

A robust soil moisture reserve at planting time means more water is available for drawdown through germination, seedling emergence and well into the growing season. We need to have as much water banked in the soil profile as possible to cover evaporative losses from the soil surface plus water loss from leaves due to transpiration, together known as evapotranspiration (ET) that is associated with a growing crop. It is through transpiration or loss of water vapor from leaves that these tissues are cooled, and the photosynthetic machinery protected which produces sugars for export. Transpiration is also integral to the upward movement of nutrients from the roots to meet maintenance and growth requirements of all the above ground tissues. Do these processes get underway early? Indeed, they do and ramp up as plants grow and develop vegetatively.

Plant demand for soil moisture reserves through the early true leaf stages gradually increases up to the pinhead square or beginning reproductive stage of growth. Besides warm temperatures, adequate soil moisture promotes rapid growth and ability of seedlings to withstand stressed conditions. Examples of stress include possible injury from preemergent herbicides and feeding of thrips on tender leaves that originate from plant terminals.

One of my previous blogs and newsletter addressed the term "soil health" and discussed ways that soil chemical and physical properties are integral to building and maintaining soil health for a cotton cropping system. When it comes to meeting the water requirements for an irrigated or dryland cotton crop, soil health is paramount. Keeping residue cover on the soil surface reduces evaporative water loss via lower wind speed, less radiation load, greater reflectance of light, a cooler soil surface temperature, all of which promote greater soil moisture available for plant transpiration. Transpiration or water loss from leaves to the atmosphere is essential for adequate cooling and physiological maintenance of the leaves.



Resources for Soil Health and Preplant Soil Moisture Management

www.OgallalaWater.org offers well written overviews on water management in our part of the semi-arid, High Plains region supported by groundwater from the Ogallala Aquifer. Browse through the drop-down menus for detailed information on irrigation scheduling tools, irrigation management technologies, soil health, soil moisture monitoring, drought planning and more. Connect with The Soil Health Institute at <https://soilhealthinstitute.org> for insight and access to online resources such as articles, videos, training, and blogs that cover multiple aspects of soil health. Researchers and scientists in all states that share the presence of Ogallala groundwater resources contribute to this information database. The North Plains Groundwater Conservation District's website <http://northplainsgcd.org/> is a great source for local, educational information including the Cotton & Conservation video series that provides season long updates on variety trial sites in the area.

There is a wide range of resources for information related to irrigation management. Land Grant University Systems in the Mid-Western and Western U.S. have Research and Extension units with Specialists and other staff including Agents who publish applied research findings, results from on-farm demonstrations, as well as guideline updates. AgriLife's Texas Row Crops Newsletter is located at <https://agrilife.org/texasrowcrops>, a great resource for practical, cropping systems advice contributed primarily by AgriLife Extension Specialists from around the Lonestar state. Additionally, see links to publications and active programs at the Texas A&M AgriLife Research and Extension Center at Amarillo <https://amarillo.tamu.edu/amarillo-center-programs/> and at Lubbock <https://lubbock.tamu.edu/>.

This wraps up today's blog on matters related to past and recent patterns we've experienced in the weather, soil health, soil carbon, and the importance of adequate preplant, soil moisture for feed grains and cotton production in the northwest Panhandle of Texas. I hope that your planting

season is getting underway smoothly and that at least some of the rain you need early on has arrived. Thanks for reading. More to come.