

2013 Sorghum Planting Considerations, Water Management, and Planning for Pests

As the summer growing season fast approaches, many area producers look to finalize their plans for the upcoming crops. This seems like a daunting task with a persistently dry and crazy weather pattern, an even crazier market, and a diminishing water supply. Nonetheless, the planning done now in the spring will have a major effect upon our water inputs, weed control, and IPM plans.



The subject of splitting pivots with multiple crops as a way to spread risk, maintain a solid crop rotation, while remaining profitable has received quite a bit of airtime in professional meetings and coffee shop gatherings alike. The practice of splitting a pivot for multiple crops is far from a new concept to most Hale and Swisher county producers, yet the best way to incorporate the idea into a firm plan remains debatable and is likely to vary from producer to producer.

Despite a short-term decrease in acres, cotton is likely to remain king as our primary commodity grown for most of the area. For most producers, that is where our crop management decision tree starts and is focused. Undoubtedly, grain crops look to be a good bet to invest more acres toward this year. If a producer has the irrigation capacity, corn is a clear choice. And then there are the majority of our acres. Although there are now some solid alternate crop options available to producers, limited irrigation sorghum looks to have a big year locally as the crop that most will be choosing to split pivots with cotton. This now brings to mind several management questions. How do we incorporate limited irrigation sorghum and realistically keep the full pivot profitable? How do we manage this potential split pivot to conserve the most water? And, what will the potential pest situation be on this pivot given the management options you choose today?

If sorghum will become a major crop for you this season, I feel that before we tackle those issues in-depth, there are some little known sorghum facts we need to address. Sorghum, regardless of type, sets its head size somewhere between V2 and V5. For most fields that will only be a matter of days, or possibly weeks, after the crop emergence. Most producers at that early stage are pleased to see a crop out of the ground and a job well done at planting and rarely give a second thought about pushing for high yields yet. If these (very small) sorghum plants are stressed even slightly or are otherwise unhappy at this stage, that sorghum field's yield potential is then capped at a very low level. If these plants are happy with plenty of water and fertilizer at that time, that field's *potential* can be ridiculously high, even in a limited irrigation scenario. At this early stage it does not take a very large amount of water or fertilizer to make these little plants happy.

Keep in mind we are talking potential here, not a guarantee of high yield, but if we at least start with higher potential we have a better chance of making better yields. The other, and likely the most important stage in the life of a sorghum plant, starts at boot and continues through grain fill. Between these two stages, most sorghum varieties tend to be relatively drought tolerant, usually requiring only enough water per week to develop through its leaf stages.

Understanding these two facts now gives us something to target with our limited available water inputs to give us the best return on investment. Dr. Calvin Trostle, Texas A&M AgriLife Extension - Agronomy Specialist, attempted to answer some of our management questions for us at the recent High Plains Association of Crop Consultants annual meeting in early March. Dr. Trostle shared several brainstormed thoughts and calculated water use estimates on cotton / sorghum sharing pivots with sorghum planting dates as the variable, "Although it is not our only option, if cotton remains our primary crop of focus and investment, planting sorghum at a later date, following the conclusion of cotton establishment and pushing that insurance planting deadline date, will probably be your best bet for producing sorghum with minimal water inputs. "

Dr. Trostle went on to stress the importance of variety selection and understanding your sorghum variety's maturity rating, "When we plant our sorghum after our cotton is established and target our particular sorghum variety's days to boot for late August or September, we should be able to focus our limited water inputs to fit your field's situation. Hopefully we will have the opportunity to give our sorghum a decent start in June or July and then be able to focus heavier irrigations for that sorghum after our cotton has reached cut-out stage and we will be able to tell if that sorghum is a worthy investment in water and dollars."

There are always two sides to every coin. When I evaluate the later planted sorghum plan for best potential water management it makes perfect sense. Then again, when I look at the plan through insect management goggles some problems develop. Typically the Fall Army Worm (FAW) population builds throughout the growing season on multiple crops and weeds. By September the FAW population has reached its peak and soft dough stage sorghum is one of their favorite hosts. It is my experience the damage from FAW on late planted sorghum *can be* severe enough even to invalidate any need to bother with harvest, especially on lower yield potential sorghum fields. There is another pest that can damage late sorghum severely. Sorghum midge, typically, are an economic pest in our area sorghum only one out of every ten years. I have noted though, I do see midge almost every year, but it is normally only after an average date of August 4. By mid-September midge can easily be close to a true economic concern, especially if there are only a few area sorghum fields in bloom. Very often we let these late season sorghum pests slide because our yield potential is already so low for our 'stepchild fields' the economics are just not there to spray.



Another option for splitting a cotton pivot with sorghum is to plant the sorghum early, ideally the last week of April. This is a more difficult plan to comprehend as it seems backwards by planting our secondary crop first, especially if our focus is on cotton, but it is something I have looked at the past few seasons with some admirable success and very few failures, even during a serious drought. When we look closely at the option, sorghum requires a lower seedling soil temperature requirement than cotton does and can be planted earlier, more similar to corn than most of us utilize. If the sorghum is planted early, we will be able to run our pivots to get the field off to a good start even while our tractors are still in the field next door planting our cotton. Much of our typical seasonal rainfall (assuming we get any) usually comes in mid to late May, just as the early sorghum would be at the important head size determination stage of V2 to V5. Plus it is almost impossible to hail-out sorghum. The tricky part comes at boot stage and deciding just how much water you are willing to take away from the cotton and give the sorghum in early to late July, sorghum variety depending.

At that time in July most cotton fields should be at or about 6 to 9 nodes above white flower (NAWF). I have experienced that during that stage, soil water availability depending, we can cut cotton's supplemental irrigation down some without harm, usually into the 50% ET (evapotranspiration rate) range for a short time, usually a week to ten days. That does free up a few inches of irrigation to go toward the sorghum if needed. I do warn cotton focused growers to be careful here, because when cotton reaches 5 NAWF, that field will be at peak water use and irrigation should be returned quickly, at least to previous irrigation levels (usually 75% ET for most producers) and, if possible, a touch higher (100% ET) for a short period, usually only four to ten days. Once cotton reaches 3.5 NAWF and 95% of cotton yield or so has typically been set and the needed irrigation amount can drastically be lowered. By that time, early planted sorghum will be in the last stages of dough-fill and could use a touch more water to finish up.

Conceptually speaking, early planted sorghum should have less pest pressure than late planted sorghum. The FAW and sorghum midge *should not* have time to build into an economic concern. Spider mites on early sorghum could be more of an issue, as many of us learned in the hot days of 2012.

When asked to compare the concepts of early and late planted sorghum Dr. Trostle stated, "I would be concerned that most cotton producers would view the early season investment of water in a sorghum crop as a loss or mistake should the summer turn out hot and dry again and they are unable to rescue the sorghum then possibly struggling to get past boot stage. Early planting does make more sense for insect pressure and the early season environment is closer to ideal for young sorghum compared to the heat of June and July... plus it makes the cotton grower wait on ideal cotton planting soil temperatures, a real side bonus, but one can never have a guarantee either way. I think what is important is that area producers understand the intimate nature of the possibly unfamiliar crops they are growing so they can weigh the advantages and disadvantages of both concepts to find the solution that fits their fields, their management, and irrigation ability."

Cotton Seed Treatments and Multiple Pest Considerations

Most cotton producers have been affectively using seed treatments for so long it is almost an afterthought, especially for seedling disease. In the absence of Temik from our thrips control tool-bag, several producers have turned to insecticide seed treatments to help manage this early season pest too. If you are a producer who has no experience with wireworms on cotton seedlings this last decade, count yourself lucky. That is a pattern, I am sorry to say, is likely to change in the near future as the one time oddity of serious wireworm pressure seems to be expanding into an annual problem for more and more cotton fields over a growing area. Through some hard gained experience, we have learned that this pest can be tackled with some good seed treatments or other planned preventative measures. So... what is the likelihood that wireworms will develop into a problem on your cotton? The chances are they may have already taken some nickels and dimes out of your pocket.

Manda Anderson, County Agent – IPM in Gaines county, and myself spoke recently on the current wireworm situation, "Problems for us in Gaines county started three or four years ago. We expected the wireworms to be one of those oddities you see from time to time. They pop up, make a major nuisance, and then you never really see them again. I would say though that in 2012, we still had 10 to 20% of our cotton fields experience at least some stand reduction from wireworms, and some of that was pretty severe."

Historically, wireworms are a sporadic pest in seedling cotton at best, but history is being written all the time. Wireworms do not like cotton and it is not a preferred host. They will however attack cotton after germination and before emergence as a survival method, often as a last resort to stave off starvation. When we review the literature we find a list of circumstances where wireworms could be a problem for seedling cotton.

- Following a grain, forage, or hay crop.
- In a dry season following a wet year.
- In a field with a heavy cover crop or heavy spring weed pressure.

The damage from wireworms can be two fold. First, is the direct damage from their feeding. If the feeding occurs on the cotyledons only the damage is usually minimal. It takes an experienced eye to even spot this type of damage. If the feeding occurs along the tap root it could be substantial causing developmental delays for that plant taking weeks to recover from, and if heavy enough, eventually fatal. If the feeding occurs at the apical meristem (growing point found between the two cotyledons) or the curve just below the cotyledons, it is almost always fatal for that plant. There is a substantial amount of secondary damage that is normally associated with wireworm feeding on the tap-root of cotton seedlings. The wounds caused by the feeding open gapping wounds allowing seedling diseases to impact young plants at a level I would estimate to be near ten-fold.



Problems with wireworms began locally early in the 2004 growing season. Then, as a crop consultant, identifying problems in, and finding solutions for, roughly 224 area cotton fields was one of my jobs. The wireworms alone demolished nearly 20% of those fields before the crop ever emerged from the soil and reduced the stands of all but a handful. That is a season that fit most of the applicable prerequisites listed in the entomological literature dating back to the 1930's, the last time wireworms were troublesome for cotton in the Hale & Swisher county areas. Much like Manda in Gaines County, our area entomologist expected the wireworms to subside over the next few years. While the problem has not reached that 'nightmare' level again, the problem has never really abated, especially in areas that commonly rotate with hay and small grains or where fields are subjected to cattle grazing periodically. In the past few years, wireworms have been troublesome mostly for cotton fields that experienced some other delay in emergence (lack of soil moisture, thick crust, cloddy ground, etc.) and where producers had not taken preventative steps to control them.

While not as severe as 2004, the wireworms do seem to be spreading. In 2012, 100% of the fields I checked had some level of wireworm pressure, no matter the crop rotation pattern or location. Most of this pressure was light enough that if we did not have some experience with the pest, we would have accounted any slight reduction in stand to seedling disease or the dry environment.

Several area entomologists have hypothesized that the wider adoption of no-till and min-till practices could be another factor adding to the wireworm's prolonged stay. Few believe the soil and water saving practices should be abandoned just to deal with the problem, especially when we have learned to affectively control the wireworm pest with other methods, no matter the pest pressure.

Between 2004 and 2012, Reed Consulting conducted four wireworm product control studies. While these are not Texas A&M AgriLife studies, much of the results of this work has been adopted by area 'at risk' producers and shared with AgriLife Extension personnel and implemented (where needed) with success on wireworm control throughout the region. Only because of its pertinence to a possibly growing wireworm problem we need to address preventatively, I will share a condensed version of all four trials here. Because we have found many of the available insecticides commonly used for thrips control also have proven some level of control on wireworms, producers will be able to choose the best product for their farm based on their expected control needs.

<u>Reed's Tested Product List</u>	<u>Wireworm Control</u>	<u>Thrips Control</u>
3.2 lbs. Temik	C-	B+
5 lbs. Temik	B-	A-
Orthene (seed treatment)	F	D--
Orthene (spray)	F	C+
Aeris	C-	B
Cruiser	C-	B-
Avicta Complete	C+	B-
3.5 lbs. Thimet	C+	B+
Imidacloprid (10 X rate)	A++	B+
"seed box treatments" (assorted Lindane type products)	A-	F

All studies were conducted in Swisher (3) or Castro (1) Counties and thrips species found might be different in your area. True wireworms and four species of false wireworms were all found in tested fields. This is not a complete list of available products for thrips control, only those products that were protocolled and studied for both wireworms and thrips by Reed Consulting, cooperating companies, and other sponsors are listed. Several new products for insects and seedling disease have been released recently. For that complete list, please refer to the relevant Texas A&M AgriLife Extension publications. Temik has been included although it is no longer available because the LLC product Memik has an expected launch although the date and much about the new product are not yet known.



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Please come by or give me a call if you have any questions, or if we can be of any assistance.

Blayne Reed