



ARKANSAS WHEAT



Jason Kelley - Wheat and Feed Grains Extension Agronomist

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It doesn't seem possible as everyone is busy with harvesting summer crops, but wheat planting is just around the corner. Now is a good time to discuss planting decisions that will impact you throughout the season. Below are some general comments/recommendations on getting your wheat crop off to a good start this fall.

Variety Selection

There are lots of varieties on the market that will yield well, but choosing more than one variety with different genetics and varying maturity is critical to spreading your risks out. Varieties need to be adequately tested in our area to have confidence in how they will perform and ideally have favorable yields from 2 years or more. Varieties should have resistance to stripe and leaf rust as well as good resistance to lodging, have good test weight, and of course have high yields.

The 2014 Wheat Update publication is a summary of the Arkansas Wheat Variety Testing Program, and contains current variety disease ratings, agronomic data including test weight, lodging, and relative maturity, and multi-year yield data. The 2014 Wheat Update can be found at the following link:

<http://www.uaex.edu/farm-ranch/crops-commercial-horticulture/wheat/>

The full report of the 2014 Arkansas Wheat Variety Testing program can be found at:

<http://arkansasvarietytesting.com/home/wheat/>

One key production practice to consider is to plant late maturing varieties first and early maturing varieties later in the planting season. Yes sometimes we get all of our wheat planted within one week and this might not make that much difference. However the early maturing varieties tend to have less of a vernalization requirement and can begin to joint very early in the spring which greatly increases risk of freeze damage, so planting the early maturing varieties last makes sense. In past years we have seen some of the early maturing varieties that were planted too early, get tall and rank in the fall that led to freeze damage problems later on. This is especially true following corn where there may be residual nitrogen which can stimulate excessive fall growth.

Planting Date

Proper planting date for wheat is very important for optimal yields. Planting too early can lead to multiple problems including increased potential for freeze damage because wheat gets too big and rank during the fall and increased risks from insects including; fall armyworms, Hessian fly, and Barley Yellow Dwarf Virus, which is transmitted by aphids. Recommended planting dates for Arkansas are listed below:

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| Region | Planting Date |
|------------------|------------------------|
| North Arkansas | October 1-November 1 |
| Central Arkansas | October 10-November 10 |
| South Arkansas | October 15-November 20 |

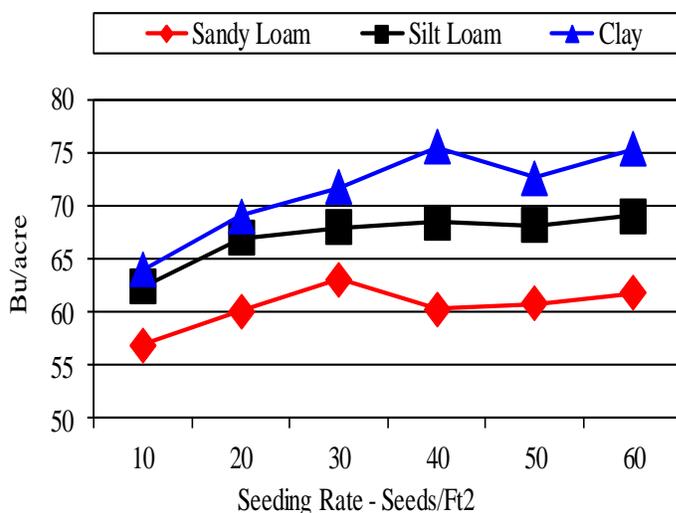
These dates represent the ideal planting dates for Arkansas, planting earlier or later can still produce good yields, but there may be greater risks outside of these “ideal” dates.

Seeding Rates

Seeding rates can vary considerably, depending on planting date, quality of the seedbed, and whether wheat is drilled or broadcast seeded. Using a grain drill allows for more precise seed placement and generally allows for a lower seeding rate. Broadcasting wheat allows you to cover many acres quickly. I prefer to drill wheat, but concede that weather sometimes pushes us to get things done quickly to beat an incoming rain.

Recommended seeding rates for drilled wheat planted within recommended planting dates is 26 seeds per square. The pounds per acre of seed planted to achieve 26 seeds per square foot can vary considerably with seed size, (**See Tables 1 and 2**) but with a normal seed size, this would be approximately 90 pounds of seed/acre (assuming you had good quality seed). **Figure 1** below shows a summary of 12 trials conducted in Arkansas over the last few years evaluating seeding rate response of drilled wheat when planted in October. Planting more than 26 seeds per square on sands or silt loams did not increase or decrease yields, while on clay soils, a slightly higher seeding rate was needed to achieve maximum yield. A higher seeding rate on the clay soil was likely needed to compensate for a rougher seedbed and/or potentially a lack of tillering.

Figure 1. Impact of Seeding Rate of Drilled Wheat on Yield in Arkansas in 12 Trials



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Increasing seeding rates above recommended rates will increase the cost of production and increases the potential for lodging prior to harvest, especially if nitrogen rates are high.

Table 1 below shows the number of seeds per foot of drill row to accomplish a desired seeding rate. For example, a seeding rate of 30 seeds per square foot using a grain drill with 7.5 inch row spacing would, you would need 19 seeds per foot of drill row to achieve 30 seeds per square foot.

| Table.1 Number of wheat seeds to plant per square foot or per drill row foot | | | | |
|---|---|----|----|----|
| Grain Drill Row Width | Seeds per Square Foot | | | |
| | 25 | 30 | 35 | 40 |
| | -----Seeds per Drill Row Foot Needed----- | | | |
| 6 inches | 13 | 15 | 18 | 20 |
| 7.5 inches | 16 | 19 | 22 | 25 |
| 8 inches | 17 | 20 | 23 | 27 |
| 10 inches | 21 | 25 | 29 | 33 |

Table 2 below illustrates how seed size greatly impacts the pounds of seed planted. In the example of planting 30 seeds per square foot with a large seed of 10,000 seeds per pound, we would need 131 pounds of seed per acre to accomplish 30 seeds per square foot. If we had a small seeded variety with 18,000 seeds per pound, we would only need 73 pounds of seed per acre, a 58 pound difference in seeding rate. Considering seed size can help prevent you from planting too many or too few seeds to maximize yields and profits.

| Table 2. Number of pounds of wheat seed planted depending on seed size and seeding rate | | | | |
|--|-------------------------------|-----|-----|-----|
| Seeds/lb | Seeds per Square Foot | | | |
| | 25 | 30 | 35 | 40 |
| | -----Pounds of Seed/Acre----- | | | |
| 10,000 (large seed) | 109 | 131 | 152 | 174 |
| 12,000 | 91 | 109 | 127 | 145 |
| 14,000 | 78 | 93 | 109 | 124 |
| 16,000 | 68 | 8/2 | 95 | 109 |
| 18,000 | 61 | 73 | 85 | 97 |
| 20,000 (small seed) | 54 | 65 | 76 | 87 |

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If we are planting later in the planting window (November), planting into a rough seedbed, or planting no-till, increasing seeding rates 10-20% or more would be justified. Broadcast seeding generally takes higher rates of seed to obtain stands, since the seed is placed at varying depths with incorporation (some too deep, some on top of the soil). Having a good firm seedbed prior to spreading seed is important. Many producers are having good results broadcasting seed and then shallowly incorporating using a harrow, roller, or field cultivator with rolling baskets. Using a disk to incorporate often buries much of the seed too deep and can result in poor stands. How the seed is incorporated makes all the difference on how successful broadcast planting is.

Land and Seedbed Preparation

Having adequate surface water drainage is critical for maximizing wheat yields in the Mid-South. Adding drain furrows after planting to allow excess water to drain is very important. In recent years there has been an increasing amount of wheat planted on raised beds. This helps facilitate water drainage and also allows for quicker plant back of double crop soybeans after wheat harvest. Bedded wheat will likely work best on precision leveled fields that have a uniform grade so water can drain off adequately. In large block trials that we have been conducted over the last few years comparing bedded vs flat planted wheat, yields were similar. There are many ways of planting wheat on beds, but the wider the bed the better the wheat will likely be. However beds wider than 60 inches may be too wide for maximum soybean yields since furrow irrigation water may not fully soak into a 60 inch or wider bed. Below are examples of production systems currently being utilized by Arkansas wheat producers and with proper management, all are producing good wheat yields.



Figure 2. Drilled, planted on flat ground with drain furrows



Figure 3. 60 inch wide beds, drilled wheat

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Figure 4. 38 inch wide beds, broadcast, then roller bedded. Figure 5. 38 inch wide beds, broadcast and hipped.

On bedded wheat, one of the issues we have seen is that we still have to get the water off the field. A drain furrow across the beds at the bottom of the field will allow water to leave the field.

Whichever system we use to plant wheat (drilled, broadcast, flat or bedded) taking the time to get things right is the most important item to consider. Once the wheat is planted, you don't have a chance to do it again.

Fall Fertilization

Fall nitrogen is typically not recommended unless we are planting wheat following rice or if we are planting later than the recommended. We used to recommend a small amount of nitrogen at planting following corn or grain sorghum, but the data did not show a consistent yield benefit. If soil sample analysis shows a need for phosphorus and DAP (18-46-0) is used, the nitrogen with that application would be sufficient for any fall needs. Having adequate phosphorus is critical for maximizing wheat yields. Dr. Trent Roberts wrote an excellent article on P and K fertilization for wheat and/or wheat-double crop soybean that is posted on Arkansas Crops blog;

<http://www.arkansas-crops.com/2013/09/30/preplant-p-and-k-considerations-for-winter-wheat/>

Contact Information:

Please contact your local county extension agent in Arkansas or the author by email at, jkelly@uaex.edu, if you have questions or comments regarding this newsletter.

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