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Wheat Newsletter

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Texas wheat and small grain producers are facing another challenging year. In 2004, the fall was too wet and planting was delayed or was not planted across the Rolling Plains, the Blacklands, and NE Texas. The fall of 2005 and January of 2006 has been unseasonably dry and warm across most of Texas. These extremely dry conditions and only very scattered rain showers have lead to a lot of dry-sown wheat and marginal and erratic wheat stands.

In the last couple weeks, I have received several calls asking questions associated with wheat stands, delayed emergence, and wheat vernalization requirements. Like usual, there is not an easy or straightforward answer to this question. However, below is some information that should assist in making some decisions. There will be four areas discussed in the newsletter: 1) adequate stands and crop condition, 2) expected yield losses 3) vernalization issues, and 4) should the wheat crop be destroyed to prepare for a summer crop?

What is an adequate wheat stand?: Wheat has an amazing ability to compensate for low plant populations by increasing tiller number and spikelet size. Typically, plant populations at or above 10 plants/ft² are considered adequate stands for wheat that has adequate time to develop tillers. However, late emerging wheat (emergence after 12/15) that is growing under unfavorable conditions (drought) probably will not develop many tillers. See the publication entitled "Estimating Wheat Yield Potential" at <http://varietytesting.tamu.edu/wheat/docs/mime-6.pdf> for specific details on yield potential (remember this publication will only estimate wheat yield potential and therefore, should be only be used as a guide in making cropping decisions). When estimating wheat yields one will most likely want to use the formulas developed with 15 seeds/head. This will especially be true for wheat that is stressed and has very little underground moisture. Care should also be taken to use live tillers and not ones that have already died in these estimations. Additionally, areas with low or no wheat stand should also be considered when estimating the overall field yields. Also, weeds will also emerge in these bare areas and will require management.

Expected yield losses: Wheat can remain viable in the soil for long periods of time, as long as the seed never germinated. As time passes the level of viability and vigor will typically decrease due to several factors; however, the seeds can still emerge if an adequate rainfall event occurs in the near future. Also, if adequate soil moisture is present but soil temperatures are cold, wheat seed requires much longer to germinate and emerge (7-10 days) than under warmer soil conditions. However, wheat emerging in late-December or January will develop fewer tillers

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than early planted wheat and good stands are more important in late emerging wheat. In recent research at McGregor in 2003 and 2004, wheat planted after late-November yielded substantially less (30-60%) than the earlier planting dates (**Table 1**). Also, refer to the publication “Estimating Wheat Yield Potential” mentioned above.

Table 1. Impact of Planting Date on Grain Yields in McGregor, TX

Planting Date	2004	2005
	% of Highest Yield	
September 8 th	71	90
September 22	83	88
October 11 th		100
October 20 th	94	100
November 12 th	100	96
November 25 th	68	-
December 14 th	-	36

Vernalization issues: Another concern for wheat emerging in late-December and January in Central and South Texas will be adequate chilling days (vernalization) for the winter wheat. Winter wheat varieties require between 5 to 45 days of accumulated exposure to temperatures between 45 to 32° F at the growing point to vernalize. Without adequate vernalization, winter wheat plants will remain vegetative and will not produce grain. Fields that are inadequately vernalized exert heads later than normal and heading is very erratic. Vernalization requirements are different for each variety. The exact number of vernalization days for most wheat varieties are not known. However, below are some vernalization ratings for the 2005 Uniform Variety Trial that was conducted in Castroville, Texas (**Table #2**).

Table 2. Vernalization ratings for the Uniform Variety Trial in Castroville, TX*.

Variety	Vernalization (0-5)**	Variety	Vernalization (0-5)*	Variety	Vernalization (0-5)*
Longhorn	3	Stanton	3	TAM 202	3
Ogallala	2	2145	4	TAM 110	2
Coronado	3	Overley	5	Lockett	3
Thunderbolt	1	OK 101	0	TAM 111	3
Cutter	3	OK 102	1	Sturdy 2K	1
Dumas	2	Endurance	1	TAM 303	2
Jagalene	2	Deliver	1	TAM 112	4
Fannin	4	TAM 101	2	Cisco	1
Jagger	5	TAM 105	3	HG-9	1
Trego	3	TAM 107	2		

* Ratings by Dr. Jackie Rudd, Wheat Breeder, Amarillo, TX.

** 0 = spikelets did not develop

5 = fully vernalized

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If adequate rain was received today to initiate germination and average temperatures occur for the remainder of January and February, approximately 25 and 35 days of vernalization can still occur before jointing in Central Texas, and North/Rolling Plains, respectively. This level of vernalization should be sufficient for most wheat varieties grown in Central and North Texas, and Rolling Plains. However, if the variety is rated as a 0, 1, or 2, in Table 2, then adequate vernalization may not occur.

What if vernalization does not occur?: If winter wheat plants are not adequately vernalized, then spikelets (heads) will not develop, or heading will be late and erratic. Most of the wheat will remain in the vegetative stage and can be used for forage, hay, or silage.

Should the wheat crop be destroyed to prepare for a summer crop?:

- Before any crop is destroyed, visit with the appropriate agencies about your wheat crop and carefully plan your alternatives.
- Wheat that emerged in October, November, and December still have the potential to produce grain because the root system has developed and vernalization will occur. However, yields will likely be substantially reduced due to drought stress conditions and poor plant development at this point. Refer to the Expected Yield Loss section above for estimating potential yield. However, there is the possibility, with a cool and moist spring, that wheat yields will not be significantly reduced.
- Wheat emerging after mid-January will likely have several issues, and yields will be substantially reduced. In particular, the wheat will need to be checked in early to mid-March to determine if adequate vernalization has occurred. If the wheat has been vernalized, the wheat plant will joint (nodes will present) and the future wheat head will be present in the lower stem. If vernalization has occurred, the wheat crop will produce some grain.

There is still time: We still have several weeks before any summer crop will need to be planted and wheat is extremely resilient to adverse conditions. Because of this, we can afford to wait another few weeks to see what the wheat crop will do, if we get rain. With most of the state and region suffering from drought conditions, it is possible the wheat prices will be higher and lower yields can still be profitable.