

Northwest Plains Pest Management News

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Cool temperatures continue to slow crop development. While current heat units remain above those observed this time last year general crop maturity is lagging behind. When one looks at this information it is somewhat conflicting since heat unit accumulation is usually an accurate measure of crop maturity. Early heat unit accumulation in 2008 was accompanied by extremely dry and windy conditions. These dry windy conditions induced significant stress on local crops which limited their ability to utilize the early accumulated heat units efficiently, thus delaying crop development. For instance, there was a two week period in late May and early June where cotton should have developed 5 nodes but it only developed .5 to 1.5 nodes. In addition, many crops had to be replanted as a result of harsh environmental conditions. These secondary crops are maturing later than normal due delayed re-plant dates.

Heat units are calculated by adding the high

Daily Water Use	
Crop	Inches per day
Corn	.12-.17
Cotton	.15-.20
Grain Sorghum	.14-.17
Bermuda grass	.12
Fescue/ Bluegrass	.16

Cotton Heat Unit Accumulation ¹			
Location	Current	2007	Long Term ²
Farwell	1603	1566	
Friona	1631	1593	
Muleshoe	1752	1615	1758
Muleshoe WR	1789	1649	

¹ DD 60 based on May 1

² Based on Muleshoe long term weather data 1971-2000

and low daily temperatures, dividing by 2 and subtracting the threshold temperature. The threshold temperature is 50 degrees F for corn and grain sorghum. The following table lists the average number of heat units normally accumulated from various dates through October 22.

Corn and Sorghum

Date	Accumulated H/U thru 10-22
September 1	749
September 10	557
September 20	369
September 30	213

Based on 2008 weather data through September 16 and long term weather data to project the remainder of the season, 110-115 day corn hybrids which were planted on or before June 15 have a reasonable chance to reach full maturity before the average freeze date. If corn will be harvested for silage 200-250 fewer heat units will be required to reach the desired

maturity level, therefore 110-115 day corn hybrids which were planted on or before June 25 have a reasonable chance to adequately mature before the average freeze date. The following are the heat unit requirements for corn to reach full maturity from various crop stages.

Heat Units From Crop stage to Maturity in Corn

Crop Stage	Heat Units
Milk	860
Dough	720
Dent	420
1/2 starch line	200

Some of the same calculations can be made for grain sorghum. The old rule of thumb is if sorghum has headed by September 1 it should "make grain". The following are the heat unit requirements for grain sorghum to reach full maturity from various crop stages.

Heat Units From Crop stage to Maturity in Grain Sorghum

Crop Stage	Heat Units
Flower	825
Soft dough	462
Hard dough	165

Based on the table above sorghum which is currently in the soft dough stage should have time to adequately mature.

In cotton it is generally accepted that 850 heat units are required from bloom to boll maturity but 750 or so have been observed to adequately mature bolls locally. Cotton heat units are calculated in the same manner as corn and sorghum but the

temperature threshold is 60 degrees. The following table is a combination of local actual 2008 weather data through September 16 and long term weather data and can be used to predict boll maturity for various bloom dates.

Predicted Heat Unit Accumulations From Various Bloom Dates in Cotton

Bloom Date	Heat Units
August 1	661
August 10	500
August 20	362

Comparisons between existing crops and the previous tables can be made to assess crop maturity. The data is based on 30 year long term weather data from the NOAA weather station located at Muleshoe, Texas. Different hybrids and varieties may respond to varying heat unit accumulations differently and may mature more quickly or slowly than the "average". The impact of crop immaturity normally is not an all or nothing situation but is proportional to the level of crop maturity.




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