Texas A&M Agricultural Research & Extension Center Amarillo

Sorghum Development and Key Growth Stages

Brent Bean and Carl Patrick, Extension Agronomist and Entomologist

Emergence	!	Coleoptile visible at soil surface. Coleoptile is the first leaf and is shorter than the later emerging leaves and has a rounded tip.
3-Leaf	!	Collar of 3rd leaf is visible. This stage will occur approximately 10 days after emergence, depending on soil temperature, moisture, planting depth, etc.
	!	Slow emergence may lead to more injury from preemergence herbicides.
	!	Corn leaf aphids may have infested the whorl. Greenbugs may have infested the leaves although not likely.
4-Leaf	!	Collar of 4th leaf is visible. Occurs approximately 15 days after emergence.
5-Leaf	!	Collar of 5th leaf is visible. Occurs approximately 20 days after emergence.
	!	May have lost 1st leaf (coleoptile) by this time.
	!	Plant is generally 8 to 10 inches tall.
	!	2,4-D and Banvel should not be applied after this stage without using drop nozzles.
	!	Greenbugs colonies likely to be found on lower leaves. Corn leaf aphids continue to increase.
Growing point differentiation	!	Key growth stage. Occurs approximately 30 to 35 days after emergence. Generally corresponds with the 7 to 8 leaf stage.
	!	Growing point now above the soil surface.

	!	Plant is generally 12 to 15 inches tall.
	!	May have lost 1 to 3 leaves from the bottom of the plant.
	!	Potential number of kernels per head will be determined between growing point differentiation and flag leaf emergence.
	!	Sorghum plant is entering a period of rapid growth.
Flag leaf visible	!	Tip of the flag leaf (last leaf) is visible in the whorl. The last 3 to 4 leaves may not be fully expanded (collars not visible).
	!	Greenbug population may begin to rapidly increase.
Boot	!	Leaf collars of all leaves are now visible. Sorghum head is enclosed in the flag leaf sheath.
	!	Potential head size has been determined.
	!	Peduncle (stalk supporting the head) is beginning to elongate. Stress at this time will reduce the length of the peduncle.
	!	Maximum water use occurs at this stage. Crop will respond vary favorably to irrigation at this stage.
	!	Corn leaf aphids begin to decrease. Greenbugs may be approaching an economical threshold.
Heading	!	50% of the plants in the field have visible heads.
	!	Greenbugs may be at economic threshold levels.
Flowering	!	Occurs when 50% of the plants in the field are in some stage of bloom.
	!	When considering individual plants a plant is considered to be flowering when blooms have progressed half way down the head.
	!	Peduncle is rapidly elongating.
	!	Flowering occurs over a 4 to 9 day period.
	!	Stress or herbicide drift can lead to blasted heads.
	!	Greenbugs may continue as a problem — mummies may be

present. Begin checking for headworms.

Soft dough	!	Grain can be easily squeezed between the fingers.
	!	8 to 12 functional leaves present.
	!	One half of grain dry weight has accumulated.
	!	An early freeze will result in shriveled light grain.
	!	Susceptible to bird damage.
	!	Greenbugs may continue as a problem — mummies should be increasing. Continue to check for headworms.
Hard dough	!	Cannot squeeze grain between the fingers.
	!	Three-fourths of grain dry weight has accumulated.
	!	Water stress during grain fill may cause lodging.
	!	Greenbugs and headworms should be on the decline.
Black layer	!	This stage is identified by the dark spot on the tip of the kernel.
	!	Maximum total dry weight has been achieved.
	!	Grain will contain 25 to 35% moisture.