

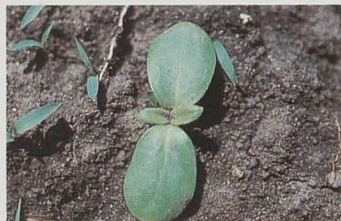
Field Development of the Sunflower

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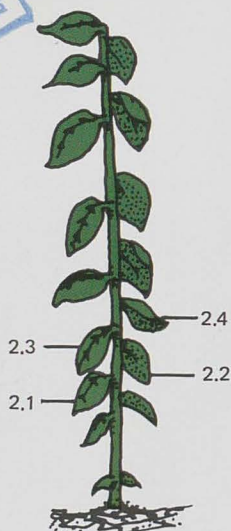
Stage 1.1



Stage 1.2



Stage 2-2.4 (vegetative)



Stage 3.1



Stage 3.3



Stage 3.3



Stage 4.0



Stage 4.1



Stage 4.1



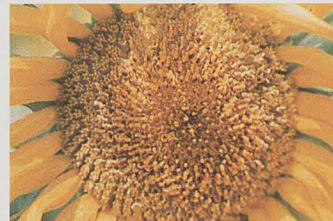
Stage 4.3



Stage 4.4



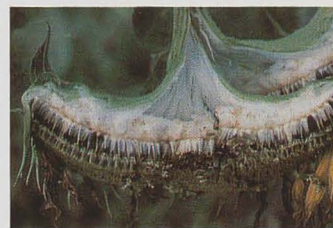
Stage 4.5



Stage 5.1



Stage 5.1



Stage 5.15



Stage 5.3



(See descriptions on back)



Field Development of the Sunflower

Stage	Description
1. Emergence SN ¹ = 1.1-1.4 DFP ² = 0-14 GDU ³ = 0-190	From seeding until opposite leaves are fully expanded. Each leaf stage is distinguished from another when the leaf petiole is visible through the crown.
2. Vegetative SN = 2.1-2.4 DFP = 14-60 GDU = 191-1239	From the formation of the first alternate leaf until leaf formation ceases. Each successive alternate leaf after the formation of the 4th alternate leaf can be a substage of this stage. Total number of leaves can range from 26 to 38.
3. Bud SN = 3.1-3.4 DFP = 60-70 GDU = 1240-1510	Terminal bud forms a head rather than a cluster of leaves. Plant has reached maximum height and a flower bud is distinctly visible (½ to 1 inch button). Inflorescence separates from leaves and begins to open.
4. Anthesis SN = 4.1-4.5	
Early Bloom SN = 4.2 DFP = 70-80 GDU = 1511-1780	Petals of ray flowers become visible as inflorescence opens. First anthers appear at the outer edge of the inflorescence as anthesis begins in outer circumference of inflorescence and progresses to one-half bloom.
50% Bloom SN = 4.3 DFP = 80-90 GDU = 1781-2040	One-half of the disk flowers are in anthesis. Seed filling begins in outer florets and progresses inward.
Full Bloom SN = 4.5 DFP = 90-100 GDU = 2041-2280	Anthesis is complete. Seed filling continues. Seeds at outer edge of head become dark in color.
5. Seed Development SN = 5.1-5.2 DFP = 100-114 GDU = 2281-2545	Petals of ray flowers wilt and drop from head. Seed filling continues. Lower leaves begin to senesce. Head becomes inverted and is green in color.
Physiological Maturity SN = 5.3 DFP = 115 GDU = 2545-2561	Back of head is yellow and bracts are brown. Stems and seeds are hard and mature.

¹ Growth stages according to Siddiqui, Brown, and Allen ("Plant Disease Reporter," 1975, Vol. 59, pp. 7-11).

² Days from planting for a field to reach completion of particular growth stage.

³ Approximate growing degree unit accumulation for a field of sunflower to reach a given stage of growth. GDU calculated from a base temperature of 45° F for a 115-day hybrid.

Picture	Description
Stage 1.1	Cotyledons emerged, petioles of first opposite leaves not visible
Stage 1.2	First pair of opposite leaves developed, petioles of second pair not visible
Stage 2-2.4 (vegetative)	First alternate leaf to last alternate leaf (drawing of all leaf stages)
Stage 3.1	Head visible, ¼ inch "button"
Stage 3.3	Bud elevated above crown leaves
Stage 3.3	Cross-section
Stage 4.0	First anthers visible on outer edge of inflorescence
Stage 4.1	Early bloom
Stage 4.1	Cross-section
Stage 4.3	50% bloom—seed filling in outer florets
Stage 4.4	75% bloom
Stage 4.5	Full bloom—anthesis complete, seeds in outer florets dark in color
Stage 5.1	Head inverts, petals of ray flowers drop from head
Stage 5.1	Cross-section
Stage 5.15	50% mature
Stage 5.3	Physiological maturity; back of head turns yellow, bracts brown