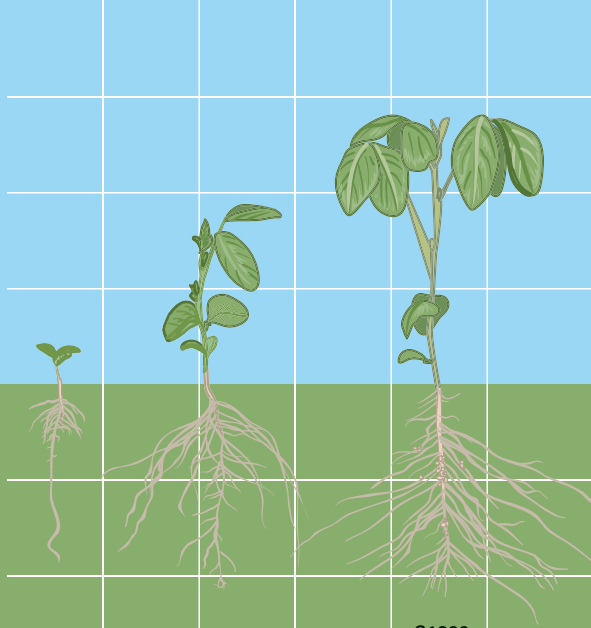
UNIVERSITY OF ILLINOIS
EXTENSION

College of Agricultural, Consumer and Environmental Sciences

Pocket Guide to Crop Development

Illustrated Growth Timelines for Corn, Sorghum, Soybean, and Wheat



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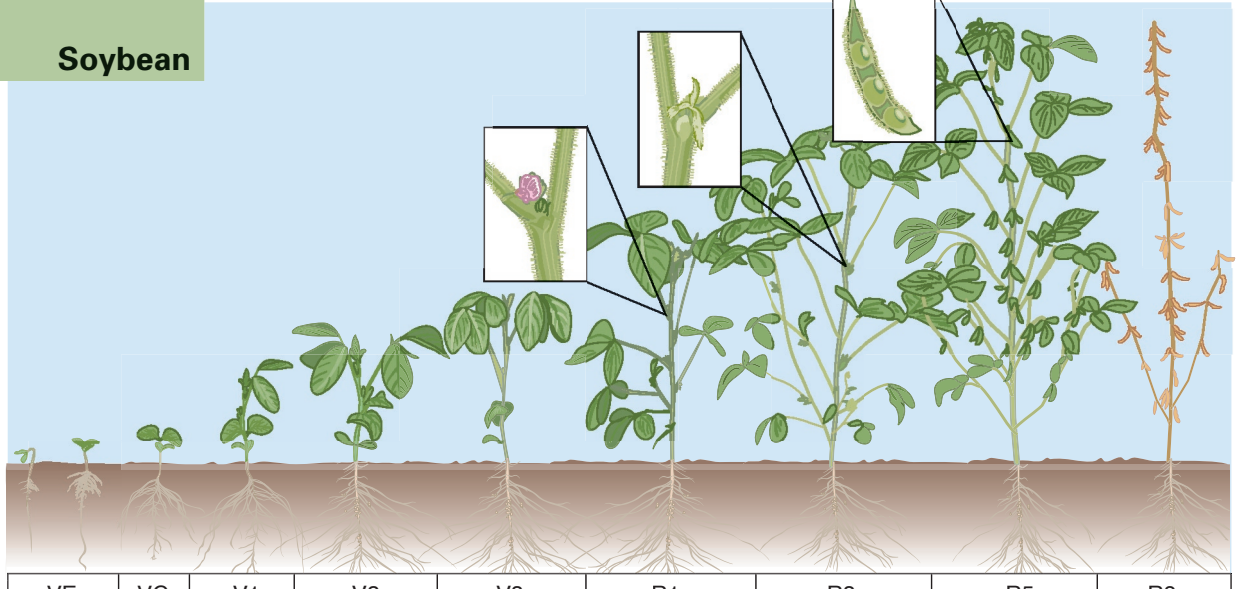
Soybean



VE	VC	V1	V2	V3	R1	R3	R5	R8

Growth Stages of Soybean

VE **Emergence:** cotyledons above soil surface

VC **Cotyledon:** cotyledons fully expanded, unifoliate leaves unfolded

V1 **2nd node:** 1 node on main stem with fully developed trifoliates

V2 **3rd node:** 3 nodes on main stem with 2 fully developed trifoliates, nodules begin forming on roots

V3 **4th node:** 4 nodes on main stem with 3 fully developed trifoliates, increased lateral root growth, branching may begin at first node

V5/V6 **6th/7th node:** number of nodes plant may produce is set, cotyledons have fallen off, branching begins, increased lateral root expansion

R1 **Beginning bloom:** 1 open flower at any node on main stem, usually occurs at V7 to V10

R2 **Full bloom:** large number of nodules present on roots, 1 open flower at one of upper 2 nodes on main stem

R3 **Beginning pod:** pod 0.5 cm long at one of 4 uppermost nodes on main stem, flowers appear rapidly

R4 **Full pod:** pod 2 cm long, rapid pod growth, beginning of seed development, flowering at upper nodes

R5 **Beginning seed:** seed 0.3 cm long inside pod at one of 4 uppermost nodes, pod number set, seed number determined, plants very sensitive to stress

R6 **Full seed:** seed fills pod cavity at one of 4 uppermost nodes, seed weight approaches maximum, leaves begin to turn yellow

R7 **Beginning maturity:** 1 pod on main stem has reached mature color, seed size is set, most seeds physiologically mature, 50% of leaves yellow

R8 **Full maturity:** 95% of pods are mature color, leaves have dropped off, 5 to 10 days before harvest-ripe

Calculating Plant Populations

For corn, sorghum, and soybean (except solid-seeded soybeans—see right), count the number of plants in a corresponding row length and multiply by 1,000 to determine the number of plants per acre. Repeat this in multiple locations to get an average for the field.

Row width (in.)	Length in ft for 1/1,000 A
15	34.8
20	26.1
30	17.5
36	14.5
40	13

For solid-seeded soybeans, use the "hula-hoop method," tossing a hoop at five randomly selected locations in the field. Count the number of plants within the hoop for each location and calculate an average number of plants. Multiply the number of plants by the corresponding factor to determine the number of plants per acre.

average number of plants in hoop
× conversion factor
= number of plants per acre

Hoop diameter (in.)	Conversion factor
18	24,662
21	18,119
24	13,872
27	10,961
30	8,878
33	7,337
36	6,165

Calculating Plant Populations

For wheat, use the following chart for number of plants per square foot, per acre, and per linear foot of drilled row.

Plants/ sq ft	Plants/A (millions)	Plants per ft of row at spacing of			
		6 in.	7 in.	8 in.	9 in.
20	0.87	10	12	13	17
24	1.05	12	14	16	20
28	1.22	14	16	19	23
32	1.39	16	19	21	27
36	1.57	18	21	24	30
40	1.74	20	23	27	33

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Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Dennis Campion, Director, University of Illinois Extension, University of Illinois at Urbana-Champaign. University of Illinois Extension provides equal opportunities in programs and employment.

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