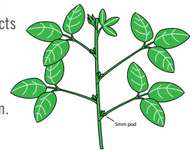
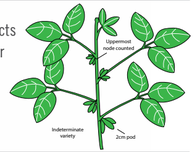
Beginning pod — R3

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed. Early season diseases can severely impact yield. Drought stress can affect pod formation. Begin irrigation, if available, at this stage. Late-season hail damage to the leaf area at this stage will severely affect final yields.



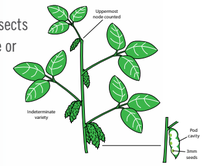
Full pod — R4

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed.



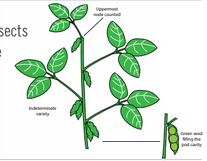
Beginning seed — R5

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed.



Full seed — R6

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed.



Beginning maturity — R7

Management Practices: Scout for issues before harvest.

Full maturity — R8

Management Practices: Scout for potential harvest issues such as green stem or lodging. Keep an eye on seed moisture content to determine your optimum harvest date. For best results, aim to harvest at 13 to 15 percent moisture.

Photos: Kansas State University Department of Communications and Agricultural Education and Department of Agronomy; Dr. Ciampitti, Crop Production and Cropping Systems Professor.

DOUBLE CROPPING

- Between 30 and 40 percent of the soybean acres in Tennessee are double-cropped annually, primarily with wheat.
- For best economic results, consider the following:
  - **Planting date:** Select an early-maturing wheat variety that allows for soybeans to be planted by early July.
  - **Variety maturity:** Select a Maturity Group IV or V variety recommended for your region, ensuring that its estimated maturity date will pass before the first frost.
  - **Wheat residue:** Evenly spread wheat or other small-grain residue after harvest. Too much residue can block sunlight and hinder the planter, too little provides no field cover to block weeds and prevent erosion and nutrient loss.
  - **Soil moisture:** Inadequate moisture may prevent germination or cause soybeans to emerge late. If adequate moisture isn't available, consider skipping the soybean rotation.
  - **Row width:** Plant soybeans in narrow rows (less than 20 inches) deep enough for sufficient moisture. Increase planting rate by approximately 20 percent to make up for the late planting. When planting with a lower efficiency drill, increase planting rate by approximately 30 percent.
  - **Weed control:** Apply a burndown herbicide with a pre-emergence residual before planting soybeans to eliminate existing weeds and reduce future threats.

SOIL FERTILITY

- Strive to keep soil pH between 6.0 and 6.5 by applying lime at recommended rates. Optimal pH ensures better nodulation and nutrient availability.
- High crop yields use more nutrients from the soil. It is impossible to achieve those high yields with low-fertility soils, so it is important to replace those nutrients.
- Be sure to sample your fields and run a soil test at least once every two to three years. Be knowledgeable about your fields' nutrient levels and apply fertilizer to deficient fields.
- You're always watching your bottom line. When cutting costs, remember that phosphorous (P) and potassium (K) are the most important nutrients to replenish for your next soybean crop.

EXPECTED RESPONSE OF SOYBEANS TO PHOSPHATE AND POTASH AT VARIOUS SOIL-TESTING LEVELS

	Percentage of maximum yield expected without fertilizer		Fertilizer needed (lb./acre) for maximum yield	
Current level	Phosphate	Potash	Phosphate	Potash
Low	<75	<75	40	80
Medium	75-95	75-95	20	40
High	100	100	0	0
Very high	100	100	0	0

Table 4

Technical editing for this fact sheet was led by Angela McClure, Ph.D., University of Tennessee extension corn and soybean specialist. Sources: National Agriculture Statistics Service, United States Department of Agriculture, University of Tennessee Extension. The United Soybean Board neither recommends nor discourages the implementation of any advice contained herein and is not liable for the use or misuse of the information provided.

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UTEXTENSION INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

A GUIDE TO TENNESSEE SOYBEANS

A LOOK BACK: 5-YEAR AVERAGE

1.4 Million acres harvested

38.7 Bushels-per-acre state yield average

KEY DATES:

Planting
3 percent planted April 30
40 percent planted June 1
92 percent planted July 1

Harvest
13 percent harvested September 30
56 percent harvested October 31
93 percent harvested November 30

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MANAGEMENT TIPS FOR THROUGHOUT THE GROWING SEASON

DISEASE CONTROL

MAJOR TENNESSEE SOYBEAN DISEASES AND POTENTIAL METHODS OF PREVENTION

Disease	Varietal resistance	Foliar fungicide	Incidence	Additional information
Frogeye Leaf Spot	Yes	Yes	Warm, wet conditions	Resistance to strobilurin fungicides has been identified
Septoria Brown Spot	Yes	Yes	Warm, wet conditions	Use less-susceptible varieties and fungicides as needed
Sudden Death Syndrome	Yes	No	Cool, wet conditions and early planting	Use less-susceptible varieties; certain nematicide seed treatments may help reduce infection
Southern Stem Canker	Yes	No	Moderately dry, warmer conditions and continuous soybean	Use less-susceptible varieties; crop rotation
Charcoal Rot	No	No	Very dry, hot conditions	Prevent/reduce plant stress

Table 1

WEED CONTROL

- Start clean with a burndown and a residual herbicide or tillage.
- Use different herbicide modes of action prior to planting and throughout the growing season.
- Scout fields and document weed escapes, which could indicate herbicide resistance.

MAJOR TENNESSEE WEED PESTS IN SOYBEANS AND THEIR CHARACTERISTICS

	Palmer Amaranth	Italian Ryegrass	Marestail
			
Growth	Up to 2.5 inches per day; rapid growth in all stages makes control with post-emergence herbicides exceedingly difficult	Winter annual	Emerges from late March through June and from late summer through the fall
Threats	• Extremely competitive • High reproductive capacity up to 1 million seeds per plant • Herbicide-resistance traits can transfer to pollen • Extended germination period	• Resistance has developed to many of the commonly used herbicides • Can move via contaminated wheat and cover crop seed	• Up to 200,000 seeds per plant • Approximately 80 percent of seeds will germinate right off the plant • Windblown seeds disperse easily across great distances
Weaknesses	• Does not emerge from low soil depths • Short-lived in the soil seed bank (four to five years)	• Poor winter hardiness • Seeds normally stay on the plant without falling to the ground	• Doesn't tolerate soil disturbance, such as deep tillage • Doesn't tolerate shading from crop canopy

Table 2

INSECT CONTROL

- Treat for insects only when threshold levels have been met or exceeded and insect populations will cause economic losses. Use Table 3 to determine when to apply insecticides.

SOME COMMON INSECT PESTS OF SOYBEANS, THEIR THRESHOLDS AND SCOUTING RECOMMENDATIONS

	Insect	What to look for	Threshold	Scouting recommendations/ Additional information
	Stink bugs (green and brown)	The presence of adults and immatures	• Before R6, when there are 9 bugs per 25 sweeps • After R6, use double the normal thresholds for next 7-10 days to prevent damage to seed	Stink bugs are only an economic threat after flowering has begun. Populations often begin building rapidly about R5.
	Soybean looper (pictured) and green cloverworm	Irregular, relatively large holes in leaves and the presence of larvae in sweep net samples	• Before R1, treat at 35% defoliation • R1-R6, treat at 20% defoliation	Loopers have 2 pairs of prolegs in the middle of their body. Green cloverworms have 3 pairs of prolegs.
	Kudzu bug	This is an invasive insect not yet found in all parts of the state	• Sweep net: One nymph per sweep • Canopy observation: Nymphs easily found on main stems, petioles or leaves	Initial infestations are often highest on field edges.
	Corn earworm	Pod feeding is the primary concern for this insect	• Before R1, treat at 35% defoliation • After R1, treat when there are nine larvae per 25 sweeps	This pest occurs most frequently in late-maturing fields.

Table 3

SEED TREATMENTS

- **Fungicide:** Not all seed treatments are equal. Be sure to use a seed treatment that controls a broad range of fungal diseases.
- **Insecticide:** Use only when you're confident that early-season insect damage will occur. Insecticide seed treatments do not replace late-season insect control.
- **Nematicide:** Seed-applied nematicides do not provide season-long control and do not replace the use of resistant varieties and crop rotation as the primary nematode-management methods.

HARVEST

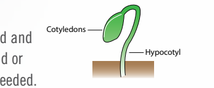
- For best economic results, strive to harvest soybeans when they contain between 13 and 15 percent moisture. Harvesting soybeans when they're too wet means more time in the dryer. Harvesting when they're too dry (less than 13 percent) means potential yield loss via water weight that is left in the field.
- Harvest desiccants can be helpful in cases of slow drydown due to wet weather or weed resurgence. Desiccants work by killing the green tissue of both soybean plants and weeds. If using a desiccant, it should be applied 7 to 15 days before harvest when at least 65 percent of the seed pods have reached a mature brown color and seed moisture is 30 percent or less. Determinate soybeans should be treated when beans are past R6, one half of leaves have dropped and remaining leaves have yellowed.

MANAGING A SOYBEAN CROP THROUGH GROWTH STAGES

VEGETATIVE STAGES

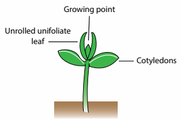
Emergence — VE

Management Practices: Scout for proper emergence; check final stand and uniformity. Irrigate to obtain a stand or incorporate residual herbicides if needed.



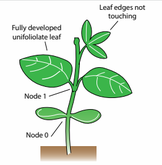
Cotyledon — VC

Management Practices: Scout for proper emergence. If stand is poor, replanting or supplementing a thin stand may be needed.



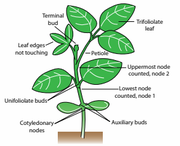
First trifoliate — V1

Management Practices: Scout for early-season weeds, insects and diseases.



Second trifoliate — V2

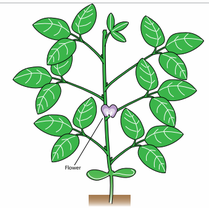
Management Practices: Scout for early-season weeds, insects and diseases. Apply post-emergence herbicides to control small emerged weeds.



V growth stages continue as long as the plant continues to produce trifoliates. Determinate soybean plants complete most of their vegetative growth when flowering begins. Indeterminate plants continue vegetative growth until the beginning of the seed formation stage (R5).

Beginning flowering — R1

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed.



Full bloom — R2

Management Practices: Scout for insects and diseases. Spray foliar insecticide or fungicide, if needed.