2021 Arkansas Soybean Quick Facts

Dr. Jeremy Ross – Extension Agronomist – Soybean
Chris Elkins & Chad Norton – Program Associate – Soybean/ Wheat Verification

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

2020 Facts:

- 2.82 million acres harvested
- 50 bushel/acre state average
- 65.1 bushel/acre SRVP average
- Average dates in 2020 SRVP
  - Planting: May 21
  - Emergence: May 30
  - Harvest: October 20
- 60 lbs = 1 bu
- 13.0% moisture is dry

Growth and Development:

Description of Vegetative Stages		
Stage No.	Abbreviated Stage Title	Description
VE	Emergence	Cotyledons above soil surface
VC	Cotyledon	Unifoliate leaves unrolled sufficiently so the leaf edges are not touching
V1	First- Node	Fully developed leaves at unifoliate node
V2	Second-Node	Fully developed trifoliate leaf at node above the unifoliate nodes
V3	Third-Node	Three nodes on the main stem with fully developed leaves beginning with the unifoliate nodes
V*n*	*nth*-Node	*n* number of nodes on the main stem with fully developed leaves beginning with the unifoliate nodes

Description of Reproductive Stages		
Stage No.	Abbreviated Stage Title	Description
R1	Beginning Bloom	One open flower at any node on the main stem
R2	Full bloom	Open flower at one of the two uppermost nodes on the main stem with a fully developed leaf
R3	Beginning Pod	Pod 3/16 inch long at one of the four uppermost nodes on the main stem with a fully developed leaf
R4	Full pod	Pod ¾ inch long at one of the four uppermost nodes on the main stem with a fully developed leaf
R5	Beginning Seed	Seed 1/8 inch long in a pod at one of the four uppermost nodes in the main stem with a fully developed leaf.
R6	Full Seed	Pod containing a green seed that fills the pod cavity at one of the four uppermost nodes on the main stem with a fully developed leaf
R7	Beginning Maturity	One normal pod on the main stem that had reached its mature pod color.
R8	Full Maturity	95 percent of the pods have reached their mature pod color; 5-10 days of drying weather are required after R8 before the soybeans have less than 15 percent moisture.

Days for a Plant to Develop from One Stage to Next		
Vegetative Stages	Average Number of Days	Range in Number of Days
Plant to VE	10	5-15
VE to VC	5	3-10
VC to V1	5	3-10
V1 to V2	5	3-10
V2 to V3	5	3-8
V3 to V4	5	3-8
V4 to V5	5	3-8
V5 to V6	3	2-5
V6 and Later	3	2-5

Reproductive Stages	Average Number of Days	Range in Number of Days
R1 to R2	0*, 3	0-7
R2 to R3	10	5-15
R3 to R4	9	5-15
R4 to R5	9	4-26
R5 to R6	15	11-20
R6 to R7	18	9-30
R7 to R8	9	7-18

*Stages R1 to R2 generally occur simultaneously in determinate varieties. The time interval between R1 and 2 in indeterminate varieties is about 3 days.

Seeding

- Plant when ground temp is 55° @ 2 inches deep by 9:00 a.m. for three days
- Place seed between 1 to 1.5 inches deep
- Seeding rate should be around 150,000 seeds per acre for a final plant population of around 130,000 plants per acre
- Minimum plant stand of 75,000 plants/acre can maximize yield-**Must be Uniform Stand, No Skips**

Determining Final Plant Stands

- 38” rows measure 13 ft 9 in
- 30” rows measure 17 ft 5 in
- 20” rows measure 26 ft 2 in
- 15” rows measure 34 ft 10”

Count plants in that distance and multiply by 1,000. This will equal plants per acre. Do this in at least ten stops in the field to get an accurate count. Example:
30” row, count 130 plants in 17 ft 5 in
130 x 1,000 = 130,000 plants per acre

Seed Treatments:

- Systemic insecticides applied on the seed are recommended for early season insect control.
- Systemic fungicides applied on the seed are recommended if soybeans are planted early under cool/wet conditions or planted late under hot/dry conditions.

Weed Control:

- Start clean with a burndown plus a residual herbicide or tillage
- PPO-resistant pigweed is widespread and Group 15 resistance has been Identified, Cultivars tolerant to metribuzin are recommended.

Link: Metribuzin Variety Tolerance

2021 Arkansas Soybean Quick Facts

Dr. Jeremy Ross – Extension Agronomist – Soybean
Chris Elkins & Chad Norton – Program Associate – Soybean/ Wheat Verification

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

- Metribuzin plus Anthem/Zidua, Outlook or *S*-metolachlor at planting plus an overlapping residual is recommended with an effective POST herbicide program.
- Refer to MP 544 Herbicide Resistance Traits: For crop tolerance traits
- Refer to MP 44 Recommended Chemicals for Weed and Brush Control for latest herbicide recommendations

Insect Control:

Treatment Levels

- Bollworm

The following table shows the treatment threshold for 25 sweeps.

Treatment cost	$8	$10	$12	$14	$16	$18	$20
Crop Value $/bu)							
$6	6.5	8.2	9.8	11.4	13.1	14.7	16.3
$7	5.6	7.0	8.4	9.8	11.2	12.6	14.0
$8	5.0	6.1	7.4	8.6	9.8	11.0	12.3
$9	5.0	5.4	6.5	7.6	8.7	9.8	10.9
$10	5.0	5.0	5.9	6.9	7.8	8.8	9.8
$12	5.0	5.0	5.0	5.7	6.5	7.4	8.2
$13	5.0	5.0	5.0	5.3	6.0	6.8	7.5
$15	5.0	5.0	5.0	5.0	5.2	5.9	6.5

- Stink bugs – 9 SB per 25 sweeps until R6, 18 SB per 25 sweeps until R6.5
- Redbanded Stink Bug- 4 per 25 sweeps until R6.5; 10 per 25 sweeps through R7
- Defoliators – 29 per 25 sweeps with 40% defoliation b/f bloom or 25% defoliation after bloom treat through R6.5
- Refer to MP 144 Insecticide for the latest insecticide recommendations.

Irrigation:

- Soybeans require 20 – 25 inches of water per growing season

General Soybean Water Use	
Crop Development	Water Use (in/day)
Germination & Seedling	0.05 – 0.10
Rapid Vegetative Growth	0.10 – 0.20
Flowering to Pod Fill	0.20 – 0.30
Maturity to Harvest	0.05 – 0.20

Irrigation Termination:

- When at least 50 percent of the pods have seeds that are touching within the pod (R6) with good soil moisture present irrigation can be terminated

Fertility:

Nitrogen (N):

- Applying nitrogen fertilizer to soybeans is not a recommended practice as long as proper nodulation occurs.

Phosphorus (P) and Potassium (K):

Nutrient	Soil Test Level	Soil Test Value	Production System	
			Full-Season Soybeans	Wheat and Double-Crop Soybeans*
		ppm P	-------- lb P2O5/acre -------	
Phosphorus	Very Low	≤8	80	120
	Low	9–16	60	120
	Medium	17-25	50	90
	Optimum	26-35	0	50
	Optimum	36-50	0	0
	Above Optimu	≥51	0	0
		ppm K	-------- lb K2O/acre --------	
Potassium	Very Low	≤60	160	180
	Low	61–90	120	120
	Medium	91 - 130	75	80
	Optimum	131-175	50	60
	Above Optimum	≥176	0	0

Double-crop soybean P and K fertilizer recommendations include the recommendations for winter wheat. The cumulative fertilizer rate can be applied in the fall.

Chloride Toxicity:

To reduce problems from Cl toxicity select a chloride-excluding variety. Chloride-excluding varieties do not readily translocate Cl from plant roots to the shoots.

Boron:

Soybeans grown on sandy and silt loam soils with pH>6.9, North of I-40 and West of Crowley's Ridge is susceptible to B-Deficiency, especially near well inlets. Consider applying B.

Diseases and Disease Control:

- Frogeye Leafspot, Aerial web blight and Cercospora leaf blight are among the more common foliar diseases in Arkansas soybeans
- Fungicides are most effective when applied at onset of development
- Diseases are often observed at reproductive stages of soybean growth
- Refer to MP 154 Arkansas Plant Disease Control Products Guide for the latest fungicide recommendations

Harvest:

- 4 -5 beans per square foot can add up to one bushel per acre loss
- Match harvest speed to conditions at time of harvest
- Adjust combine settings to harvest conditions
- Try to harvest soybeans as close 13% moisture as possible to avoid moisture loss

More Information and additional copies of this fact sheet are available at:
https://www.uaex.edu/farm-ranch/crops-commercial-horticulture/soybean/ **&** http://www.arkansascrops.com