

## Selecting Soybean Varieties

Variety selection is perhaps the most important single soybean crop management decision a producer makes. Matching the right variety to field and management conditions is critical to optimizing returns. A poor decision can result in significant yield reductions or crop failure. This fact sheet is designed to assist in selection of varieties from an official list recommended and distributed annually by Clemson University.

The following are the steps to consider when selecting soybean varieties in South Carolina.

1. Know your fields and match crop management, including variety selection, with productive potential of soils.
2. Use nematode-resistant varieties in fields where nematode assay results indicate a potential problem.
3. Select varieties from the list recommended by Clemson University, since these have met performance guidelines for at least three years.
4. Study yield performance and other data over at least two or three years from the test location most relevant to the farm in question (see Table 1).
5. Choose varieties with good tolerance to diseases, shattering, and lodging.
6. Select varieties best adapted to management practices such as irrigation, conservation tillage, or narrow rows.

### Recommended Variety

Recommended varieties are listed in Table 1. A recommended variety has been evaluated in official tests in South Carolina for at least 3 years, and has

performed equal to or better than one of the currently recommended varieties in one or more economic traits (e.g., yield or nematode resistance). A committee of Clemson research and extension personnel meets annually to discuss performance test results and to decide which varieties to add or delete from the recommended list.

### PERFORMANCE TESTING

New soybean varieties and experimental strains that appear to have potential for South Carolina producers are tested in replicated plots each year at Blackville (Edisto REC), Florence (Pee Dee REC), and Clemson (Simpson Agricultural Experiment Station). Yield, plant height, time of maturity, and lodging resistance are measured for each variety/strain. Researchers may also evaluate disease or nematode resistance at certain locations. Performance results serve as the basis for making variety recommendations and are published annually in Circular 184, "Performance of Field Crops in South Carolina," available in each county Extension office.

### SELECTION FACTORS

#### 1. Yield

The yield of a variety is a function of its genetic makeup interacting with the management and environmental conditions under which it is grown. Valid yield comparisons (Table 1) should only be made between varieties of similar maturity grown in the same test at the same location. For example, a very early-maturing variety (e.g., Deltapine 105) should only be compared with varieties of similar maturity (Group V) for at least 2 or 3 years at the same test site. Producers should refer to Circular 184

for detailed yield performance data to assist with the variety selection decision.

## 2. Nematodes

Nematodes represent an important factor in variety selection for at least 50% of South Carolina's soybean acreage. Crop rotation and the use of resistant varieties are the most economical and effective ways to control nematodes. Some important nematodes for which there is varietal resistance are soybean cyst, rootknot, and Columbia lance. For more information on these nematodes and others like sting and lesion, please refer to Soybean Leaflet 2, "Soybean Nematode Control."

## 3. Maturity

Soybean varieties are divided into 12 maturity groups from Group 000, adapted to southern Canada, to Group IX, adapted to areas like southern Florida and south Texas. In South Carolina, Groups V through VIII can be successfully grown. The maturity range (harvest dates) for these groups, when planted in May are:

Group V - October 1-15

Group VI - October 10-25

Group VII - October 20-November 5

Group VIII- October 25-November 15

**It is strongly suggested that producers plant varieties from different maturity groups to spread harvest dates and to hedge against drought during podfill and poor weather at harvest.**

## 4. Planting date

In South Carolina, full-season soybean planting is from May 10 to June 10. Maturity Groups V through VIII can be planted successfully during this period.

Late refers to planting between June 10 and July 1, and corresponds to the time soybeans are planted double-crop behind small grain. Since there is less time for a soybean crop planted this late to develop vegetatively to support good yields, Group VII and VIII varieties, which flower later, usually do best.

## 5. Soil type

Most soybeans in South Carolina are grown in the Coastal Plains where sandy or light-textured soils predominate. The less-productive deep sandy soils

have clay beginning at a depth greater than 15 inches. Varieties which grow fast and tall tend to perform best on these soils (e.g., Group VIII varieties).

The more productive Coastal Plain soils have clay beginning at a depth of less than 15 inches. Most varieties are adapted to this kind of soil. The same can be said for a typical sandy loam or clay loam soil in the Piedmont in which the clay is usually within 8 inches of the soil surface.

Silt loams are commonly found in river bottoms, Carolina bays, or other productive soils with high organic matter content. Soil moisture is not usually a limiting factor in these soils. Shorter, high-yielding varieties with strong stalks and good lodging resistance tend to perform better in these soils.

## 6. Row width

For purposes of handling with traditional deep tillage (e.g., row subsoilers) and cultivation equipment, rows 30 to 40 inches wide are considered conventionally spaced. Most varieties will perform well in these row spacings or in narrow rows 16 to 29 inches wide. Preference in this category is given to faster-growing varieties which will help shade weeds earlier. For broadcast or drilled row spacings, 15 inches or less, choosing shorter varieties with good lodging resistance and prolific branching is suggested. The only exception would be for late broadcast plantings (June 10-July 1), when tall, fast-growing and late-maturing varieties are preferred. Suggested plant populations for the various row widths are:

row width (in)	plants/row foot
30 to 40	6 to 8
15 to 29	3 to 5
15 or less	2 or 3

NOTE: consider seed germination and expected emergence rate (90% or better) when determining proper seeding rate needed to achieve final plant population.

## 7. Miscellaneous management practices (e.g., irrigation and no-till)

Irrigation generally increases soybean yields 5 to 15 bushels per acre, even with good weather. When

there is a dry August and/or September, yield increases will be larger. High-yielding varieties with good lodging resistance and prolific branching are preferred with irrigation. Tall varieties with spindly stalks are more likely to lodge and cause harvesting

problems and lower yields. For no-till planting, varieties which grow tall and fast are suggested since crop competition with weeds is important for successful weed control.

**Table 1. Recommended varieties for South Carolina (1994)—regions and planting dates, disease and nematode tolerance, and '90-91 yields at Clemson test locations.**

Variety	Region/Planting Date*	Disease and Nem. Tolerance**	'91-92 Yield (BU/A) †		
			Blackville	Florence	Clemson
<i>Maturity Group V</i>					
Asgrow 5979	PDM, SV, PD, CO (all E)	C <sub>3,4</sub>	—	—	—
Hutcheson	PDM, SV, PD, CO (all E)	SC	34	28	25
NK Coker 485	PDM, SV, PD, CO (all E)	RiC <sub>3</sub> LaSC	—	—	—
Deltapine 105	PDM, SV, PD, CO (all E)	—	38	30	33
Deltapine 415	PDM, SV, PD, CO (all E)	RiC <sub>3</sub> SC	34	31	27
FFR 562	PDM, SV, PD, CO (all E)	SC	44	33	—
Pioneer 9591	PDM, SV, PD, CO (all E)	SC	37	28	25
TN5-85	PDM, SV, PD, CO (all E)	C <sub>3</sub> SC	32	31	24
AT 575	PDM, SV, PD, CO (all E)	C <sub>3</sub> SC	—	—	—
		LSD(.10).....	NS	NS	5
<i>Maturity Group VI</i>					
Underwood 607	PDM, SV, PD, CO (all E)	—	38	35	32
Asgrow A6785	PDM, SV, PD, CO (all E)	RiSC	36	37	33
Asgrow A6297	PDM, SV, PD, CO (all E)	C <sub>3,4</sub>	37	36	35
Sampson	PDM, SV, PD, CO (all E)	—	35	33	38
Centennial	SV, PD, CO (all E)	RiC <sub>3</sub> LaSC	38	35	31
Bryan	PDM, SV, PD, CO (all E)	RiRaC <sub>3</sub>	36	38	39
Hartz 6130	PDM, SV, PD, CO (all E)	RiRaC <sub>3,4</sub>	—	—	—
Deltapine 726	PDM, SV, PD, CO (all E)	RiC <sub>3</sub> SC	35	35	36
Brim	PDM, SV, PD, CO (all E)	—	36	44	30
NK RA606	PDM, SV, PD, CO (all E)	RiC <sub>3</sub>	—	—	—
Pioneer 9691	PDM, SV, PD, CO (all E)	RiC <sub>3</sub>	34	36	36
Pioneer 9641	PDM, SV, PD, CO (all E)	SC	36	36	36
Young	PDM, SV, PD, CO (all E)	La	29	38	38
HSC B2J	PDM, SV, PD, CO (all E)	RiC <sub>3</sub>	40	31	27
FFR 695	PDM, SV, PD, CO (all E)	Ri	36	40	—
NK S62-66	PDM, SV, PD, CO (all E)	RiC <sub>3</sub>	—	—	—
		LSD(.10).....	6	4	5
<i>Maturity Group VII</i>					
Asgrow A7986	PDM(E,L), SV(E,L), PD(E,L), CO(E)	SC	38	30	42
Braxton	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiRaSC	35	31	43
NK Coker 6727	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiC <sub>3</sub> SC	—	—	—
NK Coker 6847	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiRaC <sub>3</sub> LaSC	37	31	41
Colquitt	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiRaSC	38	28	43
Deltapine 417	PDM, SV, PD, CO (all E,L)	Ri	28	26	42
Hagood	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiC <sub>3</sub> La	40	33	40
Howard	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiRaC <sub>3,4</sub>	38	30	39
Hartz 7126	PDM(E), SV(E), PD(E), CO(E)	C <sub>3</sub>	33	31	41
Pioneer 9711	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiC <sub>3</sub>	38	35	42
Stonewall	PDM(E,L), SV(E,L), PD(E,L), CO(E)	C <sub>3</sub> LaSC	37	28	42
Thomas	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiC <sub>3</sub> SC	39	31	42
Deltapine 3776	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiSC	36	34	—
		LSD(.10).....	5	NS	NS
<i>Maturity Group VIII</i>					
NK Coker 6738	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiRaC <sub>3</sub> SC	40	32	41
NK Coker 368	PDM(E,L), SV(E,L), PD(E,L), CO(E)	RiC <sub>3</sub> LaSC	37	32	33
NK S83-30	PDM, SV, PD, CO (all E,L)	RiC <sub>3</sub> LaSC	41	35	38
Kirby	PDM, SV, PD, CO (all E,L)	RiRaC <sub>3</sub> LaSC	38	32	37
Perrin	PDM, SV, PD, CO (all E,L)	RiRaSC	38	30	39
Maxcy	PDM, SV, PD, CO (all E,L)	RiC <sub>3</sub> La	42	28	39
Cook	PDM, SV, PD, CO (all E,L)	RiSC	39	38	—
Hartz 8558	PDM, SV, PD, CO (all E,L)	RiSC	33	33	—
		LSD(.10).....	6	4	NS

\*PDM = Piedmont; SV = Savannah Valley; PD = Pee Dee; and CO = Coastal Area; E = early or full-season planting (May 10-June 10);  
L = late planting (June 10-July 1); and VL = very late planting (July 1-July 25)

\*\*Indicates tolerance to one or more of the following: R1 - Rootknot-common (*M. incognita*); Ra - Rootknot-peanut (*M. arenaria*); C - Soybean cyst (*H. glycines*),  
Race 3 or Race 3 and 4; La - Lance (*H. columbus*); SC - stem canker

†= Full-season plantings of performance tests; for Clemson, '90 and '92 avg. yields; tests conducted by Dewey Barefield, Ronnie Chrestman, et al.

LSD(.10) = Yield differences larger than this figure are assumed to be real with 90% confidence (within maturity group) and not due to chance or experimental error.

NS = no statistically significant yield differences exist in this test.

NOTE: Yield comparisons should only be made within a particular maturity group at each test location, e.g. Bryan vs. Centennial (VI), and not Bryan (VI) vs. Braxton (VII).

Other Soybean Leaflets are available from your county Extension office or from the Bulletin Room (free of charge), 82 Poole Agricultural Center, Clemson University, Clemson, SC 29634-0311.

Soybean Leaflet 1 - Soybean Insect Management  
Soybean Leaflet 2 - Soybean Nematode Control  
Soybean Leaflet 3 - Soybean Disease Control  
Soybean Leaflet 4 - Soybean Harvest Management

Soybean Leaflet 5 - Storing Soybeans To Maintain Quality  
Soybean Leaflet 6 - Soybean Weed Control  
Soybean Leaflet 7 - Soybean Fertility Management  
Soybean Leaflet 9 - Guidelines for Drilling Soybeans  
Soybean Leaflet 10- Interseeding Wheat and Soybeans