Soybean Disease Loss Estimate for Southern United States in 1985 and 1986

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The Disease Loss Estimate Committee of the Southern Soybean Disease Workers compiles estimates of disease loss in soybeans for the southern United States. This record serves as the official disease loss statement for the production year. The estimates are solicited annually from personnel of the Cooperative Extension Service and experiment stations in each southern state. The loss estimates are derived from IPM field monitoring programs; regional trials for seedling, nematode, and foliar disease control; field observations; laboratory diagnoses; grower demonstrations; and diagnostic clinic records.

The loss estimates for each state listed in Tables 1 and 2 are based on the percent loss of what yields would have been had there been no disease present. The actual production figures for each state were supplied by the state crop reporting service.

In 1985 in the United States, 2,098,531,000 bu of soybeans were harvested from 61,584,000 acres (31.4 bu/acre). The southern states produced 25.1% (528,190,000 bu) of the nation's soybeans on 33.2% (20,475,000 acres) of the harvested acreage (25.8 bu/acre).

In 1986 in the United States, 2,007,033,000 bu of soybeans were harvested from 59,427,000 acres (33.8 bu/acre). The southern states produced 26.2% (527,474,000 bu) of the nation's soybeans on 36.2% (21,535,000 acres) of the harvested acreage (24.5 bu/acre).

In 1985, the estimated disease losses for the individual southern states ranged from 4.8% (Delaware) to 41.7% (Florida). An estimated 93.5 million bushels of soybean yield were lost to disease. This loss was valued at $490 million. Losses were attributed to seedling diseases (8%), root and lower stem rots (11%), nematodes (39%), foliar and stem diseases (40%), and virus and other diseases (2%).

In 1986, the estimated disease losses for the individual southern states ranged from 3% (Maryland) to 40.2% (Florida). Losses were attributed to seedling diseases (8%), root and lower stem rots (18%), nematodes (34%), foliar and stem diseases (36%), and virus and other diseases (4%). An estimated 94.5 million bushels of soybean yield valued at $953.4 million were lost to diseases. Losses from stem canker increased in 1986, whereas losses from nematodes decreased significantly, compared with 1985.

Obviously, soybean diseases are important and continue to limit soybean production in the southern states. Expanded efforts are needed to provide more effective and economical control practices for these known disease problems.

Table 1. Estimated loss of soybean yields in 1985 to disease in 16 southern states

	Percent loss for state																
	AL	AR	DE	FL	GA	KY	LA	MD	MS	MO[a]	NC	OK	SC	TN	TX	VA	Avg.[b]
Disease																	
Seedling diseases	0.1	3.0	0.1	5.0	0.05	0.8	0.25	TR[c]	0.4	0.0	1.1	0.5	0.25	2.0	0.05	0.2	0.86
Root and stem rots	0.1	1.0	1.0	10.0	1.4	0.4	3.0	0.5	3.4	0.5	0.5	2.0	1.5	3.0	1.0	0.5	1.92
Diaporthe pod and stem blight	2.5	3.0	0.1	5.0	0.08	0.2	6.5	TR	6.7	0.5	2.0	5.0	1.25	0.1	6.0	3.0	2.62
Stem canker	0.0	TR	0.0	TR	TR	TR	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.03
Anthracnose	2.5	1.5	0.1	1.0	2.3	0.6	2.0	0.0	1.3	1.0	0.1	2.0	1.25	2.5	3.0	0.5	1.35
Downy mildew	0.1	0.4	TR	TR	TR	TR	TR	TR	TR	0.0	0.0	0.0	0.25	0.0	TR	0.0	0.05
Cercospora leaf blight and purple seed stain	0.5	1.0	0.0	10.0	0.02	TR	0.25	0.0	1.9	0.0	0.0	2.0	0.5	0.1	1.0	0.2	1.09
Brown leaf spot	0.5	2.0	0.0	0.1	0.01	2.0	TR	1.5	TR	0.0	0.1	0.0	0.15	1.5	0.0	0.1	0.50
Bacterial diseases	0.2	TR	0.0	0.0	TR	TR	TR	0.0	TR	0.0	0.0	0.0	0.25	0.0	0.0	0.0	0.02
Foliar diseases—others	0.5	0.0	0.0	0.0	0.01	TR	1.0	0.0	0.5	0.0	0.0	0.0	0.75	0.0	0.01	0.0	0.17
Soybean cyst nematode	4.0	6.7	3.0	5.5	1.8	2.5	3.0	2.0	1.1	4.0	6.0	0.5	7.0	2.5	0.0	4.0	5.77
Root-knot nematodes and ectoparasitic species	3.5	1.5	0.5	5.1	4.8	0.0	3.0	1.0	0.3	0.0	2.3	0.0	8.0	0.5	0.01	1.0	2.25
Virus diseases	0.0	TR	0.0	TR	0.01	0.3	0.1	TR	TR	0.0	1.6	0.0	0.25	0.0	0.0	0.5	0.17
Other diseases	0.0	0.0	TR	15.0[d]	3.4[d]	1.5[e]	0.1	0.0	TR	0.25[e]	0.0	0.0	18.0[d]	0.1[e]	0.0	0.0	0.29
Total percent loss	15.4	20.1	4.8	41.7	10.48	8.3	19.3	5.0	15.7	6.25	13.8	12.0	21.45	12.4	11.17	10.0	17.1
Average yield (bu/A)	23	26	30	25	25	32	19	32	26.6	32.4	24	22	23	31	25	28	
Loss (bu/A)[f]	4.0	6.4	2.0	22.5	3.0	3.2	4.5	1.7	4.8	1.9	3.9	3.0	6.4	4.3	3.0	3.0	**Total**
Acres ($\times 10^6$)	1.1	3.7	0.2	0.2	1.7	1.2	2.2	0.4	2.7	0.9	1.7	0.2	1.4	1.5	0.4	0.7	20.2×10^6A
Total yield loss (bu $\times 10^6$)[f]	4.4	23.7	0.4	4.5	5.1	3.9	10.0	0.7	13.1	1.7	6.6	0.6	9.0	6.4	1.2	2.1	93.4×10^6bu
Total dollar loss ($\times 10^6$)[f,g]	23.1	124.4	2.1	23.6	26.8	20.5	52.5	3.7	68.8	8.9	34.6	3.5	47.2	33.6	6.3	11.0	$\$490.6 \times 10^6$

[a] Eight counties in southeastern Missouri.
[b] Based on percent disease weighted by acreage for each state.
[c] TR = trace.
[d] Field loss due to weather; not included in loss from pathogens.
[e] Sudden death syndrome (SDS).
[f] Rounding errors present.
[g] Based on $5.25/bu.

Table 2. Estimated loss of soybean yields in 1986 to disease in 16 southern states

	Percent loss for state																
	AL	AR	DE	FL	GA	KY	LA	MD	MS	MO	NC	OK	SC	TN	TX	VA	Avg.[a]
Disease																	
Seedling diseases	0.1	2.2	0.0	5.0	0.04	0.6	0.25	0.0	0.4	2.0	0.3	0.25	0.2	0.5	0.05	0.2	0.75
Root and stem rots	0.5	2.1	TR[b]	10.0	0.05	0.04	3.5	TR	3.7	4.0	0.3	1.0	1.5	3.5	1.0	0.5	1.97
Diaporthe pod and stem blight	1.5	6.1	TR	5.0	0.05	0.3	5.0	TR	7.7	3.0	1.0	4.0	1.0	0.01	6.0	3.0	2.48
Stem canker	0.1	0.2	0.0	TR	0.0	TR	0.15	0.0	0.1	0.0	TR	0.0	0.1	1.5	0.1	0.0	0.88
Anthracnose	2.0	0.4	0.0	3.0	0.8	0.6	2.0	0.0	1.0	1.0	TR	4.0	1.25	1.0	3.0	0.5	1.22
Downy mildew	0.1	0.1	0.0	TR	0.0	TR	TR	0.0	TR	0.0	0.0	0.0	0.2	0.0	TR	TR	0.02
Cercospora leaf blight and purple seed stain	0.2	0.3	TR	10.0	0.04	TR	0.25	0.0	1.1	0.0	0.05	2.0	0.3	0.3	1.0	0.2	0.92
Brown leaf spot	0.5	1.7	TR	0.1	TR	2.1	TR	TR	TR	0.0	0.1	0.0	0.11	1.0	0.0	0.1	0.36
Bacterial diseases	0.1	0.1	0.0	0.0	TR	TR	TR	0.0	TR	0.0	0.0	0.0	0.1	0.0	0.0	TR	0.02
Foliar diseases—others	1.0	0.0	0.0	0.1	0.01	TR	1.0	0.0	1.4	0.0	0.0	0.0	0.25	0.05	0.01	0.0	0.24
Soybean cyst nematode	3.5	4.4	4.0	1.0	1.0	3.0	3.0	2.0	0.8	4.0	6.0	0.5	2.0	2.0	0.0	3.0	2.51
Root-knot nematodes and ectoparasitic species	3.0	0.8	1.0	6.0	3.0	0.0	3.0	1.0	0.5	TR	1.5	0.0	5.5	0.3	0.01	2.0	1.72
Virus diseases	0.1	0.1	TR	TR	TR	0.2	0.5	0.0	TR	0.0	1.0	0.0	0.25	0.0	0.0	0.5	0.16
Other diseases	1.0	0.1[c]	0.0	10.0[d]	25.0[e]	0.2[c]	0.1	0.0	TR	0.0	6.5[f]	0.0	0.0	0.01[c]	0.0	0.0	0.49
Total percent loss	13.7	18.6	5.0	40.2	4.99	7.4	18.75	3.0	16.7	14.0	16.75	11.75	12.75	12.4	9.9	10.0	13.74
Average yield (bu/A)	20	20	25	23	18	32	21	26	17	33.9	23	25	15	25	32	23	
Loss (bu/A)[g]	3.2	4.5	1.2	15.3	1.1	2.5	4.8	0.8	3.4	5.5	8.3	3.3	2.5	2.7	4.3	2.5	**Total**
Acres ($\times 10^6$)	0.63	3.4	0.24	0.17	0.8	1.17	1.9	0.38	2.5	5.4	1.6	0.15	0.85	1.5	0.21	0.63	21.5×10^6A
Total yield loss (bu $\times 10^6$)[g]	2.0	15.5	0.3	2.6	0.7	3.0	9.2	0.3	8.5	29.8	13.3	0.5	2.1	4.1	0.9	1.6	94.4×10^6bu
Total dollar loss ($\times 10^6$)[g,h]	9.6	74.4	1.4	12.5	3.4	14.4	44.2	1.4	40.8	143.0	63.8	2.4	10.1	19.7	4.3	7.7	$\$453.1 \times 10^6$

[a] Based on percent disease weighted by acreage for each state.
[b] TR = trace.
[c] Sudden death syndrome (SDS).
[d] Harvest loss due to excess rainfall; not included in loss from pathogens.
[e] Drought damage; not included in loss from pathogens.
[f] Air pollution injury.
[g] Rounding errors present.
[h] Based on $4.80/bu.