

Soybean (*Glycine max*)

Forgeye leaf spot; *Cercospora sojina*

Alternaria leaf spot; *Alternaria* spp.

Soybean Disease Evaluations-2013

Disease severity was evaluated at full season soybean variety trials located in Newcastle and Sussex counties. The variety trials tested the adaptability soybean to Delaware growing conditions and susceptibility to common diseases in the region. Frogeye leaf spot was present at all sites but only in sufficient amounts to rate at the irrigated site located in Georgetown, DE. Brown spot (*Septoria glycones*) and downy mildew (*Peronospora manshurica*) were present at all sites but not in sufficient quantities to rate. Alternaria leaf spot was only observed at the Georgetown site.

The disease ratings were conducted at the Newcastle County and Sussex County locations on September 4th, 2013 and September 6th 2013, respectively. The Sussex County trial in Georgetown was irrigated. Ratings were made from a 1 ft² portion of the center of each plot. Ratings were made on a 5-point scale as follows: 0 = 0-1% disease; 1 = 1-10% disease severity; 2 = 11-20%; 3 = 21-30%; 4 = 31-40%; 5 = 41-50%. Frogeye leaf spot was rated on the upper most fully expanded leaves in the canopy. Severity of frogeye leaf spot in individual plots ranged from 0 to 30%. Severity of Alternaria leaf spot was estimated in the middle canopy on four fully expanded leaves. Severity of Alternaria leaf spot in individual plots ranged from 0 to 50%. Disease levels were too low to differentiate treatments the unirrigated site in Newcastle County. Plants were at R5-R6 when rated. Data presented here represent the plot averages (N=4) based on the aforementioned rating scale. Data were transformed to the midpoint of the range and analyzed statistically using non-parametric Kruskal-Wallis tests. Analysis indicated that significant differences between varieties existed (P <0.001). Means were separated using student's t-tests at $\alpha=0.05$.

In general the amount of frogeye leaf spot was low and infection was not severe enough to result in defoliation often associated with yield loss. Alternaria leaf spot was only found at the irrigated Georgetown site. This disease was moderate in some cultivars and caused some defoliation into the mid-upper canopy in some varieties. In Georgetown no differences in disease were noted in early maturing varieties. Conversely, six late season varieties contained significantly more Frogeye leaf spot severity than the most resistant variety. Twelve late season varieties had significantly greater amounts of Alternaria leaf spot than the most resistant variety. The data are summarized in Tables 1 and 2. Soybeans were planted into conventionally tilled ground and therefore inoculation was dependent on airborne spores from other areas. Therefore disease levels are likely lower than what would be expected in no-till or minimal-tillage fields.

Georgetown Soybean Trial-Irrigated Early Maturity		
Variety	FLS	Alternaria
HiSoy HS 39A22	0	0.25
Dyna-Gro S39RY33	0	0.75
Doebblers RPM DB 3312RR	0	0.25
Doebblers RPM 3813RR	0	0
Unisouth USG 73P93R	0.25	0.5
Syngenta NK S35-C3	0.25	0.25
Syngenta NK S39-U2	0.25	0.5
HiSoy HS 38A02	0.25	0.5
Dyna-Gro S38RY84	0.25	0.25
Southern States SS 3801NR2	0.25	0
HiSoy HS 39A14	0.5	0
T.A. Seeds TS3849R2S	0.5	0
Southern States SS 3813NR2	0.5	0.5
Doebblers RPM DB3513RR	0.5	0.25

Table 1. Disease ratings of 14 early maturing soybean varieties grown under irrigation in Georgetown, Delaware. FLS = Frogeye leaf spot (*Cercospora sojina*) disease severity; Alternaria = Alternaria leaf spot disease severity. Ratings were made using the following scale: 0 = 0-1% disease; 1 = 1-10% disease severity; 2 = 11-20%; 3 = 21-30%; 4 = 31-40%; 5 = 41-50%. No differences in disease levels were detected.

Georgetown Soybean Trial-Irrigated Late Maturity		
Variety	FLS	Alternaria
Unisouth USG 74F12R	0	1
Unisouth USG 74D32R	0	0.5
Unisouth USG 74B42	0	0.75
Mycogen 5N385R2	0	0.75
Syngenta NK S43-K1	0	0
Syngenta NK S46-G6	0	0.5
Syngenta NK S49-F8	0	0.5
Dyna-Gro S40RY73	0	0.5
S.States SS 4917NR2	0	0
Doeblers RPM DB4512RR	0	0.5
Growmark HiSoy HS44T14	0	2.25
Growmark HiSoy HS45A14	0	1.5
Growmark HiSoy HS47T12	0	2.25
Unisouth USG 74E88	0	0.25
Syngenta NK S48-P4	0.25	2.75
Dyna-Gro S44RS93	0.25	2.5
Bayer HBK RY4721	0.25	2.75
S. States SS 4510NR2	0.25	0.5
Mycogen 5N478R2	0.333333333	2.66666667
Unisouth USG 74A33R	0.5	0.5
Unisouth USG 74B58	0.5	0.25
Mycogen 5N431R2	0.5	0.75
Dyna-Gro S48RS53	0.5	2.5
Doeblers RPM DB4013RR	0.5	0
Gromark HiSoy HS42A12	0.5	1.25
S. States SS 4700R2-STS	0.666666667	2.66666667
Unisouth USG 7495NRS	0.75	0.25
Unisouth USG 74A79R	0.75	1.5
Dyna-Gro 38RY45	0.75	1.25
Dyna-Gro 39RY43	0.75	1.5
S. States SS 4312NR2	0.75	1.75
S. States SS 4412NR2	0.75	2.75
Growmark Hi-Soy HS49T14	0.75	0
Syngenta NK S41-J6	1	2
Bayer HBK RY4620	1	1.25
S.States SS 4913NR2	1.25	3.25
Unisouth USG 74A27	1.75	0.5
Unisouth USG 74A69R	1.75	2
Dyna-Gro 37RY47	1.75	1.25

Table 2. Disease ratings of 39 late maturing soybean varieties grown under irrigation in Georgetown, Delaware. FLS = Frogeye leaf spot (*Cercospora sojina*) disease severity; Alternaria = Alternaria leaf spot disease severity. Ratings were made using the following scale: 0 = 0-1% disease; 1 = 1-10% disease severity; 2 = 11-20%; 3 = 21-30%; 4 = 31-40%; 5 = 41-50%. Bold text and shaded cells indicates significantly greater disease than most resistant variety using LSD at $\alpha = 0.05$.

