

Evaluation of Sources of Resistance to *Sclerotinia sclerotiorum* in Common Bean with Five Test Methods at Multiple Locations

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The best putative sources of resistance to *Sclerotinia sclerotiorum* (white mold) in 11 bean lines and a control were tested in seven locations. The evaluations included laboratory, greenhouse and field tests conducted in Brazil, Michigan, Nebraska, North Dakota, Oregon, Washington, and Wisconsin. The tests conducted at each location are shown in Table 1.

Field tests consisted of two rows of each entry and a common susceptible line or variety resulting in a three-row plot 15 feet long replicated three times in a randomized complete block design. The laboratory and greenhouse tests were detached leaf (Steadman et al., 1997), straw (Petzoldt and Dickson, 1996), oxalate (Kolkman and Kelly, 2000), and modified limited term (Pennypacker and Hartley, 1995). Because of the differences in data sets, e.g., field disease severity, lesion size, length of stem or number of nodes affected, the entries were ranked from most resistant (1) to most susceptible (12) in each test (Table 1). A Spearman's rank correlation was used to compare entry rankings in each test. In general, there are significant ($p < 0.05$) positive correlations among Michigan field, Oregon straw, Washington field and straw, and Wisconsin field and straw. The three most highly associated tests were between Michigan field and Washington field ($r=0.746$, $p=0.0053$); Michigan field and Wisconsin field ($r=0.795$, $p=0.002$) and Washington field and Wisconsin straw ($r=0.762$, $p=0.004$). Oxalate tests were not correlated significantly nor were they correlated with other tests. The detached leaf was similar to the oxalate test in its lack of correlation with other tests.

When an ANOVA was used on ranks, with each test as a block and bean line as a treatment, there were significant differences ($p=0.0041$) among lines (Table 2). B7354 (J. Myers) and I9365-25 (P. Miklas) had the best mean rank, but L192 and MO162 (J. Myers), G122, PC-50 and NY6020-5 (M. Dickson) all were significantly lower than the susceptible control great northern Beryl.

Literature Cited

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- Pennypacker, B.W., and O.E. Hatley. 1995. Greenhouse technique for detection of physiological resistance to *Sclerotinia sclerotiorum* in soybean. *Phytopathology* 85:1178. Supplement.
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- Steadman, J.R., K. Powers, and B. Higgins. 1997. Screening common bean for white mold resistance using detached leaves. *Ann. Rep. Improv. Coop.* 40:140-141.

Table 1. Comparison of rankings of 12 bean lines for reaction to *Sclerotinia sclerotiorum* at seven locations in 2000

Lines	Rankings*										
	ND	MI		OR	WA		WI		Brazil	NE	
	Ox***	Ox	Field	Straw	Field	Straw	Field	Straw	Ox	det	
B7354	6	1	2	5	1	1	1	1	12	10	9
I9365-25	5	2	6	1	11	3	3	9	5	3	1
PC-50	1	3	3	9	5	10	6	5	6	7	12
ExRico	8	4	8	12	9	9	7	12	8	5	3
(Bunsi)	10	5	10	11	8	8	8	10	4	6	11
N97774	7	6	1	6	4	2	5	3	3	11	5
L192	9	7	8	10	10	11	10	11	2	1	7
ND8915146-	12	8	5	4	2	5	2	6	1	9	6
02	3	9	11	7	7	7	12	7	7	8	10
MO162	4	10	7	3	6	4	9	2	9	2	2
Prosperity	2	11	12	8	12	12	11	8	10	12	4
G122	11	12	4	2	3	6	4	4	11	4	8
Beryl											
NY6020-5											

*1 - 12 low to high disease

**limited term inoculation with plug of isolate SS24

***Ox = oxalate test

Table 2. Mean ranking of bean lines for reaction to *Sclerotinia sclerotiorum* in 11 field and in vitro tests.

Entry	Ranking	T Grouping
Beryl	9.723	A
N97774	8.273	AB
Prosperity	8.000	ABC
ND8915146-02	7.818	ABC
ExRico (Bunsi)	7.727	ABC
NY6020-5	6.273	BCD
PC-50	6.091	BCD
M0162	5.455	BCD
G122	5.273	CD
L192	4.818	D
I9365-25	4.455	D
B7354	4.455	D

Means with the same letter are not significantly different LSD (0.05) = 2.832.