

Tolerance Level of Alfalfa Cultivars to Lesion Nematode *Pratylenchus penetrans* and Columbia Root knot Nematode *Meloidogyne chitwoodi*.

S. L. Hafez¹, P. Sundararaj¹, D. Miller² and B.A. Hatjian³

¹Parma Research and Extension Center, 29603, U of I Lane, Parma, Idaho 83660, USA,

²Senior Alfalfa Breeder, ABI Alfalfa, Nampa, ID 83653, USA

³Director General, Ministry of Environment, Antelias, Lebanon.

In two green house experiments, alfalfa cultivars were evaluated for their tolerance to lesion nematode *Pratylenchus penetrans* and the Root knot Nematode *Meloidogyne chitwoodi*. Each experiment was in a completely randomized block design with four replications of seven cones each. An individual replication consists of seven cones of 150 cc capacity filled with sterilized soil and seeds of each of alfalfa cultivar. After germination, seedlings were thinned to three per cone and inoculated with either *P. penetrans* or *M. chitwoodi* at the rate of 100 nematodes per container. Eight weeks and 100 days after planting for *P. penetrans* and *M. chitwoodi*, the plants were uprooted and data on fresh and dry weight of root and shoot, and nematode population in the soil and root were recorded. In the first experiment there was a significant difference among the 16 cultivars tested in the parameters as compared to the lesion nematode susceptible cultivar Baker. Data indicated that the cultivars ZG 0245A and ZC 0256A showed minimum nematode population in the soil, while ZG 0250A had minimum population in the root. Maximum fresh root weight and shoot weight was observed in the variety 6530. In the second experiment there was a significant difference among the 12 alfalfa cultivars tested in the parameters as compared to the Columbia root knot nematode susceptible cultivar Lahontan. In ZL 0051A fresh and dry weight of shoot as well as roots were significantly higher, and nematode population in the soil and root was minimum.

Table 1. Mean nematode population, shoot and root weight of the alfalfa cultivars inoculated with lesion and root knot nematodes and harvested eight weeks and 100 days after planting (20 plants).

Alfalfa cultivar	Shoot weight (g)		Root weight (g)		<i>Pratylenchus penetrans</i> population in soil/root		
	Fresh	Dry	Fresh	Dry	Soil	Root	Soil + Root
I Experiment					<i>P. penetrans</i> population in soil/root		
ZG 0245A	14.31 cdef	4.314 cd	29.14 cde	3.586 a	30.00 g	45.14 defg	75.14 ef
ZC 0246A	11.86 fgh	3.543 d	25.36 de	2.014 bcde	47.14 efg	71.29 abcde	118.4 bcde
ZC 0256A	14.11 cdef	4.443 cd	26.94 de	4.257 a	28.57 g	97.14 ab	125.7 bcd
ZC 0257A	13.67 defg	4.357 cd	27.59 de	2.271 bc	45.71 efg	90.29 abc	136.0 bc
ZG 0152A	12.77 defgh	4.029 cd	27.23 de	1.800 bcdef	60.00 ef	90.43 abc	150.4 b
ZG 0150A	17.80 b	5.514 ab	35.49 a	2.614 b	54.29 efg	61.14 bcde	115.4 bcde
Baker (susceptible)	21.20 a	6.314 a	35.21 a	0.8857 f	117.1 ab	98.43 ab	215.6 a
6530	20.37 a	5.943 a	36.09 a	1.329 cdef	94.29 bcd	57.71 bcdef	152.0 b
Ameristand 403T	14.61 cdef	4.229 cd	27.56 de	1.571 bcdef	55.71 efg	104.6 a	160.3 b
MNGRN-16 (Resistant)	10.60 h	3.414 d	24.33 e	1.971 bcde	41.43 fg	53.14 cdef	94.57 cdef
MNGRN-14	11.13 gh	3.343 d	26.33 de	2.171 bcd	45.71 efg	33.29 efg	79.00 ef
Archer II	12.33 efgh	3.871 cd	29.70 bcd	2.414 b	44.29 efg	19.57 fg	63.86 f
ZG 0250A	15.23 bcde	4.729 bc	33.20 abc	2.057 bcde	70.00 de	13.71 g	83.71 def
ZL 0051A	12.80 defgh	3.914 cd	27.89 de	1.129 def	97.14 bc	61.29 bcde	158.4 b
ZG 9650A	16.69 bc	5.557 ab	33.83 ab	1.043 ef	137.1 a	82.29 abcd	219.4 a
ZN 0255A	15.41 bcd	4.871 bc	27.94 de	1.229 cdef	87.14 cd	67.86 abcde	155.0 b
LSD	2.5	0.96	4.1	0.91	23.7	35.5	40.9
II Experiment					<i>M. chitwoodi</i> population in soil/root		
ZC 0257A	21.20 cde	4.614 cd	28.34 abc	3.629 abc	118.6 abcd	159.6 b	278.1 abc
ZC 0256A	28.46 ab	5.686 ab	26.21 bcde	3.257 bc	22.86 d	55.86 d	78.7 d
ZG 0250A	22.84 cde	4.743 bcd	26.56 bcde	3.414 bc	201.4 a	126.3 bc	327.7 a
ZL 0051A	29.37 a	5.900 a	31.91 a	4.286 a	84.29 bcd	156.4 bc	240.7 abc
NEV SYNXX (Resistant)	23.70 bcd	5.329 abc	29.40 abc	3.414 bc	44.29 cd	129.0 bc	173.3 cd
Lahontan (Susceptible)	15.50 f	3.200 e	23.00 e	2.543 d	85.71 bcd	221.9 a	307.6 ab
Ameristand 403T	18.14 def	4.000 de	27.60 bcd	3.471 bc	102.9 abcd	88.86 cd	191.7 bcd
ZN 0255A	17.49 ef	4.086 de	23.89 de	3.071 bcd	171.4 ab	102.9 bcd	274.3 abc
Archer II	19.79 cdef	4.614 cd	25.96 bcde	2.957 cd	80.00 bcd	96.86 bcd	176.9 cd
ZX 9453	21.83 cde	4.986 abcd	30.13 ab	3.314 bc	155.7 ab	95.57 bcd	251.3 abc
ZL 9760	21.80 cde	4.829 bcd	25.21 cde	3.014 bcd	138.6 abc	93.29 bcd	231.9 abc
ZG 9650A	25.21 abc	5.500 abc	28.74 abc	3.714 ab	132.9 abc	128.0 bc	260.9 abc
LSD	4.9	0.87	3.8	0.63		58.1	37.2

