

Host suitability of biofortified Fusarium-resistant sweet potato lines to *Meloidogyne* species in South Africa

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Introduction: Due to challenges posed by root-knot nematodes, the Sweet Potato Breeding Programme of the ARC had since included screening for host-status in its breeding-selection programs.

Materials and methods: Ten Fusarium-resistant biofortified sweet potato lines were each inoculated with 3000 eggs + J2 of *M. javanica*, *M. incognita* race 2 and *M. incognita* race 4 (later identified as *M. enterolobii* through molecular techniques) in pot experiments under greenhouse conditions (**Fig. 1A**), with a susceptible cv. 'Beauregard' serving as a standard (**Fig. 1B**).

Results: FS-10-19, FS-10-14 and FS-10-25 lines had RP values <1 in *M. javanica*. In *M. incognita*, RP values were the lowest on lines FS-10-19 and <1 on FS-10-14. In contrast, all lines had RP values of greater than one in *M. enterolobii*, with FS-10-14 having the lowest (**Table 1**).

Conclusion: Although results of this study suggested lack of nematode-resistance genotypes in Fusarium-resistant lines, FS-10-19, FS-10-14 and FS-10-25 lines versus *M. javanica* could provide some light on genes responsible to nematode resistance in sweet potato Fusarium-resistant lines.



Fig. 1 Pot experiment (A) and susceptible cultivar 'Beauregard' (B)

Table 1: Fresh root mass (FRM), eggs, J2 and RP of *M. javanica* and *M. incognita* and *M. enterolobii* on sweet potato lines and nematode-susceptible standard at 56 days after inoculation.

Line	<i>Meloidogyne javanica</i>				<i>Meloidogyne incognita</i>				<i>Meloidogyne enterolobii</i>			
	FRM (g)	Eggs	J2	RP	FRM (g)	Eggs	J2	RP	FRM (g)	Eggs	J2	RP
FS-5-3	38.42	21920	24823	1216.7	33.06	31457	6270	1186.5	16.83	10610	2573	828.9
FS-11-15	35.18	23937	26737	7573.9	29.01	8723	2360	437.8	13.89	22971	2709	2156.8
FS-11-18	17.53	60	83	8.1	21.38	3307	653	186.0	16.35	840	77	53.5
FS-10-21	30.82	87	120	6.7	27.65	2613	1017	150.5	14.87	363	107	35.7
FS-11-1	33.883	8837	10433	568.7	31.96	5977	1400	225.4	18.73	12320	3543.3	906.8
FS-11-21	28.67	63	90	5.3	33.66	80	67	4.45	20.05	170	47	11.2
FS-1-2	23.05	6277	7143	582.2	24.96	1743	473	93.4	17.50	13573	3737	1031.7
FS-10-19	37.25	0	0	0	33.65	17	27	1.3	20.51	263	77	16.5
FS-10-14	21.57	9	11	0.9	16.20	0	0	0	14.20	13	3	1.1
FS-10-25	24.92	10	13	0.9	24.38	4123	783	238.3	14.18	457	93	44.0
*Beauregard	11.05	16210	2233	1558.1	11.62	4887	1113	516.5	19.15	5087	2633	403.1

¹Reproductive potential = total eggs + J2 in root/g total root.

*Sweet potato nematode-susceptible standard.