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*Meloidogyne javanica*  
*Fusarium oxysporum f.sp. lycopersici*

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*Meloidogyne javanica*  
*Fusarium oxysporum f.sp. lycopersici*

(Roma VF)

( )

) ( )  
(

( )

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( ) .()

(PAL)

(POX)

(PPO)

:

( )

( ) .()

( )

*M. incognita*

( ) .()

.()

(HPRG)

( , ) (HGRG)

( )

( )

( , )

( )

TMV

( )

*Meloidogyne incognita*

( ) .()

*Radopholus similis*

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.()

*M. incognita*

Dopamine

(3-hydroxytyramine)

( ) .( )

Dopamine

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(

(SAR Signaling)

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( )

*Puccinia hordei*

*M. javanica*

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*Meloidogyne javanica*

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*Fusarium oxysporum* f.sp. *lycopersici*

Roma VF

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Roma VF

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±

**(Total phenol)**

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( )

spss

excel

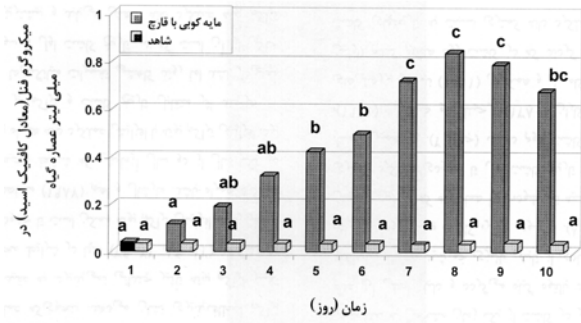
(uv-visible shimadzu)

$\lambda$  max = nm

(c)

( )

(a)



Roma VF

*F. oxysporum* f.sp. *lycopersici*

%

pH=2

(v/v)

× g

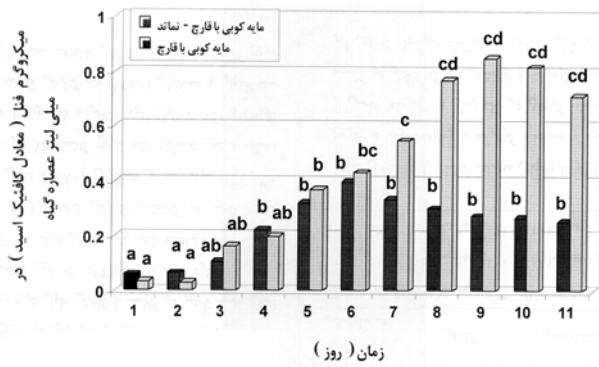
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(

( )

(b )

( )

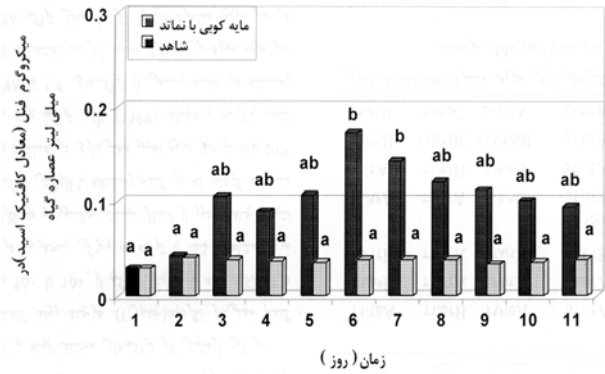


Roma VF

*F. oxysporum* f.sp. *lycopersici*

*M. javanica*

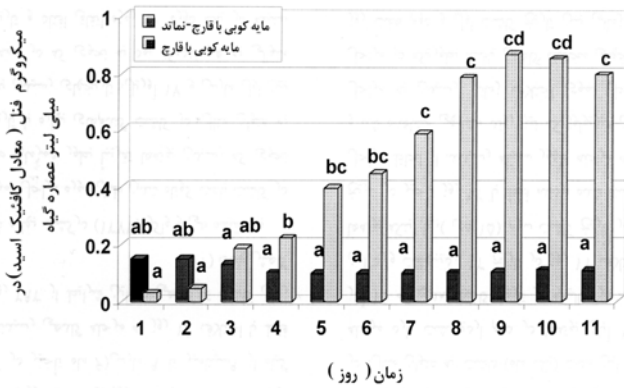
%



Roma VF

*M. javanica*

%



Roma VF

*F. oxysporum* f.sp. *lycopersici*

*M. javanica*

%

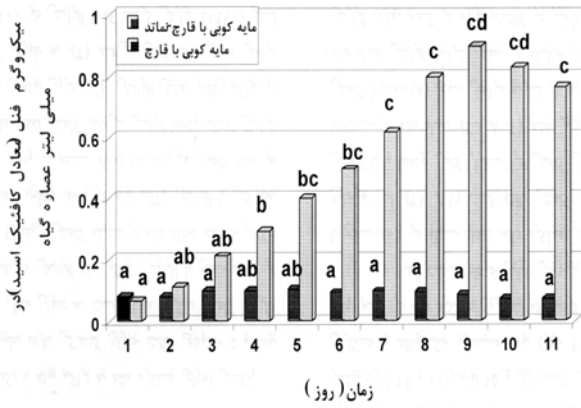
d

b

( )

Roma VF

*M. javanica*



Roma VF

*F. oxysporum* f.sp. *lycopersici*

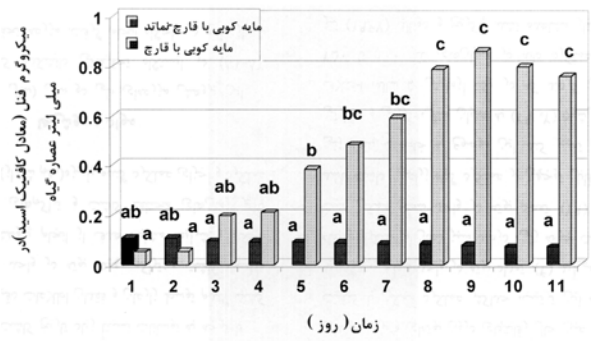
*M. javanica*

%

(a )

(c )

( )



Roma VF

*F. oxysporum* f.sp. *lycopersici*

*M. javanica*

%

(cd )

(a )

( )

Roma VF

( )

( )

( )

( )

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## REFERENCES

*Puccinia graminis*

*Fusarium oxysporum* f.sp. *lycopersici*

*Meloidogyne javanica*

3. Abawi, G.S. & K. R. Barker. 1984. Effect of cultivar, soil temperature and population levels of *Meloidogyne incognita* on root necrosis and Fusarium wilt of tomatoes. *Phytopathology* 74: 433-438.
4. Brueske, C. H. & V. H. Dropkin. 1973. Free phenols and necrosis in nematex tomato infected with the root knot nematode. *Phytopathology* 63: 329- 334.
5. Hammand-Kosack, E. & D.G.J. Jones. 1996. Resistance gene - dependent plant defense responses. *The Plant Cell*. 8:1773- 1791.
6. Hammerschmidt, R. & J. Kuc. 1995. Induced resistance to disease in plants. Kluwer Academic. Pub. 183 pp.
7. Hussey, R. S. & K. R. Barker. 1973. A comparison of methods of collecting inocula of *Meloidogyne* spp., including a new technique. *Plant Dis.Rep.* 75: 1025- 1028.
8. Mai, W. F. & G. S. Abawi. 1987. Interactions among root-knot nematodes and Fusarium wilt fungi on host plants. *Ann. Rev. Phytopathol.* 25: 317-338.
9. Mullin, B. A.; G. S. Abawi & M. A. Paster-Corrales. 1991. Modification of resistance expression of *Phaseolus vulgaris* to *Meloidogyne incognita* by elevated soil temperature. *J. of Nematol.* 23: 182-187.
10. Oka, Y.; I. Chet & Y. Spiegel. 1997. Are pathogenesis-related proteins induced by *Meloidogyne javanica* or *Heterodera avenae* invasion?. *J. of Nematol.* 29: 501-508.
11. Paxton, J. D. 1981. Phytoalexins-a working redefinition. *Phytopathology* 101: 106.
12. Ryals, J.A.; U.H. Neuenschwander; M.G. Willits; A. Molina; H. Steiner & M.D. Hunt. 1996. Systemic acquired resistance. *Plant Cell* 8:1809-1819.
13. Vallete, C.; C. Andary; J. P. Geiger; J. L. Sarah & M. Nicole. 1998. Histochemical and cytochemical investigations of phenols in roots of banana infected by the burrowing nematode *Radapholus similis*. *Phytopathology* 88: 1141-1148.
14. Williamson, V. M. & R. S. Hussey. 1996. Nematode pathogenesis and resistance in plants. *The Plant Cell* 8: 1735- 1745.



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15. Yalpini, N.; P. Silverman & I. Raskin. 1991. Salicylic acid is a systemic signal and an inducer of pathogenesis-related proteins in virus-inoculated tobacco. *Plant Cell* 3: 809-818.
16. Zacheo, G.; T. Bleve-Zacheo; D. Pagoda; G. Orlando & R.D. Durbin. 1995. The association between heat-induced susceptibility of tomato to *Meloidogyn incognita* and peroxidase activity. *Physiological and Mol. Plant Pathol.* 46: 491-507.