

( )

*Meloidogyne javanica*

*Trichoderma harzianum*

\*

( // : // : )

*Meloidogyne javanica*

*Trichoderma harzianum*

)

(

(P≤0/05)

( )

+

%

*Meloidogyne* spp.

(Chitwood, 1949)

(Vovlas & Castillo, 2004; Elad *et al.*, 1983)

(Vovlas & Castillo, 2004; Elad *et al.*, 1983)

*T. harzianum*

( )

*M. hapla*

(Brants *et al.*, 2000)

POX (EC; 1.11.1.7 donor;

hydroxyl oxidoreductase)

(Zacheo *et al.*, 1993; Mohammadi *et al.*,  
2002; Silva *et al.*, 2004)

(Mader &  
Fusel, 1982; Peng & Kuc, 1992; Zacheo *et al.*,  
1993; Mohammadi *et al.*, 2002)

(Mohammadi *et al.*, 2002)

(Peng & Kuc 1992;  
Zacheo *et al.*, 1993; Zacheo *et al.*, 1995;  
Mohammadi *et al.*, 2002)

(Mohammadi *et al.*, 2002; Silva  
*et al.*, 2004)

*T. viride* *M. javanica*

(2006) Sahebani *et al.*

(Zacheo *et al.*, 1993)

(1995) Zacheo *et al.*

*M. incognita*

*T. harzianum*

*Meloidogyne*

(Williamson & *javanica*  
Hussay, 1996; Harman, 2000; Sharon *et al.*, 2001;  
.Harman *et al.*, 2004)

*Trichoderma*

(Elad *et al.*, 1983; Kubicek & Harman, 1998;  
.Sharon *et al.*, 2001)

*T. harzianum*

(Williamson & Hussay, 1996; Harman,  
2000; Chet & Hennis, 2003; Harman *et al.*, 2004)

*T. harzianum*

(Kubicek & Harman, 1998; Sharon *et al.*, 2001;  
.Chet & Shires, 2003; Harman *et al.*, 2004)

*T. harzianum T-12*

(egg mass) *T. koningii*

*M. arenaria*

(Windham *et al.*, 1989)

(T-203)

*T. harzianum*

*Meloidogyne* spp.

( )

(Sharon *et al.*, 2001)

*T. viride*

(Khan & Saxena, 1997)

*T. harzianum*

*Globodera rostochiensis*

(1996) Siffullah & Thomas

) (Yedidia *et al.*, 1999)

) ( *T. harzianum* Bi

( *M. javanica*

)

::

(

*M. javanica*

*M. javanica*

(Root- dip)

( )

(Early urbana)

)

(

Hussay & Barker

(1973)

*Trichoderma harzianum*

(Sahebani *et al.*, 2006) *T. harzianum* Bi

:

PDA

( )

:

*T. harzianum*

*M. javanica*

)

(

(Sahebani *et al.*, 2006)

( / ) :

( )

(Mohammadi *et al.*, 2002; Sahebani *et al.*, 2006)

**(Total protein)**

(1976) Bradford

SAS

(G250)

(W/V)

)

)

(

(

)

::

(

nm

)

(BSA)

(Merck

(Root- dip)

(

)

pH

)

(

(Mohammadi *et al.*, 2002;

.Sahebani *et al.*, 2006)

) **POX**

(

/ pH

H<sub>2</sub>O<sub>2</sub>

/ pH

nm

(Zacheo *et al.*, 1995; Mohammadi *et al.*, 2002)

(KCN)

(Mohammadi *et al.*, 2002; Sahebani *et al.*, 2006)

(Lammeli, 1970)

(Native electrophoresis)

*M. javanica* *T. harzianum*

(Mohammadi *et al.*, 2002)

/ :

/

pH

(Mohammadi *et al.*, 2002)

*T. harzianum* / :

/

/ pH

( )

**POX**

/

/

(Zacheo *et al.*, 1995; Mohammadi *et al.*, 2002)

( )

( )

(C<sub>1</sub>)

( )

(B) +

( )  
( )

R<sub>f</sub>

(C<sub>2</sub>)

( )

(A)

R<sub>f</sub>

*M. javanica*

*T. harzianum*

\*

a	a	b	b	c	c	c	
a	a	b	b	c	c	c	
/ a	/ a	/ ab	/ b	/ c	/ c	/ c	( )
/ a	/ a	/ ab	/ ab	/ b	/ ab	/ ab	( )
/ a	/ a	/ b	/ b	/ c	/ c	/ c	( )

\*

*T. harzianum*

(λ<sub>max</sub>/min/mg protein)

/ a	/ a	a	/ c	/ c	/ d	/ d	/ d	/ bc	/ ab
a	/ a	/ a	/ a	/ a	/ a	/ a	a	a	/ a

\*

\*

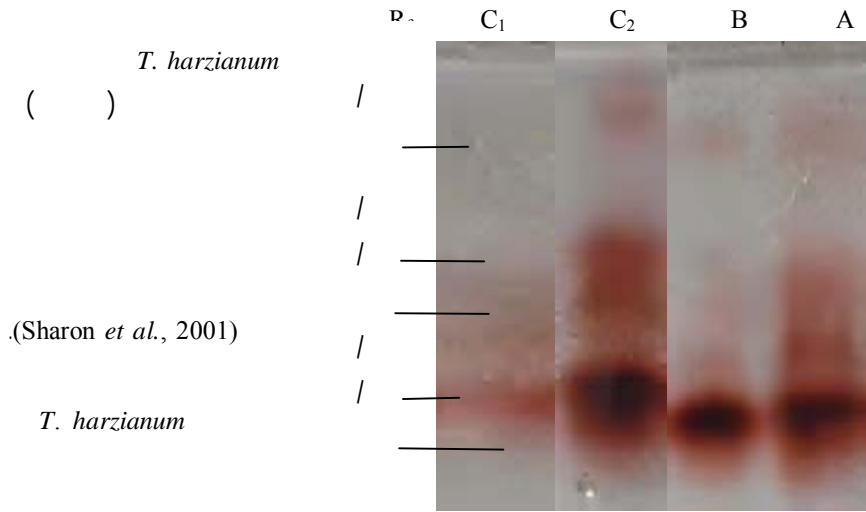
*T. harzianum*

(λ<sub>max</sub>/min/mg protein)

*M. javanica*

/ a	/ b	/ d	e	/ f	/ d	/ c	/ c	/ b	/ b	+
/ a	/ a	/ b	/ c	/ d	de	/ f	/ ef	/ d	/ ab	*

\*



(2006) Sahebani *et al.* *T. harzianum* :C1  
 + :C2  
 :B  
 :A

*T. harzianum*  
*T. harzianum*  
*M. javanica*

(f) )  
 (2001) Sharon *et al.* (1989) Windham *et al.*  
 (2006) Sahebani *et al.*

*T. harzianum*  
*M. javanica*  
 (2001) Sharon *et al.* (Sharon *et al.*, 2001)  
 P<sub>2</sub>,WT,T-203  
*M. javanica*  
*T. harzianum* T-203

(Williamson & Hussay, 1996)

+

$R_f = 41$   $R_f=35$

( )

$R_f= 52$

(Howell, 2003)

(1999) Yedidia *et al.*  
*T. harzianum*

(Silva *et al.*, 2004)

( )

( )

.Brants *et al*

(Zacheo, 1993)

(2000)

*T. harzianum*

(Howell, 2003)

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