

A.

T. harzianum
alternata

(2009 / 3 / 30 2009 / 1 / 19)

Trichoderma harzianum

Alternaria alternata

%100

/

200

%100

()

%85.55

/

25

()

(0.15 %20.40)

0.06 %10.5

T.harzianum

43.80 41.57

Effect of *T. harzianum*, Fungicides and Plants Extracts on Leaf Spot Disease of Broad Bean Caused by *A. alternata* in Greenhouse

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ABSTRACT

The study was conducted by using several factors to control leaf spot disease of *Vicia faba* caused by *Alternaria alternata*. The bio control agent *Trichoderma harzianum* proved to have a high antagonistic ability against the pathogen (invitro). All three fungicides, benomyl captan and metalaxyl gave a significant inhibitions to the growth of *A.alternata*, Benomyl was the best since it caused 100% inhibition at the concentration of 200 mg a.i / Liter, Also Plant extracts of *Datura innoxia*, *Olea europaea* and *ocimum basilicum* Inhibited the growth of the fungus, with the maximum inhibition 85.55% caused by *Datura* at 25mg/ml followed by Olive then Ocimum. In greenhouse experiments, all individual treatments caused significant reduction of infection and severity of the disease as compared to control. Seed treatment with benomyl was the best treat and gave 20.4% and 0.15 respectively. The incorporation of different control measures together using plant extract of *Datura*, benomyl and *T.harzianum* gave a high synergistic effect in decreasing infection incidence and severity of the disease to 10.5% and 0.06 respectively Moreover, it gave a significant increase in plant length and fresh weight by 41.57cm and 43.80g respectively.

Fabaceae

Alternaria alternata

(Kwon and Park, 2002).

A . alternata

A . alternata .(Dubey and Patel, 2000)

Thomma,)

(2003

..... *T. harzianum*

.(Mohamad and Abo – Raya, 1993) *Rhizoctonia solani*

(1990) Mukhopadhyay Sawant

. *Pythium aphanidermatum*

750 1000

(2007)

T. Trichoderma

.(Ahmad and Baker, 1987) *harzianum*

Datura spinosa

.(Morsy, et al., 1998)

Solanaceae

(2007)

Oleaceae

.(2007)

.(Gonzalez et al., 1992) Oleuropein

A.alternata

.

A.alternata : -1

%1

Potato (P S A)

/ 10 Chloramphenicol

Sucarose Agar

(Aneja, 2004)

2 ± 25

.(1971)Ellis

Alteruaria

Trichoderma harizanum

-2

: *alternata*

T. harizanum

A.alternata

4

9

PSA

4

2 ± 25

:

(1982)

Bell

-1

-2

-3

-4

-5

2

: *A. alternata*

-3

%50

%50

%50

100

PSA /

250 200 150

7

PSA

4

. / /

3

2 ± 25

:

-

100 ×

= %

.....

T. harzianum

: *A.alternata*

-4

40

(1987)

Rios

(:) 4:1

160

24

4

60

(Lyophilizer)

/ 6000

5

1

Millipore filter

/ 200

(PSA)

/ 25 20 15 10 5

A. alternata

/ / 3

4

27 - 25

:

-5

A.alternata

/ 25

Trichoderma harziannm

A.alternata

/

()

35 - 25

%1

15

PSA

A.alternata

.(Mustafa and Chattopadhyay,1981)

3

5

%1

:

()

2

-1

.(1981) *A. alternata*

³ / 10⁶ * 5.3 *T. harzianum*

-2

20 10

(PSA)

150

(William *et al.*, 1976)

/ 10⁶

8 25

-3

-4

(1)

-5

(2)

-6

: (1975) Clark

..... +

*2

+

*

=

() *

%20

1

%40 - 21

2

%60 - 41

3

%80 - 61

4

%100 - 81

5

..... *T. harzianum*

: -1

A. alternata

Deuteromycetes

.(Thomma, 2003)

A. alternata (2000) Patel Dubey

12 – 10

T.harzianum

-2

: *A.alternata*

A.alternata

T.harzianum

%100 1

(2006)

(1982) Bell

A.alternata

%100

T.harzianum.

T.harzianum

Acetaldehyde

Clgatoxins Trichodermin Emodine

.(2003)

(El-kafrawy, 2002) (Papavizas, 1985)

A. alternata

-3

(1)

250 200

A. alternata

(2000)

%100

/

%100

R.solani

Fusarium.solani

F.solani

(1988)

R.solani

(1979)

(20 KI) *T.harzianum*

100 *A.alternata*
 %44.96 39.62 / 150
 .(Ward, 1984) RNA
A.alternata
 / 250 200
 Thiophosgen
 .(Lukens and Sisler, 1958) SH- group
 -4
A.alternata
 (2)
 %85.55 / 25 *A.alternata*
 8.88 / 5
 / 15 10 %13.33
 / 25 20 / 5
A.alternata
 Hess Geiger 1828 Brandes
 (1986) Daturine 1833
 Scopolitin (2007)
Drechslera biseptata F.solani Scopoline
 (2007) Renuka
 %66.60 %69.07 *A. alternata*
 (2007)
F. Macrophomina. phaseolina A. alternata
.F. oxysporum solani

Curvularia tuberculata A.alternata

F.oxysporum

A.flavus Aspergillus niger F.moniliforme

(<http://www.benhascience.com/forum/download>) .

A.alternata

T. harzianum.

A. alternata

:1

250	200	150	100	
100 A	100 A	92.22 A	* 83.33 B	
50.00 D	42.59 DE	30,36 F	22.22 G	
75.38 D	68.88 C	44.96 DE	39.62 E	

*

0.05

A. alternata

:2

/ 25	/ 20	/ 15	/ 10	/ 5	
85.55 A	75.55 B	57.77 C	45.18 A	* 13.33 GH	
61.10 C	47.03 D	35.55 E	28.51 EF	8.88 HI	
55.55 C	43.33 D	26.66 F	18.51 G	5.18 I	

*

0.05

(3)

%0.15 %20.4

(2002)

T.harzianum

(1999)

%0.22 %26.4

T.harzianum

(+ +)

.() 0.06 %10.5

(+ +)

() 43.80 41.57

(1999)

(1981) Harman

()

(2002)

()

T.

T. harzianum

harzianum

			%	
32.00 B	29.95 B	0.15 C	* 20.4 C	
37.57 AB	35.57 AB	0.22 B	26.2 B	<i>Trichoderma harzianum</i>
25.63 B	30.25 B	0.30 B	28.8 B	
43.80 A	41.57 A	0.06 D	10.5 D	+ + <i>T. harzianum</i>
20.90 C	20.22 C	0.84 E	92.3 A	()
29.76 B	30.10 B	E	E	()

*

0.05

.2000

/ /

.2002

.90

.1986

.1979

.2007
 .Abs
 .1999
 .2003
 /
 .2007
 .()
Trichoderma .2006
 .4 18
Gliocladium
 .1988
 .387-275 . :20
 .1981

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