

( )

***Magnaporthe grisea* (Hebert) Barr**  
**Poaceae**  
**rep-PCR**

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( // : // : )

*Magnaporthe grisea*

rep-PCR DNA

(*Echinochloa crus-galli*)

(*Setaria italica*)

(*Digitaria sanguinalis*)

nit

nit

% %

VCG3 VCG2 VCG1

VCG1

DNA

BOX ERIC

F E D C B A

% /

A

%

DNA nit

*Pyricularia grisea* :

(Lumbsch & Huhndorf,

Magnaporthaceae

.2007)

: ] *Magnaporthe grisea* (Hebert) Barr

[*Pyricularia grisea* (Cooke) Sacc.

(Valent, 1997; Couch &

Sordariomycetes

|   |                                    |                  |                           |  |
|---|------------------------------------|------------------|---------------------------|--|
|   | <i>vic</i>                         |                  | <i>Pyricularia grisea</i> | .Kohn, 2002)                             |
|   |                                    | <i>M. grisea</i> | <i>Lolium perenne</i>     | (Cooke) Sacc.                            |
|   | DNA                                |                  |                           |  |
|   |                                    | DNA              |                           | .(Landschoot & Hoyland, 1992)            |
| (Levy <i>et al.</i> , 1993; Kachroo <i>et al.</i> , 1994;   |                                    |                  |                           |  |
| .Kumar <i>et al.</i> , 1999;)                               |                                    |                  |                           |  |
|   |                                    | <i>M. grisea</i> |                           | .(Ou, 1985; Ziegler, 1998)               |
| RFLP  | DNA                                |                  |                           |  |
| MGR586  |                                    |                  | <i>M. grisea</i>          |  |
| (2002) Farman .(Zeigler <i>et al.</i> , 1998)               |                                    |                  |                           |  |
| MGR586  |                                    | RFLP             |                           |  |
| <i>P. grisea</i>  |                                    | MAGGY RETRO5     |                           | .(Hebert, 1971)                          |
| <i>Lolium perenne</i>                                       |                                    |                  |                           |  |
| (1998) George <i>et al.</i> .                               |                                    |                  |                           |  |
| Pot2  |                                    |                  |                           |  |
|   | DNA                                | rep-PCR          |                           |  |
| DNA   | RFLP                               |                  |                           |  |
|   |                                    |                  | ( )                       |  |
| Pot2  |                                    | <i>M. grisea</i> |                           |  |
|   |                                    | rep-PCR          |                           | <i>vic</i>                               |
| (George <i>et al.</i> , 1998; Correll <i>et al.</i> , 2000; |                                    |                  |                           |  |
| .Prabhu <i>et al.</i> , 2002; Suzuki <i>et al.</i> , 2006)  |                                    |                  |                           | (1976) Genovesi & MaGill .(Leslie, 1993) |
| <i>M. grisea</i>  | (2004) Javan-Nikkhah <i>et al.</i> |                  |                           | (1986) Crawford <i>et al.</i>            |
| Pot2  |                                    |                  |                           |  |
|   | rep-PCR                            |                  |                           | <i>M. grisea</i>                         |
| <i>M. grisea</i>  | (2007) Bargnil                     |                  | <i>vic</i>                |  |
| Vera Cruz <i>et al.</i> .                                   |                                    | RAPD             |                           |  |
|   |                                    | (1996)           |                           |  |
| BOX ERIC REP  |                                    | DNA              | Correll <i>et al.</i>     | <i>M. grisea</i>                         |
|   |                                    | rep-PCR          | (2002) Javan-Nikkhah      | (2000)                                   |

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5. Repetitive element-based PCR  
6. *Xanthomonas oryzae* pv. *oryzae*

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1. Vegetative Compatibility Groups  
2. Vegetative incompatibility  
3. Mutants  
4. Parasexualism

MgSO<sub>4</sub>.7H<sub>2</sub>O      KH<sub>2</sub>PO<sub>4</sub>      K<sub>2</sub>HPO<sub>4</sub>  
 NaNO<sub>3</sub>      /      CaCl<sub>2</sub>.H<sub>2</sub>O      /  
 B-Complex vitamin  
 /      Trace element  
 /  
 °C

rep-PCR

(1999) Jedryczka *et al.* .  
*Leptosphaeria maculans*

DNA  
*Tilletia*      (2000) McDonald *et al.*  
 rep-PCR      DNA

°C

(Correll *et al.*,

*nit X*

.1987)

DNA

*M. grisea*

*nit*

*nit*

*M. grisea*

*M.*

*grisea*

(*Digitaria sanguinalis*)

(*Echinochloa crus-galli*)

(*Setaria italica*)

/

*nit*

( )

) *nit* 1

) *nit* 3 (

*M. grisea*

(

) *nit*

(

) *Nit M*

(

PDA

(Landschoot & Hoyland, 1992)

*nit*

(KClO<sub>3</sub>)

*nit*

:(Harp & Correll, 1998)

(Prabhu *et al.*, 2002) *nit* 1 *Nit* M *nit* 1 × *Nit* M *nit* 3 *nit* 1 *nit* 3 °C

( ) *Nit* M *Nit* M *nit* 1 ( )

DNA (Liu *et al.*, 2000)

( ) / pH EDTA (SDS) pH Tris-HCl NaCl (VCGs) *nit* cm *nit* M *nit* 1 *nit* M *nit* g / g *M. grisea* rep-PCR DNA DNA

4. Vortex

- 
1. Complementary tests
  2. Heterokaryon Self-Incompatible
  3. Tester

DNA

%

g

DNA DNA

DNA Tris-HCl ) TE

(EDTA

DNA °C

DNA .(Liu *et al.*, 2000)

**rep-PCR** **DNA**

DNA

)

( ERIC

MWG-Research BOX

(McDonald *et al.*, .2000)

(

.(Yap & Nelson, 1996)

ERIC: 1R 5'-ATGTAAGCTCCTGGGGATTAC-3'  
2 I 5'-AAGTAAGTGACTGGGGTGAGCG-3'  
BOX : 1A-1R 5'-CTACGGCAAGGCGACGACGCTGACG-3'

UPGMA

NTSYSpc-2.02e

DNA

/ PCR

*nit*

dATP) dNTPs DNA

Taq DNA / (dGTP dCTP dTTP

x PCR Polymerase

( x PCR buffer)

*nit* 3

*nit* 1

Gp001 DNA

*Nit* M

Corbett Research

*nit*

Set5 Set4 Unk3

ERIC PCR

*nit*

: BOX

% / PCR

1. Dice's coefficient

2. Cluster analysis

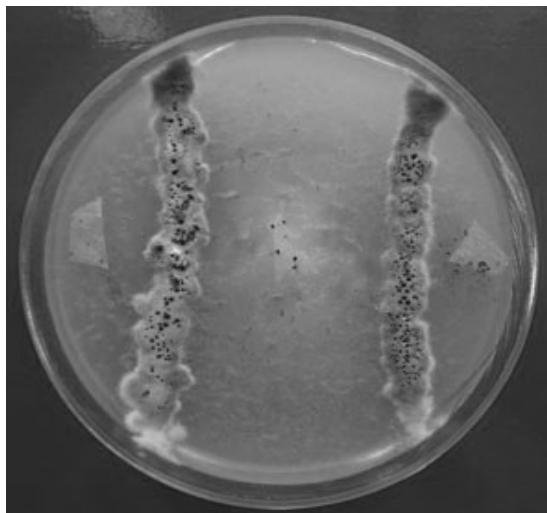
3. Unweighted pair group method with arithmetic average

4. Phenogram

(Imago ISOgen

M. grisea

( )  
 VCG1  
 ( ) VCG3 VCG2  
 Dig6  
 Unk7  
 VCG1  
 Unk7 Dig6  
 Dig21 Dig6 Dig15 Dig4  
 Unk7 Unk2  
 Dig9 Dig7  
 VCG2 Set6 Ech1 Dig11  
 VCG3 Set3 Set2 Set1  
 VCG1



Dig17

M. grisea ( ) Dig6

Dig17

VCG1

Dig17

| VCG    |           |
|--------|-----------|
| Mat1-2 | 1 Dig1    |
| Mat1-2 | 1 Dig2    |
| Mat1-2 | 1 Dig3    |
| Mat1-2 | 1 Dig4    |
| Mat1-2 | 1 Dig5    |
| Mat1-2 | 1 Dig6*   |
| Mat1-1 | 1 Dig8    |
| Mat1-2 | 1 Dig10   |
| Mat1-2 | 1 Dig12   |
| Mat1-1 | 1 Dig13   |
| Mat1-2 | 1 Dig14   |
| Mat1-2 | 1 Dig15   |
| Mat1-2 | 1 Dig16   |
| Mat1-2 | 1 Dig17   |
| Mat1-1 | 1 Dig18   |
| —      | 1 Dig19   |
| Mat1-2 | 1 Dig20   |
| Mat1-2 | 1 Dig21   |
| Mat1-2 | 1 Dig22   |
| Mat1-1 | 1 Dig23   |
| Mat1-1 | 1 Set7    |
| Mat1-1 | 1 Set8    |
| Mat1-1 | 1 Set9    |
| Mat1-2 | 1 Unk1    |
| Mat1-1 | 1 Unk2    |
| Mat1-2 | 1 Unk4    |
| Mat1-2 | 1 Unk5    |
| Mat1-2 | 1 Unk6    |
| Mat1-2 | 1 Unk7*   |
| Mat1-2 | 2 Dig7*   |
| Mat1-2 | 2 Dig11   |
| Mat1-1 | 2 Ech1    |
| Mat1-1 | 2 Set6    |
| Mat1-2 | 3 Dig9*   |
| Mat1-1 | 3 Set1    |
| Mat1-1 | 3 Set2    |
| Mat1-1 | 3 Set3    |
| Mat1-1 | HSI Set4  |
| Mat1-2 | HSI Set 5 |
| Mat1-2 | HSI Unk3  |

Unk7 Dig6

( )

\*

(Heterokaryon Self-Incompatibility) HSI

(2007) Bargnil

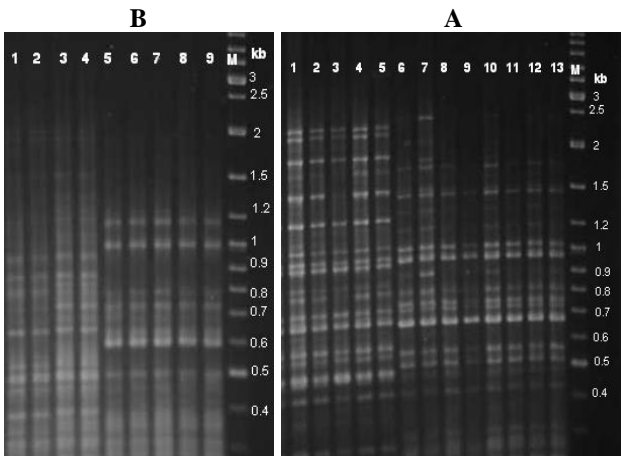
Unk2  
 A<sub>13</sub> A<sub>10</sub> A<sub>6</sub>  
 DNA  
 ( )  
 E F  
 A  
 DNA  
 ( )  
 F E  
 DNA

DNA %  
 (1991, 1993) Levy *et al.*

F E D C B A

( )

% %



VCG1

A

*M. grisea*

% /

:A

rep-PCR

DNA

*M. grisea*

( )

(A . /

ERIC

(B .

BOX

M

A<sub>4</sub>

Dig15 Dig13

DNA

(kb)

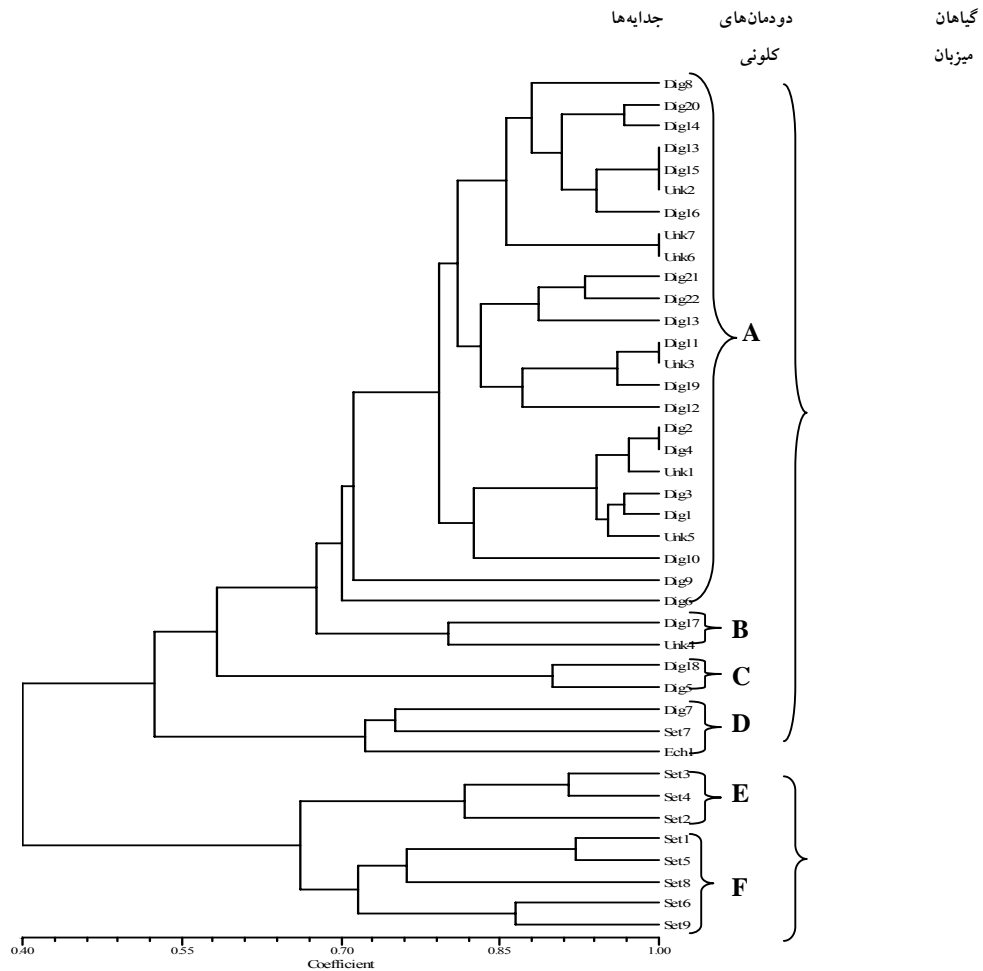
DNA

1. Haplotype

( )

D

D<sub>3</sub> D<sub>2</sub> D<sub>1</sub>



M. grisea NTSYS PC-2.02e UPGMA

BOX ERIC

rep-PCR

DNA

%

Set7

DNA

≥

D

(VCG)

*Magnaporthe grisea*

| ** |   |   |   |   |   | VCG* |
|----|---|---|---|---|---|------|
| F  | E | D | C | B | A |      |
|    |   |   |   |   |   | VCG1 |
|    |   |   |   |   |   | VCG2 |
|    |   |   |   |   |   | VCG3 |

rep-PCR

\*

\*\*



:C B

% %  
 .( )  
 B<sub>1</sub> B  
 B<sub>2</sub>  
 C<sub>2</sub> C<sub>1</sub> C

(Barnil, 2007) *Mat1-2 Mat1-1*

DNA %

(Barnil, 2007)

*M. grisea*

(Turgeon

Genovesi & MaGill .et al., 1993)

(1986) Crawford et al. (1976)

*M. grisea*

BOX ERIC

(%)

(2000) Correll et al.

(2002) Javan-Nikkhah

|   |   |
|---|---|
| / | A |
|   | B |
|   | C |
| / | D |
| / | E |
| / | F |

*M. grisea*

( )

(2000) Correll et al.

(2002) Javan-Nikkhah

*M. grisea*

(2000) Crawford et al.

VCG1

VCG

Unk7 Dig6

VCG

*M. grisea*

vic

VCG1

*M. grisea*

*M. grisea* DNA

(Levy *et al.*, 1991)

DNA

A

(2000) Xia *et al.*

ERIC rep-PCR

Set7 *M* DNA BOX

*.grisea*

DNA

D Ech1 Dig7

rep-PCR

(2007) Bargnil

(2002) Couch & Kohn

PCR-RFLP

ERIC

*M. grisea* BOX

ERIC BOX

(Tredway *et al.*, 2003)

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