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***Blumeria graminis f. sp. tritici***

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**(*Blumeria graminis f. sp. tritici*)**

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7.7.7.2.5

1.1.6.0.0

**Pm1**

**Pm2+4b+8**

**Pm6 Pm3a, Pm3b, Pm4a, Pm8, Pm3c, Pm5**

**Pm7,**

**Pm1+2+9 Pm2, Pm3d**

(% )

**Pm2+6 Pm17**

***Blumeria graminis f. sp. tritici***

*Blumeria*

*graminis* (DC.) E. O. Speer f. sp. *tritici* Em. Marchal (syn. *Erysiphe graminis* f.sp. *tritici*)

(*Triticum*

*aestivum* L.)

Pm4b

Pm3

( )

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( )

Pm3

Pm4b

*B. graminis* f. sp. *tritici*

(race specific resistance)

( )

( )

( )

( )

( )

( Selection pressure )

( )

( Pyramiding resistance genes )

*B. graminis* f. sp. *tritici*

( )

(Triplet code)

( )

*B. graminis* f. sp. *tritici*

Pm3, Pm 8

Pm4b

Pm3b

*B. graminis* f. sp.

( )

*tritici*

... *Blumeria graminis* f. sp. *tritici* :

*B. graminis* f. sp. *tritici*

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(Namuco *et al.*, 1987)  
( )  
( )  
Pm4b (Ronos)  
°C  
( )

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(L) - °C  
(H) -  
- )  
( )  
- )  
- ( )  
) - (

Pm

*Blumeria graminis* f. sp. *tritici*

		Is.1	Is.2	Is.3	Is.4	Is.5	Is.6	Is.7	Is.8	Is.9	Is.10	Is.11	Is.12	Is.13	Is.14	Is.15	Is.16	Is.17
Axminster/8Cc*	Pm1	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Ulka/8Cc	Pm2	L	H	H	H	L	H	L	H	H	H	L	L	H	L	H	L	H
Asosan/8Cc(DH)	Pm3a	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
Chul/8Cc	Pm3b	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
Sonora/8Cc	Pm3c	H	H	H	H	H	H	H	H	H	H	L	H	L	H	H	H	H
Khapli/8Cc	Pm4a	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
Rektor(DH)	Pm5	H	H	H	H	H	H	H	H	H	H	L	H	H	H	L	H	H
NK-747	Pm6	H	H	H	H	H	H	H	H	H	H	H	H	L	L	H	H	H
Disponent(DH)	Pm8	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
Amigo	Pm17	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L
M. Huntsman(DH)	Pm2+6	L	L	L	L	L	L	L	H	H	H	L	L	H	L	L	L	H
Apollo	Pm2+4b+8	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Rolle	Pm3d	L	H	H	H	H	H	L	H	H	H	L	L	L	H	L	L	H
Transec	Pm7	L	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L
Normandie	Pm1+2+9	L	L	L	L	H	L	L	H	H	H	L	L	L	H	H	L	H

(Chancellor)

= Cc .

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= H

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= L

... *Blumeria graminis* f. sp. *tritici* :

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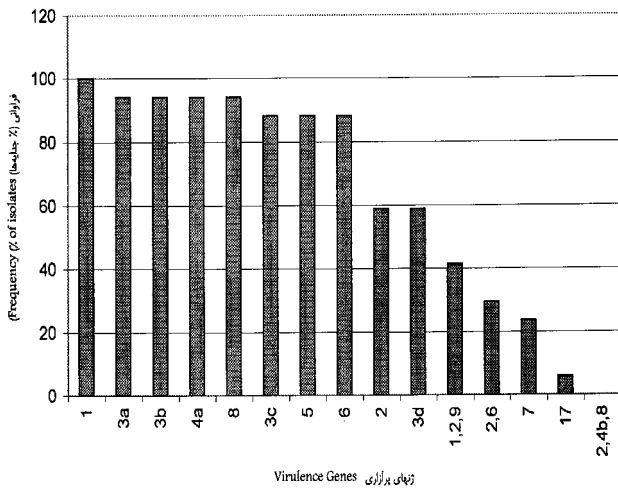
Pm7 Pm17, Pm2+4b+8

7.7.7.2.5

1.1.6.0.0

( gene for gene )

( )



7.7.7.2.5,

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5.7.7.0.0

7.7.7.0.3

1.1.6.0.0,

5.7.5.1.5

5.6.3.0.5, 7.5.5.2.0, 7.7.6.0.4

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Pm2+4b+8

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(0)

(2)

*Blumeria graminis* f. sp

*tritici*

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Pm1

(7-9)

Pm3a, Pm3b,

/

Pm8

Pm4a

Axminster

/

Pm6

Pm3c, Pm5

Pm1

Pm3d

Pm2

( / )

Pm17 Pm1+2+9, Pm2+6, Pm7

*Blumeria graminis* f. sp. *tritici*

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*	/	**
1;3b;6;8 / 2;3a;3c;4a;5;17;2,6;2,4b,8;3d;7;1,2,9	Is.11	/ 1.1.6.0.0
1;3a;3b;3c;4a;5;6;8 / 2;17;2,6;2,4b,8;3d;7;1,2,9	Is.1	/ 5.7.7.0.0
1;3a;3c;4a;5;6;3d;1,2,9 / 2;3b;8;17;2,6;2,4b,8;7	Is.5	/ 5.6.3.0.5
1;3a;3b;3c;4a;5;6;8 / 2;17;2,6;2,4b,8;3d;7;1,2,9	Is.7	/ 5.7.7.0.0
1;3a;3b;3c;4a;5;6;8 / 2;17;2,6;2,4b,8;3d;7;1,2,9	Is.12	/ 5.7.7.0.0
1;2;3a;3b;4a;5;8;2,6 / 3c;6;17;2,4b,8;3d;7;1,2,9	Is.13	/ 7.5.5.2.0
1;3a;3b;3c;4a;5;6;8 / 2;17;2,6;2,4b,8;3d;7;1,2,9	Is.16	/ 5.7.7.0.0
1;2;3a;3b;3c;4a;6;8;1,2,9 / 5;17;2,6;2,4b,8;3d;7	Is.15	/ 7.7.6.0.4
1;3a;3b;3c;4a;5;8;17;3d;1,2,9 / 2;6;2,6;2,4b,8;7	Is.14	/ 5.7.5.1.5
1;2;3a;3b;3c;4a;5;6;8;3d;7 / 17;2,6;2,4b,8;1,2,9	Is.2	/ 7.7.7.0.3
1;2;3a;3b;3c;4a;5;6;8;3d;7 / 17;2,6;2,4b,8;1,2,9	Is.3	/ 7.7.7.0.3
1;2;3a;3b;3c;4a;5;6;8;3d;7 / 17;2,6;2,4b,8;1,2,9	Is.4	/ 7.7.7.0.3
1;2;3a;3b;3c;4a;5;6;8;3d;7 / 17;2,6;2,4b,8;1,2,9	Is.6	/ 7.7.7.0.3
1;2;3a;3b;3c;4a;5;6;8;2,6;3d;1,2,9 / 17;2,4b,8;7	Is.8	/ 7.7.7.2.5
1;2;3a;3b;3c;4a;5;6;8;2,6;3d;1,2,9 / 17;2,4b,8;7	Is.9	/ 7.7.7.2.5
1;2;3a;3b;3c;4a;5;6;8;2,6;3d;1,2,9 / 17;2,4b,8;7	Is.10	/ 7.7.7.2.5
1;2;3a;3b;3c;4a;5;6;8;2,6;3d;1,2,9 / 17;2,4b,8;7	Is.17	/ 7.7.7.2.5
(effective / ineffective resistance genes)		/ *
		( Limpert and Muller, 1994) **

Apollo

Pm1

(Avirulence (Avir))

(Virulence (Vir))

Pm2+4b+8

Apollo

Asosan, Chul, Khapli

Disponent

NK-747 Sonora, Rektor

Pm3a, Pm3b,

Pm3c, Pm5, Pm6

Pm4a, Pm8

... *Blumeria graminis* f. sp. *tritici* :

Pm4b  
(Pyramiding resistance genes)  
Pm2+4b+8  
( ) Pm7 Pm17  
*B. graminis* f. sp. *tritici*  
Pm3, Pm3b ( )  
Pm8  
Pm4b  
Weihenst.M1  
Pm4b

## REFERENCES

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