

( )

*(Pyrus communis L.)*

( )

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( // : // : )

(MS, MS/2, MSN/2 and MQL)

MSN/2 MS/2

MSN/2

MS

MQL

( )

MS/2

BA

MS/2

IBA

BA

( / ) NAA IBA

NAA

(Al-Maarri et al., 1994; Hildebrandt & Harney,

(Viseur, 1987; 1988)

*(Pyrus communis L.)*

(Bell et al., 1996; Al-Maarri et al., 1994;

.Shibli et al., 1997; Brardi et al., 1993)

(Al-Maarri et al.,

.1994)

(Zimmerman et al.,1995)

1. Rosaceae  
2. Heterozygocy

		MS	
BAP	(Daminco et al., 2002)		(Murashige & Skoog, 1962)
IBA	2ip		DKW ( ) LP
			(2003) Roozban et al. (Bell & Reed, 2002)
(Abdollahi et al., 2006a; Abdollahi et al., 2006b; Sedlak & Paprstein, 2003)			WPM
			BAP
			(Quoirin & Lepoivre, QL
			QL 1977)
			(Abdollahi et al., 2006a; Abdollahi et al., 2006b)
(Pasqual et al., 2002)			
			/ BA
(Wang, 1992)			(Banno et NAA IBA
			al., 1988; Banno et al., 1989; Bhojwani et al., 1984;
			.Shibli et al., 1997; Yeo & Reed, 1995)
(Shibli et al., 1997; Wang, 1992; Yeo & Reed, 1995)			BA
			(Bhojwani et al., 1984; Amiri, 2002; Lane,
	( )		.1979; Singha, 1980; Stimart & Harbage, 1989)
			BAP BA
			(Freire et al., 2002; Singha, 1980; Roozban et
			al., 2003)
			/ MS (Pyrus syriaca)
			(Shibli et al., 1997) BA
			MS
pH	/		/ GA3 / BA
	/		BA (Bell et al., 1999) IBA
			(Dolcet-Sanjuan et al., 1990)
±			(Hartmann et al., 1997)
		±	( )

- 
1. Driver and Kuniyki Walnut 1984
  2. Woody Plant Medium
  3. Establishment

... (*Pyrus communis* L.)

MS 2N	MQL2B
MQL	MS N/2 2B
MS N/2	MS/2 2B
MS	MS2N2B
MS/2	MS2B

MS QL B

QL MQL

( ) :

MS/2

IBA / BA

MS/2

(BA)

NAA, IBA

/

BA

( )

(B)

/

MSTATC

EXCEL

% %

MS

( )

( )

( )

( )

MQL

MS/N2

MS/2

/

( )

MQL

MS/2

Shibli et al. (1988, 1989) Banno et al.

(1997)

MS/2

( )

( )

MQL

MQL

MS/2 MSN/2

MS/2

(1979) Lane (1980) Singha

MSN/2

(1989) Stimart & Harbage (1984) Bhojwani et al.

( )

MS

MS

/	**	/	**	/	**
/	**	/	**	/	**
/	**	/	**	/	**
/		/		/	
%		**	%		*

MS/2

( )

( )

BA

... (*Pyrus communis* L.)

:

BA

BA

/	**	/	**	/	**	/	**	/	**
/	**	/	**	/	**	/	**	/	*
/	**	/	**	/	*	/	*	/	n.s
/		/		/		/		/	x
	%		**		%		*		

:ns

/	c	/	c	/	b	/	b
/	ab	/	b	/	a	/	c
/	b	/	c	/	b	/	bc
/	a	/	a	/	a	/	a

  

/	e	/	c	/	bcd	/	b	MQL 2B
/	cd	/	a	/	abc	/	ab	MS N/2 2B
/	bc	/	a	/	bc	/	ab	MS/2 2B
/	bc	/	a	/	cd	/	b	MS 2N 2B
/	bc	/	a	/	cd	/	ab	MS 2B
/	de	/	bc	/	d	/	b	MS 2N
/	e	/	bc	/	bcd	/	b	MQL
/	cd	/	a	/	a	/	a	MS N/2
/	b	/	a	/	abcd	/	ab	MS
/	a	/	a	/	a	/	a b	MS/2

/	b	/	a	/	b
/	b	/	b	/	b
/	b	/	b	/	b
/	a	/	b	/	a

  

/	a	/	a	/	b	MS
/	ab	/	b	/	a	MS/2
/	b	/	b	/	a	MS N/2
/	c	/	b	/	c	MQL

/	cde	/	bcd	/	fg	MS x
/	cde	/	cde	/	bc	MS/2x
/	def	/	bcd	/	def	MS N/2 x
/	efg	/	a	/	g	MQL x
/	cde	/	def	/	fg	MSx
/	efg	/	def	/	cde	MS/2x
/	cde	/	def	/	ef	MS N/2 x
/	bcd	/	cd	/	g	MQL x
/	ab	/	ab	/	fg	MS x
/	abcd	/	def	/	cde	MS/2x
/	cde	/	ef	/	ab	MS N/2x
/	fg	/	f	/	g	MQL x
/	a	/	abc	/	bee	MSx
/	abc	/	def	/	a	MS/2x
/	a	/	abc	/	ab	MS N/2 x
/	g	/	f	/	g	MQL x

( )

BA

Stimart &

(1993) Brardi et al. (1989) Harbage

(1997) Shibli et al. (1979) Lane (1989) Harbage

BA

/  
BA

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BA

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BA

(1997) Shibli et al.

BA

/

IBA

NAA

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( )

BA

Yeo & Reed (1993) Brardi et al.

BA

(2002) Bell & Reed (1995)

BA

BA

.( )

BA

BA

/ BA

NAA

BA

.( )

Stimart & (1980) Singha

BA

( / NAA IBA)

( )

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/	**	/	**	/	**	/	**	:A
/	n.s	/	n.s	/	n.s	/	**	:B
/	n.s	/	n.s	/	n.s	/	n.s	x
/	**	/	n.s	/	**	/	**	:C
/	**	/	n.s	/	*	/	n.s	x
/	n.s	/	n.s	/	n.s	/	n.s	x
/	n.s	/	**	/	n.s	/	**	x x
/		/		/		/		

---

ns      %      \*\*      %      \*

... (*Pyrus communis* L.)

:

( / NAA IBA )				( ) BA	
**	**	**	**		
/ ab	/ b	/ b	/ a		
/ a	/ a	/ ab	/ b		
/ b	/ a	/ b	/ a		
/ c	/ b	/ a	/ a		
n.s	n.s	n.s	**		
/	/	/	/ a		IBA
/	/ -	/	/ b		NAA
**	n.s	**	**		
/ a	/	/ c	/ a		
/ b	/	/ b	/ b		
/ c	/	/ a	/ c		
( % )					**

( ) BA

**	n.s	*	n.s	BA	x
/ b	/	/ f	/		x
/ cd	/	/ cd	/		x
/ de	/	/ de	/		x
/ a	/	/ ef	/		x
/ cd	/	/ cd	/		x
/ de	/	/ a	/		x
/ bc	/	/ ab	/		x
/ de	/	/ d	/		x
/ de	/	/ bcd	/		x
/ e	/	/ d	/		x
/ de	/	/ ab	/		x
/ e	/	/ ab	/		x
( % % )					** *

MS

MS/2

MS

BA

/ IBA  
NAA

MS/2

( NAA IBA)

BA

n.s	**	n.s	**	BA	×	×
/	/ b	/	/ abcd			× IBA ×
/	/ a	/	/ b...f			× IBA ×
/	/ ab	/	/ e...h			× IBA ×
/	/ ab	/	/ ab			× NAA ×
/	/ ab	/	/ e...h			× NAA ×
/	/ a	/	/ g...I			× NAA ×
/	/ a	/	/ abc			× IBA ×
/	/ a	/	/ f...I			× IBA ×
/	/ a	/	/ I			× IBA ×
/	/ a	/	/ d...g			× NAA ×
/	/ a	/	/ ghi			× NAA ×
/	/ a	/	/ I			× NAA ×
/	/ a	/	/ abc			× IBA ×
/	/ ab	/	/ a...e			× IBA ×
/	/ a	/	/ fgh			× IBA ×
/	/ a	/	/ a...d			× NAA ×
/	/ a	/	/ e...f			× NAA ×
/	/ a	/	/ h...I			× NAA ×
/	/ ab	/	/ ab			× IBA ×
/	/ ab	/	/ a...c			× IBA ×
/	/ ab	/	/ ghi			× IBA ×
/	/ ab	/	/ a			× NAA ×
/	/ a	/	/ ghi			× NAA ×
/	/ a	/	/ hi			× NAA ×

(% )

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