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Populus nigra L.

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(2013 / 4 / 8 2012 / 12 / 9)

Populus nigra L.

0.1 NAA IBA BA / 3 2 1 0.5

. / 0.3

. %68.33 % 80

MS

8 .BA

BA / 1.0 NAA IBA / 0.3 . (

(BA / 1.0)

% 73.5 . (/ 3.5 / 3.7) 0.5

IBA / 0.5 MS

.% 90

:

Micropropagation of Black Poplar Trees (*Populus nigra* L.) by Tissue Culture

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ABSTRACT

A successful protocol was used for black poplar (*Populus nigra* L.) micropropagation through tissue culture, through initiation stage which studied, the effect of concentrations 0.0, 1.0, 1.5, 2.0, 2.5, 3.0 mg/l of Benzyl Adenin (BA) and explants of two different types (single node and shoot tips). In multiplication stage the effect of BA concentrations 0.0, 0.5, 1.0, 2.0, 3.0 mg/l alone or in combination with IBA or NAA 0.1. 0.3 mg/l. The results of initiation stage after four weeks of culture showed significant differences for single node application in comparison with shoot tips, by ratios value of response (80%, 68.33%) at a time the growing node has a significant superiority for growth in MS without regulators in relation with that MS medium having different concentrations of BA. But the results of the multiplication stage, after eight weeks of culture showed different cultured nodes of response to different concentrations of BA, the medium with 1.0 mg / 1 BA is significantly different for a number of shoot traits (2.7 shoot / node) and the longest shoots more than 0.5 cm. (2 shoot / node) in comparison with other concentrations studied of BA. On the other hand, the combination of 1.0 mg / 1 BA with 0.3 mg / 1 of IBA or NAA causes a significant increase for some studied characteristics in comparison with the control (1 mg/1 BA) and other studied interactions by which we have got the highest number of shoots (4.7 shoot / node, 4.9 shoot / node) respectively in relation with control (2.6 shoot / node), also we have highest number of leaves (17.4 leaf / node, 17.2 leaf / node) and shoots longer than 0.5 cm. trait of (3.7 shoot / node, 3.5 shoot / node) respectively. The shoot regenerated from tissue culture rooted by ratios of 73.5 % in MS medium with half of the strength of salt with 0.5 mg/1 IBA and then adapted and transferred to field conditions at success rate 90%.

Keywords: Poplar, tissue culture, BA.

/

BAP

0.25

Populus	salixaceae	Populus nigra L.				
		.(2003)				
(Chaturvedi <i>et al.</i> ,		(Fotonopoulos and sotiropoulos, 2005; Reeves et al., 198	83)			
		200	04)			

MS

3

```
/ 1.2 0.8 0.4 0
                                          (Kang et al., 1992)
           / 0.8
2.0
                                8
      BA
                                    MS
                  IBA (Khan et al., 2011)
            NAA
                                                        /
    MS
                                                   / 1.0
             BA
                                              BA
                                                    1
             6.1
                  6.4
                        BA / 1.0
                                                          4.4
                        / 0.25
                    IBA
                                         BA / 1.0
              NAA
                                           (Mofidabadi et al., 2001)
                    NAA
                          BA
    NAA / 0.1
                        BA
                           / 2.0
                                                    MS
             2.5
      /
                            % 34
                                   % 50
                                          % 73
   BA
                  NAA / 0.2
                                     BA
                                          / 1.0
 IBA
                     MS
                                                     (
                                                           )
                                                        .NAA
        /
              .2011 / 12 / 1 2011 / 2 / 20
                                               12 - 10
               Populus nigra L.
          15
             ) NaOCl
                                         % 6
  10
               90
                                 20
.(2006
                )
 Thiamine-HCl / 0.1 (Murashige and Skoog, 1962) MS
    2.0 Myo-Inositol / 100 Nicotinic acid 0.5 Pyridoxine-HCl / 0.5
                  .(Agar-Agar ) 5.5 Sucrose /
                                                  30 Glycin
```

4

20 200 5.8 20 ° 121 ° 25 – 23 2000 / 16 1.0 MS 10 BA / 3 2.5 2 1.5 1 0.5 0 20 BA / 3 2 1 / 1.0 BA0.3 0.1 NAA IBA BA20 8 (Reculture) (2) .IBA / 0.5 MS(CRD)) %5 .(2000 (1) % 68.33 % 80

5

.....

					(Bowes, 1999)	
Populus		()	:1 nigra L.	
			.MS			
	()	()	()	()	
]	B 68.33	A 13.33		A		
	A 80	В 8.33	В 4.16	В 7	7.5	
.%:	5				1	
					D .4	
			.0	(2)	BA	
	D.A	% 10	0	(2)		
	BA			MS		
	BA	MS			•	
BA	/	1.0	BA		% 85.7	
	BA	MS				
			.BA		% 63.7	
		BA				
				(/	1.0) BA	
					.(Edwin, 2005)	

MS BA :2

Populus nigra L.

.

()		()		()		BA /
A 100	A 100	A 85.7	A 63.7	A 100	A 100	()
A 100	A 100	AB 81.2	B 50	A 100	A 100	1.0
A 100	A 100	BC 50	C 22.2	A 100	A 100	1.5
A 100	A 100	BC 50	B 41.6	A 100	A 100	02.
A 100	A 100	В 66.6	D 12.5	A 100	A 100	2.5
A 100	A 100	D 0	E 0	A 100	A 100	3.0

BA .

RNA

(Park et al., 2008)

(1985)

.

/ 1.0 BA

(Sellmer *et al.*, 1988) (George, 2008)

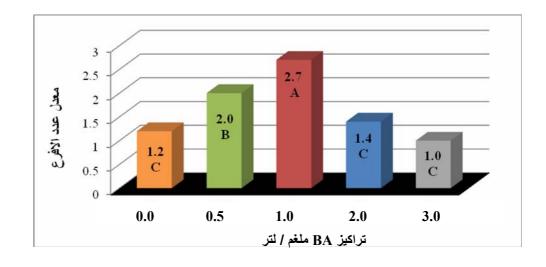
BA MS

7

/ 1.0 / 1.0 (Vinocur et al., 2000) .Populus tremula L.

BA

BA



.%5

BA : 1

. MS Populus nigra L.

: **BA**1.09 (2)

/ 3 2 1 0.5

. 0.55 0.64 0.80 0.86

(1)

BA .(2007)

: BA

BA (3)

BA / 1.0 / 9.8

/ 8.1 / 0.5

/ 3 2

. / 3.8 5.8 3.6

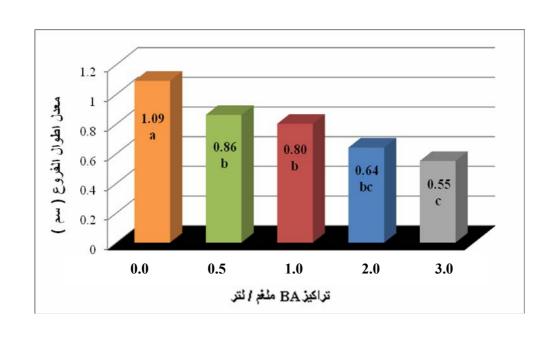
(2) BA

BA / 1.0

1985 .

.%5

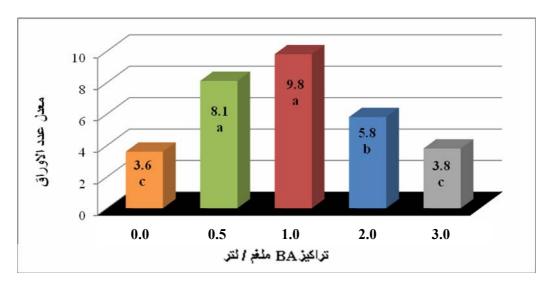
Shimizu-Sato et al., 2009



BA : 2
. MS Populus nigra L.

9

.....



.%5

BA : 3
. MS Populus nigra L.
: 0.5 BA

BA (4)

/ 2 0.5

BA / 1.0

0.5

/ 3 2 0.5

. / 0.7 1.0 1.5 0.8

BA / 1.0 (Edwin, 2005)

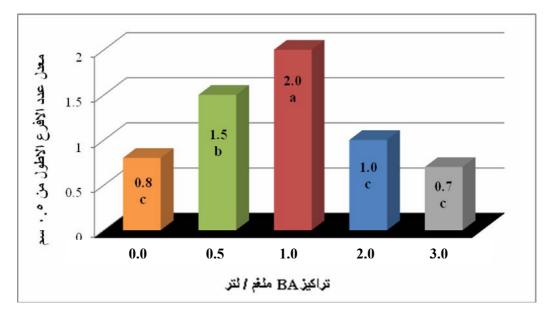
1.0 (Sellmer *et al.*, 1988)

0.5 BA /

: 4

4.7

)



. %5

0.5 BA

NAA

IBA BA

MS Populus nigra L.

·

:
BA / 1.0 NAA IBA (5)
BA / 1.0 /
NAA IBA / 0.3 BA / 4.9

/ 3.5 NAA IBA / 0.1 BA / 1.0

BA / 1.0

(Khan et al., 2011) .(1

IBA BA / 1 MS Salix tetrasperma

.IBA 0.25 + BA / 1

BA / 1.0

.(Devlin and Witham, 1983)

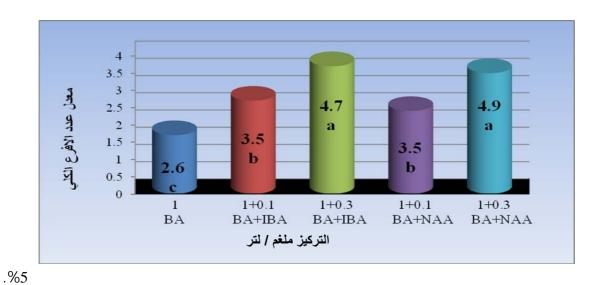
11

NAA IBA BA (6)

0.87

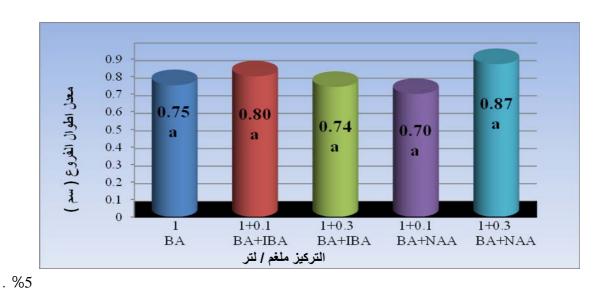
NAA / 0.3 BA / 1.0 0.80 1 (0.70) IBA

.NAA / 0.1 BA /



NAA IBA BA :5

MS Populus nigra L.



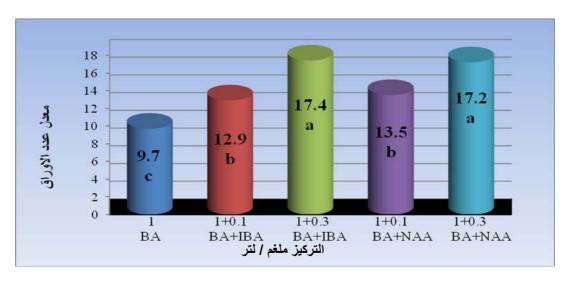
NAA IBA BA :6
. MS Populus nigra L.

RNA

NAA IBA (7) BA / 1.0 17.4 NAA IBA / 0.3 BA / 1.0 / 17.2 / 13.5 12.9 NAA IBA / 0.1 BA .(1) BA / 1.0 NAA IBA / 0.3 BA / 1.0 (5) 0.5 (8)NAA IBA BA / 3.5 3.7 0.5 0.5 NAA IBA 0.3 BA / 1.0 / 0.1 BA / 1.0 / 2.4 2.7 0.5 NAA IBA 0.5 . / 1.7 BA / 1.0

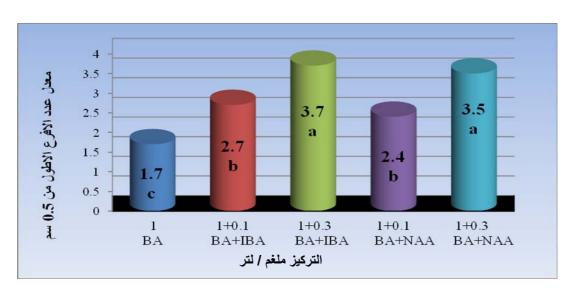
(Cline *et al.*, 2002)

13



.%5

NAA IBA BA :7
MS *Populus nigra* L.



. %5

0.5 NAA IBA BA :8
MS Populus nigra L.

NAA IBA BA BA

(Khan et al., 2011)

Skoog (Edwin, 2005)

•

.(Devlin and Witham, 1983)

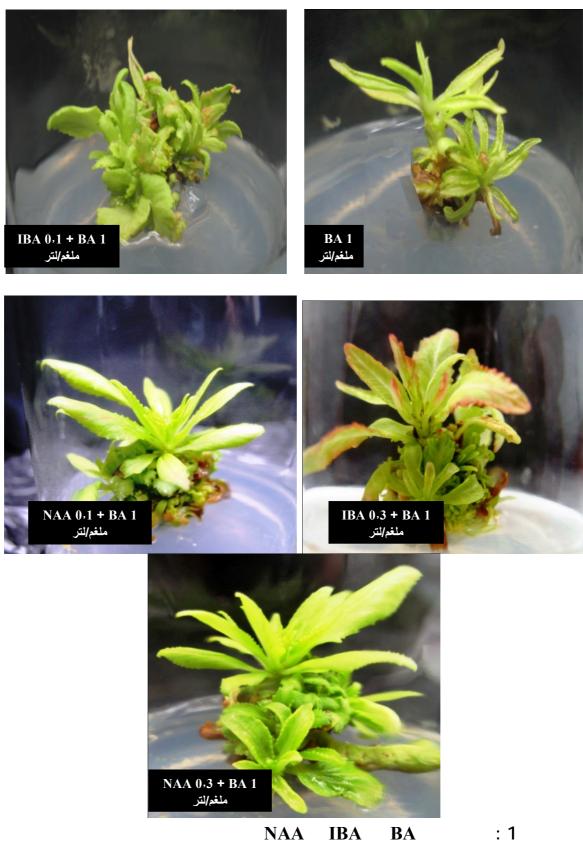
: **IBA**MS % 73.5

MS % 73.5 . 3.7 / 4.5 IBA / 0.5

(2006) IBA / 0.5

. MS

15



Populus NAA IBA BA : .nigra

.(2000)

.(2007)

.(1992)

.(2006)

.() .(2003)

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