

( )

## RAPD

\*

( / / : / / : )

RAPD

TSS TA pH

PCR

% /

DNA

RAPD

UPGMA

%

r = /

RAPD

*Diospyros* :

2n=60, 90

*D. virginiana*

(*Diospyros kaki*)

(Yonemori et al., 2000)

*Diospyros* L. Ebenaceae

(Holdman, 2000)

(2n=6x=90)

*D. kaki* x=15

*D. lotus*

(2n=9x=135)

2n=30 *D. olifera*

1. Allopolyploidy

E-mail: fattahi@ut.ac.ir

:

:

\*

(Holdman, 2000)

(Madanloo, 1987)

(*Diospyros kaki*)

(2001) Bellini et al.

RAPD

( $r = /$  )

Badenes et al. RAPD

(Madanloo, 1987)

(*Diospyros kaki*)

(2003) al.

FAO

RAPD

RAPD

(2005) Hasegawa et al.

([www.fao.org/Faosatat](http://www.fao.org/Faosatat))

TSS

C A

(2005) Yang et al.

(Miller & Crocker, 1994)

...

(Guo et al., 2006; *Diospyros*)

Kanzaki Hasegawa et al., 2005; Hu & Luo, 2006;

RAPD (2006) Shiran et al. (et al., 2002; ( )

SSR

(2006) Sarkhosh et al.

RAPD

RAPD

... :  
 TA TSS ( )  
 ( ) ( )  
 °C  
 ppm ( )  
 ( )  
 ( )  
 ( )  
 DNA  
 DNA  
 (1996) Vroh Bi et al.  
 DNA  
 DNA nm nm  
 ( ng/μl) ( )  
 RAPD  
 RAPD  
 TIB MOLBIOL  
 (dNTPs) Taq DNA polymerase /  
 MgCl<sub>2</sub> ( ) PCR  
 ( )  
 PCR /  
 μl  
 ng/μl DNA  
 PCR buffer PCR μl  
 MgCl<sub>2</sub> dNTPs TaqDNA Polymerase pH  
 μl PCR + )  
 / pH ( )  
 / pH pH  
 )  
 °C  
 °C °C °C  
 (Daood et al., 1992; Glew et al., 2005)

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3. ABBE Refractometer (Ceti Belgium)  
 4. Color Chart  
 5. Astringent

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1. Fruit pressure tester-FT327  
 2. Sartorius professional pH meter pp-20

UV	DNA	PCR	(
		$\mu l$	
		/	TBE % /
	*	Kaki-RK1	Kaki-Round-Karaj-1
		Kaki-RK2	Kaki-Round-Karaj-2
		Kaki-RK3	Kaki-Round-Karaj-3
		Kaki-RK4	Kaki-Round-Karaj-4
		Kaki-RK5	Kaki-Round-Karaj-5
		Kaki-RK6	Kaki-Round-Karaj-6
		Kaki-RK7	Kaki-Round-Karaj-7
		Kaki-RK8	Kaki-Round-Karaj-8
		Kaki-RK9	Kaki-Round-Karaj-9
		Kaki-RK10	Kaki-Round-Karaj-10
		Kaki-RK11	Kaki-Round-Karaj-11
		Kaki-RK12	Kaki-Round-Karaj-12
		Kaki-RV1	Kaki-Round-Varamin-1
		Kaki-RV2	Kaki-Round-Varamin-2
		Kaki-FV1	Kaki-Flat-Varamin-1
		Kaki-FV2	Kaki-Flat-Varamin-2
		Kaki-HK1	Kaki-Heart-Karaj-1
		Kaki-HK2	Kaki-Heart-Karaj-2
		Kaki-HK3	Kaki-Heart-Karaj-3
		Kaki-HV1	Kaki-Heart-Varamin-1
		Kaki-HV2	Kaki-Heart-Varamin-2
		Kaki-HV3	Kaki-Heart-Varamin-3
		Lotus-MV	Lotus-male-Varamin
		Lotus-MK	Lotus-male-Karaj
		Lotus-K1	Lotus-Karaj-1
		Lotus-K2	Lotus-Karaj-2
		Lotus-K3	Lotus-Karaj-3
		Vrgn-K1	Virginiana-Karaj-1
		Vrgn-K2	Virginiana-Karaj-2
		g	: *

FFW	Fruit Fresh Weight		
FL	Fruit Length		
FD	Fruit Diameter		
FF	Fruit flesh Firmness		
pH	Potential of H <sup>+</sup> ions		
TA	Titration Acidity of fruit extract		
TSS	Total Soluble Solid of fruit extract in 25°C		
FFI	Fruit Flavor Index	(TA TSS )	
FFC	Fruit Flesh Color	( )	
FSC	Fruit Skin Color	( )	
SP	Seed Presence	( )	
LL	Leaf Length		
LW	Leaf Width		

Lotus-K1  
 Kaki-RK8 TSS SAS  
 TA SPSS  
 ( )  
 /  
 Kaki-RK2  
 MSTAT-C  
 SPSS  
 RAPD  
 ( × )  
 NTsys  
 TA (r = / )  
 UPGMA  
 RAPD  
 TA NTsys MX-COMP

(r = / ) (C.V.)

Kaki-HK2

Kaki-HV3

(r = / )

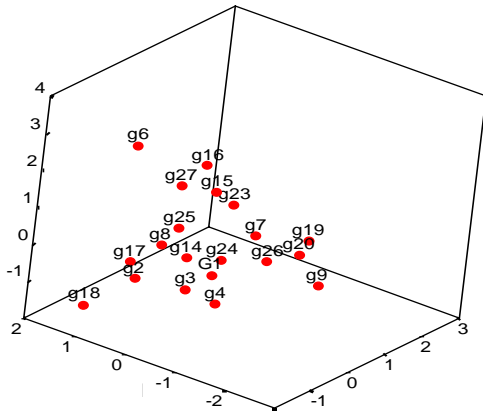
(r = / )

- 
1. Varimax
  2. Jaccard's similarity coefficient
  3. Unweighted Paired Group Method Using Arithmetic Average
  4. Coefficient of Variability

TSS

/  
/  
( )

z y x



)  
Kaki- Kaki-RK12

( HK1

Kaki-HV2 Kaki-HV1 Kaki-HK2 :  
Kaki-RK3 Kaki-RK2 Kaki-RK1 :  
Kaki-RK7 Kaki-RK6 Kaki-RK5 Kaki-RK4  
Kaki-FV2 Kaki-FV1 Kaki-HV3  
Kaki-RK9 Kaki-RV2 Kaki-RV1  
Kaki-RK11 Kaki-RK10

\*(%)

/	/	/
/	/	/
/	/	/
/	/	/
/	/	/
/	/	/
/	/	/
/	/	/
/	/	/

pH

( )

(C.V.)

\*

Lotus-MK ( / )  
/ Kaki-RK6  
(1998) Yonemori et al.  
*D. Kaki*

DNA  
*D. Kaki* RFLP  
*D. virginiana* *D. lotus*  
(Yonemori et al., 1998)  
( )

**RAPD**

Kaki-HK2 Kaki-RK1

Kaki-RK3 Kaki-RK2 Kaki-RK1  
( ) Kaki-RK4

Kaki-RK9

TIBMBB-16  
TIBMBD-15

Kaki-RK8 Kaki-RV2

(bp)

Kaki-RK5 ( )  
Kaki-RK6 Kaki-RK7

UPGMA

NTsys (Ver. 2.2)

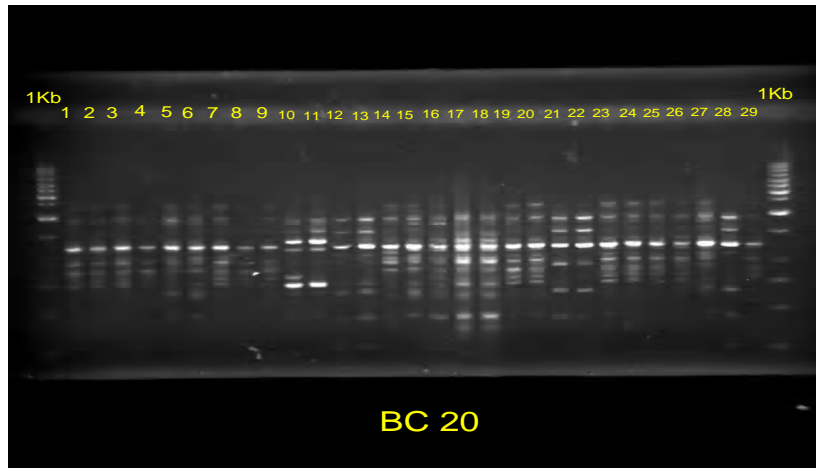
Kaki-RK10  $r = /$   
Kaki-RK12

Kaki-HK2 Kaki-HK1 ( / )

Kaki-HV2 Kaki-HV1

RAPD

/

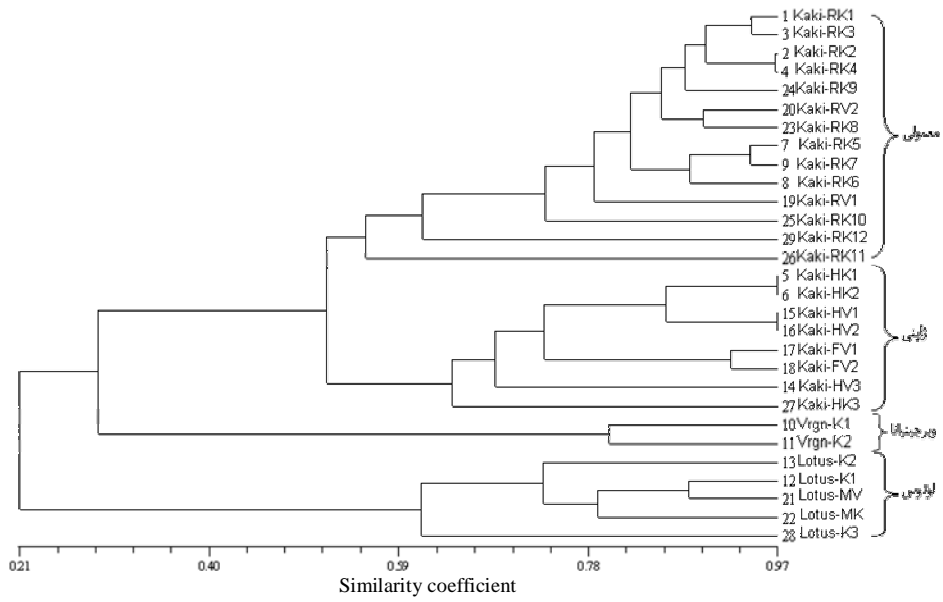


TIBMBC-20 ( ) DNA

(bp)	GC	' → '	
		TTCCCCACCC	TIBMBA-1
		GGAACTCCAC	TIBMBA-9
		AGGCCGGTCA	TIBMBA-9
		TGCGGGTTCC	TIBMBA-11
		TCGGCACCGT	TIBMBA-16
		GGTCTTCCCT	TIBMBC-8
		CTGGTGCTCA	TIBMBC-16
		AGCACTGGGG	TIBMBC-20
		GAGCTGGTCC	TIBMBA-7
		TGTCGTGGTC	TIBMBA-15
		CAGCGGGTCA	TIBMBA-6
		CTTTGCGCAC	TIBMBA-14
		AGGCCAACAG	TIBMBA-19

Kaki-HV2 Kaki-HV1  
 Kaki- /  
 ( ) Kaki-HK2 HK1 Kaki- Kaki-HK2 Kaki-HK1  
 / .Kaki-HK3 Kaki-HV3 Kaki-HV2 HV1  
 / Kaki- Kaki-FV1)  
 Kaki- Kaki-FV1 (FV2)  
 / FV2  
 /  
 Kaki-HK1 Kaki-HV2 Kaki-HV1  
 Kaki-HV3 / Kaki-HK2





RAPD

UPGMA

Kaki-HK3 /

(Vrgn-K1)

/

(Vrgn-K2)

Vrgn-K1

Vrgn-K1

Kaki-HV3

( ) Kaki-HK3

SRAP

(2005) Guo & Luo

*virginiana lotus*) /

*(rhombifolia glaucifolia*

RAPD

(2001) Bellini et al.

RAPD

( )

RAPD

Hachiya

%

Hachiya

(Miller & Crocker,

.1994)

$r = /$

Hiratanenashi

RAPD

Hachiya

Hiratanenashi

RAPD

(Yamagishi et al., 2005)

(Wang et al., 2005; Yonemori et al., 1998)

(Badenes et

al., 2003)

(Bellini et al., 2001)

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