

() , ()

NIR

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(// : // :)

NIR

PLS

NIR

PDA

NIR

(PLS)

(MSC)

NIR

PLS

NIR

(RMSECV)

/

(R^2_{cv})

/

(RPD)

% /

/
(FAOSTAT, 2006)

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(Ashraf

.Jahani, 2002)

(FAOSTAT, 2006)

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samireei@cc.iut.ac.ir :

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1. Palmaceae
2. Phoenix
3. Dactylifera

(Nicolai *et al.*, 2007)
(2000) Schaare & Fraser

(Schmilovitch *et al.* 1999)

SSC

(2011) Kavdir *et al.* .

(Ashrafjehani, 2002)

NIR

FT- (Mireei *et al.*, 2010a) NIR

(Mireei *et al.*, 2010b) NIR

NIR

NIR

NIR

(Noh & Choui, 2006) ^Δ

^YPDA

EPP2000NIR

(InGaAs)

-
1. Reflectance
 2. Transmission
 3. Interactance
 4. Full Transmittance Measuring Method
 5. Half Transmittance Measuring Method
 6. Bifurcated optical cable

7. Photo-Diode Array
8. StellarNet, Inc. Oldsmar, Florida, USA

... :

(R_{dark})
($R_{reference}$)

/
()

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SL1-CAL

$$R_{relative} = \left(\frac{R_{sample} - R_{dark}}{R_{reference} - R_{dark}} \right) \times 100 \quad (1)$$

R_{sample}
 $R_{reference}$ $R_{relative}$:
 R_{dark}

R400-7-VISNIR

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NIR
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($T_{reference}$) (T_{dark}) ($T_{relative}$)

()

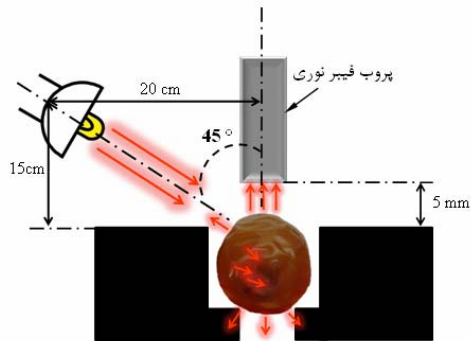
()

()

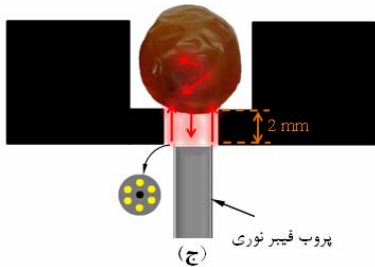
(I_{dark})

($I_{reference}$)
($I_{relative}$) ()

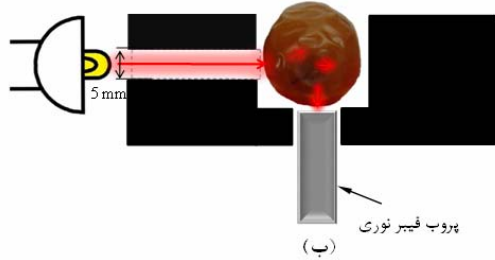
($R_{relative}$)



(الف)



(ج)



(ب)

NIR

(((()

(MSC) r

MSC

(Lu, 2001)

AOAC

(Elleuch et al., 2008; Keramat Jahromi et al., 2008)

(PLS) r

PLS .

) X

(Williams & Norris, 2001)

) Y

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X

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1. Savitzky- Golay Algorithm
2. Multiplicative Scatter Correction
3. Partial Least Squares

(RPD) ⁴

(RMSECV) ³

(LV) ¹

RPD

Williams & Norris, 2001

PLS

Mireei *et al.*, 2010b

(RMSECV)

PLS

(Li *et al.*, 2007; Williams & Norris, 2001)

PLS

²

RMSECV

PLS

/ Unscrambler

()

NIR

(Williams & Norris, 2001)

)

(

(/)

(R²)

% /

3. Root Mean Square Error of Cross Validation
4. Residual Predictive Deviation

1. Latent Variables
2. Leave one-out Cross Validation

NIR

(%)

/ / / / /

/

(%)

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-CH₂ -CH

-OH

()

()

()

Williams

(2001) & Norris

NIR

-CH₂ CH

()

-OH

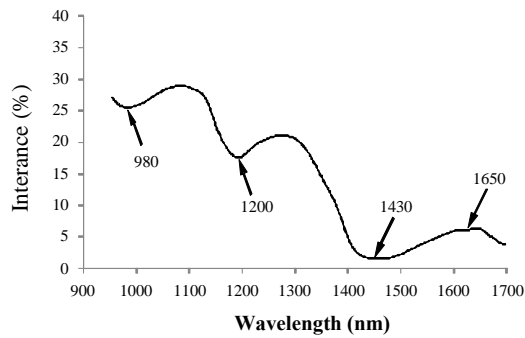
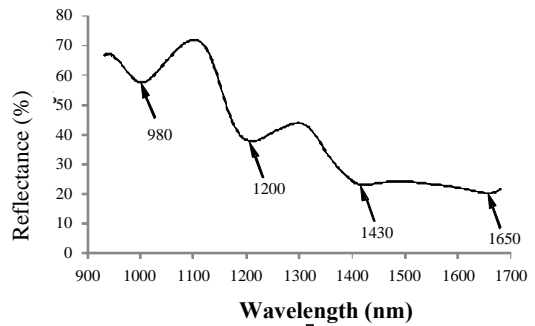
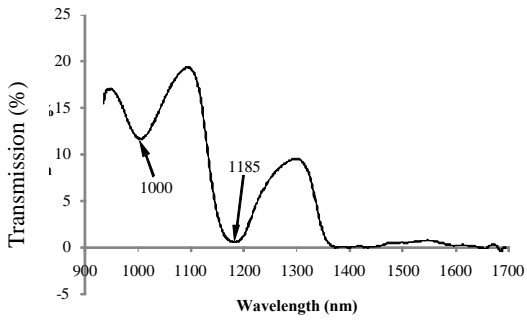
()

()

()

Schaare & Fraser, 2000

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(2003)

-CH₂

(Williams & Norris, 2001)

NIR

PLS

MSC

PLS

NIR

(PLS-PCs) PLS

NIR

()

NIR

/ / /

/

-OH

(2001) Williams & Norris .

-OH+-CH

/ /

RMSECV

(LV)

-CH₂ -CH

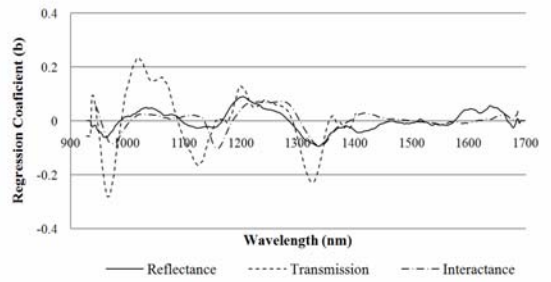
Park *et al.* .

PLS ()
()

PLS

PLS

RPD	RMSECV	R^2_{cv}	RMSEC	R^2
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/



(b)

()

()

-OH

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()

PLS

() ()

()

() ()

PLS

$R^2_{cv} = /$ ()

()

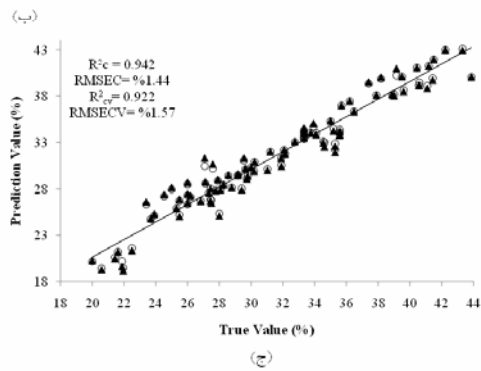
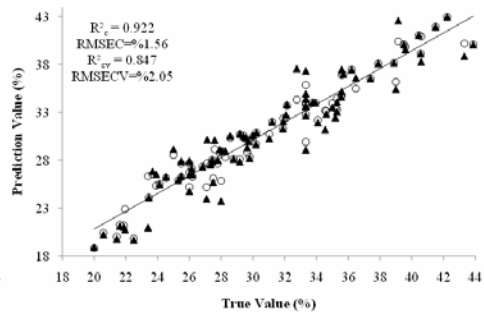
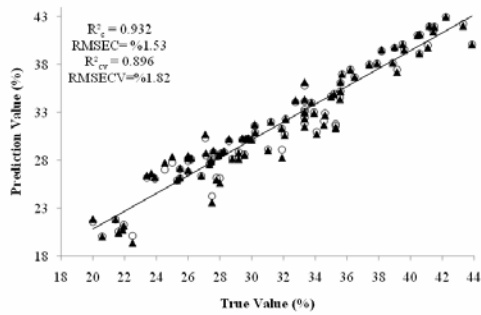
$$R^2_{cv} = /)$$

$$(RMSEC = \% /$$

$$(RPD = / RMSECV = \% /$$

MSC

()



(c)

PLS

(((((▲)

$$(RMSEC = \% / R^2_c = /)$$

$$RMSECV = \% / R^2_{cv} = /)$$

$$(RPD = /$$

(2000) Schaare & Fraser

	$R^2_{cv} = /$)	
	$R^2_{cv} = /$)	(RMSEC=% /
NIR			(RPD= / RMSECV=% /
PLS			
RPD	($R^2_{cv} = /$)	/	RMSECV
		/	

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