
Quercus infectoria

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Quercus infectoria

TSAP LINTAB5

TSAP
ARSTAN

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(*Quercus macranthera*)

) (Frits, 1976)

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(Schweingruber, 1988)

(Pourtahmasi et al, 2009)

Quercus

liaotungensis

(Safdari et al, 2005)

(Sheng Du et al,

2007)

Quercus pubescens

Quercus petraea *Quercus robur*

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(Cedro, 2007)

(Pourtahmasi)

.et al, 2008

Fagus)

(*Quercus robur*) (*sylvatica*)

(*Juniperus polycarpus*)

(Van der

. Werf et al, 2007)

Quercus alba *Quercus rubra*

(Tardif and

.Conciatori, 2006)

Quercus)

(*infectoria*

Quercus robur *Quercus petraea*

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(*Q. brantii*)

.(C̣ufar et al, 2008)

(*Quercus infectoria*)

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LINTAB¹
(Rinn, 1996) TSAP²

(Cropper,

TSAP

1979)

$$Z_i = x_i - \text{mean}[\text{Window}] / \text{std}[\text{Window}]$$

$$\begin{aligned} & i & & = Z_i \\ & i & & = X_i \\ & & & = \text{mean}[\text{window}] \\ & & & X_{i-2}, X_{i-1}, X_i, X_{i+1}, X_{i+2} \\ & & & = \text{std}[\text{window}] \\ & & & X_{i-2}, X_{i-1}, X_i, X_{i+1}, X_{i+2} \end{aligned}$$

$$\pm / \text{std}[\text{window}]$$
$$Z_i$$

(Frits, 1976)

ARSTAN³

(Cook, 1987)

Pourtahmasi,)

(2001

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¹ Linear Table

² Time Series Analysis Program

³ AutoRegressive STANdardization

⁴ Tree ring indexes

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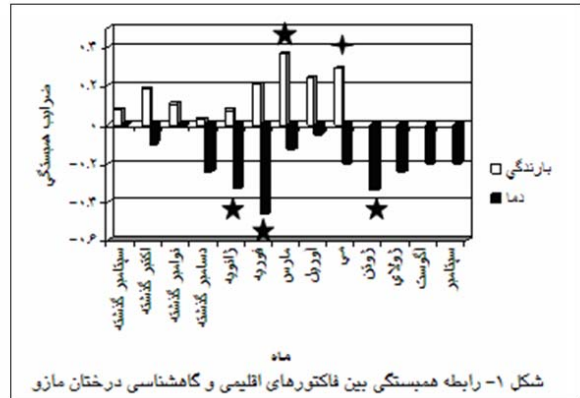
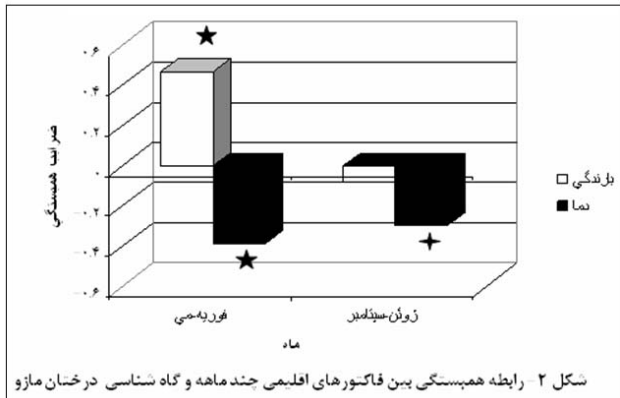
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(Schweingruber, 1996 ; Takahashi et al, 2003)

(Pourtahmasi et al, 2009)

(Glock & Aegerter, 1962)

(Wang et al, 2001)

(Sheng Du et al, 2007)
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(Van der Werf et al, 2007)

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.(Cedro, 2007)

.(Corcuera et al, 2004 ; Cedro,
2007)

. (Sheng

Du et al, 2007)
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.(Van der Werf et al, 2007)

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.(Sheng Du et al, 2007)

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Dendrochronological Investigation of Radial Growth of *Quercus infectoria* in Kermanshah Oak Forests

F. Najafi Harsini^{*1}, K. Pourtahmasi² and A. N. Karimi³

¹ Former Graduate Student, Wood and paper science and technology, University of Tehran, I.R. Iran

² Associate Prof., Faculty of Natural Resources, University of Tehran, I.R. Iran

³ Professor, Faculty of Natural Resources, University of Tehran, I.R. Iran

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Abstract

Many characteristics of the trees including annual ring width are affected by climate variations. This research investigates the effect of temperature and precipitation on tree rings of *Quercus infectoria*. Twenty two healthy and thick trees were selected from oak forests located in the region near Javanrood in Kermanshah with geographical coordinations of 34° 47' 30"N and 46° 20' 6"E". Samples were taken by increment borers. After preparing the sample surfaces, rings width were measured by binocular and LINTAB measurement table and TSAP software. Cross dating was carried out using TSAP software. Data of six trees were excluded because of low cross-dating indexes. ARSTAN software was used to develop the ring-width chronology. Data of temperature and precipitation were collected from the nearest meteorological station and their effect on tree-rings were investigated. The results showed that temperature had a negative effect whereas precipitation had a positive effect on rings width because of warm and dry condition of the region. Rings width was positively and significantly correlated with precipitation in March and May while temperature affected the rings width negatively and significantly in January, February and June. The effect of precipitation on tree growth was more significant than temperature.

Keywords: Dendrochronology, Annual ring width, Temperature, Precipitation, *Quercus infectoria*