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-Richness
-Evenness

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					P.P.M	P.P.M	( )	( ) pH of Paste	EC *	(m)
Si-c							/	/	/	/	/

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$$\chi^2 = \sum \frac{(o-E)^2}{E}$$

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X   ( )

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	Fa Ju Py
	Fa Ca
	Fa Al Ca
Qu Fa Di Ca Pr Gl Me Al Pt Fr Ze	
Pa Ca Al Pt Qu Fr Bu Pr Cr Di Fa	
Bu Pt Di Fa Al Ac Ca Gl Fi Pa Pr	

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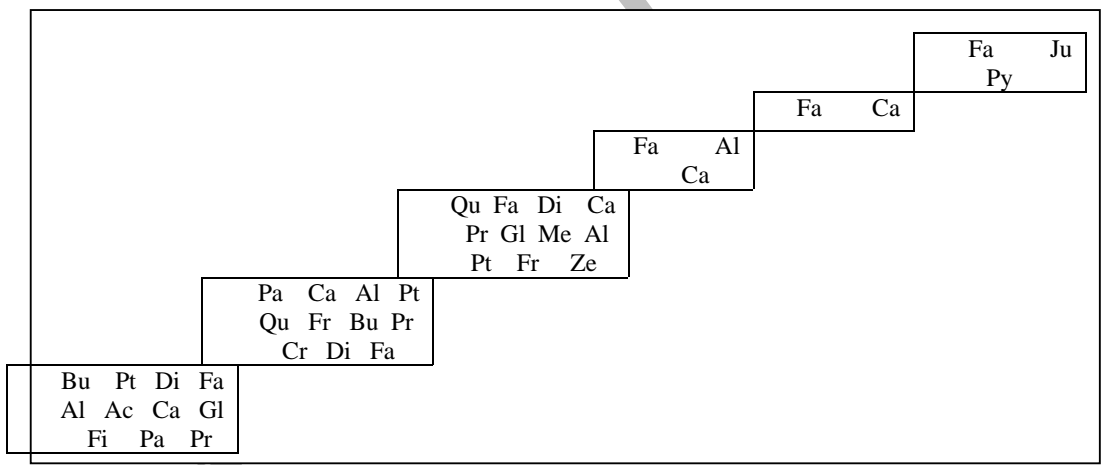
Qu   Al   Ca   Ac   Fa

Pa   Pt   Di   Ze   Fr

Fi   Pr 15   GL   Bu13   Cr 12

Ju   Py   Me

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( )   (Gerrold,1999)

$$X^{\Upsilon} = \Sigma \frac{(O-E)^{\Upsilon}}{E} = \frac{(\Lambda-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} + \frac{(\Upsilon\mathcal{F}-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} + \frac{(\mathsf{V}-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} +$$

$$\frac{(\mathcal{F}-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} + \frac{(\mathcal{F}-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} + \frac{(\cdot-\Upsilon)^{\Upsilon}}{\Upsilon\cdot} = \Upsilon\mathsf{W}\Upsilon$$

( )

$H_0 : \chi_c = \chi_t$

$H_a : \chi_c \neq \chi_t$

$\chi = /$

$= {}_{k-1, \alpha} \ \chi \ \chi \ / \qquad = /$

Reject H_0 if $\chi^2_c > \chi^2_t$

$/ < /$

Reject $H_0 : \chi^2_c = \chi^2_t$

Accept $H_a : \chi^2_c \neq \chi^2_t$

VI   II

V

VI   III

II   VI

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χ

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	(%)	(%)	(%)	(%)
	$X = /$ n.s	$\chi = /$ *	$\chi = /$ *	$\chi = /$ *
	$\chi = /$	$\chi = /$	$\chi = /$	$\chi = /$

n.s = non - significant   *

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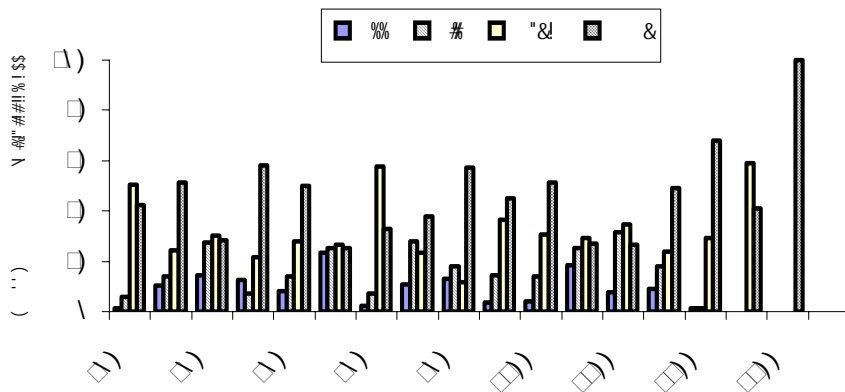V   .(   )

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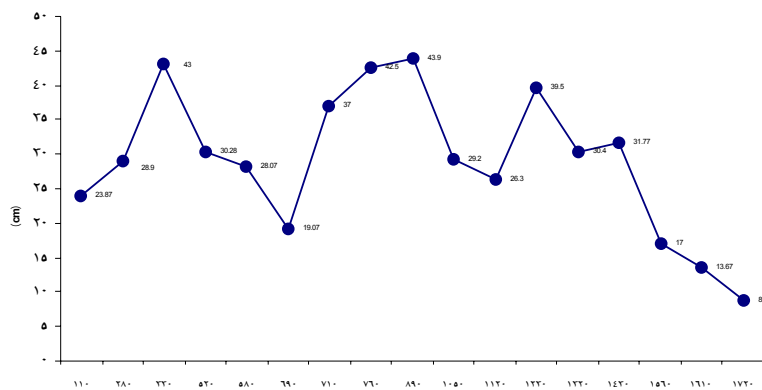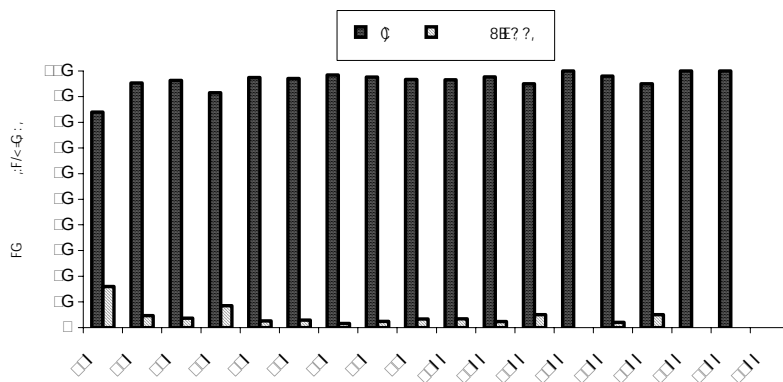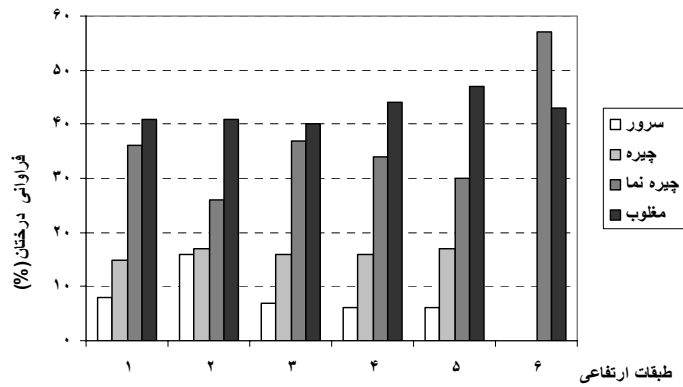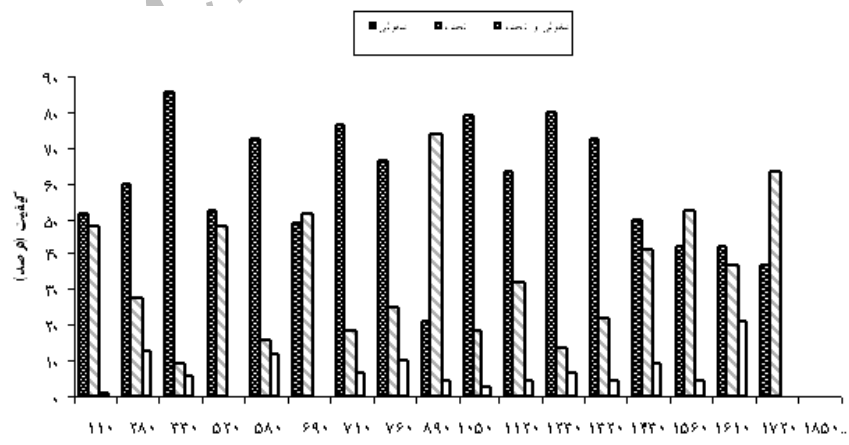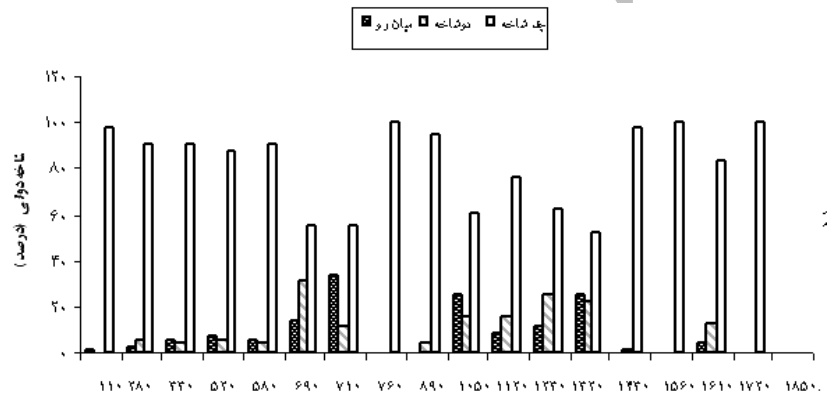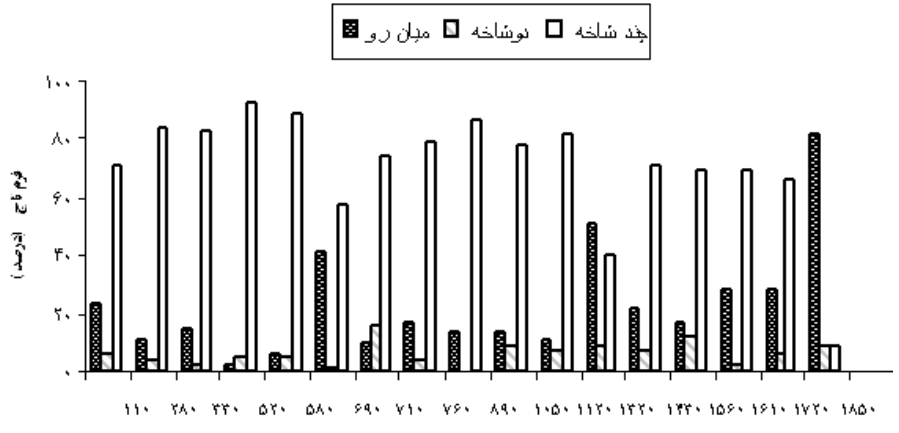
(Lust &

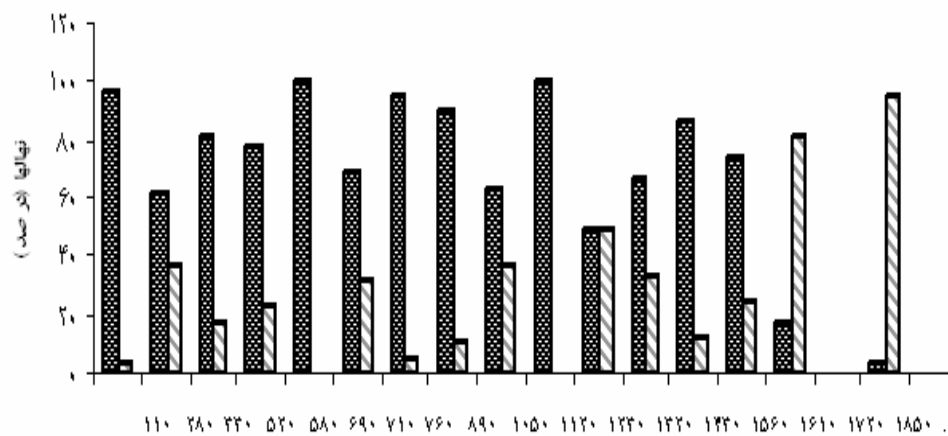.(Kessler, 1994   Nachtergale , 1996

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Lust & Nachtergale, 1996)

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- Biodiversity

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(*Taxus baccata*)   .

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12- Gerrold H. Zar, 1999. Biostatistical analysis,Harvard University Press, 663p.

13- LUST.N & Nachtergale. L 1996. Towards the Challenge of Biodiversity in Forests and Forestry, Silva Gandavensis 61, p 20 - 37.

Ecological Role of Altitude in Diversity of Tree Species in Siahkal Forests, North of IRAN

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Abstract

A majority of hyrcanian forests (north of Iran) are mountainous with the diversity of woody species being high. Therefore an ecological survery of altitude from sea level in relation with species diversity in these forests seems to be of paramount importance. For this purpose, the diversity of woody species in forest stands along with their natural regeneration has been surveyed by way of randomly choosing 18 sample plots of 0.5 hectare in different altitudes of Siahkal forests.

The results obtained from the analysis of data in this survey, indicate that with increase in altitude, species richness decrease while species diversity and evenness continue to rise.

Maximum species diversity is observed at an altitude range of 100-700 meter above sea level while the least diversity observed above 700 meter altitude. The distribution of trees in the diameter classes show a "normal, decreasing feature distribution", which is a prime character istic in natural forests. Site conditions suggest that dominant and depressed trees represent minimum and maximum mumbers respectively. Ninety seven percent of trees are healthy with only 3 percent damaged or wilted.

Crown branching suggests that forked crown form is at the lowest proportion, while the proportion of broom shaped crowns is at a maximum. The study of branching in the first ten meters of tree trunk indicates that branchless trees are at a lowest proportion while multibranch trees are of the highest proportion. Moreover 59 percent of trees have a straight stem while 34 percent have crooked stems with the remaining 7 percent showing a combination of the two forms.

With change in altitude from sea level, "diameter at breast height" and number of species per hectare do not change in a regular and organized manner. Sufficient quantity of regeneration (seedlings and sapling) has been observed at the altitude range of 1300-1600 meters above sea level. At lower and higher altitude ranges, the occurence of regeneration per unit area was not satisfactory.

Keywords : Species diversity, Altitude, Hyrcanian forests, Natural regeneration.

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