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Investigation on Quality and Quantity of Forest Types Common Hazel (*Corylus avellana* L.) in Foundogluo Forest, Iran

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Abstract: The total forest area of Iran is approximately 12 million ha which make only 7.3% of the total land area. Foundoglu forest is a unique forest with 1773 ha and located at the and of western Elburz Mountain chains, in Ardabil province (North Eastern of Iran). For doing this research, we have organized a sampling to drive structural information of some quantitative and qualitative characteristics. Stand measurement was a systematic random sampling. With the sampling grid of 150×200 m and plot area 500 m^2 and the measurement of structural characteristics were done to get information on species, origin of sp., quality of sp., collar diameter, total height canopy cover, regeneration, slope aspect and altitude. Results showed that common hazel is distributed on site between 1370 and 1580 m.a.s.l. with 352.2 mm annul precipitation and mean annul temperature 9.7°C five vegetation types of Corylus-Quercus, Corylus-Fagus, Fagus-Corylus, Corylus-Acer and mixed Corylus were separated.

Key words: Common hazel, regeneration, diversity of woody speices, vegetation, Iran

INTRODUCTION

The total forest area of Iran is approximately 12 million ha which make only 7.3% of the total land area (Marvie-Mohadjer, 2005). However, it is rich country with aspect of plant biodiversity with almost 8000 vascular plants. Fandogluo forest is a unique forest with 1773 ha (Yousefpour *et al*., 2004) and located at the and of western Elburz Mountain chains in Ardabil province (Northwestern of Iran), the area smooth topography and climatically sub humid (Anonymous, 1984). Common hazel (*Corylus avellana* L.) is the most important tree species in Fandogluo forest. Common hazel is typically a shrub reaching 5 m tall but can reach 8 m. The leaves are deciduas, rounded 6-13 cm long across 5-10 cm, softly hairy on both surface (Sabeti, 1976). There are some study about forests, study of environmental adaption ecology (Moraghbi, 2001). In particular about phytosociology of Fandugluo forest (Teymourazadeh *et al*., 2004) and about succession of Beech stand (Anonymous, 1984).

MATERIALS AND METHODS

Study sites: The experimental forest is a 256 ha between longitudes 48°42' 31" and 48°53'25" and latitudes 38°17'11" and 38°25'50". Minimum altitudes about 980 m and the maximum 1550 m.a.s.l. the slope inclination in this sites is 5-35%. Mean annual temperature is around 9.7°C while the mean annual rainfall is estimated to be around 352.2 mm and high number of foggy days is particularly effective is supply water regimen. Dominant tree and shrub species in this region consist of Beech (*Fagus orientalis* Lipsky) *Carpinus orientalis* L., *Quercus castane folia*, *Acer campestre* L., *Malus orientalis* L., *Quercus macranthera* F. and M.

Methods: For doing this research, we have organized a sampling to drive structural information of some quantitative and qualitative characteristics. Stand measurement was a systematic-random sampling (Zobeiry, 2002). With the sampling grid of 150×200 m and plot area 500 m^2 and the measurement of structural characteristics were done to get information on species, origin of sp. quality of sp., collar diameter, total hight, canopy cover, regeneration, slope, aspect and altitude.

RESULTS

The results of these measurement is shown in the Table 1 and shows that how different are the measured stands. Kuchler physiognomic method in 1988 was used for forest classification totally, five different types of

Table 1: Five types of common hazel in study site

Foerst type	Slope (%)	Aspect	Range of altitude m.a.s.l
Corylus-Quercus	5-35	S,NS,N	1380-1460
Corylus-Fagus	10-60	N,NW,NE	1370-1580
Fagus-Corylus	35-55	N	1385-1560
Corylus-Acer	5-20	S	1440-1500
Mixed Corylus	10-45	N,S	1390-1485

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Table 2: Qualitative and quantative characteristics of diffrernt forest types

Foerst type	Diversity of woody speices	No. of woody species (n ha^{-1})	Canopy cover (%)	Renegeration seed. origin
Corylus-Quercus	23	2400	65	13.4
Corylus-Fagus	24	2951	778	8.5
Fagus-Corylus	14	1898	54	13.5
Corylus-Acer	17	2955	79	11.9
Mixed Corylus	12	3580	83	15.5

Table 3: Qualitative and quantities characteristics of common hazel in study site

Forest type	Frequency of corylus (%)	Average of collar diameter (cm)	Average of height (m)	Average of number of sprout on stump
Corylus-Quercus	25.5	10.5	4.9	33
Corylus-Fagus	61.5	9.0	4.5	28
Fagus-Corylus	28.5	18.0	4.1	22
Corylus-Acer	33.5	13.0	3.8	31
Mixed Corylus	56.0	10.0	3.6	38

Corylus-Quercus, Corylus-Fagus, Fagus-Corylus, Corylus-Acer and mixed Corylus were separated. The results of inventory showed that distribution range of altitude varies between 1370-1580 m.a.s.l (Table 1). The highest common hazel trees were observed on Corylus-Quercus type (4.9 m) and Corylus-Fagus type (4.5 m), respectively. The most frequency of Corylus (%) was observed on Corylus-Fagus (61.5%) and the most number of sprouts on stump were observed on Mixed Corylus type (Table 2 and 3).

CONCLUSION

Ardabil province where is located in northwestern of Iran contains 1.8 million hectare. Fandogluo forest that located in the east Ardabil city is very important of ecological condition and specific fauna and flora. This non commercial forest including species such as common hazel, oak, beech, hornbeam, maple trees. Like other investigations of Yousefpour *et al.* (2004) and Teymourazadeh *et al.* (2004) in this forest, diversity of woody species is very high and Average of number of sprout on stump is showed that forest structure in this forest is coppice system (Anonymous, 1984; Teymourazadeh *et al*., 2004).

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