Investigation on seedling selection of 29 *Juglans regia* genotypes for further forest plantation trial on degraded forest lands of Kurdistan

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Abstract

In this experiment 29 genotypes of walnut (*Juglans regia*) were studied, based on Randomized Complete Blocks Design (RCBD) and four replicates. The experiment was conducted in Rikhalan Experimental Station of Marivan.

City through three years (1996 – 1998). The results showed that there were significant differences between the walnut genotypes for survival percentage, height and collar diameter performances. The highest value of the three seedling performances belonged to the following walnut genotypes:

Survival: J–19 with 50.75 percent.

Height: J-10 and J-19 with 35.52 and 34.87 cm, respectively.
Collar diameter: J-14, J-19, J-4 and J-10 with 6.52, 6.47, 6.3 and 6.2 mm, respectively.

According to Cluster Analysis Statistical Method, J-19, J-10 and J-14 were the most successful genotypes in view point of the three seedling performances.

The above genotypes were introduced to the second phase of the trial, which aims to investigate the survival and growth of the genotypes at forest plantation scale.

Key Words: walnut, *Juglans regia*, survival, height, diameter, Kurdistan, afforestation

Genetic variability of beech populations in Iran assessed by PCR-RFLP analysis of cp-DNA

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Abstract

Fagus is one of the most abundant and economically important forest tree genera in north of Iran.

14 populations of F. orientalis Lipsky were selected from its wide distribution through the Caspian Forests, in order to study the species genetic variation by three methods: enzyme, cpDNA and morphology.

Chloroplast (cp) DNA polymorphysm was analyzed in the same populations of the Iranian beech by PCR-RFLP test. Two cpDNA gene regions, including DT and OA were generated and digested by bounder of HaeIII and HinfI. endonucleases The generated pieces fragments were separated by gel electrophoresis. The digestied profiles of the two regions CDT and OA were compared simultaneously with the digestied fragments of the control DNA of the known haplotype (kindly provided by Raffaello Giannini, IMGPF-CNR, Italy) to identify the Iranian haplotypes. The restricted fragments of the region DT did not show polymorphism among the individuals within any analysed population. However, among individuals within the analysed populations of Asalem and Neka-1400 areas, polymorphism in the bounder fragments of the OA region was found. Overall, three different chloroplast (cp) haplotypes were scored. Distribution of the cpDNA haplotypes revealed a geographical structure of the genetic differentiation with Gst=%68.7 and Nst=%70.3.

Key words: *Fagus orientalis*, Hyrcanian zone, genetic variability, cpDNA characteristics.

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Soft - wood species trial on low altitude site of Neka Forest of Caspian Region

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Abstract

The aim of the study was to introduce the most successful exotic species for Forest plantation projects. The trial was conducted in 1992 on ahumidsite at low altitude of Neka Forest in Mazandaran province of I. R. Iran (North Forests), under compeletely Randomized Block with three replicates and eight tretments. The treatments consisted of six pine species (P. taeda, P.radiata, P. brutia, P. nigra var. austriaca, P. pinaster and P. Longifolia), Crytomeria japonica and Cedrus deodara.

The species growth characteristics were measured after 10 years (1992-2000), including survival, height, collar diameter, breast height diameter and quality. soil physical and chemical properties were determined and climate characteristics were identified.

The statistical analysis showed that there were significant differences between the species in relation to their qualitative and quantitative parameters. The most promising species were P. taeda, P. radiata and P. brutia, respectively.

Key words: Elimination trial, Needle-leaved, Caspian forests, Survival, Height, Diameter

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Investigation on weakness and mortality of some soft - wood species planted in a park of Fars province of Iran

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Abstract

A research project was carried out from 2000 to 2002 to determine the dieback and death cause of several conifer trees, planted in 1972 in the Abolmahdi spring park, located 100 km away in north of Shiraz, centre of Fars province of I. R. Iran. The related biological, climatical and edaphic factors were studied. There was no indication that the death and dieback might have occurred as the result of any specific pests, disease or soil limited elements found in arid and semi - arid regions, despit of low organic matter.

The observations and tests showed that the dieback and death of the species such as *Pinus eldarica, Cupressus sempervirens* var. *horizontalis* and C.S. var. *cerifomis* are the result of restrictions in root growth. This problem is attributed to the fact that some of the plastic bags which used as plot, had been have not been removed at planting time due to careless management of plantation. The sever drought which occurred in the region from 1998 to 2001 was also responsible for the physiological problems of the trees. Irrigation in dry season can prevent trees from showing physiological difficulties. *Cedrus libani trees* might have died due to harsh climatic conditions during the sever drought period. Using native tree species and carrying out research projects to identify the adapted tree species for forest plantation programs is a practical way for preventing problems resulting from introducing exotic species. Fire incidences have also caused damages in some parts f the park.

Key words: *Cedrus libani, Cupressus sempervirens* var. *cerifomis, Cupressus sempervirens* var. *horizontalis,* Dieback, Drought, Fire incidences, *Pinus eldarica*

Investigation on adaptability and wood production of different poplar clones (closed crown) in Karaj City

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Abstract

In this investigation 15 superior poplar clones with closed crown were selected from the first stage of nursery selection trial. From each clone 75 one year old seedlings were planted according to the randomized complete blocks design, at Karaj Alborz Research Center in 1989. At the end of each growing season height and diameter (dbh) growth of all trees were measured. After 10 years, the mean values of total, annual and average volume growth for each clone were calculated and statisticaly analyzed, using MSTATC software.

The following results were achieved from this study:

- *Populus nigra* var. *betulifolia 17/13* and *populus nigra 56/33* had the greatest growth in diameter (19.8 cm) and in height (17.7 m.), respectively.
- *Populus nigra* var. *betulifolia 17/13* with 30.83 m³ and *Populus simonii* with 7.79 m³ had the maximum and minimum average volume growth per hectare per year. There were significant differences between these clones in volume growth.

The maximum volume growth of the clones was developed in 1997 and 1998 when the percentage of volume growth in these two years, varied between *30.41* and *42.88* m³ in the different clones, in comparison to the 10 year growth period.

- *Populus ciliata* and *Populus simonii* were the most sensetive clones and *Populus alba 44/9* and *Populus alba 58/57* were the most resistant clones to pest attack, respectively.

Based on the results of this investigation, the following clones could be recommended for large scale plantation:

	Clones	Average volume growth (m³/h/yr)
1-	*P. nigra* var. *betulifolia 17/13*	30.83
2-	*P. nigra 56/33*	28.09
3-	*P. nigra 47/3*	24.83
4-	*P. nigra 42/53*	24.60
5-	*P. nigra 42/78*	23.06
6-	*P. nigra 49/5*	21.49

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Key words: Poplar, Clone, Adaptability, Wood production, Clones comparison.

Northren forests boundary mapping of Iran Using Landsat7 ETM+ data

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Abstract

For sustainable management of the Caspian Forests of Iran, a most appropriate and fastest method of data collection and combination is essential. Combination of Satellite digital data with field data, using Geographic Information Systems, (GIS) could be applied to obtain accurate information for multiple decision making which is influenced by different factors. In this study eight senses of Landsat 7ETM+ data accosted from Caspian Forests of Iran, June and July 2000, were used.

Based on OIF index and statistical analysis of the ETM data, color composite 3,4 and 5 were selected for unsupervised classification. The ground observation information were collected from 3860 plots(30*30), using unsupervised map as a primary map.

Overall, combining the ETM and the ground data throw the field information, using the supervised classification method, boundary of the Caspian Forests of Iran were achieved in six classes (Dense forest, Sparse forest, Rangeland, Farm land, Water and Bare soil).

The classification accuracy assessment showed that the accuracy rates of the dense forest, sparse forast, rangaland, farmland, water and bara soil were 83, 78, 54, 76 and 98 percent, respectively.

Keywords: Classification, Satellite data, boundary mapping, Accuracy assessment, Caspian forests.

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