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*Fagus orientalis*

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(Coleman model6/2)

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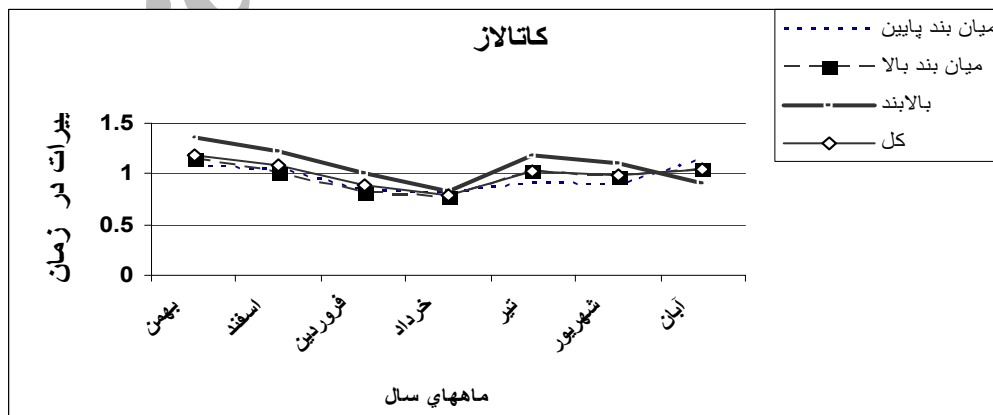
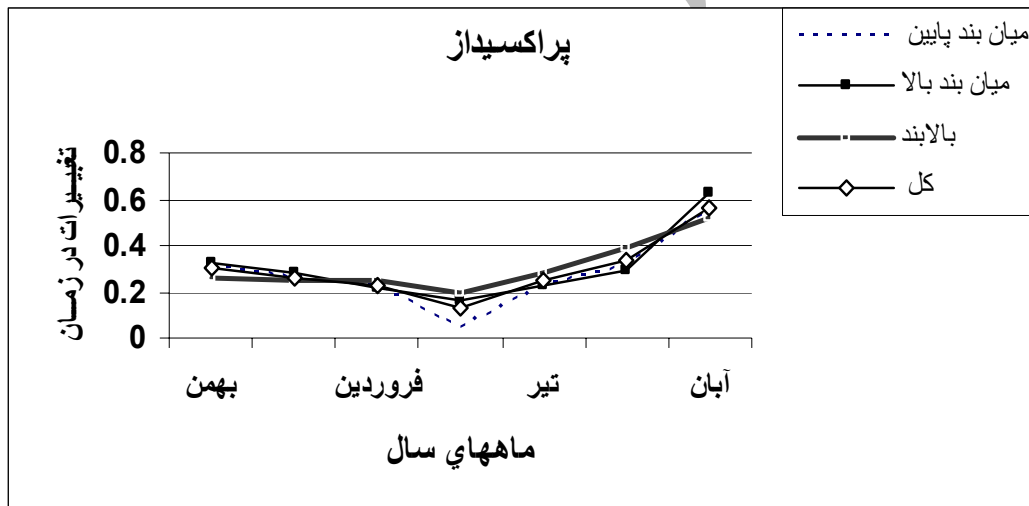
Bausch&Lumb

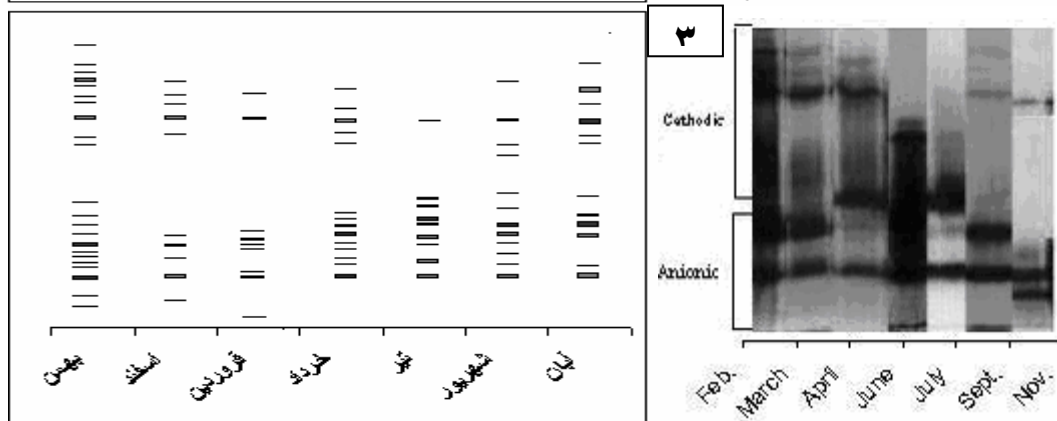
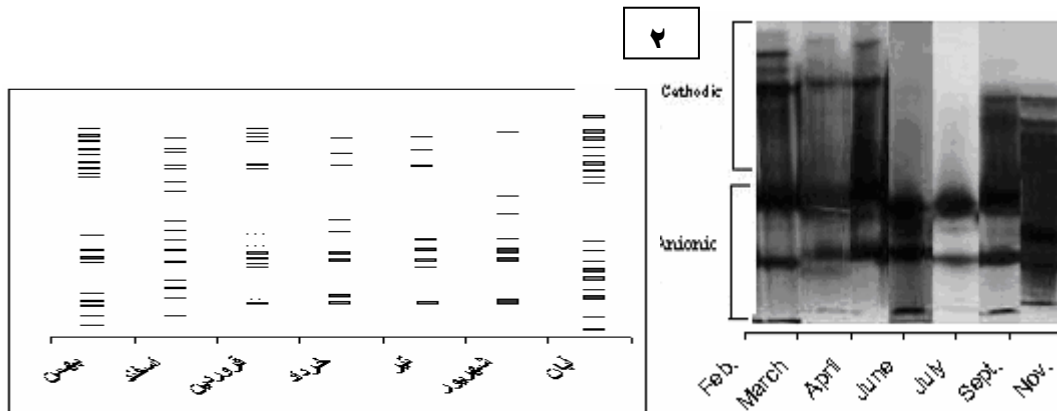
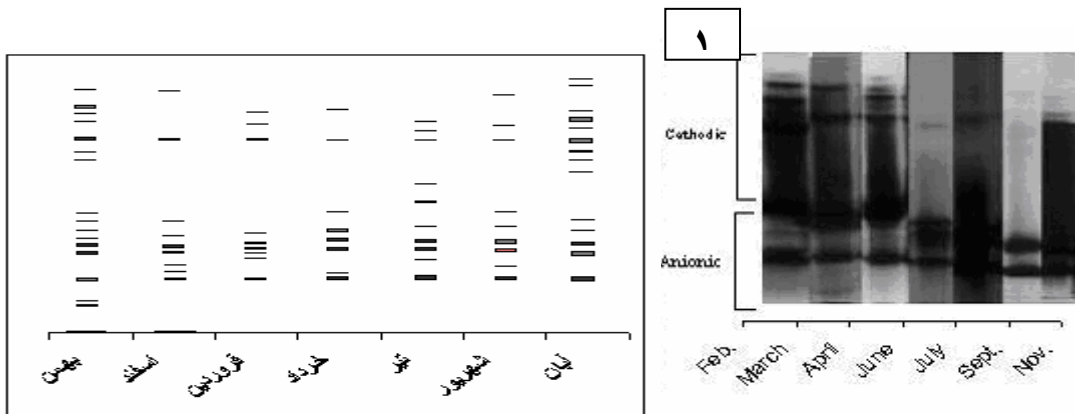
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## Using Peroxidase and Catalase enzymes for identification of cold resistant individuals in Iranian Beech (*Fagus orientalis* Lipsky)

R Zolfaghari<sup>1</sup>, S. A. A. Korori<sup>2</sup> and V. Etemad<sup>3</sup>

<sup>1</sup> Ph.D Student, Forestry, University of Tarbiat Modares, I.R. Iran

<sup>2</sup> Staff Member, Forest and Rangelands Research Institut I.R. Iran

<sup>3</sup> Assistant Professor, Faculty of Natural Resources, University of Tehran, I.R. Iran

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### Abstract

Beech (*Fagus orientalis* Lipsky) is one of the most important species in northern forests of Iran. This species is a main constituent of northern forests of Iran in terms of both the volume and coverage, hence the survival and protection of this plant is highly important. Therefore, a way to protect and revive this plant is to find the types that are resistant to various environmental stresses, such as late and early cold. Enzymes are the most sensitive causes of physiologic changes in the plants undergoing environmental stresses. In this research, the enzyme content of branch tips of 90 trees in (1,100 m, 1,500 m and 1,900 m) elevations was collected in order to study seasonal qualitative and quantitative changes in peroxidase and catalase enzymes within seven months and the results were compared (Duncan test). Peroxidase and catalase enzymes were studied quantitatively by spectrophotometry. Furthermore, the peroxidase collected underwent qualitative tests based on the PAGE (polyacrylamid gel electrophoresis) method. Results showed that peroxidase and catalase are more active and more isoenzyme bands are observed in the cold months as compared to warmer months. In Farvardin (March 21-April 20), catalase is quantitatively more active in higher elevations relative to lower elevations however the number of isoenzyme bands of peroxidase in the trees located in lower elevations was more to combat the stress caused by late cold. In Shahrivar (August 23-September 23), the number of isoenzyme bands significantly increases in higher elevation as a means to resist early cold. This research again emphasized the role of peroxidase and catalase in the face of physiological stresses, especially decrease of temperature.

**Key words:** Peroxidase, Catalase, Cold, *Fagus orientalis*