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"Development on the margin"

Lack of Regeneration and Sustainability Crisis of Northern Zagros Forests of Iran

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Abstract

Northern Zagros forests have the highest diversity of oak species of Iran. Underdevelopment, lack of arable lands due to the mountainous situation, and shortage of ranges led to high dependence of local inhabitants on forest resources. Grazing by domestic animals, for more than 7 months, leads to the destruction of ground vegetation and soil compaction. Most of the seedlings grazed or dried out during the summer, so forest structure and finally forest sustainability are suffering. To understand how forest structure might be affected, diameter distribution curve, as a guideline for forest structure was considered. We carried out a random-systematic sampling within 4000 ha forestland in Armardeh. In 87 circular sample plots, dbh was measured for all trees (≥5 cm dbh) and regeneration was measured in micro plots. To determine diameter increment, several cross sections were taken from trees. Results showed that the diameter distribution pattern was almost bell-shaped and skewed to the right. This means that Armardeh forest has an even aged structure comprised of few young trees and a large number of old trees. Average annual diameter increment was counted 2 mm for cross sections. In most of the discs about one third to one half of their width was hollow. A simple simulation based on diameter increment, was done with Microsoft excel. The output was several diameter distribution curves dispersed in a time sequence of 70 years. They showed that the diameter distribution curve will move to the right hand with time laps, the number of young trees will reduce and old trees will increase. So, in 2075 (after 70 years) the diameter distribution curve might have a narrow range from 21.5 to 61.5 cm while this was 7.5 to 62.5 for 2005. We discuss that sustainability of Armardeh forest is facing a serious problem. Every year some trees might be broken by wind and snow. Considering our results, low input (lack of regeneration) and high mortality are two most important features of unbalanced forest structure. The most essential attempt is to investigate the methods to establish and guarantee regeneration in the Armardeh and similar forests.

Keywords: Diameter distribution curve, oak, regeneration, sustainability crisis, Zagros

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