Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Genetic Diversity and Physiological Capacity of Iranian Long-lived Cypresses (Cupressus sempervirens)

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Abstract

Trees considered as one of the most important components of bio-community in our world. Long-lived trees are the crucial plant genetic reserves of every countries which need to be identify and prevent from more damages. Because they are the biological memorials of each country. In current research, we investigated genetic diversity of long-lived Iranian cypresses (Cupressus sempervirens) using SSR marker and UPGMA method after estimation of their age. Besides, their 30-years average growth approximated by dendrochronology method as a physiological capability index. Long-lived Iranian cypresses have been expanding in the tropical areas. Totally, fifty-nine long-lived cypresses were identified in thirty-four area of fourteen province. These results indicated that, their age fluctuate between 412 (Firoozabad Ashkezar cypress which is located in Yazd province) and 3822 (Chavar or Bansol cypress which is located in Ilam province) years. Unfortunately, Bansol cypress has the lowest average growth, as well. The average Polymorphism Information Content (PIC) was 0.26 and these long-lived trees classified as four major groups. As well as, principal coordinate analysis (PCo) conducted according to genetic similarity metrics to determine the genetic relationship among them, which its result confirmed cluster analysis. The first two eigenvectors accounted for 51.87 % of the total molecular variation. In addition, seed vigour of Iranian old cypresses were 90 to 100 percent during 1980 until 2011 years. These result further to registration as the Iranian cultural heritage in UNESCO, will be proper to reforestation management of destructed forests, and this is a critical step to the seed certification and exchange, internationally.

Keywords: Average growth, Genetic diversity, iranian Long lived cypresses, Physiological capability

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