University of Kashan

Assessment of Roudab plain of Sabzevar city desertification intensity emphasizing two climate and water criteria

A.A. Vali[1], H. Barabadi[2], E. Heidary[3], H. Khosravi [4]

Abstract

Land degradation in arid and semi-arid regions caused by climate change and human activities makes it more susceptible to desertification. The aim of this research is assessing the intensity of desertification in Roudab plain of Sabzevar city using IMDPA model. So, two criteria of climate and water as the main criteria affecting desertification process were considered based on field observations and regional conditions and scoring the indicators of these two criteria was accomplished according to their effects on desertification intensity and the model tables. Then integrating maps of indices related to each criterion by geometric mean method, desertification intensity map of climate and water criteria was obtained and finally, desertification intensity map was provided by integrating two climate and water criteria maps. The results show that climate criteria with the score of 1.71 and the water criteria with the score of 2.60 are both in medium desertification class. The ultimate desertification intensity map of climate and water criteria indicated that 10.85% of the studied area falls within the low class, 48.27% in the severe medium class, 34.63% in the severe class and 6.25% in very severe desertification intensity class. To prevent desertification process, it is suggested using modern irrigation techniques to prevent of quantitative and qualitative of groundwater reduction.

Keywords: class of desertification, IMDPA, water criteria, climate criteria, Roudab plain of, Sabzevar city Index.

1. Associate professor at natural resources and earth science college, university of Kashan. (corresponding author: vali@kashanu.ac.ir)
2. Ph.D. student of combating desertification at university of Kashan
3. Ph.D. student of combating desertification at university of Tehran
4. Assistant professor at agriculture and natural resources college, university of Tehran