Abstract: Desertification is specific phenomenon of arid, semi-arid, dry sub humid regions. This phenomenon has a high rate in developing countries such as Iran. The main objective of this research was calibration of IMDPA model in Abuzeidabad (Kashan) region with emphasis on land criteria. IMDPA model, introduced by Iranian researchers to assess desertification intensity in Iran. Before application, the criteria and indices applied in model were re-defined. For this study, Regarding to region conditions three criteria were defined as key criteria for desertification which were: Geology-geomorphology, soil and wind erosion criteria. Then each criterion was assessed based on selected criteria, which resulted in qualitative mapping of each criterion based on selected criteria. Finally, by mean of all the indices and criteria desertification mapping was provided and these results obtained. Regarding the studied criteria, Geology–Geomorphology benchmark has the highest effect on desertification. Among the total studying are (16161 hectares), the medium class is about (4792 hectares), and the high class is about (11369 hectares). Among indicators, slop index with 3.9 and lithology sensitivity to erosion and wind erosion with the value of 3.5 and 3.4 are the main indexes of increase in desertification intensity in the study area. According to map of desertification statue 70.3% of study area have a high intensity and 29.7% have a medium intensity.