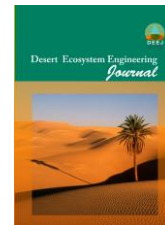




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An ecological model to estimate above-ground biomass of some range perennial species by a non-destructive method in dry ecosystems

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Abstract

Biomass is a key factor in dynamics evaluation of ecosystems, biodiversity level and their stability. Biomass measurement is performed every year to evaluate range ecosystems (investigating the trend of changes), range management (suitable browsing systems) and cover assessment in rangelands. As direct biomass measurement is time-consuming, has costs and destroy rangelands; non-destructive methods by modeling can be taken into consideration. On the other hand, introduction of a suitable non-destructive method for biomass estimation that has high speed and precision and low sampling costs has been of importance according to wide areas of range ecosystems in dry parts of Iran, low vegetation cover and sensitivity to destruction. This study was aimed to estimate the biomass of three range species of *Polygonum salicornioides*, *Astragalus ebenoides* Boiss, and *Astragalus coluteopsis* Parsa by an ecological model using a non-destructive method in Sepidan, Iran. The studied species were perennial. Parameters of mean diameter of canopy cover, perimeter and height were used to determine the ecological equations to estimate biomass. About 30 samples of each species were selected for this purpose and measurements were performed in their blooming season. After the measurement of these parameters for each species in the range, their biomass was determined by cut-and-weight method and the ecological equations were constructed. The results showed that the obtained equations were precise enough to estimate biomass due to their correlation coefficient. Between the parameters of mean diameter of canopy cover, perimeter and height; mean diameter of canopy cover had the highest correlation with biomass. In all three species, perimeter had the highest correlation after diameter. In general, the results showed that biomass of each species can be estimated by measuring its mean diameter of canopy cover and using the obtained equations for the studied species.

Keywords: Biomass estimation, non-destructive method, mean diameter, ecological equation.

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