

عنوان مقاله:

Comparison of allometric equations to estimate the above-ground biomass of *Populus alba* species (Case study; poplar plantations in Chaharmahal and Bakhtiari province, Iran)

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خلاصه مقاله:

Carbon sequestration into plants biomass, especially in fast growing trees is an easier and economically way for dropping off CO₂ from atmosphere. This study was carried out in order to investigate above-ground biomass of white poplar (*populus alba*, L.) plantations that was planted in four different plant spacing (0.5 × 0.5, 1×1, 2×2 and 4×4 m.) in Chaharmahal and Bakhtiari province in west of Iran. Selecting the trees was according to diameter classes. After inventory, 10 trees were selected from each density at one hectare area. The tree's characteristics including diameter at breast height (DBH), total height, and crown diameter measured. Then measured trees felled down in order to measure the wet and dry weight of different organs including (whole tree, trunk, main branches, twigs and leaf). The regression analysis was applied to find out a relationship between mass production and poplar characteristics and to develop different allometry models between different organs and their carbon sequestration ability. The results showed that the independent DBH factor in *populus alba*, demonstrated high correlation against all the dependent variables. Height of trees also creates the allometric equations with average accuracy (0.30-0.81) against all the dependent variables. The crown diameter in dependent variable almost creates weakest equations. The result also indicated that there is no significant difference among equations of different planting spaces.

کلمات کلیدی:

Allometric equation, *Populus Alba*, non-linear regression, CO₂, Greenhouse gases

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