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Investigating the Amount of Carbon Sequestration of Oak Seedling (*Quercus castaneifolia* C. A. Mey.)

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Abstract: One of the most important ways to reduce Atmospheric carbon is the carbon sequestration by trees. In this study, by using some morphological characteristics of the root and stem of Oak seedling the carbon sequestration evaluated. For this purpose, one hundred seedlings were sampled by method of Systematic-Random from the planting bed on March 2022 in the Pylambra nursery at Guilan province. Seedlings are divided to three grades small, medium and large according to Root Collar Diameter (RCD). The biomass and carbon sequestration of Oak seedling calculated according to the basic density of its root and stem. the Pearson's correlation coefficient used for correlation detection between variables. The one-way analysis variance test at the 95% confidence level used to recognize difference between biomass and carbon sequestration of three group of the Oak seedlings. The results of correlation analysis showed that the root collar diameter (RCD) had the strongest correlation with other morphological characteristics. the amount of the basic density for the root and shoot of the Oak seedling obtained about 0.57 gr/cm^3 which is the same for both of them. the amount of the biomass and carbon sequestration of the root obtained more than shoot at the small and medium seedlings, whereas in large seedling was the same. In general, by increasing the size of seedling the biomass and carbon sequestration increased.

Keywords: Oak seedling, Biomass, Carbon sequestration, Basic density, Root collar diameter.