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BIOMASS ALLOCATION OF *ACACIA SALIGNA* TREES GROWN IN DIFFERENT DUNE POSITIONS AT EL QASR, NW COAST OF EGYPT

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ABSTRACT

The present study was carried out on 50 yr.-old rainfed acacia trees *(Acacia saligna)*, to evaluate the biomass allocation (wood, forage and roots) of the cultivated trees under the adverse conditions of coastal dunes ecosystem in different dune positions in addition monitoring sand movement in different dune topographic positions and surveying plant communities distribution under conditions of aeolian sand movement. Acacia saligna trees were cultivated in different dune positions for the purpose of biological fixation and control sand dune encroachment. Results revealed that the fine and medium sand fractions were dominate by 55 and 39.76 % of total sand fractions. Fine sand particles were dominant in leeward slopes and dune foot, where it recorded 62.29 and 53.73 %, respectively. The highest rate of sand movement was achieved in the leeward slopes, it recorded 144 kg/ m^2/ year (as sand accumulation), whereas the lowest rate was observed in the windward slopes, it recorded 40.53 kg/ m^2/ year (as sand erosion). Foredune and windward slopes showed sand erosion process, whereas dune crest, leeward slopes and dune foot showed sand accumulation. Some plant communities were record in dune crest. *Ammophila arenaria* was a dominant species in dune crest, it was found also in the leeward slopes, where high rate of sand accumulation occurred**.** Biomass allocation of Acacia trees revealed that wood biomass were significantly higher in both of foot and fore dune (92.72 and 88.68 Kg/ tree), when compared with other dune positions; windward slope, leeward slope and the crest of the dune (75.37, 68.87 and 59.77 kg/tree, respectively). Forage (shoots and leaves) production (kg/tree) as fresh weight produced from *Acacia saligna* was significantly affected by different trees locations on the dune, where the foredune position which produced more fresh weight of shoots and leaves followed by foot of the dune. Then both of the windward and leeward slopes then the crest of the dune which recorded the lowest value (36.30, 30.61, 27.70, 26.75 and 20.57 kg/tree, respectively). Roots production (kg/tree) as fresh weight was significantly affected by trees locations over the dune, where the foredune was the highest followed by foot, windward slope, leeward slope then the dune crest (93.00, 82.10, 79.16, 72.70 and 62.60 kg/tree, respectively). Total production (kg/tree) of *Acacia saligna* as fresh weight was significantly affected by different locations on the dune, where the foredune was the best i.e. produced highest total fresh weight production followed by foot, windward slope, leeward slope then by the crest location on the dune which was the lowest (217.98, 205.42, 182.22, 168.31 and 142.94 kg/tree, respectively).

Key words; Aeolian sand deposits.Biomass allocation, dune parts, Sand movement.