

Title: Determination of effect of water availability (during the dry season) on abundance of *vachellia xanthophloea* around dam 5 in Embu University, Embu county, Kenya

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Abstract

Water sources are an important feature in many terrestrial ecosystems as they provide continuity of the hydrological cycle in many aspects. They provide vapor that rises to form clouds and later fall as rain precipitation also, they store water that evaporates to form the vapor. Many living organisms, including plants are dependent on water for their development. The higher the primary productivity the higher the diversity as hypothesized in ecological laws. This explains why tropical ecosystems have more species diversity than desert ecosystems. Far from that, abundance of trees is partly determined by water availability in an area. Soil is from where plants derive the water that they utilize to perform various functions. Therefore, it is only right to consider soil water as a parameter to consider when checking whether water availability affects plant abundance. The only way that can determine the age of trees is dbh. It is used to show the developmental stages for tree species. Narrowing down the population to a particular age group of a tree species and ruling out the probability of difference in soil moisture will help determine whether distance from a water source determines abundance. Because older trees are nearer the water table level and younger tree abundance maybe determined by dispersal, their abundance may be measured separately. Assuming that the climatic conditions and that their response is at the same level because they samples are from the same geographical area. This will help show importance and high value that water sources should be given or levelled at.