

TOFs Role in Carbon balance and their relation with LST and Vegetation Indices: A Remote Sensing Approach

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Life can be said to be dominated by the carbon cycle. Reducing energy demands plants act as both reservoirs and potential sources of carbon. The destruction and degradation of trees contributes to the climate change through the release of CO₂, but the planting of new trees can help mitigate against climate change by removing CO₂ from the atmosphere. In the absence of major disturbances a newly planted patch of trees which is called as Tree Outside Forests, continue to absorb carbon for 20-50 years or more. Plantations grow relatively fast, thus absorbing CO₂ at higher rates than natural forests. Carbon stock assessment is one of the important step for sustainable land use planning in relation to low carbon emission. Rise in CO₂ concentration in atmosphere affects temperature leads to disturbance in the normal growth and development of tree species. Using Satellite data current study attempts to assess how TOFs contribute for maintaining carbon balance in atmosphere, their role in maintaining the Land Surface Temperature (LST) of a particular area and its relation with Vegetation Indices (VIs) like (NDVI, EVI etc.). Attempt has been made to measure tree height and crown area and to estimate carbon stock using high resolution satellite data. TOFs grow on a variety of landscape eg. Linear scattered, block etc. called as stratum. Study has been conducted on two areas one having variety of strata and another with less number of strata. Finding of study depicts the picture about carbon stock for areas having variety of strata and its relation with VIs and LST compared with areas having less variety of strata. As trees and vegetation lower surface temperature through evapotranspiration, study also focused on influence of TOFs on microclimatic parameters like Evapotranspiration, Leaf area Index, PAR, fPar and vice versa on both type of study areas.

Keywords: Tree Outside Forest (TOFs), Land Surface Temperature(LST), Vegetation Indices(VIs), NDVI, EVI, Carbon Sequestration