Do forests capture more carbon from the air? Carbon sequestration assessment between Madhupur Sal Forest and croplands of Dhaka city.

Suranjana Mehjabin, master's student, Sher-e-Bangla Agricultural University.

Abstract

Over the past half-century, rapid urbanization in Dhaka city played a vital role in deforestation of Madhupur Sal Forest (MSF) primarily for croplands and residence. The study was designed to evaluate carbon sequestration rate between major forest tree species (*Shorea rubusta, Terminalia bellirica,* and *Mallotus philippensis*) and agricultural crop (*Orza sativa*) in Bangladesh's largest deciduous Sal forest, MSF, and experimental fields of Sher-e-Bangla Agricultural University by diameter-height model and above ground biomass by CHN analyzer respectively. However, sequestrated carbon in the crop is stocked in soil by decomposition. In straw burring practice, soil test results in highly significant carbon stock per hectare by the crop than the forest trees. It suggests adopting agroforestry practices for carbon emission reduction.

Image

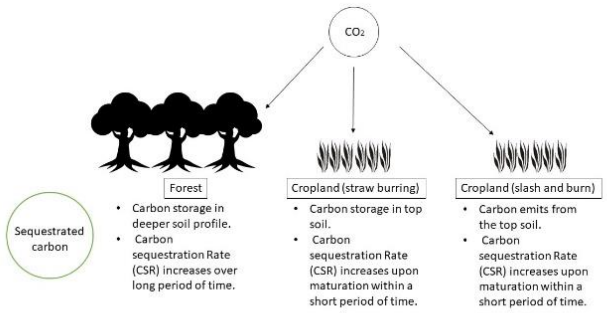


Figure: Graphical representation of comparative carbon storage by forest, cropland incorporating straw burring practice, and cropland involving slash and burn practice.

Recent Publications

1. Begum K, Kuhnert M, Yeluripati J, Ogle S, Parton W, Kader MA, Smith P (2018) Soil organic sequestration and mitigation potential in rice cropland in Bangladesh: a modeling approach. Field Crops Research 226:16-27.
2. Hanif MA, Bari MS, Rahman MA (2015). Potentiality of carbon sequestration by agroforestry species in Bangladesh. Research on Crops. 16:562-567.
3. Islam KK, Sato N (2012) Deforestation, land conservation and illegal logging in Bangladesh: the case of the Sal (Shorea robusta) forest. Forest 5:171-178.
4. Islam MS, Tusher TR, Kabir MH, Hassan MR, Khan MNH (2016). Carbon storage and sequestration potentiality of tree species in madhupur sal forest of bangladesh. Bangladesh Journal of Environmental Science 30:33-39.
5. Komatsusaki M, Syuaib MF (2010) Comparison of the farming system and carbon sequestration between conventional and organic rice production in west Java, Indonesia. Sustainability 2:833-843.
6. Lin C, Lin CH (2013) Comparison of carbon sequestration potential in agriculture and afforestation farming systems. Scientia Agricola 70(2):93-101.
7. Malaker JC, Rahman MM, Asad-ud-daula Prodhand AKM, Malaker SK, Khan MAH (2010) Floristic composition of Madhupur forest in Bangladesh. Journal of Soil Nature 4(1):25-33.
8. Uddin MJ, Mohiuddin ASM, Hassan M (2019) Organic carbon storage in the tropical peat soils and its impact on climate change. American Journal of Climate Change 8:94-109.



Biography

Suranjana Mehjabin is a master's student of Agroforestry and Environmental Science at Sher-e-Bangla Agriculture University. Her concern in evaluating natural degradation led her to address real-world conservation issues through scientific principles. She strives to explore alternatives to combat climate change. Over six month's research project, she evaluated the major carbon sinks in Dhaka district on the basis of non-combustible methods for the forest trees, and combustible for the crops. Estimated volumes eliminated biased data through the age-volume model, and also analyzed the cost-benefit ratio for economic profit. It exhibits the role of sustainable agriculture for the growing economy and environmental protection.

Email: mehjabin80@gmail.com

Notes/Comments: