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DEVELOPMENT OF APPROACHES FOR BUILDING CLIMATE RESILIENT TECHNOLOGIES FOR FARMERS IN SIDDIPET DISTRICT

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ABSTRACT: Agroforestry is a unique land management approach that blends agriculture, forestry and or livestock /pasture on same land to enhance productivity, profitability and environmental sustainability. The study aimed to know the role of Agroforestry in economically improving livelihoods and its contribution to climate change mitigation. The data is collected using farm land household survey based on random sampling using ex-post facto design. The agricultural crops on-farm contributes to the major part of their livelihood whereas tree and livestock component is a substitute in their farms. The farmers retain tree species like *Tectona grandis, Azadirachta indica, Mangifera indica, Syzygium cumini,* which accumulate carbon dioxide in their biomass. Agroforestry not only helps in climate change mitigation but also in climate change adaptation. The results suggest that the agricultural crops as a stable economy, crop diversification and soil fertility. The trees on boundaries acts as carbon sinks by reducing greenhouse gases and, thus states that the trees/ crops raised for livelihood have served the purpose of both economic stability and environmental sustainability by enhancing overall farm productivity, conserving biodiversity of the site.

Key words: *Agroforestry, biodiversity, carbon sinks, ex-post facto design, mitigation, random sampling.*

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INTRODUCTION

Forests are stabilizing force for the climate. They protect biodiversity, regulate ecosystem, play an integral part in carbon cycle, support livelihood and supply goods and services that can drive sustainable growth. Forest's role in climate change is two-fold. They act as both a cause and a solution for greenhouse gas emissions, around 25% of global emissions are from the land sector and second is from greenhouse gas emissions (5-10 Gt carbon dioxide annually) comes from deforestation and degradation. As most of the activities are man-made either for commercial or domestic use which is indirectly reducing the green cover and leading to the increased emissions of greenhouse gases (FAO 2010).

Green cover is also one of the best solutions to address the effects of climate change. Approximately 2.6 billion tons of carbon dioxide (CO_2) of this one-third of carbon dioxide is absorbed by forests every year, estimates show that nearly 2 billion hectares of degraded land is given for reforesting in order to increase green cover and reduce the effect of greenhouse gases, therefore it is important to maintain forests as an essential solution to climate change (Jasna *et al.,* 2014) Interrupting the loss and degradation of natural systems and boosting their restoration have the potential to contribute over one-third of the total climate change mitigation. Developing countries are expected to suffer the most from changes in climate patterns. The effect of climate change, including their higher temperatures, changes in precipitation patterns, raising sea levels and increased frequency of weather-related disasters are bound to create risks for agriculture, food and water supplies.