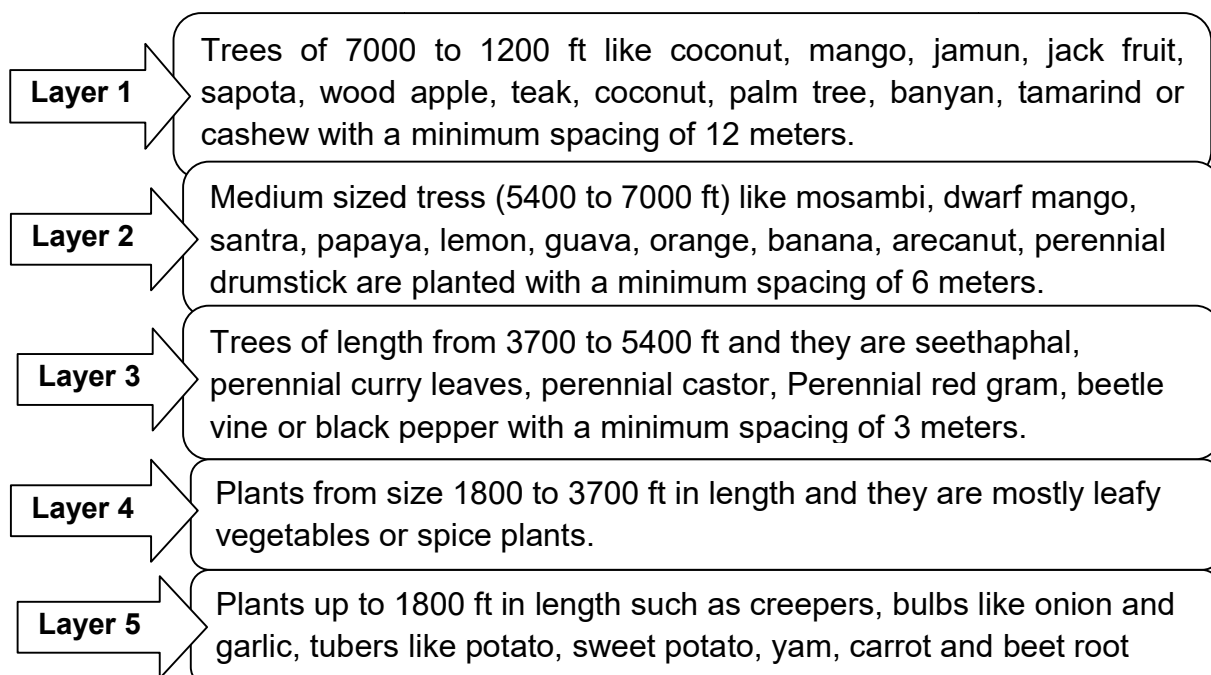


A Case study on Five Layer Model

In order to cope with the change in climate in the drought prone regions of Anantapur district in the state of Andhra Pradesh, APMAS is implementing a project, '**Climate Smart Village' (CSV)** in two mandals viz. Nallamada and Gudibanda. The project is being funded by AEIN Luxembourg and aims to promote affordable and replicable adaptation and mitigation practices to enhance livelihoods of vulnerable communities in the district of Anantapur.

As a mitigation measure, the project has adopted a cultivation technique, "**Five Layer Model**", which was promoted by Subash Palekar, an Indian farmer, Agricultural Scientist and Padma Shri Awardee, in Vidarbha region of Maharashtra state. "**Five Layer Model**" is a sustainable crop management model which improves the soil health. This system allows a maximum of five horticulture crop species in a small holding. This farming system basically aims at utilizing every inch of soil available and making the system look like a forest with its layers of canopy.

Five-layer plantation systematically integrates tree and crop species with varying degrees of sunlight intensity, ensuring 100% cover to the soil with diverse plants and trees. This enhances the soil biome, carbon sequestration, water retention capacity of soils, nutrient availability and year-round income to farmers. The trees create biodiversity and hence provide nutrition through live roots. The trees also protect the environment at micro level by reducing the temperature, allowing rains to come, maintaining soil health and carbon sequestration and providing fodder to animals. Thus, a five layer model as given below is definitely a step towards addressing drought in the semi-arid areas of the district.



Five Layer Models in Climate Smart Village

Narayan Naik of MS Thanda village in Gudibanda Mandal, used to cultivate groundnut in his half acre land every season. He earned around Rs.10000 during good monsoon year, otherwise he hardly earned Rs.6000 due to untimely and sporadic rainfall in the drought prone region. Naik has adopted the five layer model in the year 2019 in his half acre land. He has planted Guava, Tamarind, Jamun, Lemon, Drum stick, Mango, Papaya and Curry leaves trees in the 1st, 2nd and 3rd layers and Chilli in 4th and 5th layers. All the plants and seeds were provided from the CSV project. Land preparation, pitting, plantation and staking were done by farmer himself and also some labour cost, which was the investment from his side. All the trees are still in growing phase. He has harvested the Chilli crop during January 2020 and earned around Rs.15000. Now he has sown Finger Millet in the place of Chilli (Kharif 2020). He is very happy that he could earn more money from just one crop and he is waiting for the plants to grow so that he can get more income from his half acre land.



Figure 1: Narayan Naik in his half acre land

Another farmer Jayamma, a female farmer, has also planted the same plants in 1st, 2nd and 3rd layers. But in 4th and 5th she has sown Sesbania (which is known as Avisa in local language), fodder specie which grows in three months time. In the village, the farmers generally enter into a contract with cattle rearers and sell the entire fodder to them. Just by sowing the seeds, leaving the land for three months and spraying water in regular intervals, she has earned Rs.5000. Jayamma is happy for the income that she earned by growing fodder species when compared to earlier, where she used to grow groundnut as rest of the farmers in the village.



Figure 2: Jayamma's land with Sesbania crop

Five Layer Model Farming...a way to mitigate drought due to climate change

The CSV project team has oriented the farmers on the advantages of the Five Layer Model and taken them for an exposure to Gajulolapally village of Amadaguru mandal in Ananthapur district during May 2019. About 36 farmers came forward to adopt Five Layer Model during Kharif 2019 and about 4000 plants were procured from various nurseries, distributed and planted by the farmers. The project aims to enable especially the small landholders to go in for the multi layer farming.

Planting of more trees yields number of benefits for the humans and the environment and helps fight climate change in many ways – absorption of carbon dioxide and other pollutant gases in the air; cleans the air and produces enough oxygen for humans; reduces the temperature; prevents evaporation of water; prevents soil erosion and water pollution; brings more rain; increases the fertility of the soil; provides shelter for birds, bees, squirrels; serves as eco-friendly fuel; promotes bio-diversity; provides nutritious fruits; provides fodder for livestock; gives sustainable income to the farmers and so on.