World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:17, No:11, 2023

Coconut Based Sustainable Agri-Silvicultural System: Success Story from Sri Lanka

Authors : Thavananthan Sivananthawerl

Abstract : Coconut palm is existing for more than 2000 years in Sri Lanka. However, cultivation on a large scale (plantation) began only in the 19th century. Due to different light perceptions during the growth stages of palm, there is a huge potential to grow crops in-between rows of coconut plants which are grown with wider, fixed spacing. Intercropping under coconut will have multiple benefits such as increasing soil fertility, increasing sunlight utilization, increasing total crop productivity, increasing income & profit, maximum use of resources, reducing the risk, and increasing food security. Growing potential annual, agricultural intercrops could be classified as 'agri-silvicultural' system. This is the best agri-silvicultural system that can be named under any perennial crop system in Sri Lanka. In the late 1970's cassava, pepper and cacao are the major intercrops under the coconut plantations. At the early ages of the palm (<5 years) light-loving crops such as pineapple, passion, papaya, and cassava are recommended and preferred by the cultivators. In between 5-20 years of age, the availability of light is very low, and therefore shade tolerant/loving crops (pasture, yam, ginger) could be used as the intercrops. However, after 20 years of age (>20 years) canopy is getting small, and the light availability on the ground increases. So, light demanding crops such as pepper, banana, pineapple, betel, cassava, and seasonal crops could be grown successfully. Even though this is a sustainable system in several aspects, there are potential challenges ahead to the system. The major ones are land fragmentation and infrastructure development. The other factors are drought, lack of financial support, price instability of the intercrops, availability of improved planting materials, and development of dwarf varieties which reduces the light.

Keywords : coconut cultivation, agri-silviculture, intercrop, sunlight, annuals, sustainability
Conference Title : ICAMB 2023 : International Conference on Agroforestry and Maintenance of Biodiversity
Conference Location : London, United Kingdom
Conference Dates : November 27-28, 2023