

# Regional Cocoa Symposium

*Next Generation of Cocoa Research  
for West and Central Africa*



**PROGRAM AND BOOK OF ABSTRACTS**



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## **PP-11: Cocoa management, Indigenous knowledge and carbon sequestration in cocoa agro forest of South West Cameroon**

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Cocoa cultivation is a part of the daily life amongst the southwestern people of Cameroon. Cocoa management is carried out following agronomic recommendations that provide guidance in agronomic management of the cocoa agro forests. Smallholders tried to respect these conditions, but taking into account their context in maintaining indigenous species in the cocoa agro forest that satisfies their needs in terms of health and nutrition. This paper presents the cocoa management with indigenous knowledge for carbon sequestration and livelihood in cocoa agro forests of the south west Cameroon. A sample of 120 plots of 25m x 25m from 30 cocoa agro forests were selected and surveyed. Results obtained showed that indigenous species store 68.4% of carbon for 31.6% carbon stock from introduced species. Indigenous species are used for farmer's needs and contribute to carbon storage. *Ceiba pentandra* stored an average of 25.3 t/ha (13.5 %) of the total carbon (126.9 t/ha). *Albizia*, *Irvingia*, *Terminalia* and *Pycnanthus* are the most common indigenous species maintained. Local knowledge for indigenous trees management activities such as low intensity harvesting, reduce impact logging, leaving woody debris, conserving and maintaining trees in their cocoa farms can simultaneously provide climate benefits and maintain the cocoa agro forest as a carbon sink.

**Keywords:** carbon sequestration, Cameroon, indigenous trees south western

## **PP-12: Carbon dynamics in cacao agroforestry plantations setup after forest or savannah: a chronosequence analysis in a forest-savannah transition zone in Cameroon**

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Previous studies in the forest-savannah transition zone of Bokito in Central Cameroon have shown that smallholder farmers were able to realize afforestation by creating cacao plantations on savannah land. Compared to plantations setup after forest in the same region, cocoa production levels and associated tree species densities were found to be comparable on the long-term. In the light of climate change, afforestation of savannah with cacao agroforestry plantations could be of great potential due to its significant storage of carbon.

Cocoa agroforestry plantations with an age gradient of 0 to 80 years were selected to assess aboveground carbon accumulation in cacao and associated trees as well as the soil's carbon content. The two previous land-use types: savannah and gallery-forest were also included in the analysis for comparison. Total aboveground carbon (AGC) was found to be highest in the gallery-forest control plots (118 Mg ha<sup>-1</sup>) and lowest in the savannah control plots (trees and herbs: 8 Mg ha<sup>-1</sup>). Compared to the previous land uses, mean total AGC was around 40% lower in cacao plantations set-up after forest while AGC stocks of plantations set up after savannah have increased by 630%. AGC of cocoa plantations after forest stayed relatively stable over time while it increased significantly ( $p < 0.01$ ) with the age of the plantations setup after savannah. According to the soil texture, different tendencies of soil C accumulation over time were found in cocoa plantations setup after savannah, while no change in soil C content was observed after forest over time. Overall, we found carbon accumulation in cocoa plantations set up after savannah and carbon depletion in plantations set up after gallery-forests.

**PP-13: Effects of shade regimes and varying seasons of irrigation on survival, developmental pattern and yield of field grown cacao (*Theobroma cacao*).**

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Field experiments were conducted at the Teaching and Research Farm of the Federal University of Technology Akure, Nigeria between 2012/2013 to 2014/2015 growing seasons to investigate the effects of varying seasons of dry season drip irrigation and varying shade regimes on field survival, development and yield of cacao. It was discovered that combined effects of moderate and dense plantain shade with continuous