



CocoaSoils

COCOASOILS GAZETTE

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The CocoaSoils Programme, a public-private consortium (with funding from the Norwegian Government - NORAD) has been created to address the issues of decline in productivity in cocoa and improve the livelihoods of smallholder cocoa farmers while avoiding deforestation. The program has two main arms: Research for Development (R4D) and Partnership for Delivery (P4D). The R4D focuses on developing the protocols, establishing trials as well as data collection and management, while the P4D focuses on disseminating the recommendations from these trials in order to empower farmers and improve their livelihoods. In this edition of the Gazette, we focus on updates on activities from the Core Trials, Satellite Trials, and P4D training workshops for extension agents and farmers.



■ Photo: Aerial view of Core Trail site in Ibadan

Updates on Core Trials

All the eight Core Trials, with the additional two in Ecuador and Indonesia, are running and data is being collected. A new trial has been established by Mondelez in Ghana, increasing the number of Core Trials in Africa to nine.

IITA, Ibadan, Nigeria

At the Core Trial site in Ibadan, cocoa trees are in good condition. In at least 30 or 40 of the experimental plots, the large trees are flowering and growing pods. The plantain tree in the trial plots have been removed or reduced to a single stem to prevent damages to the flushing leaves by abrasion with plantain leaves. The second round of fertilizer application has ended. A cocoa growth evaluation was conducted and data was uploaded to the ODK server.

CRIN, Owena, Nigeria

Cocoa trees from early planting have started to grow pods. 45 out of the 900 seedlings planted in August 2021 died and were replaced. Weeding was carried out on the plots as one of the main maintenance activities to keep the clones in good condition. Plantain shade management exercises were undertaken by reducing the number of plantain trees per stand. More clonal seedlings were produced to gap up dead stands in the plot.



■ Photo: Pods on a cocoa tree at the Core Trial Site in Owena

IITA, Malmayo, Cameroon

The cocoa trees on the plots are in good condition. The plants transplanted between April and May are performing very well. Managers have engaged an irrigation company to install an irrigation system to ensure that all the plants get enough water. Herbicides are being applied regularly. Early cocoa tree evaluation has commenced.



■ Photo: Core Trial in Malmayo, Cameroon

IRAD, Nkoemvone, Cameroon

A nursery was set up in April 2021 to replace dead plants with new plants. The new cocoa plants were planted in mid-April and showed a survival rate of around 70%. Plot cleaning activities such as manual weeding and running of banana plants are carried out once every month. Herbicide application commenced in August 2021 and is still ongoing.



■ Photo: Core Trial Site in Nkoemvone

CRIG, Mabang, Ghana

In Mabang, cocoa trees planted in October 2019 are flowering. The fertilizer application for 2021 has ended. Managers are constantly applying termiticides to control termites. Regular field maintenance activities undertaken on the plots in 2021 have included manual weeding, and the thinning of plantain suckers to allow more sunlight and air into the farm and reduce competition.



■ Photo: Core Trial Site in Mabang

Mondelez, Boako, Ghana

At the new CT site established by Mondelez, a cocoa nursery was set up in April 2021. The first and second batches of plantain suckers were planted between August and September 2021. Maize was planted in August 2021.



■ Photo: A nursery at Core Trial site in Boako

CNRA, Divo, Côte d'Ivoire

At the CRNA Core Trial site, dead and underperforming trees have been replaced. Plot maintenance activities on the plots include weeding, pest and disease control, and irrigation. Drip irrigation is done at the foot of the cocoa trees, in the absence of rain, to allow good development of the plants. The second split of fertilizer for 2021 has been applied. Data collected on cocoa tree throughout the year include circumference of seedlings, the height of seedlings, crown heights, number of crowns, and the number of fallen or yellowed leaves on cocoa trees.



■ Photo: Harvested plantain at Core Trial site in Owena

Barry Callebaut, Tissale, Côte d'Ivoire

Plot maintenance activities throughout the year have consisted of weeding lines, chemical pest control, watering the plants during the dry season, and maintaining the irrigation system. Manual weeding is carried out every month. Pest control activities are also carried out regularly. From January to May 2021, the cocoa plants received 4 liters of water per day. In June 2021, plantain suckers were thinned to reduce the density of plantain and promote good shade to the plants. An irrigation system has been installed to supplement the water supply to the plots. Cocoa tree measurements were taken to assess the growth rate of the cocoa trees. The parameters measured were the height and the diameter of the trees.



■ Photo: Technicians measure the height of a cocoa tree

Mondelez, Indonesia

The second round of straw mulch and fertilizer applications has ended. Thinning out of banana shades is underway and is expected to be completed at the end of November 2021. The banana shades will be removed from the plots in December 2021 prior to fertilizer treatment. Barcode labeling was completed in September 2021.



■ Photo: Straw mulch application at Core Trial site in Indonesia

sanitation pruning. Data was collected throughout the year on Pod Harvest Index (PHI), climate variables, soil profile description, and soil densities. The main season harvest has ended on 50 percent of the plantations. Fungicides and insecticides have been applied on 80 percent of the plantations.



■ Photo: Fungicide application at a Satellite Trial site in Cameroon



■ Photo: Insecticide application at a Satellite Trial site in Cameroon

Updates on Satellite Trials

There are seven partners (Olam, Mondelez, Cargill, Kuapa Kooko, Olatunde, and Tulip) hosting a total of 393 Satellite Trial sites. The current distribution of the ST sites is as follows: 133 in Côte d'Ivoire; 64 in Cameroon; 130 in Ghana, and 66 in Nigeria.

Cameroon

Field maintenance activities undertaken on the plantations throughout 2021 have included regular farms visits, pesticides applications, structural pruning, weeding, fertilizer application, plot delineation, and the installation of barcodes. Other activities include pod count per size class and

Côte d'Ivoire

The initial site characterization and plot delineation activities have concluded on all the 133 plantations across the country. YARA supplied all the fertilizer required for the 2021 season. BAYE also provided insecticides and fungicides for all the trials sites. The second round of fertilizer

application has ended on all the plantations. Project leads are working with technicians of private partners to intensify data collection.



■ Photo: Technician applies fertilizer at a Satellite Trial site in Côte d'Ivoire



■ Photo: Fertilizer application at a Satellite Trial site in Ghana



■ Photo: Plot delineation at a Satellite Trial site Côte d'Ivoire

Ghana

The second split of fertilizer has been applied on all the 130 sites in Ghana. Data collection on tree measurements (plant height and canopy covers) is taking place across the country. The main harvest for the 2021/2022 season continued throughout October. Technicians are also collecting data on pod count.

Nigeria

The second season fertilizer application has ended on all the 66 plantations in Nigeria. Fungicides are being applied at 14 days intervals in response to heavy rains. Technicians are collecting data on pod yield, pod yield index, and crop management. Cocoa bean samples are being shipped to be dried at the IITA agronomy laboratory at Ibadan to calculate the dry bean yields from all the sites. Data collection on tree measurements (total canopy, crown depth, tree height, and trunk circumference) is ongoing.



■ Photo: Fungicide Application at a Satellite Trial Site in Nigeria.

Partnership for Delivery (P4D)

Training of Extension Agents

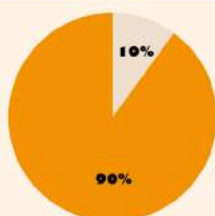
Partnership for Delivery (P4D) training workshops have been held across Cameroon, Côte d'Ivoire, Ghana, and Nigeria in 2021 to train Extension Agents (EAs) of private partners on CocoaSoils Integrated Soil Fertility Management recommendations for improved fertility, and the program's MEL framework to enhance their knowledge on the use of Open Data Kit (ODK), tools required to document types of training, location, numbers, and sex of farmers trained and to capture and upload this information.

The extension agents are Partnership for Delivery agents who train cocoa farmers in the CocoaSoils program operational areas in the four countries. The workshops take the form of lectures, field visits, panel discussions, multimedia presentations, and group practice/role play. *View details of EAs training sessions below.*

Partners' Extension Agents (EAs) Trained (January-October)

Country	Partners	Number of EAs trained
Cameroon	Olam	57
Côte d'Ivoire	Olam	137
	Cargill/Mondelez	24
Ghana	Cargill	5
	Kuapa Kooko	52
	Mondelez	35
	Olam	26
	Rockwinds	16
Nigeria	CHED	5
	Olam	77
	Olatunde International	15
	Sucden	17
	Tulip	20
TOTAL		486

486 partners' EAs were trained in Cameroon, Côte d'Ivoire, Ghana, and Nigeria. This figure represents 97% of the 2021 target of 500 EAs



1% of EAs (6) trained in Cameroon, Côte d'Ivoire, Ghana, and Nigeria are female

99% of EAs (482) trained in Cameroon, Côte d'Ivoire, Ghana and Nigeria are male



Photo: Practical training of EAs in Cameroon



Photo: Extension agents at a workshop in Nigeria



Photo: Practical training of EAs in Ghana



■ Photo: Extension agents at a workshop in Gagnoa, Côte d'Ivoire.



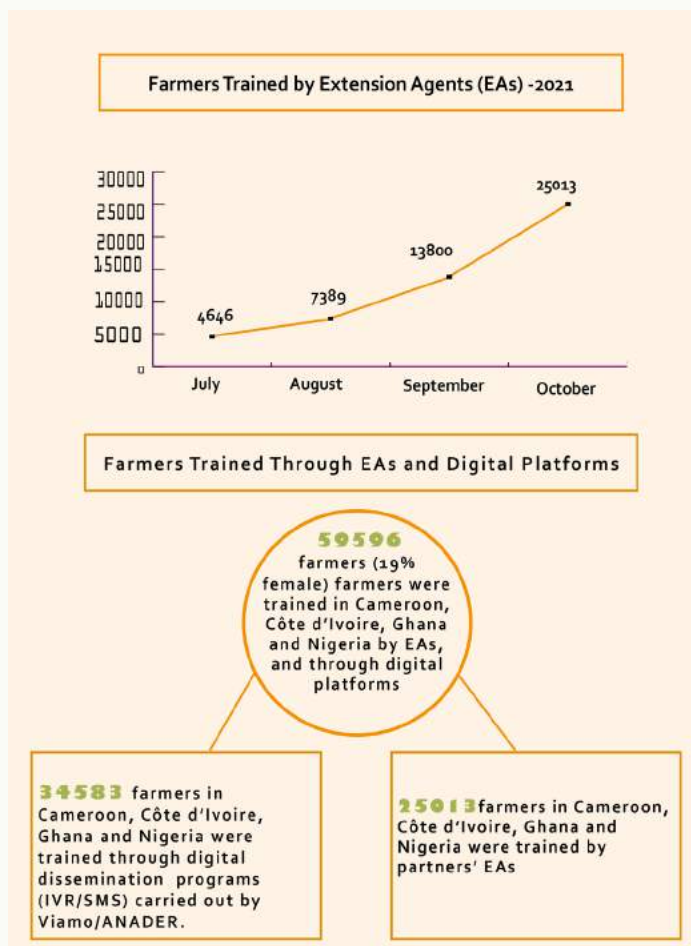
■ Photo: An extension officer demonstrates compost tea preparation to a group of farmers in Ghana.

Training of Farmers

Farmers across the four countries are being trained on CocoaSoils Integrated Soil Fertility Management (ISFM) recommendations, and Good Agronomic Practices (GAP). They are reached through partners' dissemination events such as EA-led training, sensitization, demonstration fields, farmer field schools, and digital platforms (Viamo and ANADER e-platforms). *See details of the number of farmers trained by extension agents and through digital dissemination below.*



■ Photo: An extensive agent conducts a farmer - training session on a farm in Nigeria.



Government of Cameroon Receives CocoaSoils Training Manual

The CocoaSoils Training Manual on managing

soils fertility for improved cocoa productivity and decreased deforestation was handed over to the Ministry of Agriculture and Rural Development in Cameroon at a handover ceremony held in Yaoundé on 11 October 2021. Read the full story [here](#).



■ Photo: Minister of Agriculture and Rural Development, Gabriel Mbairrobe receives the training manual

CocoaSoils Training Manual Unveiled in Kumasi, Ghana

The training manual was unveiled to the program's private and public sector partners at a Partnership for Delivery (P4D) committee meeting held in Kumasi, Ghana on 14 October 2021. Read the full story [here](#).



■ Photo: Dr. Amos Quaye of CRIG Unveils Training Manual

Policy Engagement

The reports on cocoa-related policies in Cameroon, Côte d'Ivoire, Ghana, and Nigeria have been reviewed and validated within the Partnership for Delivery (P4D) Committees with the aim of developing a set of recommendations that will feed into policy brief formulation.

Webinars

CocoaSoils Webinar on Living Income

The CocoaSoils consortium organized a webinar on September 7, 2021, to explore options and barriers on how overall farm productivity contributes or may contribute to a living income for smallholder cocoa farmers. During this webinar, participants learned about the living income concept in relation to CocoaSoils and the proper use of data. Watch the presentations and panel discussions [here](#).



Cocoa Ontology Webinar

Dr. Arun Kumar Pratihast and Abidemi Elesho from Wageningen University and Research gave a presentation on the cocoa ontology developed under the CocoaSoils program at the 6th edition of the Ontologies Webinar Series held on 26

October 2021. Watch the presentation [here](#).



environmental (i.e., climate and soil) conditions drive cocoa yields and how this differs for farms achieving on average low- and high mean production levels based on an unprecedented dataset of 3827 cocoa farms in Ghana. They further quantified the relative importance of management practices based on a subset of 134 farms for which management information was available.

The research found that agronomic management is the dominant determinant of on-farm cocoa yields in Ghana, more so than environmental conditions.

Read the full article here: <https://doi.org/10.1016/j.agry.2021.103214>

New PhD Publications



Photo: Paulina Asante ■ Email: paulinaansaa.asante@wur.nl

Current on-farm yields in this region are low and are expected to decrease in response to climate change, through warming and shifts in rainfall. Interventions intended to improve yields and climate adaptation require an understanding of the main drivers of yields across farms.

In a paper titled **“Unravelling drivers of high variability of on-farm cocoa yields across environmental gradients in Ghana”**, Asante, P. A., et al. (2021), quantified the extent to which



Photo: Kenfack Essougong ■ Email: urcil.kenfackessougong@wur.nl

In Africa, cocoa yields are low, partly due to soil fertility constraints and poor management. While peoples' knowledge, aspirations, and abilities are key factors explaining their behaviour, little is known about the rationales that underpin soil fertility management practices (SFMPs) of cocoa farmers. To address this gap, Kenfack Essougong, U. P., et al. (2020), in a study titled **“Farmers' Perceptions as a Driver of Agricultural Practices: Understanding Soil Fertility**

Management Practices in Cocoa Agroforestry Systems in Cameroon.”, conducted an exploratory survey in two contrasting regions in Cameroon where cocoa is an important crop: the humid forest and the forest-savannah transition zone. Some 30% of farmers in the transition zone, as opposed to 13% in the humid forest, expressed concerns about soil fertility. Read the full article here: <https://link.springer.com/article/10.1007/s10745-020-00190-0>



Photo: Deo-Gratias-Hougni ■ Email: deo-gratias.hougni@wur.nl

Recycling of cocoa pod husks has potential to contribute to mineral nutrition of cocoa. Yet little is known of the nutrient content and nutrient release patterns from the husks. The potassium (K) rich husks are usually left in heaps in cocoa plantations in Africa. In a study titled **“How nutrient rich are decaying cocoa pod husks? The kinetics of nutrient leaching ”**, Hougni, DG.J.M., et al. (2021) sought to understand and quantify release patterns of K and other nutrients from husks under varying rainfall regimes, and to assess the effects of partial decomposition and inundation on nutrient leaching rates by incubated chunks of cocoa pod husks to assess decomposition rates. Nutrient leaching rates were measured from two sets of husk chunks.

Read the full article here: <https://link.springer.com/article/10.1007%2Fs11104-021-04885-1>

Profiles



Photo: Adalbert Onana Adibimé

Adalbert Onana Adibimé is the research Assistant for the Cocoa Soils program in Cameroon. He holds a PhD degree in Agronomic Science / Soil Science from the University of Dschang in Cameroon, with a specialization in soil Fertility and Environmental Chemistry. He has worked as a Research Assistant for the University of Dschang in many governmental and non-governmental programs in Cameroon including the Forest and Savannah Sustainability (FOSAS) program with the Japanese International Cooperation Agency (JICA) and National Forest Agency (ANAFOR).

He worked as a consultant in many soils, plants, fertilizer, irrigation, and planning-based programs including cocoa programs, for the Ministry of Economy and Planification and the Ministry of Agriculture and Rural Development. Adalbert has experience in the following research field which are also his main research areas: Integrated Soil Fertility Management, Soil, Fertilizer and water quality, Environmental Physics and Chemistry, Land prospection and Evaluation, Land use and Land planning, Soil classification and Mapping, Agroclimatology,

Cocoa and other Arable Crops (annual and perennial) production technology and Management, and Soil, plant, water and fertilizer, amendments and products analysis.



Photo: Reginald Ofori Reginald



Reginald Ofori Kyere is the communications Officer on the CocoaSoils program. He holds a bachelor's degree in communication studies from the Ghana Institute of Journalism. Before joining IITA, he worked with Deutsche Welle's distribution agency in Ghana. During this period, he managed and expanded Deutsche Welle's media partnerships across radio, television, and online. Reginald is interested in using communication strategies and tools to facilitate development.

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Do you have a story to share? Send it to **R.Kyere@cgiar.org**

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Project partners

