

ISSUE: 44 (October, 2024)

A New Crop Added To CRIN Mandate



The number of crops in the Institute's mandate increased to six with the recent addition of a new crop to its research activities. This information emerged as the Agricultural Research Council of Nigeria (ARCN) recently furnished the Cocoa Research Institute of Nigeria (CRIN) management, ably led by the Executive Director, Dr. Patrick Adebola, with the great news. This new crop is *Vitex doniana*, commonly known as Black Plum, and locally known as 'Dinyar' (Hausa), 'Galbihi' (Fulani), 'Ori nla' (Yoruba) and 'Ucha koro' (Ibo). The fruits are generally referred to as black plum or African olive.

Vitex doniana, a member of the *Verbenaceae* family, is a tree crop species that naturally occurs in the open woodland and savannah regions of tropical Africa. Its fruits are plum-like, sweet and edible. The fruit is green when mature but turns to dark brown when fully ripe. Its pulp encapsulates a hard stone bearing 1 – 4 seeds. It is a savannah species

and can therefore be found in northern, eastern and western Nigeria.



Mature Black Plum tree with full foliage



Mature Black Plum fruits



Ripe Black Plum fruits





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Black Plum has a geographical spread in several African countries including Nigeria, Angola, Botswana, Ethiopia, Kenya, Lesotho, Namibia, Niger, Senegal, Somalia, South Africa, Sudan, Tanzania, Uganda, and Zambia. In season, it is known to possess a good shade due to its heavy rounded canopy. It is propagated from seed, root, sucker and cuttings. It improves soil nutrient status due to the Nitrogen fixing capacity of its roots and is, therefore, good in traditional agro-forestry. Its leaves serve as good mulching materials. The olive-shaped fruit has a sweet, prune-like taste with a hint of chocolate. It is believed to have high levels of vitamins A and B and can be eaten fresh as a snack or made into jam or wine, both of which are nutritious. The young leaf is highly rich in nutrient and eaten as a leafy vegetable. The bark yields a dye for cloth, and other plant part are used for various traditional medicines. Indeed, the economic importance of this underutilized species are yet being unravelled, thus making a focus on it very key.



With the current development, the Institute has set up a steering committee composed of Breeders, Agronomists, Entomologists, Pathologists, End Use Researchers, Economists, Soil Scientists, amongst others, to conduct preliminary study on the crop. The committee is headed by Dr. (Mrs.) Anna Muiwa, Director and Head of Crop Improvement Division.

CRIN Collaborates With Stakeholders on EUDR Regulations



It has been observed that 90% of global deforestation is driven by the expansion of agricultural land, contributing to climate change, biodiversity loss, soil erosion and desertification, and hindering sustainable development. The European Union (EU) is taking action to minimise the risk that products associated with deforestation enter the EU market and to increase the demand for deforestation-free products. The EU Deforestation Regulation (EUDR) requires companies to ensure that the products they place on the EU market or export from it are not associated with deforestation. Cocoa has been recognised as one of the drivers of forest loss, hence the need to change the narratives by engaging the cocoa stakeholders on the need to desist from deforestation.

Dr. Patrick Adebola, the Executive





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Director (ED) of the Cocoa Research Institute of Nigeria (CRIN), and the Secretary of the National Cocoa Management Committee (NCMC), is at forefront strategizing on how to boost Nigeria's cocoa production, and most importantly address the gaps to ensure the country complies with the EU standards. Recently, at the Rainforest Alliance Stakeholder Workshop with the theme: "Advancing Sustainable Cocoa Production in Nigeria – The Rainforest Alliance's Strategy" held on September 3, 2024 at the Conference hall of BON Hotel, Royal Parklane, Ijapo Estate, Akure, Ondo State, the ED, ably represented at the event by the Director and Cocoa Programme Leader, Dr. Samuel



Orisajo, emphasised on the need for all stakeholders to be compliant in order to ensure that we are able to export cocoa beans and products to Europe, which is the biggest market for the country. The Institute is

collaborating with stakeholders through sensitisation, training, provision of improved cocoa hybrids for more yield to make more income, thereby discouraging cocoa farmers to encroach into forest reserves and technical assistance thereby accelerating progress towards cocoa traceability and sustainability.



Panel session at the event

ED Visits NRCRI, Umudike, Abia State



The ED CRIN, Dr. Patrick Adebola, recently paid a research visit to a sister Institute, National Root Crops Research Institute (NRCRI), Umudike, Abia State. The ED NRCRI, Dr. Chiedozi Egesi, gave our ED a very warm reception and a tour of their facility.



The ED CRIN, Dr. Patrick Adebola, on a tour of NRCRI facility





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EU Delegation Visits CRIN

A delegation from the European Union (EU) paid familiarization visit to the Institute on September 11, 2024. The duo of Massimo de Luca and Inpol Stefanowis from the EU was accompanied by Thuveba Diwani of the GIZ. They were warmly welcomed to the Institute by the Executive Director, Dr. Patrick Adebola, ably represented by the Director, Budget, Monitoring and Evaluation, Dr. Amos Famaye, Dr. Sunday Agbeniyi, Director Research Operations and Dr. Kayode Ayegboyin, an Assistant Director. The purpose of the visit was centered on their quest for knowledge on cocoa production, sustainability and traceability with special emphasis on collaboration with the Institute. The Institute expressed eagerness to enter into collaboration with the EU on cocoa value chain. The EU delegation expressed optimism in the proposed collaboration and promised to pay a return visit to the Institute.



The EU, GIZ delegation and CRIN team

CRIN Walks The Talk

The Cocoa Research Institute of Nigeria was assigned with identification of suitable ecologies for the expansion of cocoa cultivation in Nigeria as well as the improvement on the genetic properties of cocoa for high yielding and resistance to biotic and abiotic factors limiting its production among her responsibilities. To cover the identified cocoa growing ecologies

in Nigeria, Ibeku substation, Abia State was established in 1971 to cover the entire southeast region of Nigeria. The following States were under the supervisions of CRIN Ibeku Substation: Abia, Anambra, Ebonyi, Enugu, Imo and Akwa Ibom States. The present Head of Station is Dr. O. O. Olaniyi.

The Institute has work tremendously by improving cocoa yield to about 2.5 tons per hectare from the usual 0.5 ton per hectare. The following are the testimonies from CRIN Ibeku substation after thorough and adequate best agricultural practices.



High yielding and well managed cocoa at CRIN Ibeku Substation





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A 2-year-old cocoa bearing healthy pods

The Cocoa Research Institute of Nigeria is capable of alleviating your fear by supplying good materials at relatively reduced price. Also, technical and necessary support needed to have a good cocoa farm in any cocoa producing states of Nigeria is right available at your disposal. The Institute under the able leadership of the Executive Director, Dr. Patrick Adebola, is poised to promote sustainable cocoa production and improve farmers' livelihoods in Nigeria.



Drying of well fermented cocoa beans on raised platforms



The ED, Dr. Patrick Adebola (right), on a working visit to CRIN Ibeku Substation, with Head of Station, Dr. O.O. Olaniyi (left)



CRIN Holds Monthly Seminar

The 9th in the series of the 2024 monthly seminar was held on September 9, 2024 at the Lawrence Opeke conference hall of the Institute. The program featured presentations from Dr. Victor Oyedokun, Mr. Samuel Ayanwale and Mr. Ibitope Babafemi of Entomology, Plant Pathology and ICT Divisions, respectively. The seminar was chaired by Dr. L. E. Yahaya Director and Acting Head, Training Department of the Institute.

Identification of resistance donor traits in hybrid cocoa bean genotypes against *Ephestia cautella* in store

- Victor Oyedokun, PhD



Fourteen hybrid cocoa bean genotypes were evaluated for resistance donor traits against *E. cautella*'s infestation during storage in a choice and no-choice test. The fermented cocoa seeds (6 days) were sun-

dried to about 7% moisture content and stored at ambient tropical conditions. In the choice test, samples of 20 beans/genotype were placed in an improvised plastic cage (24cm X 20cm X 27cm) and in no-choice test, 100 beans/genotype were placed in the improvised plastic cages (16cm X 8.5cm X 6.5cm); infested with gravid female adults of *E. cautella* (n=10), replicated six times in a Completely Randomized Design. Data were collected on total number of eggs lay/genotype, total number of adult emergent/genotype at 30, 60, 90 and 120 days after infestation. Choice test showed that G21 (T86/2 X T53/3) had a significantly

low ($P>0.05$) mean number of eggs (2.50 ± 0.81) laid on it and 0.67 ± 0.33 first instar larva emergent. Significantly higher mean number of laid eggs was recorded on G15 (T86/2 X T30.13), which eventually resulted in higher mean number of first instar larvae that emerged on G15. The mean number of beans with holes and frass ranged from 5.17 ± 1.11 in G21 (T86/2 X T53/8) to 12.17 ± 4.28 in G2 (T12/11 X N38) which were not significantly different ($P>0.05$). There was no significant difference (95% CI) in mean adult emergent of *E. cautella* at 30days, 60days and 90days after infestation in all the 14 hybrid cocoa genotypes evaluated. Stored hybrid cocoa genotypes evaluated were resistant to *E. cautella* infestation at 120 days in store. Hybridization of cocoa can be further explored in managing insect pests of stored cocoa beans as against incessant fumigation that leaves pesticides' residue above Maximum Residue Limits of EU Regulations in Nigeria.

Biocontrol of *Phytophthora* spp. using endophytic fungi isolated from cocoa (*Theobroma Cacao* L.) pods and leaves

- Samuel Ayanwale



Cocoa (*Theobroma cacao* L.) is an important agricultural commodity in Africa especially in Nigeria. Cocoa production can be negatively affected by various diseases, including pod rot of cocoa caused by *Phytophthora* spp.

This study investigated the potential of endophytic fungi isolated from cocoa pods and leaves as biocontrol agents against *Phytophthora* infections.





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Samples of symptomatic cocoa black pods were collected; surface sterilized and inoculated into freshly prepared carrot agar plates. The inoculated plates were incubated at $24\pm 2^{\circ}\text{C}$ for 3-7 days. Isolated *Phytophthora* spp. was sub-cultured to obtain pure cultures. Endophytic fungi within plant tissues were isolated from healthy cocoa pods and leaves collected from farms. These isolates were screened for their antagonistic activity against *Phytophthora* spp. *in vitro*, using dual culture assays. Results showed that some isolates exhibited strong inhibition including species of *Trichoderma asperellum* (83.92%), *Trichoderma harzianum* (75.35%), *Fusarium solani* (17.58%), *Fusarium oxysporium* (17.58%), *Colletotrichum* (17.90%), of the pathogen's growth, indicating their potential as biocontrol agents. Secondary metabolites were determined; Alkaloids (0.984, 0.970), Apicidin (0.630) Harzianic (0.577), Helvolic acid (0.531), Ergotamine (0.491) and Flavonoids (0.009) were present in the active isolates (*Trichoderma harzianum*, *Trichoderma asperellum*, *Colletotrichum gloesporioides*, and *Botryosphaeria dothidea*). The finding of this study demonstrated that endophytic fungi from cocoa pods and leaves can significantly reduce *Phytophthora* spp. infection rates. This study also established the potential of endophytic fungi as eco-friendly biocontrol agents, providing a sustainable strategy for managing *Phytophthora*-related diseases in cocoa production.

Leveraging internet and website services to enhance agricultural research at Cocoa Research Institute of Nigeria

- Ibitope Babafemi

Leveraging internet and website services is crucial for enhancing agricultural research at

the Cocoa Research Institute of Nigeria (CRIN). The internet offers vast opportunities



for researchers to access global knowledge, share findings, and collaborate with peers. A dedicated website can serve as a central hub for disseminating research outputs, providing access to research data, and

offering training and capacity-building programs. CRIN can utilize online platforms to share research findings, best practices, and innovative technologies with stakeholders, including farmers, extension agents, and policymakers. This can be achieved through online publications, blogs, and social media channels. Additionally, CRIN can leverage online collaboration tools to facilitate partnerships with international research institutions, universities, and organizations.

A well-designed website can also provide a platform for online data collection, analysis, and dissemination. CRIN can utilize online survey tools, databases, and data analytics software to collect and analyse data, and share research outputs with stakeholders. Furthermore, the website can offer e-training and capacity-building programs for researchers and farmers, enhancing their skills and knowledge in cocoa, cashew, kola, tea, coffee production and productivity. By leveraging internet and website services, CRIN can enhance its research productivity, drive innovation, and contribute to sustainable cocoa production and productivity in Nigeria.





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The Chairman, seminar presenters and rapporteurs



Cross section of participants

Official Launch of Jabulani Volley Ball by CRIN

In keeping with the Executive Director, Dr. Patrick Adebola's avowed promise to revolutionise sporting activities in the Institute, the Jabulani specification of volleyball was procured by him for the volley ball team of the Institute. The gift was warmly received by the Chairman of Sports of the Institute, Mr. Onatunde Onanuga and launched in company of the volley ball team with great enthusiasm on September 10,

2024. The sports Chairman was full of appreciation to the ED for the gesture and his unrelenting support to all sporting activities in the Institute. He equally solicited for more support in the future to facilitate training and enhance performance of the sports teams at meets.

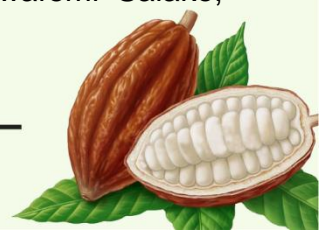


Cross section of volley ball team with the Sports Chairman, Mr. Onatunde Onanuga

ARCN News

ARCN Collaborates with CORAF CADDP XP4 on Training Workshop

The workshop which was coordinated by Dr (Mrs) Nnemeka Iheguagwu along with staff from various Departments of the Agricultural Research Council of Nigeria (ARCN) was declared open by the Executive Secretary of ARCN, Prof. Garba Hamidu Sharubutu mni ably represented by Dr. Oluwafemi Salako, Director, Plant Resources



Department. The two-day event during which participants were drafted from each Department focused on the use of foresight tools application in the attainment of organizational goals and objectives.



Cross section of participants at the training workshop

(ARCN report by Kayode I. Aiyedogbon, Acting Director, Administration)

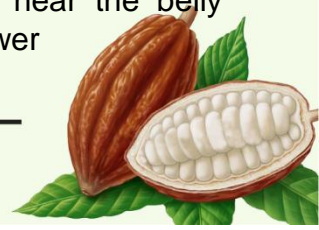
Health News

Appendicitis – Mrs. Bosede Famaye



The appendix is a small finger-shaped organ on the right side of the abdomen, connected to the large intestine. Its exact purpose is unclear and a person can live without one. Appendicitis occurs when the appendix becomes swollen, inflamed, and filled with

pus. Pain associated with appendicitis may start near the belly button and then move lower to the right. Appendicitis refers to the inflammation of the appendix. It generally occurs when the appendix is blocked, which causes blood flow problems, inflammation, infection, and pressure. Without treatment, the appendix can burst. Appendicitis can occur at any age, but it most commonly affects people in their teens and 20s. Appendicitis is a medical emergency and needs to be evaluated quickly. In 2% of cases, the appendix ruptures 36 hours after the onset of initial symptoms. Without treatment, the risk then increased by about 5% for every 12 hours after. There are two types of appendicitis: Acute and chronic. Acute Appendicitis is the more common type of appendicitis of which the onset typically occurs over 24 hours. Chronic Appendicitis is a rare form of appendicitis that lasts longer than acute appendicitis. The cause is unclear, but can occur due to a partial blockage of the appendix. Chronic appendicitis is a less severe, continuous pain that can last for weeks. Treatment involves removing the appendix. The signs and symptoms involves abdominal pains that begins near the belly button. It will then progress lower





and to the right. Pain may worsen with movement, coughing or sneezing this is followed by rebound tenderness, that is pain when pressure is exerted. Others include: abdominal swelling, fever, appetite loss, nausea and vomiting, malaise and urinary symptoms, such as frequent or urgent urination. At the course of diagnosis, test may include blood tests to check for infection, an MRI, CT, or ultrasound scan to see whether the appendix is inflamed and urine tests to identify a kidney or bladder infection. In the treatment of appendicitis, antibiotics are often prescribed, and in some cases, they are sufficient to treat appendicitis, making surgery unnecessary. In most cases, however, a surgeon may remove the appendix. This is called an appendectomy. Surgery can be by Laparoscopy - a procedure in which there is minimal loss of blood with a small incision or by open surgery - a larger incision is made so that the area inside the abdominal cavity can be cleaned especially if the appendix has ruptured and formed a mass or if the person has had many abdominal surgeries before. The pain management entails medication to control pain and discomfort and supportive care which requires fluid and electrolytes replacement, rest, and monitoring. Some of the complications of appendicitis are Peritonitis which occurs if the appendix ruptures and releases the infection into the abdomen. Peritonitis is infection and inflammation of the peritoneum, which is the membrane that lines the abdominal cavity and covers most of the abdominal organs. Other complications are, abscess formation, Ileus, which is when the bowel does not work correctly, a fistula, which is an abnormal connection between the stomach and the intestine, small bowel obstruction, Infection of the surgical site and death which is rare, but possible if left untreated. The complications of Appendicitis can be life threatening. Anyone

who may have appendicitis should seek medical help immediately.

Market Survey

Price report for September 2024

This report provides an overview of local cocoa prices in selected states for September 2024. Data were collected from various production areas within these states, and the average prices per state were computed. In September, cocoa prices saw a significant decline across all surveyed states, except in Abia State, where the average price increased by 5% compared to August. Oyo State experienced the sharpest drop, with cocoa prices decreasing by approximately 17.3% from the previous month's levels. Notably, Cross River State recorded the highest average price for cocoa at ₦11,750, while Kwara State had the lowest, with an average price of ₦10,250. It is important to note that cashew is currently in its off-season, and as a result, there is no price data available for this commodity in September.

COCOA COST PER KG (LOCAL PRICE)				
Month	State	Minimum Price(₦)	Maximum Price (₦)	Average Price (₦)
September	Abia	10000	11000	10500
2024	Cross River	11500	12000	11750
	Kogi	11000	12000	11500
	Kwara	10000	10500	10250
	Ondo	11000	12000	11500
	Osun	11000	11500	11250
	Oyo	10500	11000	10750

Source: CRIN Survey, 2024 by Economics and Statistics Sections





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Staff of the month: Mr. Gbolagade

Oludayo Adio



Gbolagade Oludayo Adio was born on the 4th May 1980 at Alata village, Ibadan Oyo State Nigeria. He attended St. John School Alata Ibadan, Oyo

State and obtained his First School Leaving Certificate. He then proceeded to Junior Secondary School Onipe, Oyo State and obtained the National Examination Council (NECO) Certificate. He joined the service of CRIN in 2001 as a casual staff and was regularised in 2009 as Agric. Field Overseer (AFA). He is currently of Chief Agric. Field Overseer (CAFO) cadre. Mr. Adio is dependable, respectful and very hardworking. He is happily married with children.

October Birthday Galore

Hearty birthday celebrations to the members of staff that will be celebrating their birthdays this month. Wishing you all the very best in your life endeavours. Congratulations!



Aribido Mary M.	01-October
Asein O.	01-October
Olawole Sarafa	01-October
Olukotun Olubunmi S.	01-October

Osho Ezekiel	01-October
Raji Ibrahim	01-October
Husein Yahaya	01-October
Adetunji Titus A.	02-October
Agbebaku Endurance E.	03-October
Balogun Samsudeen T.	03-October
Olatunji Comfort A.	03-October
Arumeni Christian I.	04-October
Ajayi Yemisi A.	05-October
Arokoyo Elizabeth	05-October
Musa Ibrahim Y.	05-October
Olutade Bamidele	05-October
Etuke Charles E.	05-October
Ayidu Sunday	05-October
Alhassan Gloria	05-October
Oladigbolu Yetunde O.	06-October
Adeogun Moruf A.	06-October
Atanda Kolawole O.	07-October
Oladokun Johnson O.	07-October
Olayiwola Adekunle M.	09-October
Adeloju Kayode	09-October
Emmanuel Felicia O.	10-October
Aboderin Ayokunnu K.	10-October
Okoh Mercy	10-October
Kunnuola Arinola	10-October
Oniosun Basiru	10-October
Egesi Nwabueze	11-October
Hammed Abiola	20-October
Fowosere Elizabeth F.	13-October
Gidiga Johnson O.	13-October





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Ebunuola Tope E.	13-October	Oladejo Wasiu	23-October
Tijani Rashidat R.	13-October	Agboluaje Aduragbemi	24-October
Osungbade Abolanle A.	13-October	Falusi Loveth	24-October
Oladejo Kemi	14-October	Yinusa Sakiru A.	24-October
Titiloye Eruke	14-October	Mokwunye Francis C.	25-October
Akinrinola Olawale A.	15-October	Onigbinde Adeniyi J.	25-October
Tijani Fatai A.	15-October	Ojo Johnson	25-October
Umontia Mercy	15-October	Ogunlade Moses O.	26-October
Hassan Akeem A.	15-October	Odusote Ayodele A.	26-October
Ajibola Yinka	16-October	Gbadamosi Taye	26-October
Oladele Olayemi O.	16-October	Dongo Lelia N.	27-October
Bolaji Oyedele	17-October	Ejikeme Paulina O.	27-October
Ekereobong Sunday	17-October	Laoye Fiyinfoluwa	27-October
Makinde Kehinde O.	17-October	Adeyemi Adewunmi E.	28-October
Olateju Kazeem	17-October	Adewumi Ibrahim	29-October
Oyefi Jolade A.	17-October	Ogar Okparaku Ekok	29-October
Titiloye Isaac S.	17-October	Oghenejabor Rita	29-October
Adewusi Eunice M.	18-October	Oladunmoye Oladimeji A.	30-October
Aleburu Juliana O.	18-October		
Owoyemi Julius	18-October		
Oyepeju Tunde	18-October		
Oguntona Victor O.	19-October		
Oyeniran Uthman	20-October		
Raheem Waheed O.	20-October		
Nmeregini Ursula N.	21-October		
Oladejo Gbemisola A.	21-October		
Fowosele Adeniyi S.	21-October		
Babafemi Kolawole A.	21-October		
Onipe Siyaka J.	21-October		
Ibrahim Wasiu	21-October		
Adesina Motunrayo	23-October		





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**COCOA RESEARCH INSTITUTE OF NIGERIA
(CRIN)**



60th Anniversary

9TH DEC. 2024



**Research & Development Mandate for
COCOA, KOLA, COFFEE, CASHEW & TEA**



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