COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH - GHANA

CSIR NEWS

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Contents

Government to prioritise local innovations to drive import substitution – MEST minister

The Minister for Environment, Science and Technology (MEST), Hon. Dr. Ibrahim Murtala Muhammed (MP), has reaffirmed the government's commitment to prioritising local innovations as a key strategy to drive its import substitution agenda.

He made this known during his familiarisation visit, where he engaged with scientists and stakeholders on leveraging research and development for national growth. During his visit, he emphasised the need for stronger government support for scientific research and innovation to reduce Ghana's overreliance on imports.

"*If we focus on supporting institutions such as CSIR with the needed financial support, I believe we will be able to produce locally what we currently import*" read more...

FROM THE DG'S DESK

Prof. Paul Bosu

With great pleasure and excitement, I extend a warm welcome to both our old and new readers of CSIR NEWS, the CSIR corporate the newsletter. I want to take this opportunity to give a special welcome to the Hon. Minister of Environment, Science and Technology (MEST), Hon. (Comrade) Dr. Ibrahim Murtala Mohammed, who is also the Member of Parliament for the Tamale Central Constituency. I wish on behalf of the staff and management of the Council for Scientific and Industrial Research (CSIR), to thank the Hon. Minister for his familiarization visit to the CSIR in February this year, where he engaged Scientists and stakeholders, on leveraging Research and Development (R&D) for national development. We are grateful for his encouragement and good counsel in respect of the challenges of funding research and the emphasis he made on the need for stronger government support for scientific research and innovation to reduce Ghana's overreliance on imports.

The CSIR as the foremost national science and technology institution in Ghana with the mandate to pursue and coordinate research and development activities and other sciences, technology and innovations nationwide, has been identified as one of the collaborators in the implementation of national programmes. The CSIR has 13 institutes that are semi-autonomous. They are the Animal Research Institute, Building and Road Research Institute, Crops Research Institute, Food Research Institute, Forestry Research Institute of Ghana, Institute of Industrial Research, Institute for Scientific and Technological Information, Plant Genetic Resources Research Institute, Oil Palm Research Institute, Science and Technology Policy Research Institute, Soil Research Institute, Savanna Agricultural Research Institute and Water Research Institute.

The agriculture-based institutes have implemented several national programmes and projects over the years and contributed significantly to national development. The Head Office's coordination role led to the effective and efficient use of programme/project resources to

achieve targeted goals and objectives. Some of the programmes include the National Agricultural Research Programme (NARP), National Agricultural Extension Programme (NAEP), Agricultural Sub-Sector Investment Programme (AgSSIP), West Africa Agricultural Productivity Improvement Programme (WAAPP 1A-2A),Modernizing Agriculture in Ghana (MAG) / Planting for Food and Jobs (PFJs 1 & 2) and recently the Food Systems Resilience Programme (FSRP).

Based on the track record of the CSIR in playing critical role in national programmes as indicated above, I am more than confident that, with my dedicated scientists and supporting staff, the CSIR is committed to supporting government in its flagship programmes/initiatives for national development such as the Feed Ghana Programme, Agribusiness development, the 24-hour Economy, etc.

Under the Feed Ghana programme, the CSIR has several high-quality crop varieties ranging from maize, rice, cowpea, root and tuber crops as well as quality poultry breed (the ARIBRO) and the nile tilapia that are comparable to foreign breeds with the advantage of adaptation to the local environment. The well-established research extension linkage committees (RELCs) that ha been pivotal in all national agricultural programmes is in place where our scientists in collaboration with the officers of the MOFA and agriculture extension agents (AEAs) and farmers engage in planning and execution of the programmes.

In terms of agribusiness, our scientists are ready to disseminate various technologies among the value chain actors, who can establish and/or expand their businesses.

We have a highly qualified human resource who are technologically skilled to bring to bear their knowledge and experiences in all the important sectors of the Ghanaian economy (food, agriculture, livestock, health, environment, housing, transport/roads, industry, energy and other service sectors. The strong operational presence of the CSIR in all the agro ecological zones with the availability of R & D infrastructure and facilities will catalyse the successes of the government's flagship programmes.

The existence of facilities and opportunities for agribusiness incubation, internationally accredited laboratories, institutionalized commercialization of developed technologies as well as the capacity to adapt and transfer technologies are opportunities at the CSIR.

The CSIR and its institutes are committed to the outlined collaboration and partnership with the other agencies of government and will work within its ability to ensure that the objective of the flagship Prgrammes/projects are achieved and also contribute to food sufficiency and livelihood improvement of Ghanaians.

SOME CSIR TECHNOLOGIES

GENERAL NEWS

GOV'T TO PRIORITISE LOCAL INNOVATIONS TO DRIVE IMPORT SUBSTITUTION – MEST MINISTER

caption

The Minister for Environment, Science, and Technology (MEST), Hon. Dr. Ibrahim Murtala Muhammed (MP), has reaffirmed the government's commitment to prioritising local innovations as a key strategy to drive its import substitution agenda.

He made this known during his familiarisation visit to the Council for Scientific and Industrial Research (CSIR) where he engaged with scientists and stakeholders on leveraging research and development for national growth.

During his visit, Hon. Dr. Ibrahim Murtala Muhammed (MP) emphasised the need for stronger government support for scientific research and innovation to reduce Ghana's overreliance on imports.

"If we focus on supporting institutions such as CSIR with the needed financial support, I believe we will be able to produce locally what we currently import," he stated.

He expressed concern about Ghana's import bill, which according to available data in 2024 stood at over US$2.5billion.

Drawing from his experience as a former Deputy Minister for Trade and Industry, Hon. Dr. Ibrahim Murtala Muhammed (MP) highlighted how policy interventions under the previous Mahama administration successfully reduced rice imports by 60 percent while increasing local production by 40 percent.

He stressed that similar approaches will be adopted to boost domestic production and support research institutions.

Strengthening research

The Minister reassured researchers at CSIR that government recognises their role in national development and would work to provide the necessary backing, noting innovation remains a critical aspect of scientific research.

"The Ministry of Communication focuses on IT-related innovation, but that does not exclude us from engaging in innovations related to agriculture, water resources and other scientific fields," he clarified.

Research commercialisation

In line with efforts to enhance self-sufficiency, the minister advocated commercialisation of research output from institutions like CSIR.

He explained that while research itself remains a public good, commercialising its outcomes will generate revenue to sustain research institutions.

"I am looking at how some research institutes can take up state contracts, such as supplying food for the school

feeding programme," he suggested.
He also underscored the importance of aligning research policies with national development strategies – noting that President Mahama is committed to increasing budgetary allocations for research, recognising its role in driving economic transformation.

He also highlighted ongoing efforts to secure international funding for research institutions, stating: "We are engaging consultants to explore funding opportunities for agencies such as CSIR. The ministry will ensure proper coordination so that funds are distributed based on priority areas".
Professor Paul P. Bosu, Director-General of CSIR, echoed the minister's sentiments, explaining that the institute is actively involved in research on key crops such as rice, maize, cowpea etc.

However, he expressed concern over funding constraints, particularly due to the withdrawal of USAID support under the present U.S. administration. He further elaborated on the potential impact of funding shortages for ongoing projects, saying: "We have about 15 major projects in areas like cowpea, rice and maize breeding that are supported by USAID. If the funding is cut, these projects will stall and we will need alternative resources to continue. We are putting together a comprehensive report to outline the necessary interventions".

Land use and encroachment
One of the key issues discussed was encroachment on CSIR lands, with the minister expressing reservations about the practice of selling prime research lands to address short-term financial challenges.
"If we keep giving up these lands without solving the underlying funding problems, in ten years we will face the same issues but with no land left to sell," he cautioned.

He assured CSIR leadership that he will review all contracts related to land transactions, ensuring they align with national development goals. He also indicated plans to engage with the Ministry of Housing to ensure a coordinated approach to land management.

CREDIT: MEST/thebftonline.com

CSIR HONOURED FOR EXCEPTIONAL CONTRIBUTION TO KOREA

Director-General Prof. Paul Bosu (arrowed) displaying the award

The Peoples Republic of Korea has honored the Council for Scientific and Industrial Research (CSIR) for its exceptional contribution to Korea's national and social development through international development cooperation, at a brief ceremony held at the Korean Embassy in Ghana. Presenting the citation to CSIR, the Korean Ambassador to Ghana, Park Kyoungsig, said that he looks forward to Ghana's future development based on its rich natural resources and young population, and expects the CSIR to play a crucial role in such development. Ambassador Park also suggested that the two sides continue to work together for further cooperation.
The citation for CSIR dated November 25, 2024 and signed by the Prime minister

of the Republic of Korea, Han Duck-soo, read in part

'In recognition of and appreciation for its outstanding contributions to the national and social development of the Republic of Korea through the international development, I hereby present **PRIME MINISTER'S CITATION TO COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH'**

For his part the Director-General of CSIR Ghana,Prof. Paul P. Bosu who received the award on behalf of the Council thanked the Prime Minister and the People of Korea for the honor bestowed on CSIR.

The citation

NEW DIRECTOR OF COMMERCIALIZATION UNVEILS AMBITIOUS VISION FOR GROWTH

Mrs. Naomi Owusu Appiah - Director of Commercialization

The Council for Scientific and Industrial Research (CSIR) has revitalized its Commercialization Directorate which shut down in 2015.

The revamped Commercialisation Directorate is expected to adopt new marketing principles and innovations to enhance sustainable growth, guided by its newly appointed director, Mrs. Naomi Owusu Appiah, who comes on board with extensive expertise in commercialization, marketing and business development.

Mrs. Appiah, who brings a wealth of marketing experience, envisions transforming the Directorate into a center of excellence that drives innovation, collaboration, and entrepreneurship to create sustainable economic value for the Council.

Prof. Paul P. Bosu, the DG of CSIR administered both the oath of office and the oath of secrecy to Mrs. Appiah. She pledged to serve, uphold, and defend the Constitution of Ghana as established by law. She also affirmed her commitment to confidentiality, stating that she would not disclose any information acquired in the course of her duties unless explicitly permitted by law.

In her acceptance speech, Mrs. Appiah expressed profound gratitude to the many distinguished individuals who have shaped her professional journey as she assumes her new role.

She acknowledged the contributions of numerous mentors, including Prof. Paul Bosu, Prof. Victor Agyeman, and Dr. Mrs. Pearl Adu-Amankwah, and underscored the significance of collaboration in her career development.

Outlining her strategic vision, Mrs. Appiah presented four key pillars aimed at enhancing CSIR's commercial viability:

1. **Restructuring Business Operations:** Fostering a more independent and robust entity through comprehensive operational restructuring.
2. **Innovative Marketing Strategies:** Implementing a four-stage approach encompassing product development, incubation, business development, and the establishment of companies with private investors.
3. **Securing Sustainable Financial Resources:** Addressing the critical challenge of securing sustainable financial resources by proposing the establishment of a dedicated bank account for commercialization activities to promote transparency and efficiency. Her vision includes collaboration with private sector partners and securing project grants to diversify funding sources.
4. **Building a Strong, Ethically Driven Team:** Enhancing the capabilities and roles of commercialization staff across all 13 CSIR institutes, fostering collaboration with the Corporate Affairs Division to boost visibility and efficiency.

The new director made a clarion call to CSIR management, staff, and the business community to support the commercialization drive. She urged stakeholders to invest in market-ready products and services that will benefit both CSIR and the wider Ghanaian economy.

Prof. Paul P. Bosu administering the oath of office to Mrs. Naomi Owusu Appiah

CSIR SHINES AT INAUGURAL WOMEN IN CHEMICAL SCIENCES EXCELLENCE AWARDS

The Council for Scientific and Industrial Research (CSIR) has once again demonstrated its leadership in advancing scientific innovation and research by excelling at the maiden Women in Chemical Sci-ences Excellence Awards (WICSEA)held on November 15, 2024, at the Oak Plaza Hotel in Accra.

The event was organized by the Women in Chemistry Network (WICN) to celebrate the achieve-ments of women who have made significant contributions to chemical sciences through research, innovation, mentorship, and leadership.

Two distinguished female scientists of CSIR received individual awards for their remarkable achieve-ments.

Dr. Mrs. Charlotte Oduro-Yeboah was honored as the Outstanding Individual in Technology Devel-opment. Her impressive accomplishments underscore the importance of leveraging technology to drive advancements in chemical sciences

Dr. Oduro - Yeboah

Dr. Trinity Ama Tagbor was also celebrated as the Outstanding Individual in Innovation, a recognition that highlights her groundbreaking contributions to project innovation

The Women in Chemical Sciences Excellence Awards(WICSEA) is designed to recognize and celebrate excellence in various areas, including research, innovation, mentorship, community contribution, and leader-ship. By acknowledging the contributions of women in these fields, WICSEA not only honors the trailblazers but also inspires the next generation of female scientists to pursue careers in science, technology, engineering, and mathematics (STEM).

CSIR emerged as a notable honoree, receiving the Outstanding Institution in Research award. This accolade reflects the council's unwavering dedication to research excellence and its pivotal role in fostering scientific discovery and innovation in Ghana

CSIR's success at this inaugural event reinforces its commitment to empowering women in STEM and fostering a culture of excellence and innovation.

Dr. Ama Tagbor

15 CSIR RESEARCH PROJECTS IN DANGER OVER USAID FUNDING CUT

No Caption

Fifteen different research projects being implemented by CSIR - Savanna Agricultural Researcg Institute (SARI) are on the verge of "extinction" following cutbacks in America's foreign aid agency spending.

The projects are funded by the United States Agency for International Development (USAID). The Management of the CSIR expressed concern over the development when Hon. Dr. Ibrahim Murtala Muhammed (MP), the Minister of Environment, Science and Technology, paid a working visit to the CSIR and some of its institutes namely CSIR - Water Research Institute and CSIR - Food Research Institute in Accra.

The visit formed part of his familiarisation tour to the various agencies under his supervision to apprise himself of their operations. The CSIR - Savanna Agricultural Institute (CSIR-SSARI) is one of the 13 institutes of the CSIR, located in the Tolon District of the Northern Region of Ghana.

The USAID has been supporting SARI in improving the effectiveness of its agricultural research to ensure smallholder farmers in northern Ghana have access to quality seeds and technologies.
Professor Paul P. Bosu, the Director-General, of CSIR, told journalists that the Council was exploring ways to continue with the affected projects.

Other issues discussed at the meeting included declining donor support, lack of private sector investment in research and development, lack of modern laboratories and facilitiesas well as the encroachment on CSIR lands.

Hon. Dr. Ibrahim Murtala Muhammed (MP) expressed delight about those innovations and reiterated his vision to ensure the commercialisation of their research findings to raise revenue.
He said the CSIR could develop varieties that had the potential to reduce the millions of dollars spent on the importation of essential food items such as rice, tomatoes, and poultry products.

The Minister tasked the various institutions under the Council to present to him a paper and make a "compelling case" to attract funding and investment to boost their operations.
"If we can find a way for some of the institutes to take up the responsibility of providing some of the basic needs of state institutions such as the School Feeding Programme, and build the capacities of our SMEs, we can build upon that," he said.

No Caption

R&D NEWS

FOOD SYSTEMS RESILIENCE PROGRAMME (FSRP) TOMATO SEEDS PRODUCTION MAKES STRIDES AT CSIR-CROPS RESEARCH INSTITUTE, KUMASI

BACKGROUND

Tomato is the leading vegetable consumed in Ghana and an essential part of the Ghanaian diet, accounting for 40 percent of vegetable expenditures. However, local production does not meet the national demand. Only 34 percent of the 1.4 million tons of tomatoes consumed annually are produced locally, resulting in substantial imports (especially between Dec and May). Meanwhile, tomato farmers and actors in the value chain are confronted with numerous obstacles and high production costs. These include use of poor-quality seed; absence of seeds well adapted to local season and climate variabilities; logistical challenges with pest & disease control; limited extension delivery services; poor agronomic/farm practices; low yields (average yield of 8.3 metric tons per hector, vis-a-vis a potential yield of 20 metric tons per hector; post-harvest losses (ranging from 20 to 60%); absence of storage innovations and low prices during peak season harvests.

In a move to address some of the enlisted challenges amidst the yearly incidence of dry season tomato shortages fluctuating prices of the produce and high importation of tomato (both fresh and processed) into the country, the CSIR-Crops Research Institute released two tomato varieties in 2021/2022 dubbed 'CRI-Kwabena Kwabena and KOPIA tomato.'' These varieties were developed and released with support or funding from KOPIA, Ghana and Ghana Care Obaatanpa project via Ministry of Food and Agriculture (MOFA) of the government of Ghana.

The West Africa Food System Resilience Programme (FSRP) with funding from Norwegian government and implemented by World bank has deployed a combination of interventions within selected tomato producing sites around the country to address the phenomenon in a gradual progressive manner. One of such key activities under the FSRP-Norwegian Tomato Intensification scheme is the production of seeds for these varieties. In line with the Plant and Fertiliser Act, 2010 (Act 803), and consistent with the Seed Policy of MOFA (2013), public institutions such as the National Agricultural Research Institutions and the Grains and Legumes Development Board (GLDB) of MoFA are responsible for the multiplication of seed at the breeder and foundation level, while the private sector (licensed seed growers) have the mandate to produce certified seeds. It is the strategy of the FSRP-Norwegian project to provide a seed package to assist farmers with knowledge on Good Agronomic Practices to achieve the yield potentials of the varieties. This will contribute to the reduction of imported tomato and their derivatives to meet the national demand

This started last year (2024), with an objective to make these varieties, which are well adapted to the hot and humid conditions of Ghana's agro-ecological

zones, competitively priced and affordable to the pockets of the average small-holder tomato farmer in Ghana.

Specifically, the activities have involved:

i. conducting adaptive trials in Northern zone (Upper East region) in order to evaluate new OPVs varieties ("CRI-Kwabena Kwabena" and "KOPIA Tomato");
ii. multiplying the locally released Open Pollinated Varieties (OPVs)
iii. conducting sensitization, training, and creating awareness of Farmer-Based Organizations (FBOs), input dealers, aggregators and marketers on improved characteristics of new varieties.

FSRP SUPPORT TO CSIR-CROPS RESEARCH INSTITUTE

In an interview with media (GTV, UTV, CityNews etc) when FSRP visited the project site at Kwadaso station of CSIR-CRI, Kumasi, **Dr. Michael Kwabena Osei, Principal Research Scientist and tomato breeder** at CSIR-Crops Research Institute, explains attributes of the varieties as well as supported provided by FSRP which included renovation of two Screen Houses at Kwadaso station of CSIR-CRI, Kumasi for the production of breeder seed for the two varieties: CRI-Kwabena Kwabena and KOPIA Tomato. FSRP also dug automated boreholes at the seeds project site to ensure regular on-site water and provided Drip Irrigation facilities for foundation seed production in the open fields; and solar paneling as an uninterrupted energy source to power the drip irrigation system. FSRP further fenced the CSIR tomato fields where the seeds are being produced.

He further indicated that, CSIR-CRI has an MOU with Agri-Commercial Services Limited (ACSL), Wenchi to produce certified seeds of these varieties. Having played an integral role in the development/ evaluation and release of the varieties, ACSL was selected to produce the certified seeds for the released Open Pollinated Tomato varieties. To this end CSIR-CRI has supplied some foundation seeds of the varieties to ACSL to produce certified seeds under the sponsorship of FSRP. FSRP has provided a 20hp electric pump and upgraded its Drip Irrigation system for 2 hectares. FSRP has also provided seed extraction equipment to process by-product after extraction to produce 100% no additive tomato pulp and crushed tomato for ACSL.
FSRP further provided cash funding to produce 184 kg of certified seeds of the approved certified seeds, namely CRI-KWABENA KWABENA and KOPIA TOMATO.

Dr. Gabriel Owusu, FSRP Project Officer for the FSRP-Norwegian tomato programme acknowledges that one of the expected key outputs is the multiplication of seed of the locally released OPVs varieties to ensure its availability to farmers in subsequent years following sensitization and awareness creation this year. The seed multiplication activities will involve multiplication of breeder, foundation and certified seeds of the locally released OPVs.

Technical experts from key agencies are playing various roles towards achieving the perennial tomato objective:
CSIR – Crops Research Institute who are researching into climate-smart varieties.
Directorate of Crop Services (DCS-MOFA), Directorate of Agric Extension Services (DAES-MOFA), World Vegetable Centre (WorldVeg), Plant Protection & Regulatory Services Directorate (PPRSD-MOFA): who are giving training to farmer-based organizations in agronomy and best practices.
Food Research Institute (FRI); Women In Agric Development (WIAD): with best processing and storage practices.
Market Queens for sales and distribution.

FIELD EXERCISES

Other interventions which are being

implemented under the FSRP-Norwegian Tomato Intensification scheme are field exercises involving adaptive trials in: the selection & preparation of sites, establishment of nurseries, monitoring & documentation; production of breeder & foundation seeds, including the establishment of nurseries, production of tomatoes, harvesting, extraction & packaging of seeds; multiplication of OPV certified seeds, harvesting, extraction & packaging of certified seeds; Sensitization on more grants for post-harvest activities & market access.

Dr. Michael Kwabena Osei (Principal Research Scientist/Tomato Breeder)

CSIR-CROPS RESEARCH INSTITUTE AND ARIMA FARMS GHANA LAUNCH INITIATIVE TO BOOST LOCAL WHEAT PRODUCTION

The CSIR -Crops Research Institute in partnership with Arima Farms Ghana has launched the Ghana Wheat Initiative to introduce Wheat to Ghana for the first time through rapid varietal development and dissemination. The Launch and Field Day event was held on 24th February , 2025 at the CSIR -Crops Research Institute, Fumesua, Kumasi.

Speaking at the Launch, the Director for CSIR - Crops Research Institute, Prof. Maxwell Darko Asante in his opening remarks, said Ghana has started this a new project to embark on wheat cultivation to reduce its reliance on imported wheat and increase local production.

The Deputy Director General, Prof. Dorcas Marian Quain who chaired the programme, stated in her address that the goal is to improve wheat farming in Ghana, reduce imports, and create economic opportunities for farmers. Currently, Ghana spends over $230 million annually on imported wheat, which puts pressure on the country's finances.

This initiative aims to:
- Reduce reliance on imported wheat
- Support local farmers
- Create jobs
- Improve food security

The lead Scientist for the project, Dr. Felix Frimpong stated that boosting local wheat production, Ghana can become more self-sufficient and reduce its dependence on foreign imports.

PUSHING THE BOUNDARIES OF S&T

COMMERCIAL CASSAVA ROOTS PROCESSING: A MUST FOR GHANA'S ECONOMY

Cassava is one of the most important staple and food security crops in Ghana providing daily nutrition for over 30 million people and a vital source of income for subsistence farmers. The crop can survive in marginal environments such as low-fertility soils and in areas of limited and/or unpredictable rainfall, where other crops would not survive, making it an excellent food security crop. Cassava grows everywhere in Ghana but the top producing regions are Eastern, Bono East, Bono, Volta, Ashanti, Oti, Central and Ahafo regions.

The United Nations FAO ranked Ghana as the 4th leading producer of cassava roots in the world in 2021 (after Nigeria, Democratic Republic of Congo, and Thailand), producing a little over 22 million metric tonnes of the root. It takes 9 to 12 months for most cassava varieties to reach maturity at which time the starch content and other relevant nutrients of the root are at their peak. The root is used in the production of ethanol, animal feed, among others thereby providing jobs and income in rural communities of Ghana. The root also serves as a reserve cash crop, convenient food for urban dwellers and foreign exchange earner.

The staple nature of cassava as food in Ghana coupled with its potential as an industrial raw material demands for innovative processing technologies and expanded viable markets for the crop. Commercial cassava roots processing is crucial to Ghana because of its contribution to the Ghanaian economy, social interventions and food security. Efforts must therefore be made to drive the cassava value addition agenda to ensure market diversification of the crop.

Why process cassava roots into other products?

Processing of foods generally provides a means of producing shelf stable products, convenient and value-added food products. Converting cassava roots to other food and non-food products results in several products and opportunities for the stakeholders along the cassava value chain. Cassava roots processing is therefore extremely beneficial to Ghana in several ways as discussed below.

Food security

Cassava roots are highly perishable once harvested and begin to deteriorate two to three days (72 hours) after harvest leading to high reported postharvest losses of more than 23%. The roots also loose substantial amounts of stored starch (dry matter content) when they are left in the soil (unharvested) after maturation. Converting cassava roots to other food forms creates products with longer shelf life, adds value to the root and ensure a steady supply of food all year round. Consequently, cassava roots need to be processed commercially into other food products to reduce postharvest losses in order to ensure food security.

Fresh cassava roots harvested for processing at a cassava processing facility at Wenchi, Bono Region

Employment creation and income generation

Processing of cassava roots into secondary products promotes rural industrialization, increase market value of cassava, and improve farmer's income and livelihoods. Production and processing of cassava has severally been reported to be a profitable venture especially for women and the youth, source of income and job creation in most cassava growing countries in Africa including Ghana.

The cassava value chain has also improved the livelihoods of the citizenry and contributed to the economic development of Ghana. The use of improved post-harvest technologies had a positive and significant effect on product output and income as demonstrated by several cassava projects implemented in the recent past in Ghana such as the "Cassava Adding Value for Africa (C:AVA) Project", funded by Bill and Melinda Gate Foundation, in five African countries (Nigeria, Ghana, Tanzania, Uganda, Malawi).

Diversification of cassava food products

Consumption of diverse food items is key for human beings in order to take advantage of the different nutritional benefits that are associated with the foods.

There is therefore the need to diversify cassava products for the people of Ghana for nutritional benefits. Processing of cassava results in products that have different characteristics, which creates variety in cassava diets. Cassava can be processed into various improved and convenient local food products such as gari, fufu, agbelima (cassava dough), ampesi (boiled cassava), agbelikaklo (freshly pressed and deep-fried cassava mash), kokonte, bread and many more which are eaten with various food accompaniments.

Gari processing group peeling cassava for further processing

The variety in the cassava diets encourages people to consume a broader food variety and nutrition. This is the reason why cassava is grown by nearly every farming family in Ghana because the roots accounts for 30 percent of daily caloric intake of the family.

Detoxification of cassava roots

Processing of cassava roots serves as a means of removing or reducing the potentially toxic cyanogenic glycosides and other anti-nutrients present in the fresh cassava roots. Both sweet and bitter cassavta varieties have inherent cyanogenic glycosides with the sweet variety having less cyanoglycoside quantity.

Cyanogenic glycosides, also known as phytoanticipins, are nitrogen containing secondary metabolites that are produced by plants for self-defense against predators and/or other stress factors.

Pastries produced from cassava flour at CSIR-Food Research Institute

The presence of excess cyanide residue in food preparations can cause acute cyanide intoxication and goiters, and is linked to ataxia (konzo), chronic pancreatitis and in some cases death. Cyanogens are eliminated or brought to minimal levels in

cassava products through combination of processing methods such as peeling, grating, fermentation, roasting, drying and steaming. For sweet cassava varieties (about 99% of cassava varieties in Ghana), peeling and cooking is sufficient to eliminate all toxicity.

Source of industrial raw materials

Cassava roots offer diversity of primary and secondary products that have great potential to serve as raw materials (feedstock) for industry.

The roots can be processed into intermediary products such as ethanol, High Quality Cassava Flour (HQCF), starch, glucose syrup (sweeteners), cassava chips and Industrial Grade Cassava Flour (IGCC) that can serve as feedstock for industry. Cassava can also be used for production of varieties of convenient staple foods, animal feed, pharmaceutical products, confectionaries, pastries and biscuits.

The abundance of cassava and its versatility in Ghana could therefore be explored for maximum utilization as an industrial crop if the right processing technologies are adopted for processing the roots.

Import substitution and export earnings

Ghana has the potential, as the fourth leading producer of cassava globally (according to 2021 FAO rankings), to export processed cassava products that can earn foreign exchange and boost the economy of the country. High Quality Cassava Chips (peeled and dried cassava chips) is one such cassava product that is traded globally. International trade of cassava chips was valued at over US $2.7 billion in 2017. The only African country ranked among the top ten highest exporters of cassava chips globally in 2017 was Egypt with export value of $20.7million. Ironically, Egypt is not even among the top ten producers of cassava in the world. Nigeria who is the number one producer of cassava globally recorded total cassava chips export value of $1.25million compared to other leading

Cassava flour used as glue extender in plywood manufacture

producers like Thailand with highest export value of $1.19billion in 2017. Ghana is yet to harness the great trade possibilities and foreign exchange earnings in the cassava sub-sector. HQCF is a substitute to wheat flour with added advantage of being gluten free flour. HQCF can be used extensively as the main ingredient for bakery products all over the world which is a potential market for Ghana to capitalize on. Commercial utilization of HQCF as substitute to wheat flour, which is heavily imported into Ghana, could also save Ghana so much foreign exchange.

Conclusion

Commercial cassava roots processing is essential for Ghana's economic development, food security and poverty reduction. Applying appropriate processing technologies to commercially convert cassava roots to other products creates jobs and incomes for the citizenry of Ghana. Commercial processing of roots also ensure food security in Ghana as cassava is one of the important staple foods in Ghana. In addition, commercial processing of cassava roots; serves as source of industrial raw materials for local industries, results in diversification of cassava diets, attracts foreign earnings for Ghana and improves the safety of cassava food products. Addressing the challenges and opportunities in the cassava value chain can unlock the full potential of cassava processing and improve the livelihoods of Ghanaians.

Gregory Afra Komlaga (PhD)
Principal Research Scientist / Deputy Director
CSIR-Food Research Institute

NOTHING DOES IT LIKE SCIENCE

ING. PROF. WILLIAMS ACKAAH

Ing. Prof. Williams Ackaah

Ing. Prof. Williams Ackaah is a Principal Research Scientist at the Building and Road Research Institute of the Council for Scientific and Industrial Research (CSIR-BRRI), Kumasi. He holds a Doctor of Engineering degree in Traffic Engineering from the University of the German Federal Armed Forces, Munich, as well as an M.Phil. in Transportation Engineering and a Bachelor's degree in Civil Engineering from the Kwame Nkrumah University of Science and Technology (KNUST). Additionally, he earned a Diploma in Road Traffic Safety from Lund University, Sweden.

Research and Impact

Prof. Ackaah was appointed as an Assistant Research Scientist in 2004 after completing his national service at CSIR-BRRI. Over the years, he has conducted research and development projects in areas such as road traffic safety, traffic analysis and simulation, transport planning, and intelligent transport systems. He has served as both a team leader and a member on several key projects, including: vehicle emission inventory and near-roadside air pollution monitoring in the Greater Accra Metropolitan Area (ongoing); the National Road Traffic Crash Statistics project—which involved collating nationwide crash data and preparing annual reports for the National Road Safety Authority and other stakeholders; the preparation of Local Area Traffic and Parking Plans in Tema and Madina; the Sustainable Urban Mobility Plan for the Greater Kumasi Area; the Benefit Assessment System framework for evaluating research investment benefits; crash blackspot evaluation studies; and the monitoring and evaluation of the Bloomberg Initiative for Global Road Safety in Accra and Kumasi. Notably, he spearheaded the use of automatic loop detectors for traffic data collection under the Bloomberg project

Global Engagement

Prof. Ackaah was the Chair of the Transportation Working Group of the Federation of African Engineering Organisations (FAEO) for 2023–2024, an adjunct lecturer in Transportation Engineering at KNUST, and a member of the editorial board of Scientific African, a journal published by Elsevier

Collaboration and Partnerships

Prof. Ackaah has served as both a team leader and a member on several key projects, including collaborative efforts with the National Road Safety Authority and stakeholders under the Bloomberg Initiative. His involvement in the Sustainable Urban Mobility Plan and Local Area Traffic Plans demonstrates effective engagement with both national and municipal partners.

Attratinfg Funds and Infrastructure

Notably, he spearheaded the use of automatic loop detectors for traffic data collection under the Bloomberg project—an innovation supported by international funding. His leadership roles, including as Grants Administrator, have also contributed to the acquisition and management of research resources at CSIR-BRRI.

Awards and Recognition

His exceptional contributions have earned him multiple awards, including: Best Research and Development Scientist (2024) at CSIR-BRRI; Most Published Author in Engineering at the Engineering Excellence Awards for three consecutive years—2022, 2023, and 2024; Outstanding Researcher (Academic–Industrial) at the 2022 Engineering Excellence Awards; and a Citation for Outstanding Contribution to the CSIR Research Staff Association in 2023.

Publication and Teaching

He has authored over one hundred scientific publications, including refereed journal papers, books, conference papers, technical reports, and manuals—many of which have been published in reputable, high-impact local and international journals. As an experienced scientist, he has mentored numerous professional and technician engineers. Currently, he is an Associate Professor of Transport Studies and the Dean of the Faculty of Built Environment at the CSIR College of Science and Technology.

Academic and Teaching

Prof. Ackaah has held several leadership roles at CSIR-BRRI, including serving as Head of the Transportation Engineering Division, Head of the Road Safety and Intelligent Transport Systems Sections, and Grants Administrator. He is a registered professional engineer and, at the 2025 Annual General Meeting, was elevated to the class of Fellow of the Ghana Institution of Engineering. His distinguished career reflects a deep commitment to advancing transport engineering and road safety in Ghana and beyond.

Front view of CSIR-BRRI Office

GOING THE EXTRA MILE

MS. HAGAR ASSAN

Ms. Hagar Assan is an accomplished administrative professional with over two decades of experience at the CSIR-Crops Research Institute (CSIR-CRI), Kumasi, Ghana. She joined the institute in 2002 as an Administrative Assistant after earning a Higher National Diploma (HND) in Secretaryship and Management Studies. Through hard work, dedication, and a strong commitment to professional growth, she has steadily advanced in her career, attaining the rank of Principal Administrative Officer in July 2024. In her administrative role, Ms. Assan plays a key part in overseeing performance management, training, and staff promotions. She is responsible for conducting performance appraisals, coordinating training programs, and facilitating promotions to ensure continuous staff development. Her leadership extends to institutional governance, where she supports the execution of policies and ensures compliance with administrative regulations. As a trusted leader, she also serves as the second-in-command in the absence of the Head of Administration, ensuring smooth operations and continuity in administrative functions. Since December 2021, Ms. Assan has held the position of College Administrator for the Department of Plant Resource Development at the CSIR-College of Science and Technology, Fumesua.

In this capacity, she is responsible for organizing Viva Voce (oral defense) presentations for postgraduate students before graduation, coordinating with the Department Head to facilitate graduation ceremonies, and managing academic documentation such as student transcripts. 'Additionally, she oversees new student registration and assists with other graduation-related administrative processes. Beyond her role in academic administration, Ms. Assan has been serving as the Sectional Head for the Estate Section at CSIR-CRI, Fumesua, since 2022. She directly supervises all estate staff, ensuring proper task allocation, accountability, and efficiency. She is responsible for preparing structured work plans to improve performance and productivity, as well as collaborating with the Head

of Administration to schedule staff assignments and monitor workflow. Through her supervisory role, she ensures that estate-related activities are effectively managed and that performance standards are consistently met.

Her commitment to professional development is evident in her Associate Membership with the Institute of Chartered Human Resource Management Practitioners (ICHMP), a qualification she attained on December 29, 2024. She has also contributed significantly to institutional decision-making by serving on several key committees, including the Change Management Committee, where she played a role in enhancing organizational structures, the Training and Promotion Committee, which oversees staff capacity-building initiatives, and the End-of-year Committee, which organizes institutional events.

Ms. Assan has made history at CSIR-CRI as the first female to hold multiple senior administrative positions, including Administrative Officer, Senior Administrative Officer, and Principal Administrative Officer. Her impact extends beyond administration, as she is also the founder of the CRI Choir, fostering cultural and social engagement within the institute. Her exceptional leadership, dedication, and contributions to the advancement of CSIR-CRI make her a highly respected and valuable representative of the institute.

The CRI Staff Choir

APPOINTMENTS AND MILESTONES

Mrs. Naomi Owusu Appiah
DIRECTOR OF COMMERCIALIZATION
Appointed in January 2025

Mrs. Naomi Owusu Appiah joined CSIR-Forestry Research Institute of Ghana (FORIG) 22 years ago as a Junior Assistant Librarian and rose through the ranks to the position of a Principal Marketing Officer. She has a B. A. Publishing Studies degree from the Kwame Nkrumah University of Science and Technology; and obtained an MBA from the same university in 2010. She is a professional Marketer from the Chartered Institute of Marketing, Ghana (CIMG).

She served as Head of Commercialization Division for 7 years, Head, Products Development and Marketing Section for a year and Training Coordinator of the Institute's livelihood technologies from 2019 to 2024. As Head of Commercialization Division, she executed clear-cut strategies aimed at achieving corporate and divisional goals, marketing objectives and specific marketing efforts geared towards brand enhancement and income generation. She developed and implemented a framework with strategic options for growth which resulted in significant increases in internally generated funds (IGF) of virtually all commercial products and services. From a net income of a little over GHc 600,000.00 in 2016, proceeds from the Institute's IGF significantly rose to over GHc 3,000,000.00 within five years under her dynamic leadership.

Over the years, she played a pivotal role in aggressively reactivating the transfer of CSIR-FORIG technologies to the general public through the delivery of training in snail farming, beekeeping and mushroom cultivation; with over 4,000 Ghanaians and foreign nationals as beneficiaries of training programs. More than 65% of all trainees currently own small to medium scale farms, with about 10% into the commercial production of snails, honey and mushrooms. Between 2020 and 2023, three (3) CSIR-FORIG trained snail farmers received awards during the National Farmers' Day Celebration in the New Adumasa , Koforidua and Nsawam Adoagyiri Districts of the Ashanti and Eastern Regions of Ghana. The DoC is currently leading a number of donor-funded projects for 'enhancing technology transfer, training and livelihood improvement program' to the tune of approximately USD 150,000.00.

Regarding awards, her efforts as a

'Gamechanger' with respect to strategic marketing interventions made, earned her the CSIR-FORIG Director's Special Award in 2017 for her remarkable role as a skilled Marketer who immensely contributed to increased revenue. In 2022, she was featured in the CSIR Newsletter under the heading 'Going the Extra Mile' for her contribution towards CSIR-FORIG commercialization drive over the years.

Outside the CSIR fraternity, she serves on the Management Board of the Ghana School of Marketing and is a member of the Welfare and Human Resource Sub-Committee. She has to her credit, two refereed journal articles, four handbooks, ten manuals and a number of research and consultancy reports.

She is married with three children .

Prof. Maxwell Darko Asante
DIRECTOR OF CROP RESEARCH INSTITUTE

Appointed in February 2025

Prof. Maxwell Darko Asante is a Chief Research Scientist and the Immediate Past Deputy Director of the Council for Scientific and Industrial Research (CSIR)-Crops Research Institute (CRI), Kumasi, Ghana.
Prof. Asante obtained a BSc. (Agriculture) degree and a Diploma in Education from the University of Cape Coast in 1998. He also holds an MSc. (Plant Breeding) from the Kwame Nkrumah University of Science and Technology, Kumasi (2004), and a Ph.D. (Plant Breeding) from the West Africa Centre for Crop Improvement (WACCI), University of Ghana, Legon (2012). Recently, he completed an MSc. in Strategic Management and Leadership from KNUST. He is a graduate of Class III of the African Plant Breeding Academy and the Gender-Responsive Cereal Grain Breeding Course (GREAT). He mentors women in Agricultural Science under the African Women in Agricultural Research and Development (AWARD) program.

As the Rice Breeding Lead at CSIR-CRI, Prof. Asante has been instrumental in developing and releasing over 20 rice varieties, significantly contributing to Ghana's efforts towards rice self-sufficiency. His current research focuses on developing high-yielding, climate-smart rice varieties tolerant to major biotic and abiotic stresses, utilizing conventional, DNA marker-assisted, and biotechnology approaches. He leads the breeding modernization effort at CSIR-CRI and consulted for the CGIAR Excellence in Breeding (EiB) programme (now known as Breeding and Research Services) in 2021 to modernize breeding programs in Ghana and other African countries. He has also consulted for AGRA, KAPEX- Korea and GIZ-MOVE.

Prof. Asante has attracted over USD 5 million in research and infrastructure support to CSIR-CRI. He has served as Principal Investigator for over 10 rice projects funded by prominent donors, including USAID, BMGF, AGRA, IFAD, and RDA, Korea.

In addition to his research expertise, Prof. Asante holds academic affiliations as an Associate Professor in Plant Breeding and Genetics at the CSIR College of Science and Technology (CCST), Kumasi, Ghana; Guest Lecturer at the Pan African University Life and Earth

Sciences Institute (PAULESI), University of Ibadan, Ibadan, Nigeria; and Associate Faculty at the West Africa Centre for Crop Improvement (WACCI), University of Ghana, Legon.

Prof. Asante's outstanding contributions have been recognized through several awards, including the Presidential Award for National Best Agricultural Scientist (2018), Overall Best Scientist at CSIR-CRI (2017), Most Influential WACCI Alumnus (2023), and Best Rice Breeding Program Award by KAFACI (2023). He has authored and co-authored over 70 scientific publications, comprising refereed journal papers in highly-rated international journals, book chapters, and conference papers.

A well-traveled scientist, he has attended conferences, workshops, and training programs globally. He was a visiting scientist at the Department of Plant Breeding & Genetics, Cornell University, and the USDA, ARS-Dale Bumpers National Rice Research Center, USA in 2006 and 2011, respectively. Previously, he served as President of the CSIR-CRI branch of the Research Staff Association (RSA) of Ghana from 2017 to 2020.
Prof. Asante is married with three children.

Dr. Paul Asante Danquah
DIRECTOR OF INSTITUTE FOR SCIENTIFIC AND TECHNOLOGICAL INFORMATION

Appointed in Febraury 2025

Dr. Paul Asante Danquah is a Principal Research Scientist and the Director of Council for Scientific and Industrial Research-Institute for Scientific and Technological Information (CSIR-INSTI).

With over 25 years' experience, he holds a BSc HONS in Computing, MSc in Information Security and a PhD in Information Technology (IT) with specialization in Cybercrime from the University of Greenwich UK, Anglia Ruskin University UK and Open University of Malaysia respectively.

He has various industry certifications, some of which are ISO 27001 Lead Implementer, Certified Ethical Hacker (CEH), Certified Security Operations Center Analyst (CSA), Data Center Infrastructure Expert(DCIE), Cisco Certified Network Professional (CCNP), Microsoft Certified Systems Engineer(MCSE) and Certified EC-Council Instructor (CEI).

Dr. Danquah has worked in various capacities over the years, these range from Programmer, Network Engineer, IT Manager, Deputy Director of IT, Lecturer and Research Scientist at various prominent technology companies and Universities in Ghana.

Additionally, he has led the provision various technology solutions to organizations and governments within the West African sub region namely Sierra Leone, Liberia, Gambia and Ghana.

GALLERY


JOY NEWS


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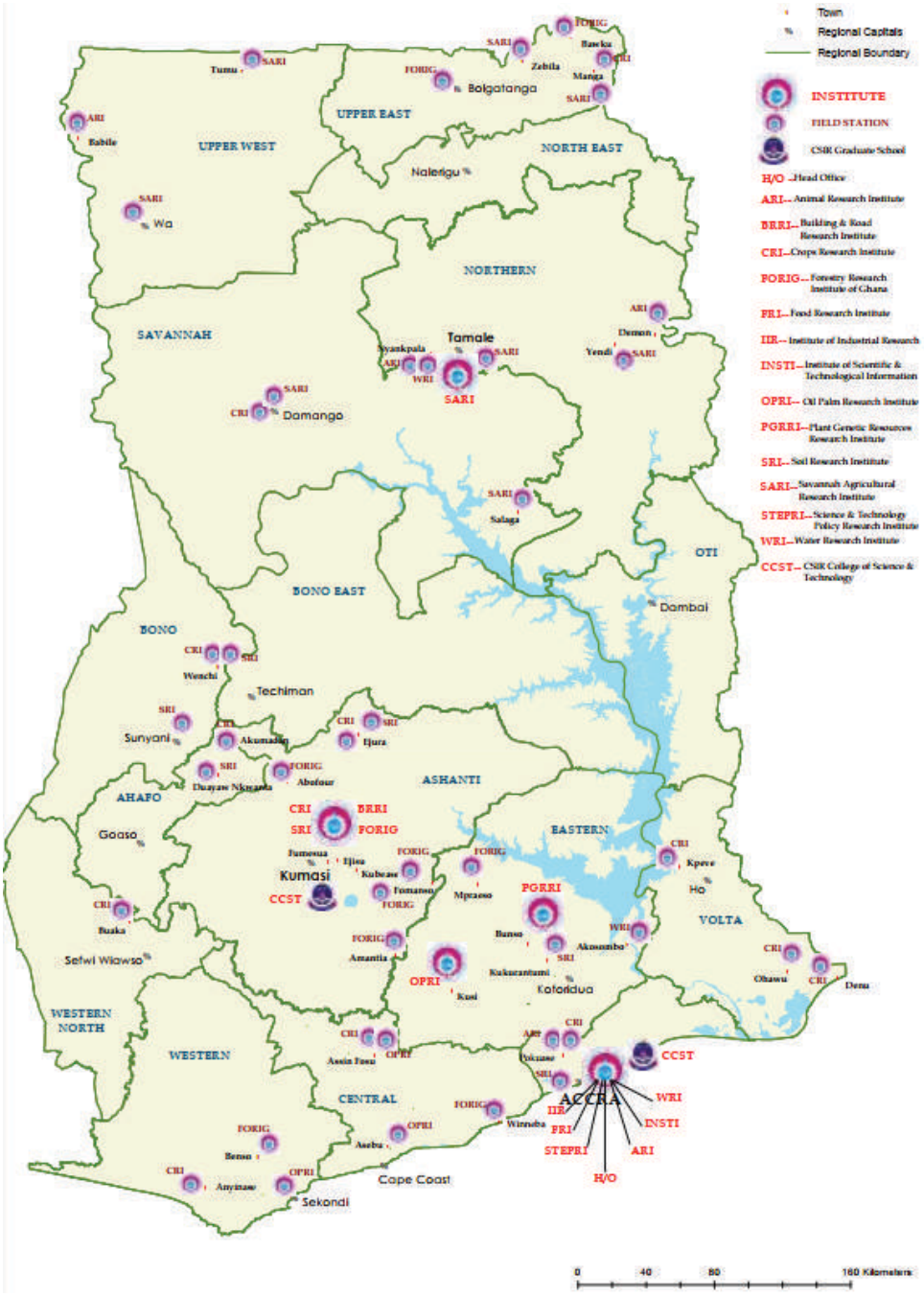
welcomes
Hon. Dr. Ibrahim Murtala
Mohammed (MP)
Minister for Environment
Science and Technology
Abwaaba!!

CSIR FOOTPRINTS



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