IITA BBEST DIGEST

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IITA
BBEST
BSF FOR BIO CIRCULAR ECONOMY
AND ENVIRONMENTAL SUSTAINABILITY

IN THE ISSUE

Message of the Project Coordinator

MESSAGE OF THE COORDINATOR

We are thrilled to introduce the third edition of BBEST Digest. This edition brings you exclusive updates on our project's training, sensitization programs, and various activities conducted in the target countries. We delve into how these initiatives are profoundly affecting the lives of smallholder chicken, fish, pig, and vegetable farmers, as well as youth and women, in both rural and urban communities.

I'm pleased to acknowledge the remarkable progress accomplished by the BBEST coordination team across all four target countries. This moment presents an excellent opportunity to extend our heartfelt appreciation and congratulations to our partners, implementation units, and all collaborators who have diligently contributed to these accomplishments.

I would like to note your remarkable contribution towards this initiative which seeks to turn organic waste into valuable goods and address the challenge of organic waste – feed for livestock and organic fertilizer with the aim of improving smallholder chicken, fish, pig, and vegetable farmers' livelihoods and contributing to improved urban sanitation and climate change mitigation.

And to our dear readers, I want to express my heartfelt gratitude for your continued readership and

interest in our newsletter. Through these few lines below, you will discover more about BSF technology and its impacts on the lives of farmers.

Rousseau Djouaka, Ph. D
Project Coordinator, IITA BBEST.

IITA BBEST SUPPORTS SELECTED FARMERS TO BUILD THE BSF DECENTRALIZED UNITS

The IITA BBEST project has taken a significant stride in aiding selected farmers in Ghana. These farmers, involved in chicken, fish, pig, and vegetable farming, received support to establish Black Soldier Fly (BSF) Decentralized Units (DU) on their premises. These units have a dual purpose: as a production hub for Black Soldier Fly larvae, a protein-rich alternative feed for chickens, fish, pigs, and frass, and also as training centers for the local farming communities. The escalating cost of protein meal and the challenges of accessing it consistently from the market have impacted smallholder chicken, fish, and pig farmers. This situation has pushed some of them to seek alternative income sources. A poultry farmer in Ghana highlighted the skyrocketing price of a 50kg bag of soybean meal, which surged from GHC 60 to nearly GHC 600 in 2023. This price surge is proving unsustainable for their profitability. Additionally, certain chicken producers struggle with waste management on their farms.

BSF Decentralized unit established by the BBEST Project in Ghana

In response to these challenges, the IITA BBEST initiative introduced the concept of decentralized units to the farmers, along with the innovative BSF technology. This

technology uses the Black Soldier Fly larvae to process fruit and vegetable waste from markets and slaughterhouses into nutritious feed for chickens, fish, and pigs. Farmers showed keen interest in this technology as it promises fresh and dried larvae production, and frass, for commercial use and effective waste management.

The establishment of these decentralized units brings several benefits to the farming community. Farmers gain access to an alternative, dependable, and cost-effective protein source for their poultry, fish, and pigs. This development enables them to produce feed for a significant number of birds, ranging from 5,000 to 10,000. Furthermore, the production and sale of frass to vegetable farmers represent an additional income stream. The implementation team in Ghana led by Dr. Dzepe-Togue, set up the units, initiating larval production.

Decentralized units established by the BBEST Project in Ghana

INTRODUCTION OF BSF TECHNOLOGY TO FARMERS

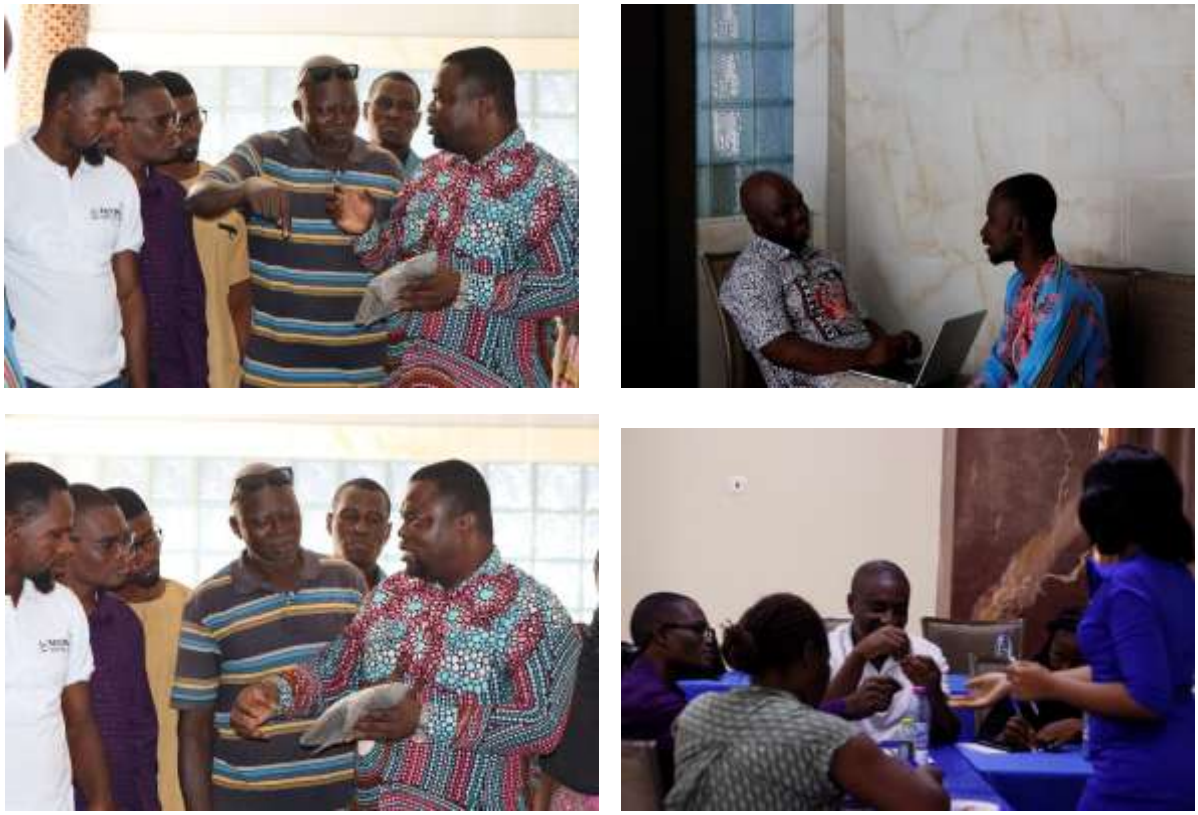
The International Institute of Tropical Agriculture (IITA0 through its project Black Soldier Fly for Bio Circular Economy and Environment Sustainability (BBEST) introduced the BSF technology and its products to farmers in Accra and its environs during an engagement workshop in Accra, Ghana held on April 4, 2023.

The project which is based on the three R principles, known as Reduce Recycle, and Reuse will use the Black Soldier Fly larvae to process urban biowaste in DRC, Ghana, Mali, and Niger.

The facilitators during the workshop gave an overview of the BBEST project whose overall objective is to improve the livelihoods of smallholder chicken, fish, pigs, and vegetable producers,

and other value chain actors and contribute to improved urban sanitation and climate change mitigation. In the presentation given by Dr. Ofori, participants were introduced to Black Soldier Fly technology and its benefits to livestock producers and farmers. The participants were introduced to the BSF by-products and how to apply them.

Through an initial price survey conducted during the workshop, the project was able to know the purchasing power of the participants. The participants who were livestock producers and vegetable farmers, expressed their willingness to purchase and use the BSF products when it is produced.



Images of the workshop on the introduction of the BSF technology and the willingness to pay survey

IITA BBEST AND BNARI BOOST THE CAPACITY OF LIVESTOCK FARMERS IN GHANA WITH ENVIRONMENT-FRIENDLY ALTERNATIVE FEED TECHNOLOGY.

In a united effort, the IITA-led project "BSF for Bio Circular Economy and Environmental Sustainability" (BBEST) joined forces with the Biotechnology and Nuclear Research Institute (BNARI) to deliver an impactful training to selected farmers in Ghana. The focal point of this training initiative was the innovative Black Soldier Fly (BSF) technology. Through this strategic collaboration, the two institutes showcased their shared commitment to

fostering sustainable agricultural practices. The training aimed to empower farmers with practical knowledge and skills related to BSF technology.

The overarching goal was to facilitate the initiation of Black Soldier Fly rearing and enable the subsequent production of larvae and frass. These outputs carry intrinsic value, benefiting both individual farm operations and wider commercial applications.
By bridging the gap between research institutions and local farmers, this joint effort bridges the path towards environmentally conscious farming practices. Through knowledge transfer and hands-on training, farmers are positioned to adopt alternative feed technologies, thereby contributing to a more ecologically harmonious agricultural landscape.

Pictures of participants who took part in the training offered by IITA and BNARI

COMMENCEMENT OF BSF LARVAE PRODUCTION AT THE DECENTRALIZED UNITS

The farmers at the Decentralized Units in Ghana have embarked on the journey of larvae production. This significant step was initiated following the distribution of larvae by IITA and BNARI.

Through a successful training program, these farmers have significantly bolstered their proficiency in the BSF technology, with IITA taking a proactive role in providing essential training to enhance their expertise. Furthering this collaborative effort, IITA facilitated the supply of larvae to these decentralized units in Ghana. This strategic move enables the farmers to kickstart the production of larvae within their own farm premises.

The primary objective of this endeavor is twofold: first, to facilitate the generation of cost-effective feed and organic fertilizer, specifically tailored for smallholder farmers; and second, to harness the capabilities of Black Soldier Fly larvae in processing urban organic waste. This dual-purpose approach resonates with the core principles of sustainability and circular economy, which are central to the project's mission.

By aligning research institutions, such as IITA and BNARI, with the endeavors of local farmers, this coordinated effort achieves a harmonious fusion of knowledge, innovation, and practical application. This not only empowers the farmers directly involved but also contributes to the broader goal of promoting environmentally friendly practices in the agricultural sector.

BSF flies emerging in one of the decentralized units established in Ghana.

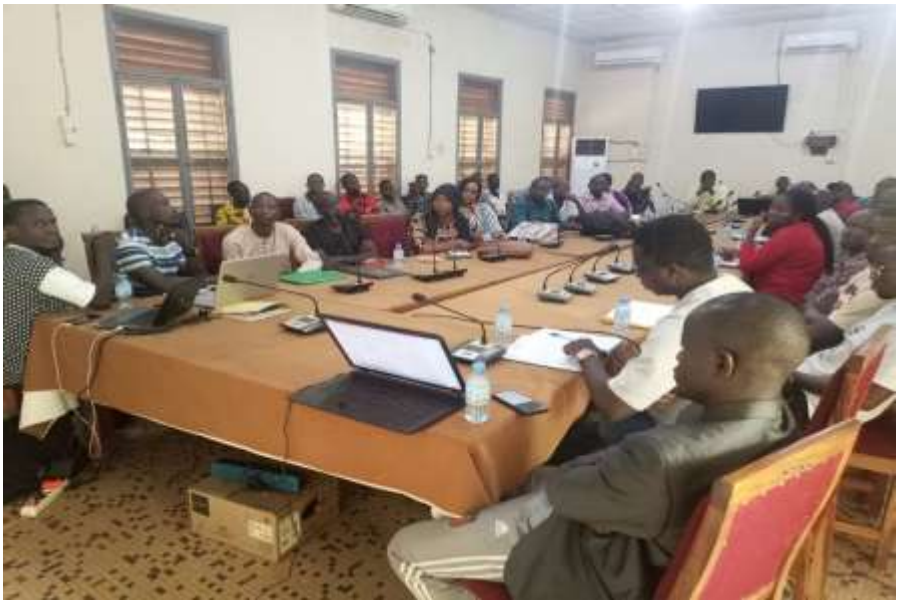
Egg harvest at one of the decentralized units

Production of BSF larvae in the decentralized units.

INFORMATION AND AWARENESS WORKSHOP ON THE BLACK SOLDIER FLY TECHNOLOGY BY IER IN MALI.

In preparation for the upcoming pilot survey that aims to determine the optimal price for Black Soldier Fly (BSF) products, an enlightening presentation workshop was orchestrated for young agripreneurs. This gathering, which took place on May 5, 2023, within the premises of the CRRA of Sotuba, marked a crucial step in disseminating knowledge and fostering awareness among individuals engaged in poultry, fish farming, and vegetable production sectors.

At the heart of this workshop lay a twofold objective: first, to catalyze the widespread adoption of Black Soldier Fly (BSF) technology in Mali, and second, to empower young and women agripreneurs by furnishing them with insights into the multifaceted dimensions of BSF technology. Integral to this endeavor was the exploration of BSF by-products, specifically organic fertilizer derived from BSF rearing. Furthermore, the workshop aimed to educate young agripreneurs about the economic and environmental significance of the animal mating and the utilization of the black soldier fly in formulating feed for chickens and fish, and its role in organic fertilizer production.



Participants during the workshop in Mali.

The workshop's agenda centered around several core themes. A comprehensive exploration of the biology of the black soldier fly served as a foundation for subsequent discussions. This segued into the introduction of black soldier fly technology itself and a comprehensive overview of the BBEST project. Significantly, the organizers underscored the existing applications of black soldier fly products in the realm of animal feed.

The participants encompassed a diverse group of young agripreneurs actively engaged in poultry, fish farming, and organic vegetable production. Through their participation, these individuals emerged enriched with newfound knowledge and insights into the transformative potential of black soldier fly technology.

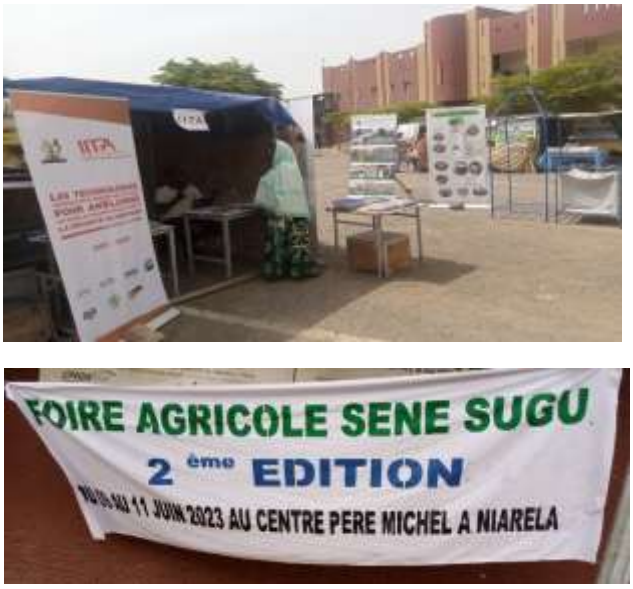
In essence, this workshop embodied the pivotal role of education and awareness in fostering sustainable agricultural practices. By equipping young entrepreneurs with the tools to harness BSF

technology, the workshop contributes to a more environmentally conscious and economically viable agricultural landscape in Mali.

IER SHOWCASED BSF TECHNOLOGY AND BY-PRODUCTS AT THE EU AGRICULTURAL FAIR IN MALI

In an effort to promoting cutting-edge agricultural practices and foster innovation, the IITA BBEST project actively engaged in the Agricultural Fair organized by the European Union in Mali. This participation served as a significant avenue for introducing attendees to transformative technologies and inputs designed to enhance agricultural production.

The overarching goal of the BBEST project's involvement was to facilitate the adoption of novel technologies by creating connections among various stakeholders. Specifically, the project aimed to empower young and women agripreneurs with insights into Black Soldier Fly (BSF) technology and the utilization of its by-products, including organic fertilizer. This event was strategically designed to ensure the accessibility of resilient inputs and pioneering technologies for the benefit of young individuals and women agripreneurs.



Participation of the BBEST Project in the EU Agricultural fair in Mali.

The dynamic agricultural fair witnessed the convergence of diverse participants: women in agriculture and poultry farms to fish farmers, technical service agents, students, and agricultural input and livestock feed vendors. Amidst this vibrant gathering, the BBEST project made its presence felt by setting up a stand that attracted a myriad of curious minds. Visitors to the BBEST project stand were presented with a comprehensive introduction to black soldier fly technology, and the BBEST project itself.
During interactions with attendees, the representatives of the BBEST project shared invaluable insights into the multifaceted applications of Black Soldier Fly technology. This encompassed elucidating the process of utilizing BSF by-products for animal feed, thus contributing to the circular economy.

In essence, the participation of the BBEST project in the Agricultural Fair exemplifies a proactive approach toward fostering knowledge dissemination and technological advancement. By bridging

the gap between innovative concepts and practical implementation, this engagement contributes to the growth and sustainability of agricultural practices in Mali.

Images of IER'S participation in the EU agricultural fair in Mali

TRAINING AND AWARENESS WORKSHOP ON THE BSF TECHNOLOGY IN DRC

In the pursuit of advancing sustainable practices in poultry and livestock feed production, an enlightening training and awareness workshop unfolded in July in Kinshasa. The focal point of this event was the utilization of the Black Soldier Fly for reducing urban organic waste to produce high-quality feed. Specifically hosted for fish farmers in the commune of Urbano at Nsele in the Democratic Republic of Congo (DRC), this session was a step towards a transformative change.

The primary objective of this workshop was twofold: first, to heighten awareness regarding the innovative process of rearing fish through the incorporation of Black Soldier Fly-treated food, and second, to provide participants with practical insights into the application of this technique.

The workshop brought together a dynamic assembly of 151 individuals, comprising 72 men and 79 women. These participants hailed from diverse sectors: fish farming, animal husbandry, and agriculture, all within the umbrella of the Association of Fish Farmers for Development in the Congo (A.P.I.D.E.C.).

Participants during the awareness creation and training workshop on the BSF technology held in DRC.

Facilitating the session were Ir Josué Mumbitshi Dibaya, President of APIDEC, and

Dr. Mawufe Agbodzavu, coordinator of the BBEST project in the Democratic Republic of Congo. Ir Mumbitshi assumed the role of a knowledgeable guide, imparting valuable insights into fish farming methodologies. His discourse spanned various aspects, including pond types such as natural and above-ground ponds, along with their construction, shape, protection, and disinfection methods.

Dr. Mawufe Agbodzavu, gave a presentation delving into the project's fundamental underpinnings. With a theme centered around developing the food value chain for fish, chickens, pigs, and organic fertilizers, he elucidated how urban organic waste treatment using Black Soldier Flies (BSF) can bring about transformative change in DRC, Ghana, Mali, and Niger.

Awareness creation and training workshop on the BSF technology held in Kinshasa, DRC.

His presentation comprehensively covered techniques for producing larvae for fish, chickens, and pigs using the Black Soldier Fly. Moreover, he expounded on the intricate process of generating organic fertilizers through Black Soldier Fly intervention, encompassing aspects like production cycles, mating, larvae treatment, and storage techniques.

Addressing the challenges intrinsic to this innovative approach, He candidly highlighted concerns ranging from potential predators to product acceptance, sanitary standards, and the requisite regulations set to be established by sector ministries. Following these informative presentations, an interactive session of questions and answers unfolded, further enriching participants' understanding.

In essence, the DRC training and awareness workshop epitomizes the convergence of knowledge, innovation, and practical application. By empowering fish farmers with cutting-edge techniques and insights, this initiative contributes to sustainable agricultural practices and increases the development of a circular economy. Through collaborative efforts and the exchange of knowledge, this workshop lays the foundation for an environmentally conscious future in agriculture.

EMPOWERING NIGER'S YOUTH, WOMEN, AND AGRIPRENEURS THROUGH A TRAINING WORKSHOP

As an integral component of the Black Soldier Fly for Bio Circular Economy and Environmental Sustainability (BBEST) project, a transformative training workshop took place in Niger from 18th to 20th July. Orchestrated by Institut National de la Recherche Agronomique au Niger (INRAN), the workshop, specifically targeted youth, women, and agripreneurs. This educational event revolved around the production and utilization of products derived from the Black Soldier Fly, aligning with the project's overarching objectives.

Central to the workshop's mission was the enhancement of participants' capabilities to leverage the Black Soldier Fly as a powerful tool for organic waste recycling. Notably, the training underscored the cultivation of skills among women and young agripreneurs in Black Soldier Fly rearing and its multifaceted applications. This included harnessing the fly's larvae as a nutrient-rich feed source and leveraging organic fertilizers for soil enrichment.

Participants attending the training workshop on the BSF technology in Niger

A diverse array of participants converged at the workshop, representing varied domains such as poultry, beekeeping, agricultural education, feed sales companies, and decentralized unit representatives. To initiate the workshop, an enlightening presentation elucidated the project's background, setting the context for the learning journey ahead.

Subsequently, trainers delved into the intricate biology of the Black Soldier Fly and its versatile uses, providing insights into its role in poultry and fish feed production. The workshop also entailed practical guidance on establishing and maintaining a successful Black Soldier Fly colony.

Integral to the workshop's impact was the establishment of a tangible connection between theoretical learning and hands-on implementation. Over 50% of the participants expressed an eagerness to embrace Black Soldier Fly rearing within their farms. Their enthusiasm translated into the commitment to start colonies by taking larvae for their own endeavors. The workshop's influence extended to an agricultural school, where a farm constructed a black soldier fly mating cage post-training. Additionally, one farm that actively participated in the training received the

BSF strains to reinforce its existing colony.

Looking forward, the workshop's momentum is set to continue through a dedicated WhatsApp platform. This platform will facilitate ongoing engagement, enabling participants to exchange progress updates on breeding endeavors, seek answers to queries, and foster a collective learning ecosystem.
Through hands-on application and sustained digital interaction, the workshop paves the way for sustainable agricultural practices and innovative entrepreneurial endeavors.

Participants during the training workshop held on the BSF technology in Niger

INFORMATION AND ORIENTATION WORKSHOP ON REGULATING STANDARDS FOR BSF PRODUCTS IN NIGER.

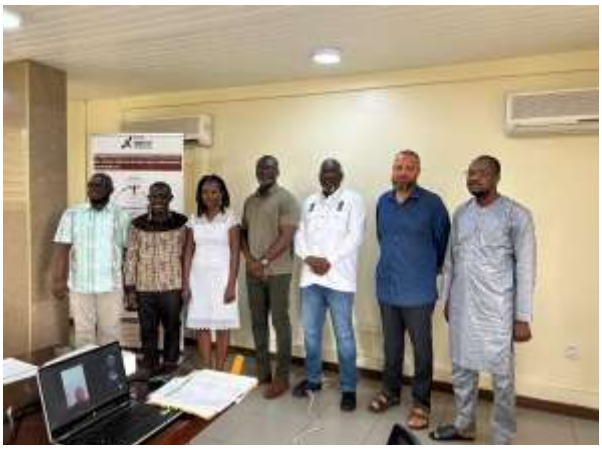
INRAN organized a pivotal information and orientation workshop. This event aimed to shed light on the imperative process of regulating standards for products derived from the Black Soldier Fly. Encompassing a multifaceted objective, this workshop sought to elevate awareness regarding the standardization and certification procedures for BSF products in Niger. It also aimed to acquaint participants with the diverse dimensions of the Black Soldier Fly and its associated products. The key components of this workshop included the presentation of the standardization and certification process by seasoned experts. An integral aspect was the collection of supplementary insights into the intricate steps and procedures inherent in standardizing and certifying BSF products. An essential outcome of the workshop was the formulation of a comprehensive guide that would serve as a blueprint for navigating the process of standardization for BSF products.


Images of the information and orientation workshop on the standardization of the BSF products in Niger

NORAD VISITS BBEST PROJECT IN GHANA

The IITA-led project, "BSF for Bio Circular Economy and Environmental Sustainability" (BBEST), was graced by an esteemed visitor from the Norwegian Agency for Development Cooperation (NORAD) to the Accra office on August 15. Mr. Gundersen Christer Solheim, a Digitalization Specialist embarked on this visit to gain a firsthand understanding of the project's progress and achievements. The primary agenda was to explore the integration of digital technology in educating various stakeholders on BSF technology, including farmers, youth, and extension officers.

During his visit, Mr. Gundersen received a warm welcome from Dr. Asare, IITA's Country Representative. He was introduced to a range of NORAD-funded initiatives, including the Sustainable Soybean Production in Northern Ghana (SSPING), Cocoasoils, Excellence in Agronomy (EIA), Sustainable Intensification of Mixed Farming Systems (SI), and the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA). The comprehensive introduction set the stage for meaningful discussions. Under the guidance of IITA Sahel hub

Presentation of the BSF technology to Mr. Gundersen during his visit in IITA Office

Director, Dr. Abdoulaye Tahirou, a comprehensive presentation was delivered, highlighting the underpinnings of the BBEST project.
Dr. Tahirou outlined the project's rationale, objectives, and diverse array of work packages. These encompassed the project's implementation sites in Accra, Bamako, Niamey, Bukavu, and Kinshasa. The presentation delved into the diverse range of activities undertaken within each work package, underscoring the dynamic nature of the project's progress.
Crucial to this presentation was the emphasis on the dismountable BSF kits. Not only do these kits provide employment opportunities for youth and agripreneurs, but they also present an affordable entry point for those interested in Black Soldier Fly production as a viable business endeavor.

The presentation also traversed to Niger, where experiments on BSF larvae and frass were conducted in collaboration with IMR and NIBIO. The importance of capacity building, especially among the youth, in the realm of BSF technology was highlighted.

In essence, this visit and subsequent discussions reinforced the project's unwavering commitment to technological integration and education dissemination. With insights garnered from Mr. Gundersen's expertise, the project is poised to leverage digital tools to enhance outreach, data collection, and educational endeavors.
Additionally, a comprehensive tour of the BSF village was orchestrated by Dr. Dzepe-Togue. This immersive experience elucidated the Black Soldier Fly's life cycle and growth process, unveiling the significance of the love cage and the dark cage in facilitating optimal breeding conditions. Displaying the dismountable BSF kits showcased the accessibility and affordability of initiating Black Soldier Fly production on a small scale.

Visit to the Decentralized units established by the BBEST Project in Ghana

An array of BSF products was showcased, accompanied by practical demonstrations of their applications. Moreover, the team visited decentralized units supported by the BBEST project, providing firsthand insights into the production of BSF. Engaging with farm managers and

assistants, the team witnessed progress and challenges faced in scaling up production. Conversations spurred discussions around overcoming challenges and streamlining educational content. Mr. Gundersen's suggestion to employ short videos for educational purposes was particularly noteworthy.

In conclusion, this multi-faceted encounter exemplified the intersection of knowledge sharing, practical application, and technology integration. The BBEST project's commitment to fostering sustainable practices and innovation remains resolute, furthering the mission of a circular economy and environmental sustainability.

UPCOMING EVENTS

Norwegian Day in Niger

Date: November 7, 2023

Venue: Radison Blue Hotel, Niger

BSF Products Standard Workshop

Date: September 6, 2023

Venue: Nsawam, Ghana.