IITA BBEST

BSF FOR BIO CIRCULAR ECONOMY AND ENVIRONMENTAL SUSTAINABILITY

In this edition

- **The Minister of Livestock and Agriculture explored the Production of the Black Soldier Fly at INRAN Maradi during his visit.**
- **IITA and stakeholders receive facilities for the production of BSF larvae and frass**
- **Agripreneurs and youth trained on the BSF technology to adopt sustainable agricultural practices in Niger.**
- **Promoting the use BSF technology among farmers, a step towards a sustainable agriculture practice**
- **INERA, IITA and stakeholders hold workshop towards the validation of the standards for black soldier fly products.**

THE MINISTER OF LIVESTOCK AND AGRICULTURE EXPLORED THE PRODUCTION OF THE BLACK SOLDIER FLY AT INRAN MARADI DURING HIS VISIT.

The Minister of Agriculture and Livestock in Niger, El Hadji Mahamane Ousmane paid an official visit to the regional headquarter of Institut National de la Recherche Agronomique du Niger (INRAN) at CERRA in Maradi as part of his objective to engage scientists on food security in the country and their working conditions.

Together with the deputy secretary of the Region, and other dignitaries, the Minister took a tour to appreciate the different activities undertaken by the institute. He visited the entomologist laboratory where he explored the production of the novel Black Soldier Fly (BSF) technology implemented by INRAN and IITA led BSF for a Bio Circular Economy and Environmental Sustainability (BBEST) with funding from the Norwegian Agency for Development Cooperation (Norad).

This Research for Development (R4D) project aims to address these two challenges: unsustainable biowaste management and unsustainable supply of animal feed and fertilizer. The scientists' work on the BSF technology was commended by El Hadji Mahamane Ousmane. The BSF technology is a sustainable practice that transforms organic waste into protein-rich animal feed and protein-rich organic fertilizer for vegetable production and soil restoration. This aligns with the Conseil National pour la Sauvegarde de la Patrie orientation for food safety and research. He also lauded the scientists for their dedication and hard work.

"I am very happy because the managers are committed and know what they must do. I am thrilled by the research undertaken by the scientists and the students". The team leading the BSF activities explained to the Minister and his team how the technology is contributing to job creation for the youth and informed him of their plan to start mass production of the BSF larvae in a facility that will be established in Niamey and sell the dried larvae and the organic fertilizer poultry, fish, and vegetable producers.

Dr Laouali, the head of the entomology laboratory explaining the BSF larvae production to the minister in charge of livestock and agriculture

In times where humans and animals compete over sources of protein, with sustainable practices at the forefront of global discourses, the Black Soldier Fly technology is emerging as a game-changer. This innovative approach is transforming traditional methods and making way for sustainability. The Black Soldier Fly (Hermetia Illucens), known for its remarkable ability to convert organic waste into rich protein feed for livestock has caught the attention of scientists, environmentalists, and private investors. By adopting the BSF technology, farmers and private investors will not only contribute to urban sanitation but also produce nutrient-rich animal feed and organic fertilizers for vegetable production and soil restoration.

IITA AND STAKEHOLDERS RECEIVE FACILITIES FOR THE PRODUCTION OF BSF LARVAE AND FRASS.

With a fully operational Black Soldier Fly and organic fertilizer production unit, established in Kofisah, in the Nsawam Adoagyir Municipality, the BBEST project led by IITA is set to become one of the largest producers of larvae for chicken, fish, pig, and organic fertilizer for crop production. The three facilities were handed over to the BBEST project, partners and stakeholders during a site visit led by Dr. Asare, IITA Ghana Country Representative.

The BBEST which is a Research for Development (R4D) project seeks to address the challenges of unsustainable biowaste management and unsustainable supply of animal feed and organic fertilizer by recycling urban biowaste such as fruit, vegetable, slaughterhouse, and household wastes into economically viable products: animal feed and organic fertilizer, using the Black Soldier Fly. The project is also developing a business model to inform potential investors and private business who might be willing to take up the BSF technology as a business.

IITA BBEST Team led by Dr Richard Asare and stakeholders inspecting the BSF facility established for the production of dried larvae and organic fertilizer at Kofisah.

After a tour and a critical inspection of the facilities by the engineers, the Municipal Coordinating Director of Nsawam Adoagyiri Municipality, IITA, its partners, and stakeholders, and with no defect observed, the contractor officially handed over the three buildings to IITA.

On behalf of the BBEST project Management, Dr Asare thanked the contractor, and his team for completing the building within the assigned period. He expressed his appreciation to the engineers who supervised the work. Before the official handing over, IITA and its stakeholders explored environmentally friendly and sustainable ways to beautify the site, such as building an underground system to harvest water, constructing fishponds, and planting green grass.

Together with the national partners, and stakeholders, the BBEST Project will continue to work in order to achieve its overall objective to improve the livelihoods of smallholder chicken, fish, pig, and vegetable producers and other value chain actors and contribute to improved urban sanitation and climate change mitigation.

AGRIPRENEURS AND YOUTH TRAINED ON THE BSF TECHNOLOGY TO ADOPT SUSTAINABLE AGRICULTURAL PRACTICES IN NIGER.

To empower agripreneurs, youth and women to adopt a sustainable agriculture practice in Niger, the Institut National de la Recherche Agronomique au Niger, (INRAN), the national partner of the BBEST Project in Niger held a training workshop on the production and the use of BSF based products for the youth, women, beneficiaries of the Decentralized Unit and private BSF Units' owners at the Plaza Hotel on August 6, 2024 in Maradi.

The overall objective of this workshop is to introduce young entrepreneurs, farmers and technicians to the rearing techniques of the Black Soldier Fly and the use of the BSF larvae in animal feed and the organic fertilizer in vegetable production. In addition, the workshop was organized to : (i) strengthen the capacity of participants on insect technology and biology and the mass production techniques of the Black Soldier Fly, (ii) empower farmers to replace imported proteins with BSF larval meal, (iii) strengthen the capacity of the youth to produce and utilize the Black Soldier Fly, (iv) demonstrate to producers the different stages involved in the rearing f the fly, the preparation and use of BSF based organic fertilizer and (v) introduce farmers to the management of decentralized and private BSF production units.

Training of agripreneurs women and the youth on BSF technology in Niger.

The workshop is led by Dr Laouali Amadou, entomologist, at INRAN, in charge of the production of the BSF component of the BBEST project. About forty people participated in the training, including nine (9) women from the regions of Niamey, Maradi, Tahoua and Zinder, all young agro-entrepreneurs, farmers.

The training which lasted five days covered the following topics: the prototype and the rearing kits of the Black Soldier Flies. Participants were trained on the biology of the fly and its nutritional performance of the BSF based products. The facilitators also provided information on the nutrition and results of animal feed experiments based on BSF products. The training revolved around the rearing and the production of the BSF larvae, BSF genital production.

Participants after the theoretical session were involved in practical activities and learnt how to prepare the BSF rearing kit, rearing of the adult flies and the larvae. They also had practical hands-on monitoring and maintaining the colony. They were taken through the harvesting and post-harvesting of the BSF larvae and the transformation of the BSF larvae. The trainers

showcased the use of the BSF products in animal feed. They were taken to the field to have hands on knowledge on the preparation of the BSF organic fertilizer and its use.

Mr. Idrissa Mohamed, an agro economist who took part in the training attested to the high cost of chicken and fish feed and the constraints it has on farming and livestock development in the country. Through the training he learnt how to set up a BSF rearing unit for mass production and affirmed that the BSF technology can easily be learnt and adopted.

Mr. Idrissa wants to set up a BSF larvae production unit and later start the feed formulation. He mentioned that he will train people who are interested in the Black Soldier Fly technology. He thanked the BBEST project led by IITA, INRAN and Norad for giving them the opportunity to be trained on the BSF technology.

DRC: PROMOTING THE USE BSF TECHNOLOGY AMONG FARMERS, A STEP TOWARDS A SUSTAINABLE AGRICULTURE PRACTICE.

In their stride to promote a sustainable agriculture practice among farmers, University of Kinshasa (UNIKIN), a partner of the BSF for Bio Circular Economy and Environmental Sustainability (BBEST) led by the International Institute Tropical Agriculture (IITA) undertook a training on the rearing the black soldier fly (BSF) in Kinshasa in DRC. The three-day training from 29 to 31July 2024 aimed at equipping agripreneurs on the rearing of the Black Soldier Fly (BSF), the production of its larvae and its incorporation into quail, chicken, fish and pig feed.

In his welcome address, Prof. Patrick MAFWILA gave a brief overview of the chicken fish and pig feed and organic fertilizer value chain development using Black Soldier Fly- based urban biowaste processing in Ghana, Mali Niger and DRC, funded by the Norwegian Agency for Development Cooperation (Norad), highlighting the various experiments carried out on animals including quails, chickens, fish and pigs.

Mr. Joel MANGANA highlighted the overall and specific objectives of the BBEST project. His presentation focused on the rearing of the Black Soldier Fly, explaining to the participants the need to have organic waste available, which is used in the fly's diet. He also specified the need to allocate a space for the rearing, with all the possible equipment, including the black cages, the nesting boxes, mosquito nets and shelves. He elaborated on the elements that are conducive for a good rearing, such as temperature, light and the quality of the organic waste. Emphasis was placed on the fly's life cycle and the importance of rearing it.

The theoretical training was followed by a series of questions from the participants, who visited the black soldier fly rearing unit at UNIKIN.

On the second day of the training, three groups were formed around the three training modules. The first module on the incorporation of larvae meal in poultry feed was taught by Mr. Toussaint MABIALA, the module on the incorporation of larvae meal in pig feed was taught by Mrs. Pierrette NZABA and the module on the incorporation of larvae meal in fish feed was taught by Mr. Pascal KOKOTA. After the theoretical sessions on these 3 modules, the beneficiaries practiced mixing larvae meal with pig, fish and poultry feed.

Following the two days of theoretical sessions, each group discussed the incorporation of the larvae meal into pig, poultry and fish feed.

Through the training, Mr. Antoine Roger Kadima TSHIYOMBO, an agripreneur attested to the challenges with the high cost of animal feed. With the training provided by UNIKIN and the BBEST project, he will be able to produce animal feed locally and reduce production cost.

According to Mr. Jaccard NGANIA "the training provided the needed answers to all the questions he had before attending the training and recommended to the organizers to provide such training throughout the country"

The 5 beneficiaries supported in various ways by the IITA BBEST project namely Mr. Aron LUKANU of the Coopérative Agricole de Centre de Kimbanseke, (COOPACEK), Mr. Mpova EWING of the Coopérative Agricole de Centre Maraicher de N'djili, (COOPACEN), Mr. Jean Rene MANGIBA of the Association des Pisciculteurs pour le Développement au Congo, (APIDEC), Mr. Lipasa NGANDU of the Judith farm and Mr. Stanis KAMBULA of the Kabala Kamesa Kalundi (KAMKA) farm shared their experiences on the rearing of the black soldier fly and encouraged participants to adopt the rearing and mass production of the BSF.

The participants thanked the IITA BBEST project, UNIKIN and Norad and asked for support from the IITA BBEST project to enable them to carry out their activities as they understood the importance of black soldier fly rearing as a solution to the problem of high cost of protein meal in the formulation of animal feed and organic fertilizer.

Training of livestock, vegetable farmers and agripreneurs in Kinshasa

INERA, IITA AND STAKEHOLDERS HOLD WORKSHOP TOWARDS THE VALIDATION OF THE STANDARDS FOR BLACK SOLDIER FLY PRODUCTS.

For a new product to thrive in a competitive market, it is imperative to have standards guiding the development of the product. for the commercialization of the Black Soldier Fly larvae and organic fertilizer in the Democratic Republic of Congo (DRC), the Institut National de l'Etude et de la Recherche Agronomique (INERA), one of the national partners of the BBEST project in DRC, held a two-day technical workshop in Kinshasa. The aim of the workshop was to propose an inter-ministerial decree and define the standards for the use of black soldier fly larvae in animal feed.

The event brought together various technical experts, representatives of the relevant ministries, researchers, members of environmental civil society and actors in organic waste recycling. The highlight

of the workshop was a review of standards for the use of black soldier fly larvae (Hermetia illucens) and its by-products in animal feeding and vegetable production.

The discussions highlighted the critical importance of these standards in ensuring food safety and promoting environmental sustainability. Participants explored how these standards can ensure safe and healthy food by reducing pathogens such as Escherichia coli and Salmonella in animal feed. From an environmental perspective, the use of black soldier fly larvae offers an innovative solution for recycling organic waste, thereby reducing waste volumes and the cost of agricultural products. This practice makes a significant contribution to sustainability by transforming food residues into useful resources, thereby promoting more environmentally friendly agriculture.

In addition, the proposed standards structure a market for these products, increasing the competitiveness of local products and offering small producers viable alternatives in the face of economic and climatic challenges.
In terms of regulatory compliance, these standards ensure that production practices comply with European regulations, making it easier to place products on international markets. They cover the production, preparation, import, processing and marketing of organically produced feed. By ensuring a sustainable and secure value chain, these standards are essential for the development of organic farming in the Democratic Republic of Congo, opening up new opportunities for local producers.

BSF Standard validation workshop held in Kinshasa, DRC


Dr Mawufe, the Project Manager of the BBEST project and the team from INERA

IITA BBEST DIGEST is a quarterly newsletter of the BBEST Project produced in collaboration with partner institutions.

Contributor: Francisca Ocloo, Claude Bahati

Editing and layout: Francisca Ocloo, Communications Officer for BBEST Project.

Do you have a story to share? Kindly send us a mail via F.Ocloo@cgiar.org.

Visit our website @ **www.iitabbest.org** for more information.