AFICAT Newsletter (Kenya No. 3)

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This newsletter presents the activities of the "Africa Field Innovation Center for Agricultural Technology" (AFICAT). In this third and final issue for the AFICAT pilot phase in Kenya, we focus primarily on activities conducted in collaboration with Japanese companies and the Government of Kenya from September to November 2023.

Ebara water pump seminar at MoALD

EBARA CORPORATION

Ebara Corporation (Ebara) is a Japanese manufacturer of industrial machinery, specializing in pumps, fans, chillers, and cooling towers, among other products. Established in 1912, Ebara has been a trusted supplier of various industries worldwide, including building services, industrial companies, and power companies. Ebara's pumps are distinguished by their high functionality, efficiency, and durability. Moreover, the company excels in manufacturing custom-made pumps for a variety of applications, thus enhancing its competitive edge. In 2022, Ebara's subsidiary, Ebara Pumps Europe S.p.A., established its East African branch, Ebara Pumps East Africa, in Nairobi with the aim of expanding its local distribution network and providing their products to customers across the country.

On September 14, facilitated by the AFICAT team and Mr. Shunichi Murakami, Japan International Cooperation Agency (JICA)'s Mechanization Advisor, Ebara held a product introduction seminar at the Ministry of Agriculture and Livestock Development (MoALD). During the seminar, representatives from Ebara Pumps East Africa delivered presentations on Ebara's pumping technologies and various related products, including live demonstrations. The presentations captured the interest of the participants, including 20 individuals from organizations such as the MoALD's headquarters and county offices, the National Irrigation Authority (NIA), and development partners' projects. Participants actively engaged with Ebara's presentations, posing numerous questions and offering suggestions to further improve their products and expand their presence in the Kenyan market.

Mr. Samuel Kibet. Ebara Pumps East Africa Branch Manager, presenting Ebara technologies and products.

During the Q&A session, numerous participants inquired about the appropriate selection of pumps for various environments. In response, the Ebara representative explained the relationship between suction and discharge diameters, flow rates, total heads, and other factors that should be considered when identifying the most suitable pump. To streamline the selection process, Ebara introduced an online tool called the Pump Web Selector, which can recommend the optimal Ebara pump based on your specific requirements. We encourage you to explore the tool using the link below.

Undoubtedly, Ebara's pumping technology stands among the most advanced globally. Through this seminar, AFICAT not only supported Ebara in promoting their products but also facilitated Kenyan government officials and other stakeholders in acquiring new knowledge and skills regarding water pumps. We believe that these newfound insights and skills will empower Kenyan officials and other stakeholders to advance agricultural mechanization efforts.

- Contact information:
  Mr. Samuel Kibet
  Ebara Pumps East Africa
  info.epea@ebara.com
- Ebara Website:
  https://www.ebaraeurope.com/
- Ebara Pump Web Selector:
  https://ezfinder.ebara.com/StartMain.aspx

【Ebara Products】

Ebara offers a variety of products, including surface pumps, submersible drainage pumps, borehole pumps and motors, circulators, and in-line pumps.

Left: Surface pump Self-priming JES-JE

Right: Borehole pump BSP SS(L)

Ebara brought their various products to the seminar hall and explained the features of each product to the participants.

Kett moisture tester seminar in Mwea

On September 20, organized by the AFICAT team and Mr. Murakami, Kett Electric Laboratory Co., Ltd. (Kett) held their third seminar in Kenya at the Mwea Irrigation Agricultural Development (MIAD) Center. The seminar attracted 29 participants from the rice sector in Mwea, which is Kenya's largest rice production area. The participants included officials from the MoALD offices in nearby counties, as well as staff from the Mwea Rice Growers Multipurpose Co-operative Society Ltd. (MRGM), Warehouse Receipt System Council (WRSC), private rice millers, and other stakeholders.

During the first half of the seminar, Kett staff, who participated online, delivered a lecture on the importance of grain moisture management. In the second half of the seminar, the AFICAT team demonstrated the operation of various equipment, including moisture testers for rice and grains, under the guidance of Kett staff. Following the demonstration, the participants were impressed by the superior performance of Kett instruments compared to those of other countries, although pricing remained a concern. Another major concern was the durability of the instruments. Based on the experiences in Japan and Southeast Asian countries with large rice markets, Kett's instruments have demonstrated longevity when properly maintained. For example, one of the portable rice moisture testers, Riceter, typically boasts a lifespan of 10 years in Japan.

Following the seminar, MRGM (a farmer cooperative), Nice Rice Millers (a private miller), and WRSC (a governmental institution) expressed interest in utilizing the instruments to assess their practical performance on their premises. Since November 2023, the AFICAT team has provided Kett instruments to these organizations on a rotational basis and collected feedback from them. Kett is deeply interested in understanding the needs of Kenyan users and seeks feedback from them. Additionally, Kett is currently seeking local distributors for their instruments. They eagerly

await your requests and inquiries. Why not contact them today?

- Contact Information:
  Mr. Ryosuke Takahashi
  International Sales Department,
  Kett Electric Laboratory Co., Ltd.
  +81-3-3776-1121 / ry-takahashi@kett.co.jp
- Kett Website:
  https://www.kett.co.jp/english/
- Kett Corporate Profile Video on YouTube:
  https://www.youtube.com/watch?v=-SPsCofmOiI

PQ-520 is one of Kett's most advanced instruments that can measure the moisture content of a single kernel. Participants tried the operation using paddy.

Kett international sales staff joined the seminar online from Japan and provided an insightful lecture on grain moisture measurement and management.

【Feedback on Kett equipment】

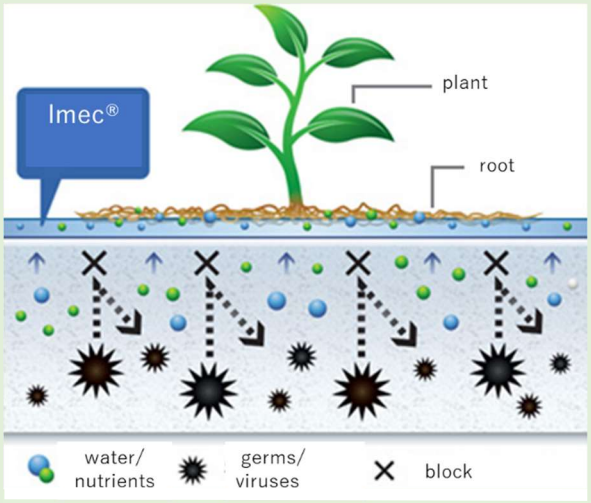
- The KETT equipment is very efficient, useful, and easy to use.
- PM 650 is very efficient. It requires less effort and energy since it does not crush the grains.
- PM 650 sometimes showed an error, and we (MRGM) noticed that it could not measure the moisture contents correctly in a hot environment with direct sunlight.

Regarding the last point, Kett assessed the environment and determined that this error was due to PM 650 being installed at an uneven location. Proper installation is crucial for maintaining high accuracy when using electrical capacitance-type measuring instruments like the PM 650. Kett emphasizes the importance of adhering to proper measurement methods and provides training to its foreign distributors.

Mebiol shares the field test results of their film farming technology, Imec

Mebiol, a Japanese company renowned for its innovative film farming technology known as Imec, is currently conducting field tests at Eagerton University in Nakuru to assess the feasibility of Imec in the Kenyan environment. This initiative, aimed at greenhouse cherry tomato production, is funded by JICA's SMEs/SDGs business-support program. The section below describes how Imec facilitates plant growth.

【Imec Technology】



Using Imec®, plants are cultivated and grown on a thin Film made of hydrogel which absorbs water and nutrients through its numerous nano-sized pores but blocks germs and viruses. Therefore, Film ensures the health of the plant and the safe produce even without the use of chemicals. Imec is the world's first hydrogel membrane-based technology developed to address serious issues facing the world today, such as food security, water scarcity and soil contamination. (Source: Mebiol website "Mechanism of growing by farming methods"[1]).

On September 15, Mebiol held a seminar at Eagerton University to present their technology and test results to the Kenyan audience. The AFICAT team participated in the seminar and observed promising outcomes in the growth of cherry tomatoes with the application of Imec. In the photos below, cherry tomatoes cultivated using Imec display robust root development over the hydrogel film, resulting in exceptionally red and sweet fruits. The sugar content of Imec cherry tomatoes surpasses that of conventional varieties in Kenya. All seminar participants, including the AFICAT team members, were impressed by the sweetness of Imec cherry tomatoes.

Mebiol anticipates that cultivation with Imec will yield approximately 8 tons/10 acres of cherry tomatoes with higher sugar content levels. This promising outcome underscores the potential for commercializing Imec technology. Mebiol envisions widespread adoption of the Imec system by farmers, enabling them to produce and sell high-quality cherry tomatoes to upscale restaurants and supermarkets, thereby increasing their profitability. Although the current market for such produce may not be extensive in Kenya, Mebiol's proactive marketing endeavors suggest the potential for future growth and development of their business in the country.

- Contact Information:
  Mebiol Inc.
  Mr. Hiroshi Yoshioka
  yoshioka@mebiol.co.jp
- Mebiol Website:
  https://www.mebiol.co.jp/en/
- Mebiol Company Video on YouTube:
  https://www.youtube.com/watch?v=6Rq1oecsEQI

[1] https://www.mebiol.co.jp/en/products/product/

Cherry tomatoes cultivated with Imec grow very thick roots on the hydrogel film to gain more nutrition

Cherry tomatoes cultivated with Imec exhibit a very bright red color and are much sweeter than ordinary cherry tomatoes

Mr. Hiroshi Yoshioka, CEO of Mebiol, explains Imec technology to the audience at the seminar

Mechanizing green tea processing in Kangaita using Japanese tecnhologies

As in Kenya, tea production and processing represents a significant industry in Japan. This led to numerous agricultural machinery manufacturers that specialize in tea-related technologies in Japan. Ochiai Cutlery Manufacturing Co., Ltd. (Ochiai), Terada Seisakusho Co., Ltd. (Terada), and Shizuoka Machinery Works Co., Ltd. (Shizuoka) are among the Japanese companies currently collaborating to mechanize green tea processing in Kangaita. The joint venture of these three companies manages a project funded by a JICA's SMEs/SDGs business-support program.

With the support of the Kenya Tea Development Agency (KTDA), the project established a green tea processing factory where machines manufactured by the three companies were installed. Ochiai provided a riding type tea harvester, Terada supplied machinery for crude tea processing, and Shizuoka provided machinery for tea finishing. The project aims to produce modern green tea using technologies developed in Japan, one of the largest green tea consumption countries. These companies have developed technologies to produce high quality green tea and the project is expected to contribute to the development of Kenya's tea industry. In February 2023, the AFICAT team visited the project site and observed how these technologies were utilized at the factory.

Manually picking tea leaves is labor intensive. The newly introduced riding type tea harvester can harvest 2,000 kg per day (based on an eight-hour working day). Hand-picking the same amount would require a labor force of 40 workers per day. Using Ochiai's machine can achieve a 50% cost reduction, including fuel and maintenance costs.

Additionally, Terada's crude tea processing machine automates the steaming, rolling, and drying process, ensuring the consistency of the color and aroma of the leaves. Shizuoka's finishing machine is used to remove foreign materials and sort the leaves by color and weight, which significantly influence the value of the final product.

The green tea processing staff at the project factory underwent training in Japan and maintain contact with technicians from the three Japanese companies to ensure continuous improvement in processing quality. Experience is essential in determining the degree of steaming and drying crucial for processing crude tea. This project aims to transfer the technology to the Kenyan tea industry, which will significantly improve the quality of Kenyan green tea products.

- Contact Information:
  Ochiai Cutlery Manufacturing, Co., Ltd.
  http://www.ochiai-1.co.jp/english/index.html
- Terada Seisakusho Co., Ltd.
  https://www.web-terada.jp/
  (Japanese only)
- Shizuoka Machinery Works Co., Ltd.
  http://www.s-kikai.com/index.html
  (Japanese only)

Crude tea processing line by Terada

A riding type tea harvester by Ochiai

Tea processing finishing machine by Shizuoka

JKUAT to evaluate the performance of Japanese soil test hardening agent

Under the coordination of Mr. Murakami, a collaborative initiative involving the MoALD, Jomo Kenyatta University of Agriculture and Technology (JKUAT), a Japanese company named SPEC Company Limited (SPEC), and a Kenyan company called APAN Ltd., has been launched to conduct a trial test of a Japanese soil hardening agent at JKUAT.

Soil hardening agents are essential in construction projects, especially considering the significant demand for infrastructure development in Kenya. Robust infrastructure in rural areas is vital for promoting agriculture mechanization. Therefore, a high-quality method that reduces construction costs is imperative.

SPEC manufactures STEIN, a high-quality, environmentally friendly inorganic soil hardening agent. According to the results of research conducted in Cambodia, a road constructed with STEIN has a lifespan ten times longer than a laterite road. Furthermore, the construction costs are decreased by two thirds compared to reinforced concrete. STEIN is already being marketed in Kenya by APAN Ltd., and has been used to construct several roads and fishponds in Kenya. However, the number of application cases remains relatively small.

Therefore, the four parties have decided to conduct several investigations and construct a small-scale road and fishpond at JKUAT as a trial, aiming to further identify the effectiveness and performance of STEIN in Kenya. The goal is to obtain results that can be used for commercial and educational purposes. This joint initiative by the Ministry, university, and private companies is highly anticipated to yield practical and high-quality outcomes. AFICAT will continue to follow up and provide updates on the progress until completion.

For any inquiries regarding STEIN, please contact the following individuals at APAN or SPEC.

- Contact Information:
  APAN Ltd.
  Mr. Ken Kimani
  apanltd2019@gmail.com
  +254-723-060-236

- SPEC Company Limited
  Ms. Shiyo Kamibayashi:
  kamibayashi@spec-env.jp
  http://spec-env.jp/

Kenyan stakeholders having a lively discussion on the detailed test plans

A fishpond constructed with STEIN

Mechanization training in Japan for public & private sector representatives

Coordinated by Mr. Murakami, three engineers from the MoALD, and one member representing the Agriculture Sector Network (ASNET) and Agro-Processors Association visited Japan for a two-week training course in November 2023. The aim of the training course was to acquire knowledge on agricultural mechanization in Japan and identify the potential of Japanese technologies and products that could be adopted by Kenya to improve the current situation.

Participants initially attended lectures before visiting the National Agricultural and Food Research Organization (NARO) to learn about the history and current framework of agricultural mechanization in Japan, particularly focusing on public-private partnerships. Subsequently, the participants visited several Japanese companies showcasing promising technologies and products that could contribute to development in Kenya. During these visits, the participants actively interacted with lecturers and identified the potential of Japanese technologies and products in Kenya. They also devised actionable strategies to accelerate the adoption of promising Japanese technologies and products in Kenya.

During their stay in Japan, enthusiastic and active interactions were observed among participants from both Kenya and Japan, all aimed at maximizing the opportunity to enhance collaboration between stakeholders in the two countries.

The training course and network established are expected to significantly enhance the relationship between Kenya and Japan, facilitating the adoption of Japanese technologies and products within the Kenyan agriculture sector.

Participants actively discussed the possibility of adopting Japanese products in Kenya (at Kett head office)

Despite the tight schedule, participants tried their best to enjoy Japanese culture

AFICAT pilot phase wrap-up seminar

The pilot phase of AFICAT in Kenya, initiated in September 2022, concluded in November 2023. On November 30, the AFICAT team organized a wrap-up seminar to present the results and outcomes of the activities over the past 15 months.

The seminar was held in a conference room at the MoALD in Nairobi and involved approximately 30 AFICAT stakeholders from both public and private sectors. The participants included representatives from the MoALD, JKUAT, the Capacity Development Project for Enhancement of Rice Production in Irrigation Schemes (CaDPERP), which is another JICA project, ASNET, and many others.

Following the AFICAT team's presentation, participants offered their perspectives and feedback on the results of the AFICAT pilot phase, which were predominantly positive. During the seminar, numerous comments were made by public and private institutions expressing interest in high-quality Japanese products such as grain moisture meters, optical sorters, and cold storage facilities. Additionally, some participants proposed the idea of training mechanics in collaboration with research institutes and AFICAT.

During the pilot phase, AFICAT was implemented jointly by JICA and the Agricultural Engineering Services under the MoALD. The AFICAT team would like to express sincere gratitude to our main partner organization for their tremendous support in conducting field studies and activities. Without their invaluable contributions, the AFICAT team could not have successfully completed the pilot phase. With the shared goal of the betterment of the Kenyan agricultural sector, we aim to deepen our partnership in the next phase to attract more Japanese companies to contribute to Kenya's agricultural industry.

Participants actively discussed the achievements of AFICAT pilot phase activities and future actions to be taken.

Results of AFICAT pilot phase in five countries shared in a webinar in Japan

On December 19, the 5th subcommittee meeting for African agriculture of the JICA Platform for Food and Agriculture (JiPFA) was convened online. The AFICAT team presented the results of AFICAT pilot activities over the past 2 years to approximately 100 participants from Japanese companies and other stakeholders.

At the beginning of the meeting, representatives from JICA headquarters and JICA Tsukuba Center highlighted that AFICAT successfully collaborated with numerous Japanese companies through its pilot activities. They emphasized JICA's commitment to further promoting AFICAT by synergizing with other JICA schemes such as the "Agriculture Co-Creation Hub" at JICA Tsukuba.

Subsequently, the AFICAT team presented the results of their engagements with over 30 Japanese companies across the five countries, along with the lessons learned and their implications. Based on these insights, the AFICAT team proposed the establishment of an AFICAT committee in each of the five countries, composed of representatives from the local public and private sectors, tasked with fielding inquiries from Japanese companies. These committees are expected to facilitate the sustainable implementation of AFICAT initiatives.

Representing Japanese AFICAT partner companies, Kett and Honda Motor Co., Ltd. (Honda) delivered their remarks. Kett expressed gratitude, stating, "Thanks to AFICAT, we received new orders from Ghana where we had no prior business establishment". Honda remarked, "We now have a deeper understanding of the realities of agricultural machinery in Africa, previously unknown to us. Agricultural machinery has become a core business for our African subsidiaries". Their statements underscore the significant contribution of AFICAT support to their business expansion across various fronts.

Five AFICAT advisors, representing the private sector, academia, and media, shared their positive

feedback regarding the AFICAT pilot phase and offered suggestions for the next phase. Their valuable recommendations included: “Consider viewing several neighboring countries as one big regional market”; “Promote personnel exchanges to enhance the capacity of engineers, researchers and AFICAT focal persons”; “Increase efforts in PR activities to enhance the visibility of Japanese technologies in African markets. For example, Japanese companies should participate in local exhibition events and JICA should organize Japanese company missions to Africa.”; and many others.

In his closing remarks, Mr. Osamu Kubota, JICA Vice President, highlighted the food security challenges in Africa, driven by population growth and the emergence of a significant market. He emphasized that introducing Japanese technologies on a commercial basis in Africa could enhance agricultural productivity and address food security concerns. To conclude the meeting, he reaffirmed JICA’s commitment to collaborating with Japanese companies through AFICAT to tackle Africa’s food challenges.

- Agriculture Co-Creation Hub: https://www.jica.go.jp/Resource/tsukuba/english/office/activities/activities_11.html

AFICAT Team’s slide in Japanese. More than 30 Japanese companies were benefitted from AFICAT support

Editors’ postscript

We thank you for your consistent support and for reading our three newsletters for AFICAT in Kenya during the pilot phase. JICA plans to commence the next phase in 2024. We sincerely hope for your patience and anticipation as we prepare for AFICAT and Japanese companies to return to Kenya. We believe that Japanese technologies will continue to contribute to the mechanization and improvement of agricultural activities for Kenyan farmers and companies. Thank you so much!

Editing/Inquiries
Kaihatsu Management Consulting, Inc.
Mr. Satoru KOBAYAKAWA
Mr. Kodai YUGETA
Tel: +81-3-5791-5083/Mail: aficat.team@kmcinc.co.jp
AFICAT HP (only in Japanese):
(https://www.jica.go.jp/activities/issues/agricul/aficat/index.html)
*Please send your name, affiliation, and e-mail address via the above contact details if you wish to subscribe to or unsubscribe from our newsletter.

