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Research results to the establishment of small agribusinesses and support farming and fishing families in improving their quality of life with technology-based livelihood.

Setting the direction

The Philippine agriculture and fisheries R&D under DA has been revolutionalized and transformed to meet the needs of its clientele. Today, DA utilizes initiatives and R&D projects that focus on "making agriculture a business".

Agriculture Secretary Arthur C. Yap's FIELDS (**F**-fertilizer, **I**-irrigation, **E**-extension and education including research and development, **L**-loans and credit, **D**-dryers and other postharvest facilities, and **S**-seeds and other genetic materials) program took the challenge of identifying ways to improve the conditions of the farmers and fisherfolk. Specifically, BAR's R&D banner programs, namely: the Community-based Participatory Action Research (CPAR) and the National Technology Commercialization Program (NTCP), enhance Da's FIELDS program by integrating R&D sub-programs and treating holistically in terms of R&D prioritization and program planning processes.

BAR has made sure that all its R&D programs, projects, and services under its orchestration are geared towards the development and improvement of farmers, fisherfolk, communities, and industries. These programs are oriented towards making agricultural enterprises locally and globally-competitive with assured product quality and, at the same time, support the social, economic, and environmental aspects of development.

With its partner agencies and organizations, BAR has set the trend and direction of the national R&D system by incorporating critical issues like climate change, biofuels, and biotechnology to highlight their importance in the works of researchers and scientists. BAR is likewise making the system more organized and efficient by providing support strategies using information communication and technology, knowledge management, and community development.

Raising the bar of excellence for R&D

The quality of research and the attainment of desired R&D outcomes through the years has been constantly improved in part through the conduct of the annual National Research Symposium (NRS). The NRS serves as a venue for researchers and scientists from the DA – National Research and Development System in Agriculture and Fisheries (DA-NaRDSAF) member agencies and other individuals to present their best research works on improving the living conditions of farmers and fisherfolk and to enhance the already existing technologies for maximum utilization and application.

Improvements in the evaluation mechanism of the NRS have set the standards for quality and appropriate research outputs of researchers. This annual symposium requires researchers to be attuned to the agriculture world view aside from showing the rigor of research, professionalism, social consciousness, development-orientation, relevance, and competitiveness. With stiff competition in producing quality research, activities like program planning, proposal evaluation, project implementation, and monitoring and evaluation have likewise improved for effectiveness and efficiency.

BAR is working with the private sector and industries to disseminate and enhance the commercialization of technologies through the annual conduct of National Agriculture and Fisheries Technology Forum and Product Exhibit every August, which coincides with BAR's anniversary. All these activities are set to make R&D responsive and dynamic with the end goal of work and output excellence by researchers and development workers.

Dissemination and application of R&D outputs

The greatest challenge that BAR is facing right now is the dissemination of research results for maximum utilization and application. Recently, BAR commissioned a group to evaluate its knowledge management program and services through its publications, website, and segment program aired over NBN Channel 4 TV Program *Mag Agri-Tayo*. The evaluation focused on how BAR developed, published, and delivered its applied communication products and services to its clientele and end users.

Based on the results, BAR has been found to be effectively doing its job in providing relevant, appropriate, and timely information. The results show that BAR has contributed much towards improving the living conditions of farmers and fisherfolk with the sharing and dissemination of information, technologies through success stories which have encouraged numerous farmers and fisherfolk, including communities to be more productive, profitable, and sustainable.

BAR has likewise banked on the gains of research implementation and lessons learned from research projects conducted by various researchers and development workers.

Achieving the desired R&D outcome

Individually, research activities address one or more issues and concerns when it comes to the condition of Philippine agriculture. Is R&D doing its job? Will R&D solve these issues and concerns?

Knowing the kind of efforts done by the Philippine agriculture R&D agencies for the people is a constant effort towards improving the lives and conditions of communities. The programs of agriculture and fisheries R&D consider in totality of farmers and their communities. R&D provide the element of integration, complementation and partnership. However, do these make sense in the overall effort of the agriculture sector? The answer is a firm "Yes".

Our farmers are simple. All they want in life are good harvests. This should be supported by modern and relevant technologies that will ultimately improve their living conditions. ***(Marlowe U. Aquino, PhD)***

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Tel.Nos +63 2 928-8505, 928-8624, 920-0234 locals 3012, 3026,3027 or email at: *acd@bar.gov.ph*

PRODUCTION TEAM

Managing Editor/Layout:	Rita T. dela Cruz
Consulting Editors:	Manuel F. Bonifacio, PhD and Victoriano B. Guiam
Writers:	Edmon B. Agron, Marlowe U. Aquino, PhD, Johanna B. Benavente and Rita T. dela Cruz
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Circulation:	Maricel F. Fortaleza and Victoria G. Ramos
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Photo by: RDELACRUZ

Instituting the essence of agri-fisheries R&D: *Sakahan, Kaalaman at Kaunlaran*

The agriculture and fisheries sectors are known as the prime movers of development in the countryside and even the urban areas especially when it comes to agri-fishery products production, processing, and marketing. In view of this, the role of research and development (R&D) is essential to meet the challenges and production concerns of farmers, fisherfolk, communities, and industries. The Department of Agriculture (DA) has set up the critical programs and effective and efficient services needed by agriculture and fisheries stakeholders.

For its part, the Bureau of Agricultural Research (BAR) through its 10th National Agriculture and Fisheries R&D Week and 21st National Research Symposium slated on 8-9 October 2009 is making sure that three important factors are highlighted and focused for competitive agriculture. These are: ***Sakahan***, which literary means farming but BAR is making it dynamic and modernized through ***Kaalaman***, appropriate knowledge and technologies for utilization and application, and ***Kaunlaran***, progressive endeavor based on productive, profitable, and sustainable activities for development.

The three interconnected factors embody the DA's and BAR's desires to improve the lives of its clientele and end-users. Researchers and scientists continue to conduct relevant and appropriate researches that improve existing technologies including processes and services that can change and elevate the plight of farmers and fisherfolk including the communities.

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WHAT'S INSIDE

BAR holds 21st NRS recognizing exceptional researchers in agriculture & fisheries R&D

Recognizing the importance of agriculture and fishery research and development (R&D) in promoting the nation's economic well-being and the pivotal role of researchers as catalyst for developing R&D that matters to the sector, the Bureau of Agricultural Research (BAR) is holding the 21st National Research Symposium (NRS) on 8-9 October 2009.

The opening program and the paper presentations which is scheduled on October 8 will be held at the 4/F BAR RDMIC Building while the awarding ceremony on October 9 will take place at the Fernando Lopez Hall, BSWM, Visayas Avenue, Quezon City.

Honored guests, Secretary Arthur C. Yap of the Department of Agriculture (DA) and Dr. William G. Padolina, Chair of the Agriculture and Food Panel Congressional Commission on Science and Technology and Engineering (COMSTE) and Deputy Director General for Operations and Support Services of the International Rice Research Institute (IRRI), will award the winners.

With the theme, "Sakahan, Kaalaman, Kaunlaran: Improving the Lives of our Farmers and Fisherfolk through Research and Development", this year's NRS highlights the importance of R&D vis-à-vis providing good quality of life for the Filipino people. R&D leads the way to significant technologies and products that increase the productivity of farmers and fisherfolk while reducing production cost and enhance their capacities to compete globally and locally.

For more than two decades now, NRS has been annually conducted by BAR not only to promote R&D excellence but more importantly, to give due recognition to the accomplishments of agriculture and fisheries researchers for their notable achievements in the field.

Since the symposium will highlight important research results and technologies generated and conducted by researchers and scientists in the fields of agriculture and fisheries, it also serves as a good venue to disseminate new technologies and knowledge, in support to agriculture and fisheries modernization.

Research Paper Awards

R&D papers will compete based on the eight categories: *basic research*, *applied research* (technology/information generated-agriculture), *applied research* (technology/information generated-fisheries), *applied research* (technology adaptation/verification-agriculture), *applied research* (technology adaptation/verification-fisheries), *socio-economics*, *development research* (agriculture), and *development research* (fisheries).

Basic researches are experimental or theoretical work undertaken primarily to acquire new insights on the underlying foundations of physical and biological phenomena and observable events, without any particular or specific application or use in view. It usually takes supplementary research/activities before a specific application or use can be identified. Attention is given on processes, methods, techniques, protocols, and chemical composition.

The *applied research category (TG/IG)* is strategic in nature and is usually conducted on-station. This type of research is directed toward contributing to a body of information with immediate application of findings.

For the *applied research (TA/TV)*, this type of research may be on-station or on-farm with specific focus on technology commercialization projects and technology enhancement-related concerns. This is geared toward fine-tuning of newly-developed technologies necessary for determining their technical feasibility in solving specific needs related to agricultural and fisheries production and postproduction under production conditions.

The *socio-economics research* category deals with people and institutions, specifically on methods of participatory action research, monitoring, and evaluation of technological packages with regard to adoption and impact, and contributions to policy-related concerns in agriculture and fisheries development. This type of research focuses more on the outputs of the project.

Development research is an output of systematic work, drawing on existing knowledge gained from research

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R&D results/ from page 6

With the steady rise of fuel prices, the Arroyo administration created the Alternative Fuels Program which is one of the five key components of the Arroyo Administration's Energy Independence Agenda. It outlines the roadmap that will lead to the country's attainment of 60 percent energy self-sufficiency by 2010.

Initial R&D initiatives

For the Biofuels Group of DA, BAR is focused on the R&D aspects to establish technologies to sustain production tapping the country's domestic produce as viable sources of energy.

The Mariano Marcos State University (MMSU) in Batac, Ilocos Norte, through funding support from BAR, was the first to conduct sweet sorghum production field trials after the crop was introduced in 2005. The field tests of sweet sorghum in MMSU have shown encouraging results.

Five out of the eight varieties of sweet sorghum bred by ICRISAT and brought into the country for field testing have been found to thrive well under Philippine conditions. These are *NTJ 02*, *SPV 422*, *ICSV 93046*, *CSR 93034*, and *ICSV 700*. They are found to have high content of juice and good grain yield when tested at the experimental farms of MMSU. Also, the crop has provided bright prospects not only as feedstock for ethanol production, but also as food and feed grain.

Following the significant initial results of the studies, the five sweet sorghum varieties were subsequently tried in 58 other sites across the country which similarly produced encouraging results as reported at the "First National Sweet Sorghum RD&E Review and Planning Conference" in March 2008.

Since 2005, BAR has supported R&D activities and the initial production of sweet sorghum in Ilocandia through MMSU with its vice president, Dr. Heraldo Layaoen, who is also the national team leader of the BAR's sweet sorghum program.

The program was subsequently implemented in several areas in the Ilocos, Cagayan Valley, Cordilleras, Central Luzon, Bicol, and some provinces in the Visayas and Mindanao.

Given its success in Ilocos Norte, and in Bicol, MMSU and the Bicol Integrated Agricultural Research Center (BIARC) developed their respective region-wide commercialization of sweet sorghum with funding and coordinative support from BAR. This included the development of village-level technologies on food products and production of molasses and organic fertilizer.

To date, BAR is coordinating and funding 16 projects all over the country. Thirteen of these projects are implemented by the RIARCS while the rest are implemented by SUCs, specifically, the Central Luzon State University (CLSU) and the Isabela State University (ISU) in addition to MMSU. ***(Rita T. dela Cruz)***

Following the significant initial results of the studies, the five sweet sorghum varieties were subsequently tried in 58 other sites across the country which similarly produced encouraging results.


Photo by: NDELROSARIO III

R&D results of BAR-funded sweet sorghum projects take center stage in first nat'l review

Four years after its introduction into the country by an India-based research center and jumpstarting R&D initiatives on the crop, sweet sorghum holds true to its promise as the best source of feedstock for ethanol production. And such claim will be further reinforced as project leaders, designated focal persons for sweet sorghum, experts, technical coordinators and evaluators and members of the stakeholders gather for the "First National Review of BAR-Funded Projects on Sweet Sorghum" on 6-7 October 2009 at the Fernando H. Lopez Hall, BSWM.

"Sweet sorghum is a promising feedstock for bio-ethanol production in the Philippines that answers both for the country's food and energy security. Not mainly for ethanol production, its grains can also be used as food, beverage, and feed, whereas the leaves can be used for fodder. Its stem contains high amount of sugar which can be extracted by simple milling and fermented to bioethanol," explained Director Nicomedes P. Eleazar of the Bureau of Agricultural Research (BAR).

BAR is conducting the national review to consolidate current efforts and activities on sweet sorghum in the Philippines, particularly R&D, as well as provide relevant information on the adaptability of the crops in the regions and its other prospects as a multi-purpose crop. On the policy side, BAR hopes that with this activity, the sector is able to develop a framework for RDE on sweet sorghum and formulate plans for immediate and long-term activities to hasten its full utilization in the country.

Photo by: PAC

How sweet sorghum was introduced

In May 2005, President Gloria Macapagal Arroyo launched the National Bioethanol Program in San Carlos City, Pangasinan to mark the signing of contracts for a P1.5 billion ethanol and power generation plant, a first in the country. A year after that, Indian President APJ Abdul Kalam brought in the country several kilos of foundation seeds of sweet sorghum developed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) for field testing and adoption which was initially funded and supported by BAR.

The enactment into law of Republic Act 9367, otherwise known as the Biofuels Act of 2006 in January 2007 prompted the government to heighten efforts to develop, produce, and distribute high-quality, reasonably-priced and environment-friendly alternative fuels. Thus, several agricultural crops were grown specifically for use as biofuels including corn, soybeans, cassava, sugarcane, sweet sorghum, coconut, and jatropha. But given the various studies conducted, sweet sorghum turned out to be the most advantageous production-, economic-, and environment-wise.

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2009 NRS paper entries increased by 20%

Initial evaluation of NRS papers held on Sept. 1 at DA-BAR.

Photo by: EAGRON

"From last year's 79, the entries for the 21st National Research Symposium (NRS) increased to 95," reported the Symposium Papers Committee headed by Dr. Carmencita B. Kagaoan of the Program Development Division (PDD) during its recent NRS Working Committees' Meeting. PDD is the leading unit of the Bureau of Agricultural Research (BAR) for this annual activity.

Out of the 95 entries, the Applied Research – TG/IG (agriculture) category got the most entries, 31 percent, followed by the Applied Research – TA/TV (agriculture) with 24 percent.

From the 2009 NRS, there is also a greater variety of paper entries, a great chunk of which are in the fields of crop protection (21 percent), socio-economics (18 percent), postharvest and engineering (13 percent), and crop science (11 percent).

In terms of agencies which submitted entries, the most number came from SUCs (39 percent) but not far behind are a wide distribution of entries from DA regions (35 percent) and DA attached agencies and staff bureaus (26 percent).

The initial evaluation of paper entries was held on 1 September 2009 with the following panel of judges:

For *basic research*: Drs. Ernelea P. Cao and Fernando P. Siringan of University of the Philippines Diliman (UPD) and Dr. Mary Ann T. Tavanlar of University of the Philippines Los Baños (UPLB).

For *Applied Research - TG/IG and TA/TV* (crop science and crop protection): Dr. Teodoro S. Solsoloy of BAR, Dr. Teotimo M. Aganon of Central Luzon State University (CLSU), Dr. Jocelyn E. Eusebio of the Philippine Council for Agriculture, Forestry, Natural Resources Research and Development (PCARRD), and Drs. Jose E. Hernandez and Rodel G. Maghirang both from UPLB.

For *Applied Research- TG/IG and TA/TV* (animal science): Drs. Enrico P. Supangco and Dr. Mildred A. Padilla of UPLB, and Mr. Felix G. Valenzuela of the Livestock Development Center (LDC).

For *Applied Research- TG/IG and TA/TV* (soils and water science): Drs. Florentino C. Monsalud and Antonio J. Alcantara of UPLB and Dr. Gavino Isagani P. Urriza of the Bureau of Soils and Water Management (BSWM).

For *Applied Research – TG/IG and TA/TV* (engineering and postharvest): Drs. Edralina P. Serrano and Delfin C. Suministrado of UPLB, Dr. Gloria P. Jimenez of the Bureau of Postharvest Research and Extension (BPRE), and Dr. Andrea B. Agillon of BAR.

For *Applied Research- TG/IG and TA/TV* (fisheries): Dr. Rogelio O. Juliano of the Professional Regulation Commission (PRC), Dir. Cesario R. Pagdilao of Philippine Council for Aquatic and Marine Research and Development (PCAMRD), Dr. Crispino A. Saclauso of UP VIsayas (UPV), and Dr. Catalino R. Dela Cruz, Dr. Carmencita V. Kagaoan, and Ms. Ma. Elena M. Garces all from BAR.

For Development Research (agriculture): Dr. Virginia R. Cardenas of UPLB), Dr. Marideth R. Bravo of UPD, and Dr. Marlowe U. Aquino and Mr. Rolando V. Labios of BAR.

Lastly, for *Socio-economics Research*: Dr. Maripaz L. Perez of The WorldFish Center, Dr. Cesar B. Quicoy of UPLB, and Dr. Manuel F. Bonifacio and Ms. Josefina M. Lantican of BAR.

(Rita T. dela Cruz)

Yap, Padolina to grace BAR's 21st NRS

Secretary Arthur C. Yap

Dr. William G. Padolina

The Bureau of Agricultural Research (BAR) of the Department of Agriculture (DA) will hold the 21st National Research Symposium (NRS) on 8-9 October 2009 with the theme, "Sakahan, Kaalaman, Kaunlaran: Improving the lives of our Farmers and Fisherfolk through Research and Development".

The opening program will be held at the 4/F RDMIC Building of BAR on 8 October while the awarding ceremony will be conducted at the Fernando Lopez Hall of the Bureau of Soils and Water Management (BSWM), Visayas Avenue, Diliman, Quezon City on 9 October.

The symposium will highlight important research results and technologies generated and conducted by researchers and scientists in the fields of agriculture and fisheries.

Gracing these year's activity are two top caliber personalities in the field of agriculture and research, Agriculture Secretary Arthur C. Yap and Dr. William Padolina, Deputy Director General for Partnerships of the International Rice Research Institute (IRRI).

Yap, who has been championing technology commercialization based on relevant and significant results from R&D, believes that sustainable and profitable farms are the keys to Philippine agriculture's future growth and expansion. Hence, he has lined up programs to help farmers and fisherfolk improve their lives. These programs are: creation of more irrigation and farm to market roads, improved access to technology, extension services and rural credit, building of postharvest drying and storage facilities and more access to domestic and international markets.

Meanwhile, Padolina, given his wide experience both in the academe and in international research, has his own great contributions in the field. He is currently the Chair of the Agriculture and Food Panel of the Congressional Commission on Science, Technology and Engineering (COMSTE). COMSTE was created through a joint resolution authored by Senator Edgardo J. Angara, which became a law when it was signed by President Arroyo on the Thirteenth Congress. It is a reviewing body composed of five senators and five congressmen that assess the state of competitiveness of S&T and the engineering R&D sector in the Philippines.

Sec. Yap and Dr. Padolina will each deliver their respective messages and confer the AFMA Best R&D Papers and Best Poster Awards on 9 October during the NRS closing rites. ***(Johanna B. Benavente)***

BAR holds/ from page 2

and/or practical experience and directed toward introducing/producing new materials, installing new processes, and improving substantially those already produced and installed for more effective use by the intended clients. The focus of this research is on innovation studies, piloting, fine-tuning, improvement of the system, linkages with the LGUs, and support services. Its main concern is on achieving the desired outcome of the project.

The top three papers from each category will be presented at the opening day from which the grand winner will be selected and awarded on the following day.

The grand winner for each category is conferred the *Best AFMA R&D Paper Award* receiving a plaque and cash prize of PhP 50,000. The first and second runners-up will take home PhP 30,000 and PhP 20,000 and plaques, respectively. All qualifying papers (with score 80% and above) will also receive PhP 10,000 cash prize and certificates.

Best Poster Awards

Best poster awards will also be given out during the awarding rites. Winners will be chosen from the submitted posters of the R&D papers presented during the NRS.

The grand winner will be dubbed as the "Best AFMA R&D Poster" receiving PhP 10,000 while the first and second runners-up will win PhP 8,000 and PhP 5,000 cash prizes, respectively. ***(Rita T. dela Cruz)***

BAR to launch two SPG-funded R&D books on vegetables and cassava

As part of the continuous effort of the Bureau of Agricultural Research (BAR) to strengthen the country's agriculture research and development (R&D), two more books will be launched on 9 October 2009 during the bureau's National Research Symposium (NRS) to be held at Fernando Lopez hall, Bureau of Soil and Water Management, Elliptical road, corner Visayas Avenue Diliman Quezon City.

The books are entitled *"Protected Vegetable Cultivation, Management Options and Economic Potentials"* of Central Luzon State University (CLSU) and *"Primary Processing of Cassava in the Philippines"* of Visayas State University (VSU) and the Philippine Root Crop Research and Training Center (PhilRootcrops).

The book on Protected Vegetable Cultivation, is a compilation of information and technical knowledge on the technology "protected vegetable cultivation" – the most effective approach in handling the harsh effects of "biotic" and "abiotic" factors that cause major failures in vegetable production in the Philippines.

Protected vegetable cultivation is the growing of vegetables under covering materials that will protect the crop from either too much heat and rain (abiotic) or pests attack (biotic). With this technology, farmers can plan and overcome seasonality, water scarcity and severe infestation that are common in open field cultivation. Eventually, farmers can grow high-value crops all year round with better protection against unfavorable weather conditions as well as infestation by pests and diseases. Thus, this technology helps address the problem of sporadic supply of vegetables characterized by market – gluts but scarce and disappearing during off-season.

The book presents the technical requirements in starting and operating protected vegetable business such as selection of crops and cultivars, proper siting or location of the structure, orientation of the structure for maximum light management and the overall steps in the preparation of the house for planting, environmental control and substrate consideration.

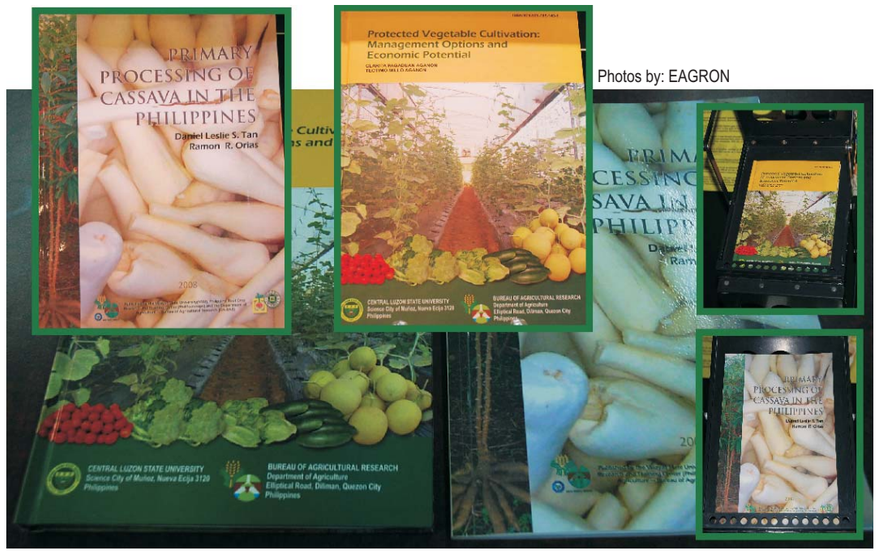
It also features guidelines for organic vegetable cultivation inside protective structures, presents the common crops for protected cultivation in the humid tropics and temperate climate, and the specific management practices such as planting, irrigation, fertilizer management using "fertigation system" or manual watering and fertilizer application as well as pest management.

Meanwhile, the book on Primary Processing of Cassava compiled by Visayas State University and Philippine Root Crop Research and Training Center, details the relevant information in processing cassava with emphasis on machines designed and developed for particular products.

Primary processing of cassava refers to the conversion of fresh roots into products that are not directly consumed or utilized.

Since cassava is highly perishable crop due to its high moisture content, primary processing is very important to prolong the crop's storage life, maintain and improve its quality, increase the crop's market value, and change its characteristics into more commerciable shape and sizes. The guidelines and procedures are detailed in this book for effective and easy reference by cassava growers and other enthusiasts of the industry.

The book also features the developed machines and their designs to provide other researchers and engineers with relevant information that can be used to improve their machines and processes in the production of cassava chips, flour, grates and other products made from cassava.



Photos by: EAGRON

The publication of these books was funded through the "Scientific Publication Grant" (SPG) program of BAR which aims to promote excellence in research and development by providing financial support to different scientific and professional societies, researchers and editors of organizations under the National Research and Development System for Agriculture and Fisheries(NaRDSAF) to published their research outputs. ***(Edmon B. Agron)***