



Bureau of Agricultural Research
2014 Annual Report

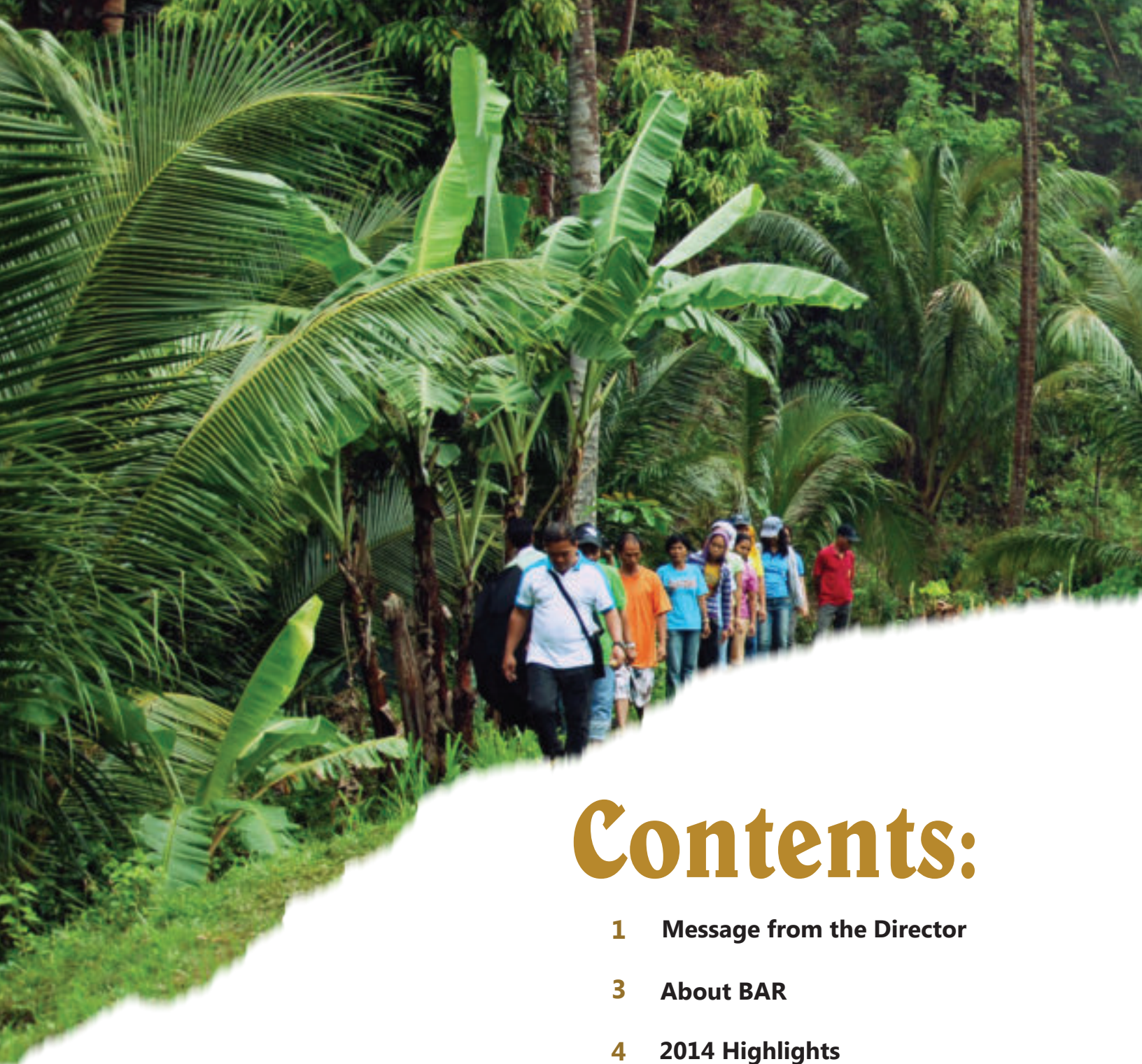
ACHIEVING

a CLIENT-DRIVEN R&D









Contents:

1 Message from the Director

3 About BAR

4 2014 Highlights

16 Achieving a Client-driven R&D

19 Banner Programs

Community-based Participatory
Action Research

National Technology
Commercialization Program



43 Client-driven R&D Programs

- Organic Agriculture
- Climate Change
- Rice
- Corn and Cassava
- Biofuels
- High Value Crops
- Rainfed Agriculture
- Adlay
- Rubber
- Apiculture
- Soybean
- Biotechnology
- Native Animals

59 BAR R&D Priority Programs

- Support to Basic, Strategic Researches
- Research Policy Advocacy
- International Partnership
- Human Resource Development
- R&D Facilities
- Information and Communication Technology
- Knowledge Management

76 Client-oriented Services and Assistance

- R&D Technology Commercialization Center
- Scientific Library Services
- Intellectual Property Support

83 BAR Annual Events

- 10th Agriculture and Fisheries Technology Forum and Product Exhibition
- 26th National Research Symposium

91 Annex

- Awards and Recognitions
- BAR Event Highlights
- Acronyms
- BAR Key Officials

Message from the Director



As a government agency that serves as the Department's national coordinating agency for agriculture and fisheries research and development, BAR is often challenged on how we can effectively present our physical accomplishments without neglecting other significant, but immeasurable outputs. Often, we gauge our success in two ways, one through the criteria and targets we have set with our oversight agencies in the beginning of the calendar year; and two, through the lives touched and improved through the R&D programs and projects we have supported. In this report, we continue to give focus on both.

In 2014, the bureau continued supporting projects and activities under its two banner programs, the Community-based Participatory Action Research (CPAR) and the National Technology Commercialization Program (NTCP). We also partnered and collaborated with various agencies of the Department in managing and coordinating the R&D component of DA thrusts and programs. With parameters set by oversight agencies, which we are required to comply with and excellently uphold, the bureau has efficiently complied. As a result of our continuing commitment to research and development, collaboration and innovation, we expect to maintain this strong momentum. Today, we focus on investing in building strategic partnerships and enhancing our faculties towards a more responsive R&D for 2015 and beyond.

Over the years, BAR has formulated and introduced new strategies and approaches in tuned with the fast changing world. With climate change affecting the agricultural landscape coupled by stresses such as poverty and rapidly increasing population, we are continually challenged to optimize our position and resources for the benefit of those that need help the most.

Alongside the programs, the projects, and their respective accomplishments presented in this report, were various R&D interventions and stories of success on how the lives of our farmers, fishers, and the community have improved and how the various technologies from R&D were made available for adoption to improve production and income.

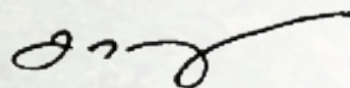
Above all these, the bureau believes that these accomplishments would all be futile if not disseminated. Thus, in this report, we also highlighted the opportunities created and grabbed in order to have these technologies disseminated to greater audience and to people who can further improve them for bigger profit and sustainability. Thus, the local and international events we have facilitated apart from the major events we stage every year.

For the 2014 Annual Report, we are featuring two major events that enabled us to showcase the results of R&D to both the national and international audience. These are the "First National CPAR Congress" and the "2014 IRRDB International Rubber Conference and Annual Meetings".

The challenges we face have driven us to think and act in ways that will not only provide our countrymen with food on their plates but opportunities to improve their lives. Dealing with R&D, a sphere that is often challenged by change, BAR continues to hold firmly to its vision of providing a better life for its countrymen.

At this point, allow me to thank our R&D partners who have helped us scale these new heights despite challenges. I believe that with your support in 2015, we can reach even higher!

Thank you and *Mabuhay!*



DR. NICOMEDES P. ELEAZAR, CESO IV
Director



About BAR

BAR was created in 1987 through Executive Order 116 to ensure that agricultural research is coordinated and undertaken for maximum utility to agriculture. It is mandated to tap farmers, farmers' organizations, and research institutions, including state universities and colleges in the conduct of research for the use of the DA particularly, the farmers and fisherfolk.

As the lead government agency for agriculture and fisheries R&D, the bureau is committed to consolidate, strengthen, and develop the agriculture and fisheries R&D system for the purpose of improving its effectiveness and efficiency, ensuring customer satisfaction and sustained improvement through work excellence, teamwork and networking, accountability and innovation.

Vision

"A better life for Filipinos through excellence in agriculture and fisheries research and development."

Mission

"To attain food security and reduce poverty through technology-based agriculture and fisheries sector."

R&D Thrusts

1. Food security
2. Increased productivity and profitability
3. Poverty eradication and people empowerment
4. Sustainable agricultural development
5. Global competitiveness

Strategic Approaches

1. Relevant and innovative technology and information generation
2. Community-based technology development and validation
3. Responsive technology commercialization
4. Agribusiness development
5. Public-private partnership
6. Institutional development
7. Local and international linkaging
8. Information communication technology management
9. Knowledge management
10. Provision of favorable research policy environment

2014

Highlights

In 2014, two important events were organized and led by BAR, both of which aimed to strengthen and empower the R&D sector particularly the rural community and the rubber industry.

The two events were: the "First Community-based Participatory Action Research (CPAR) Congress" held on 20-21 February 2014 at the Manila Hotel; and the "2014 International Rubber Research Development Board (IRRDB) International Rubber Conference and Annual Meetings" held on 24-28 November 2014 at the Hyatt Regency Hotel.

The CPAR Congress, which carried the theme, "*CPAR: Pagtutulungan ng mga Mananaliksik, Magsasaka't Mangingisda tungo sa Malawakang Pag-unlad ng Pamayanan,*" was a first of its kind gathering of project leaders, farmer-cooperators, adopters, and beneficiaries to personally tell their stories of success in the implementation of the various CPAR projects in the country.

Meanwhile, the International Rubber Conference is an annual gathering of various member-countries of IRRDB to discuss recent innovations and breakthroughs on natural rubber to further boost its growth as well as to lay down strategies and plans to sustain the industry. This year's theme focused on "Developing and Sharing Innovations for Sustainable Growth of the Natural Rubber Industry".



1st CPAR Congress

The activity was conceptualized to relay and disseminate to the public what CPAR as a program is. Particularly, the CPAR project implementers and farmer-cooperators have the opportunity to tell and share their stories to the attendees. The idea is to determine the various factors and aspects that made the CPAR program effective (or ineffective) and its impacts both in the perspectives of the researchers (project leaders) and the farmers or fishers (project cooperators and beneficiaries). It is also a means to rationalize the CPAR program and provide a feedback mechanism to the funding agency and supporters.

The event was highlighted by the testimonies of nine farmer-cooperators, 5 came from Luzon, 2 from Visayas, and 2 from Mindanao.



Testimonies of CPAR Farmers



Julie Lapingcao
Alonguinsan, Cebu, Region 7

Masaya po ako na ibalita ang tungkol sa aming CPAR project. Ibang-iba po ang buhay namin kumpara noong wala pa ang CPAR at noong andoon na ang CPAR project sa aming lugar. Binigyan kami ng capital at inputs. Dahil dito, nagkaroon kami ng magandang ani at kita sa aming farm. Hindi lang sa mais, pati din sa vegetable. Dahil sa aming corn production mula sa CPAR, may kita kami ngayon. One-fourth hectare ang crop area ko sa mais. Dahil sa CPAR ng BAR, mas maganda ang naging kita ng aming ani. Nakatulong ito para makakuha kami ng capital mula sa aming asosasyon ng walang interes. Sana po ay magpatuloy ito.



Pio Famorca
Lamut, Ifugao, CAR

Noong 2009 po, nagstart akong magfishpond at sa tulong ng CPAR, natutunan ko kung paano ang tamang pag-aalaga ng tilapia. Ang CPAR po ay malaki ang naitulong sa aming pamumuhay, sa aming mga fisherfolk sa Ifugao. Kasi noong hindi pa nagpunta ang CPAR para mag-training sa amin, kanya-kanya po kaming nagsaliksik kung paanong mag-alaga, kung paano ang timpla ng pagkain, kung pano magprepare ng pond at i-monitor kung lumalaki sa amount ng pagkain nila. Dito sa pond preparation, itinuro kung paano magfertilize, ganoon din ang stocking, sukat ng feeds. Noong nailunsad ang project namin, binigyan kami ng quota na magprepare ng 400 sq. meter na pond bawat miyembro at iyon ay nilagyan ng 2,000 fingerlings. Sinunod po namin ang turo ng CPAR at doon namin nalaman at na-obtain ang pagdami ng kita ng halos aabot ng halos doble. Sa tulong ng teknolohiya at makabagong pamamaraan, dumami po ang aming kita. Hindi lang po yun ang naturo sa amin. Pagkatapos ng harvest, sa tulong din ng CPAR Aparri, tinulungan nila ang aming lalawigan sa fish processing ng tilapia. Gumawa kami ng tinapang tilapia at fish balls. Sa ngayon po ang OTOP namin sa Lamut, Ifugao naging tilapia na. Nang dumating ang irigasyon, lahat po ay nag-engage sa tilapia, pangalawa na naming trabaho bukod sa palay at mais. Wala na po kaming masasabi sa CPAR dahil sa tulong nila, ang kabuhayan po namin ay umangat.

Isa po ako sa mapalad na tumanggap ng apat na ulo ng kambing. Sa apat na taon na pag-aalaga ko, nakapag-produce po ako ng 38 kambing na kung tutuusin ko po ay umaabot po sa Php57,000. Last year yun po ung testimony ko, na 38. Noong nagdaan po ang tag-ulan, nakapagproduce pa din po ako ng 8, na aabot na Php12,000 sa Php1,500 ang presyo [bawat isang kambing]. Sa kabuuan po, umaabot na ng Php69,000 ang aking kinita sa loob ng 4 na taon. Marami pong benepisyo ang natanggap ko. Bilang isang magsasaka, mahilig po ako magtanim ng gulay at palay. Sa pagtanim ko ng palay, may puhunan na ako, yun nga ang kambing. Noon araw po, pagpatak ng ulan, naghahanap na ako ng takalanan. Yung utang na ang ibabayad ay palay. Ngayon po hindi na tulad ng dati, pagpatak ng ulan, ang hinahanap ko ay bibili ng kambing, para may puhunan sa pagtanim ng palay. Ang aking hamon sa lahat, lahat po tayo kaya nating mag-alaga ng kambing bilang extra income sa ating pamilya. Dahil sa totoo lang, ngayong March po, ang apat na inahin na nahiram ko sa DA-BAR ay manganganak na naman. Malapit na naman ang tag-ulan, may ibebenta na naman ako na pang-budget ko para sa pagtanim sa tag-ulan.



Rufo Dolueras
Porac, Zambales, Region 3



Boni Fagela
Sto. Domingo, Ilocos Sur
Region 1

Ako po ay isa ring magsasaka na pinalad na maging kasapi ng CPAR. Noong una po ay sa tradisyunal [na gawi] pero pagdating po ng programa na ito, napakalaking pagbabago po ang binigay sa aming mga kabuhayan. Ang cropping pattern namin ay rice-corn-corn at mayroon din kaming kambing. Sa kambing po, ngayon ay tinatawag na namin siyang ATM, dahil 'pag may kailangan kami, yun ang isina-swap namin. Ginagawa naming pera ang kambing. Yun po ang kagandahan ng kambing sa aming nayon. Sa rice po, noon gumagamit lang kami ng mga inbred rice, sa isang ektarya umaani lang kami ng 60-70 cavan. Ngayon dahil sa CPAR gumagamit na kami ng certified o hybrid seeds kung saan umaani na kami. Ang pinakamataas, sa akin lang po ay 130 cavan per hectare at iyun na din sa mga kasama namin. Sabay-sabay kami nagtatanim ng ganoong variety, nag-uusap-usap kami kaya napakalaking pasasalamat namin dahil sa breakthrough na ito.

Sa corn po, noong una binabawela namin ang pagtatanim ng corn, noon kitang-kita na ang lupain namin bakante, lalo kung tag-ulan. Pero dahil sa CPAR, nabago namin. Hindi lang bakante, naging dalawang beses pa kaming nakapagtatanim. Dahil na rin sa participation ng lokal na gobyerno, nagbigay po sila ng irigasyon sa amin, mga generators para magkaroon kami ng patubig. Kaya ganun na lang ang swerte naming dahil napakarami nga din namin—lalo na sa mais. Kami po ngayon ay hindi nahihiyang magsabi na kahit paano, sa mga taga CPAR Sto Domingo, lalo na sa amin bayan na—hindi lang medyo, kundi talagang umangat na din ng konti ang aming pamumuhay dahil sa CPAR. Nagkaroon na din kami ng mga makinarya, mga ibang hanapbuhay. Nakabili kami ng baboy at baka na ngayon ay pinagkakakitaan naming lahat. At sa iba naming pinagkakakitaan, pagtapos ng rice namin, naisisingit namin ibang produkto kagaya ng pakwan. Kaya sa halip na rice-corn-corn lang produkto namin ngayon sa loob ng CPAR project, mayroon na namang dagdag na magandang mapagkakakitaan.



Carlo Aquino
Ocampo, Camarines Sur,
Region 5

Nang aming natutunan ang pagsasaka ng organiko natuto kami ng lahat ng inputs na nanggagaling din sa aming lugar at yun nga aming ginagamit sa ngayon. Kami ay may sariling produksyon ng pataba. Hindi lang po yung mga intervention, kundi yung sariling paggawa nung concoction na itinuro din sa atin ng mga taga-Department of Agriculture. At sa ngayon, dahil din sa mga naibahagi nila sa amin, lalo pa naming idi-develop na magkaroon kami ng sariling pananaliksik. Kaya ngayon ay meron na rin po kaming maliit na paaralan ng mga magsasaka at yun po ay dinarayo na rin ng iba pang grupo ng mga magsasaka at hindi lang po locals, may pumupunta na din po sa amin na ibang lahi. So makikita niyo diyan ang sistema ng aming pagsasaka, intergrated farming po, organic ang aplikasyon at dito po sinasabi namin na kung tayo ay mag-o-organiko mawawala ang listahan ng utang sa ating bahay. Kailangan lang yung tinatawag na sipag, yung interes mo para matuto at kailangan malaman mo, ano ba ang mga pangangailangan mo. At dapat lahat ng pangangailangan, andyan yan sa farm mo, sa iyong sakahan. Kung kinakailangan mo ng pataba—kung kinakailangan mo ng gatas, dapat mag-isip ka ng paraan paano masasagot ang mga pangangailangan natin.



Alodia Rey
Catanauan, Quezon, Region 4A

Pinagtuunan namin ng pansin ang pagtanim ng uraro dahil dito kami kumita ng maganda. Nakapagpaaral po ako ng apat na anak, tatlo sa kolehiyo at isang nasa high school. Marami ang nagtatanong, bakit kami nakapagpaaral ng mga anak samantalang ako'y isang magsasaka lamang? Sinabi ko sa kanila, sipag at determinasyon lamang ang aming sikreto. Dahil dito, marami na rin ang nagtanim at lumawak ang taniman ng uraro sa aming bayan, hanggang sa maideklara itong One Town, One Product ng Catanauan, Quezon. Taong 2009, nagkaroon ng proyekto sa Catanauan ang DA-Regional Field Office 4A, ito yung CPAR on Arrowroot na pinondohan ng DA-BAR at dahil po sa technology interventions na dala ng proyekto, mas lalong tumaas ang ani at kita ng mga magsasaka na kabilang sa proyekto. At dahil sa dagdag na kita, ang bawat isa sa mga farmer cooperators ay nakapundar. May nakabili ng kalabaw, baka, baboy at mga appliances at may mga nakapagpagawa din ng kanilang bahay at dagdag pa dito ang gastusin sa pagpapaaral at tustusin sa pangaraw-araw na pangangailangan. At kami po ay nabigyan din ng pagkakataon na makapag-lakbay aral sa Bicol University upang matunghayan namin ang mga makabagong makinarya sa pag-proseso ng uraro. At dahil dito, napag-alaman din namin na hindi lamang inaw (starch) ang puwedeng makuha sa pag-proseso ng uraro kundi pati na rin ang harina o flour at bagoso na puwedeng gawing papel.

Ang aming CPAR ay may cropping pattern na, rice-rice, vegetable + cattle fattening. Malaking tulong talaga ang pagkakaroon ng CPAR. Ito ang naging susi ng tulad kong magsasaka sa aming barangay na mai-angat ang aming produksiyon sa pamamagitan ng pagsunod sa mga bagong teknolohiya tulad ng palay check system, organic farming and integrated crop management. Sa CPAR tumaas ang aking ani mula sa 88 cavan up to 107 cavan per hectare. Bumaba ang aking cost of production per tumaas ang aking kita. Tumatag ang aming asosasyon mula sa 10 miyembro sa ngayon naging 46 members na. Sa cattle fattening, may income po na 10,000 per cattle in 6 months. Sa vegetable farming, tumaas ang kita ko sa third cropping kaysa rice na mababa ng anim tuwing 3rd cropping dahil sa kakulangan ng tubig. Sa ngayon ang aming asosasyon ay may shared money na mahigit sa P200,000 at tulong tulong po naming itong pinapalago at pinapalaki. Sa ngayon, hindi na kami nagungutang, sa asosasyon na namin kami humihiram ng kapital. We are very proud na dahil sa matatag na asosasyon namin, mahigit sa 5 milyon na proyekto sa irigasyon mula sa NIA at maraming biyaya mula sa DA ang aming na-avail tulad ng greenhouse, spring development and farm to market road.



Rolly Caldina
Leon, Iloilo, Region 6



Haymin Dansalan
Jolo, Sulu, ARMM

Noong 2008, ang association ay nagkaroon ng meeting tungkol sa CPAR project. Sasabihin namin kung ano ang meron sa lugar namin at kung ano ang mga kailangan namin upang makatulong sa pag-asenso ng aming kabuhatan. Noong 2009, bumalik ang taga-DA, dala ang tatlong bagay. Meron isang grater de-makina, vegetable seeds, at cassava stalk. Nagkaroon ng CPAR meeting at sinabi sa amin ang mga patakaraan ng project. Sinundan po ito ng pag-aaralan tungkol sa patakaraan, wastong pagtanim ng gulay at pag-alaga ng mga baka. Ang cassava grater de makina, eto ay pina-aralan namin. Malaki po ang kita ng gulayan. Ang 3,000 trees ng eggplant ay kumita ng Php60,000. Habang hindi pa kami nagha-harvest ng kamoteng kahoy, mayroon na rin kaming kita. Kamoteng kahoy ay pangalawa sa bigas sa amin. Ito ay aming staple food. Noong walang cassava grater, ang 1 sako kamoteng kahoy, 3 oras naming ige-grate. Ngayon sa tulong ng DA-BAR, anim na minuto na lamang po ang pag-grate ng isang sakong kamoteng kahoy. Itinuro din sa amin ang iba't ibang intervention. Nagbigay din ng bitamina para sa baka. Nag-umpisa sa 3 baka, ngayon meron na kaming 10 baka. Lima po sa amin ang nabigyan. Kapag may CPAR, nakapag-aral ang aming mga anak, nakapamili na din kami ng kagamitan sa kusina at mga kumot. Higit sa lahat mayroon na din kaming extrang pera pang-deposito sa aming kooperatiba.





Ruel Alido
*Sibagat, Agusan del
Sur, CARAGA*

Ako po ay kinatawan ng mga magsasaka ng Sibagat kung saan kami po ay nabigyan ng proyekto sa CPAR para mapaunlad pa namin ang produksyon ng mga tanim na pangunahing pinagkukunan ng aming kabuhayan tulad ng abaca, saging, luya, gulayan at vermicomposting. Ang Kagawaran ng Agrikultura sa aming rehiyon ay binigyan din kami ng mga short gestation crops para may pagkukunan kami ng income habang hindi pa productive ang aming prioriy annual crops. Kabilang dito ang pagtatanim ng kamote at luya sa ilalim ng annual crops na saging at abaca para magamit ang area at hindi mabakante. Binigyan din kami ng iba't ibang buto ng gulay para sa dagdag kita. Ang vermi project ay napakalaking pakinabang sa amin. Ito ay pinanggagalingan ng pataba para sa aming tanim at hindi na kami bumibili ng mamahaling inorganic fertilizer at ang aming surplus ay binibili ng ibang farmers. Ang aming produksyon sa vermi compost ay kulang na kulang sa ngayon at hindi namin ma-accommodate ang demand at orders ng mga mamimili kaya plano naming mag-extend ng production area para mapalago pa ang harvest at makadagdag sa aming kita. Malaki rin ang naitulong ng abaca project sa aming pamumuhay. Ang hibla na aming nakukuha sa abaca ay pinoproseso at ginagawa naming sinamay, doormat, placemat, wall decor at yung tinatawag naming pinukpok na ginagawang barong tagalog. Ang aming Municipal Agriculture Office ay nakipag-ugnayan sa mga buyers ng abaca at sa municipal cooperative para sa mayroon kaming mapagbentahan sa aming hibla at mga naprosesong produkto ng abaca. Kami rin ay nakapagproseso na ng mga produkto mula sa saging at ginagawa naming banana chips at benebenta namin sa mga eskwelahan at palengke. Sa ngayon, ang mga kasamahan kong magsasaka na miyembro ng CPAR ay unti-unti ng nagbabayad para sa roll-over scheme para rin mapadami pa ang matulungan ng proyektong ito.





Plenary Sessions

Aside from the farmers' testimonies, the Congress also featured eight seminar sessions on the various aspects of CPAR project implementation. The topics discussed were: 1) Participatory Rural Appraisal Implementation, 2) Community Organization, 3) Production Management, 4) Participatory Monitoring and Evaluation, 5) Financial Management/Roll-over Scheme, 6) Local Government Unit Support to CPAR, 7) CPAR to Technology Commercialization, and 8) Effective Collaboration.

Each topic was presented by a researcher or a project implementer in the DA-Regional Field Office; and farmer/s beneficiaries using their own CPAR

project in the regions. Among the regional offices that presented their CPAR projects were: CVIARC, WESVIARC, EVIARC, CENVIARC, NOMIARC, BFAR 3, STIARC, and BIARC.

There were three special topics discussed in the Congress. These were: 1) "Product Packaging and Labeling" by Rey Anne Grace Garalde of the Industrial Technology Development Institute - Department of Science and Technology; 2) "Organizing Farmers' Association and Cooperative by Pedro Defensor, Jr. of the Cooperative Program Development Assistance - Cooperative Development Division; and 3) "Abakayamanan Project" by Dr. Editha Lomerio of the Philippine Fiber Industry Development Authority-Region 5.





Other Highlights

Gracing the event was Agriculture Secretary Proceso J. Alcala who expressed his delight in having to see all the farmers from all over the country in one event, and this was made possible through the conduct of the Congress. He commended the program of the bureau and asked that it expands and goes beyond its goal which is to help improve the lives of the farmers and fisherfolk through the various interventions and technologies introduced by the researchers. He also asked a short dialogue with the farmers and fishers who were present during the event and heard from them their feedbacks and assistance needed in their respective regions.

Other highlights of the Congress was the launching of the CPAR Primer titled, "CPAR: Empowering Communities; Transforming Lives towards a Progressive Nation" a 10-minute audiovisual presentation which features how CPAR as a banner program of the bureau evolved since it was initiated in 1999, first as a research methodology called the On-Farm Research (OFR) to now, a location-specific research cum extension activity using community-based approach. The primer also highlighted three aspects of CPAR including its history, objectives, and dimensions which were woven to tell a story on how communities are being empowered and

how lives are eventually being transformed towards a progressive nation. The primer is narrated in Filipino to serve its purpose well with majority of the participants coming from the farming and fishing communities from all over the country.

A "Product Exhibition" featuring various products developed and generated from the CPAR projects was also held as part of the event. Presented were CPAR posters containing information on the significance and impact of the project in the farming and fishing communities, processes involved in the implementation of the project, as well as the accomplishments that were achieved through the CPAR. There were 23 posters that vied for recognition, but only three were hailed as the winners. These are: 1) "CPAR on Jackfruit Production and Processing in Barangays Malinao and San Isidro, Mahaplag, Leyte" of the Eastern Visayas Integrated Agricultural Research Center (first prize); 2) "CPAR in Enhancing Productivity and Income in the Coastal and Upland Areas of Batanes" of the Cagayan Valley Integrated Agricultural Research Center (second prize); and 3) "CPAR on Improved Arrowroot Production Technologies and Enhancement of the Arrowroot Starch in Catanauan, Quezon" of the Southern Tagalog Integrated Agricultural Research Center (third prize).

2014 Rubber Conference & IRRDB Annual Meeting

With nearly 300 participants from 15 member-countries of IRRDB, the Philippines hosted the 2014 Rubber Conference and Annual Meeting. With the theme, "Developing and Sharing Innovations for Sustainable Growth of the Natural Rubber Industry" the event highlighted various innovations and breakthroughs on natural rubber to further boost its growth as well as strategies and plans among member-countries to sustain the industry.

The conference was organized by the Philippine Department of Agriculture (DA) through the Bureau of Agricultural Research (BAR) and the High Value Crops Development Program (HVCDP), in cooperation with IRRDB.

Highlights of the Conference

Welcoming the international delegation was Dr. Nicomedes P. Eleazar, director of BAR while High Value Crops Development Program Director Jennifer Remoquillo officially opened the conference with a message speaking in behalf of Philippine Agriculture Secretary Proceso J. Alcala.

Rep. Ann K. Hofer of the 2nd district of Zamboanga Sibugay gave an inspirational message for the event. As a legislator, Rep. Hofer is instrumental in boosting the Philippine rubber industry. She filed House Bill No. 2435 creating the Philippine Rubber Research Institute in 2007 and was signed into law in 2010

through Republic Act 10089.

The keynote address was delivered by Datuk Dr. Salmiah Ahmad, director general of the Malaysian Rubber Board (MRB) and chair of IRRDB. Her message highlighted on the importance of natural rubber as an important agricultural commodity that is used in the manufacture of various products. She also cited significant advances in rubber R&D for the last 50 years particularly in the areas of plant breeding, latex harvesting technology and introduction of technically specified rubber. Along with this, she mentioned how IRRDB provided the





platform in sharing of experiences, exchanging ideas, and establishing mutual cooperation leading to the effective transfer of technology among its member-countries.

Part of the opening program was the presentation of the "IRRDB BC Sekhar Award for Research Excellence" which was awarded to Dr. Kamarudin Ab Malek, chief executive officer and vice chairman of the Tun Abdul Razak Research Centre (TARRC), based in United Kingdom. Dr. Kamarudin specializes in the use of rubber in engineering applications particularly in the seismic rubber bearings for earthquake protection of structures and in the use of rubber for offshore applications, and has written more than 60 papers in these areas.

A book titled, "Efficient Weed Management to

Enhance Rubber Production" authored by Dr. Chee Yan Kuan and Dr. Chung Gait Fee, also highlighted the event.

Also present during the event were Datuk Dr. Abdul Aziz Kadir, secretary general of IRRDB; Mr. Hubert Omont, vice chair of IRRDB; Dr. James Jacob, vice chairman of the Rubber Research Institute, India and Dr. Teodoro S. Solsoloy, asst. director of BAR.

There were 53 papers presented during two-day conference, including 3 invitational lectures and 50 technical papers from India, Thailand, Malaysia, Philippines, Singapore, Indonesia, China, Cambodia, and France. The Philippines, as this year's host country brought the largest delegation with 190 participants and 10 technical paper presentations covering various topics.



Study Tours

As part of the event, a study tour was organized by BAR to provide participants greater appreciation to rubber through exposure to three rubber-based manufacturing plants. Foreign and Filipino delegates joined the simultaneous field trips to Mariveles, Bataan; Clark, Pampanga; and Calamba, Laguna.

The Bataan group visited Dunlop Slazenger Philippines, Inc., a British-owned company that has been operating in the Philippines for more than 30 years. It is known as a manufacturer of high-quality tennis balls and squash balls often used in sports tournaments held in and out of the country.

Meanwhile, participants of the Pampanga group had the chance to explore the facilities and equipment of Yokohama Tire Philippines, Inc. (YTPI) which began its business operation in the country in Clark, the first tire manufacturing facility of Yokohama Rubber Company, Ltd. in Asia outside of Japan. YTPI carries the Yokohama brand tradition of craftsmanship and modern technologies in the production of reliable and quality tires.

In Calamba, Laguna, the group toured the manufacturing plant of Newpro Industrial Mfg. Corporation. The company engages in the production of automotive parts whose main products include weatherstrips, mouldings, rubber moulded products, and plastic injection parts.



Achieving a Client-driven R&D



Year 2014 of BAR was notable for a number of remarkable efforts sustained from their initial successes and for fresh initiatives that are seen to set the pace for R&D.





Preparation of Soil Health Card, 20th BEENET Annual Conference and Techno-Fora, First International Symposium on Biotechnology, DOST-National S&T Week, 1st National Grand Adlay Field Day, IRRDB 2014 International Rubber Conference and Annual Meetings, BAPNET International Banana Symposium, 16th Davao Trade Expo, 11th National Organic Agriculture Congress, and 2nd Philippine Native Animal Development (PNAD) Summit.

Enhanced were BAR's commitments to the DA's R&D Programs that include organic agriculture, climate change, rice, corn and cassava, high value crops, biofuels, rainfed agriculture, adlay, soybean, breadfruit, apiculture, rubber, indigenous plants, biotechnology, and native animals. Under the coordination of BAR, the research components of the DA-led programs completed a big number of projects in 2014 that add to the current knowledge list of safer, more sustainable and more efficient ways of producing food and other agricultural commodities and which make more use of indigenous agricultural species and locally-available resources.

The bigger events hosted by BAR for the year were the 10th Agriculture and Fisheries Technology Forum and Product Exhibition, the 26th National Research Symposium, and the First CPAR Congress. It also hosted the 2014 IRRDB International Rubber Conference and Annual Meetings for the second time with the first one held in Manila two and a half decades ago.

In line with the DA R&D programs, various meetings were hosted by BAR in 2014 that include the First CPAR Congress, First Meeting of the Management Committee of the Yamang Lupa Program (rainfed agriculture), the National Organic Agriculture R&D Assessment and Planning Workshop, Review and Planning Workshop for the Adlay R&D Program, Project Review and Planning Workshop on Apiculture Support to Organic Agriculture, Review of UPLB-led R&D Projects, and Climate Change R&D Agenda Review and Planning Workshop aside from meetings of research managers that also dealt with the programs.

Noteworthy in the developments in BAR and the research system is the strengthening of the role of its clientele – the farmers, fisherfolk and agri-entrepreneurs along with rural organizations – as partners in research. The increased responsiveness of R&D is also noticeable and this is particularly evident in the CPAR and the NTCP, BAR's banner programs. This is best shown in the conduct of the First CPAR Congress which was held on 20-21 February 2014 at Manila Hotel.

The bureau also played major roles in related congresses held by other agencies which include the National Review and Planning Workshop for SSNM White Corn Wet Season, 12th Philippine Food Expo, 10th Mango Festival, 5th Aquaculture Expo and Convention, Seminar cum Training on the

The CPAR Congress was a first in the history of BAR as it gathered CPAR project leaders, farmer-cooperators, adopters, and beneficiaries from all over the country in one place to personally relate how they succeeded in the implementation of their CPAR projects. It heralded BAR as a client-driven R&D organization that is willing to go to lengths to promote CPAR and its farmer cooperators to the media, policy makers, the public, and, most importantly, other farmers and producers who are largely unaware of the bright potentials of CPAR endeavors. By letting the CPAR farmer cooperators themselves tell their story, BAR is further elevating their status as owners of the CPAR accomplishments.

On the other banner program, BAR, through its NTCP, has taken of the role of middleman between the

producers of technology and the users of technology. In this facilitative role, BAR addresses gaps in making mature technologies, not just as mere products of the research process, but in developing viable enterprises out of them as well, encouraging the development of farmer and community-based entrepreneurs in agribusiness thus expanding their sources of income.

The client-responsiveness of the research system evolved slowly over time. Before BAR was organized, scientists and researchers and their organizations exclusively determined the focus and directions of agricultural R&D. Research agendas and programs were set by R&D institutions with little heed for feedback from the end-users on their experience with the products and processes of research. Very often, "field research" meant R&D activities confined to research stations and researcher-managed trials with hardly any interaction with farmers. Farmers and consumers alike had little or no involvement in the planning, implementation, governance or review of agricultural research projects.

When development priorities shifted to the alleviation of hunger and poverty, crop research agencies tried to duplicate the success of the Green Revolution to meet the food needs of a rapidly growing population but ultimately failed. Technology adoption under marginal rainfed areas remained low despite many years of breeding and technology-transfer efforts because of the inappropriate nature of the technologies to small farmers. The concept of the Green Revolution developed by scientists in their laboratories worked only under favorable soil, climatic and plant health conditions and not under marginal rainfed agricultural conditions.

In order to deal with the marginal conditions of small farmers, new approaches in the development of farming technologies that would be relevant to and acceptable to small farmers gradually evolved. The outlines of farmer participatory research emerged. Researchers began to learn how to customize their approaches to understand and better meet the diverse needs and circumstances of the rural poor. This approach built upon the farming systems approach which emphasized research at the farm level to reduce the constraints to farmer adoption of

new technologies. A paradigm shift in the conduct of downstream research wherein all applied research activities that used to be done inside experiment stations are now conducted on-farm by the RIARCs with the farmers and local government units in identified areas.

In its two banner programs, CPAR and NTCP, BAR and the RIARCs and RFRDCs look at the roles of the various actors important in the decision-making process of research. Local farmers' knowledge, needs, criteria and preferences are sought and incorporated in decisions on technology innovations for their communities and their enterprises. The valuable aspects of each role player contributes to a system that benefits the small resource-poor farmer, adds to the scientific knowledge base and enhances the well-being of consumers and other stakeholders. In so doing, BAR is empowering its clientele, the farmers and the fisherfolk and their communities.

In the CPAR, the active participation of the farmers and other stakeholders in the research process is a necessity in enhancing the relevance and efficiency of identified technological solutions and in facilitating their adoption. Farmers and fisherfolk become part of the planning of research and serve as the source of inputs from the producers' side that reflect their actual needs. It also assigns to farmers and fisherfolks higher responsibility for adaptive testing.

In the NTCP, emphasis is placed on the participation of local agriculture and fishery entrepreneurs and their communities, building on the traditional or indigenous knowledge of the local farmers and fisherfolk and features multiple actors in decentralized technology development. Consumers also have a role on the direction of agricultural research as they are the final recipients of the products of research.

Over the years, as a result of the proactive partnering of BAR and the R&D system with farmers/fisherfolk and agricultural entrepreneurs in the rest of its R&D endeavors, as well as the CPAR and the NTCP, the bureau has come of age as a client-driven research organization. The First CPAR Congress is but one step further in this evolution and we can foresee research to continue along this path with BAR at the helm.



BANNER Programs

In effort to deliver client-driven results that will impact not only the farming and fishing communities but the whole agri-fishery sector, BAR supports the implementation of its two banner programs: CPAR and NTCP. These programs promise to deliver results that will not only improve the sector in terms of production and income, but more importantly, reshape the agriculture and fisheries landscape by providing tangible outcomes that can empower the country's marginalized sector.

COMMUNITY-BASED PARTICIPATORY ACTION RESEARCH

An innovative approach to research and development, CPAR focuses on the verification, demonstration, and adoption of agricultural technologies at the community level. CPAR targets to empower farmers and fishers and their communities, resulting to an increase in productivity and an improved livelihood.

For many years since its first implementation in 2007, CPAR demonstrated a wide-range of technologies and production management systems in almost all provinces of the country.

The CPAR program is now leaving a mark in the R&D sector for the processes involved that are liberating, informative, and empowering especially for the farmers and fishers. It is through a community-based R&D where local farming communities' opinions and suggestions are taken into account to attain

relevant and successful solutions in improving farm management practices and generate matured technologies.

In 2014, another milestone for the CPAR program was made as the bureau launched the first-ever CPAR Congress, which showcases various technologies and innovations presented by the implementers, researchers, and farmer beneficiaries themselves. This activity provided a good venue for all CPAR stakeholders to share different experiences and learnings acquired through their involvement in the CPAR program.

The Project Monitoring and Evaluation Division (PMED) of BAR coordinates the CPAR projects funded by the bureau. To date, there are 94 on-going CPAR projects that are being handled by PMED.

CPAR Success Stories

1

CPAR on Corn and Vegetable-based Farming System Development in the Province of Cebu

Implementing Agency: DA-RFO 7



Before CPAR was introduced to the selected municipalities in Cebu, farmers were engaged into the traditional way of farming which meant very little to no knowledge on farm management practices. Aimed to improve farm productivity and increase the income of farm households, CPAR introduced technologies and trained farmers on proper soil and

water conservation, integrated nutrient management, animal health care and management, farm record-keeping, postharvest technologies, and other related technologies on corn- and vegetable-based farming systems.

Among the inputs given for each farmer-cooperator were 20 bags of chicken dung, 2 bags of urea, corn and vegetable seeds.

The farmers' involvement in this project resulted major changes in their lives. One farmer-cooperator, Julie Lapingcao, an active member of the Rosario Farmers Association (ROSARFA), considers CPAR as an effective strategy because it was able to boost her productivity in the farm.

Vegetable and livestock integration has become a practice for the farmer-cooperators in Barangay Aloguinsan, Cebu since the implementation of CPAR. In fact, the number of farmer-cooperators directly involved in CPAR increased to 15 from the 10 original members at the onset of the project.



2

CPAR: Tilapia Production in Fishponds in Tubo, Abra Implementing Agency: DA-BFAR CAR



farmers of Tubo value their conventional farming practices, the Bureau of Fisheries and Aquatic Resources-Cordillera Administrative Region pursued the implementation of the CPAR project without disregarding the farmers' indigenous practices. Initially, there were 70 fish farmers that were chosen to participate in the project.

This project aimed to improve the existing culture of tilapia following the semi-intensive culture system, institutionalize participatory approaches in the conduct of research and extension, and encourage and enhance the development of enterprise and agribusiness venture through tilapia production in the area.

Dilong and Tubtuba in Tubo, Abra, five kilometers away from Quirino, Ilocos Sur, are the sites where the CPAR project was implemented. These areas are abundant in water resources even during summer that farmers are able to grow tilapia through the raceway system or locally known as *lapat*. Reinforced by a politico-religious and social institution called the *Dap-ay*, the *lapat* system is a century-old system of regulating the use of natural resources and biodiversity.

Although the introduction of a CPAR intervention seemed like a challenging concept as the local

Carlos Paliwag, one of the project's farmer-cooperators, adopted the integration of the *lapat* system and CPAR intervention. Engaged into integrated farming, he grows vegetables, rice, and tilapia. According to Carlos, fishing was only an additional source of income for his family. He mainly gets income from rice and vegetables. But his involvement in the CPAR project enabled him to earn Php15, 000.00 out of the 100-kilogram harvest of tilapia. This simply means that tilapia production has become a major source of livelihood for Carlos because of the CPAR technologies he learned.



3

Community Participatory Action Research on Corn-based Farming Systems in Libona, Bukidnon

Implementing Agency: DA-RFO 10



The effectiveness of the CPAR project in Libona, Bukidnon can be best determined through the successful implementation of the rollover scheme. One of the important and crucial components of a CPAR project, the rollover scheme is where farmer-cooperators are required to pay—without interest—the seeds and inputs provided to them at the start of the implementation of the project, so that interested

farmers who wish to adopt and take part in the CPAR project can use them too. This is a unique feature of CPAR to ensure its continuity and sustainability.

Targeting an improved productivity and profitability to ensure sustainable agricultural production guided with the principles of participatory approach to development, this project has demonstrated results which made such a positive impact in the lives of the farmer-cooperators. Through the project, they were able to learn new technologies including organic farming, which have greatly improved their productivity and profitability.

One of the farmer-cooperators, Mr. Allan Sabarte, was able to earn more because of CPAR, enabling him to be a regular supplier of vegetables in local markets and restaurants.

The farmer cooperative Gango-Kinawe CPAR Producers are continuously enriching the technologies they have acquired from CPAR. As of this year, they already have 33 members, and 10 more farmers who showed great interest in adopting the same technologies.



4

Community-based Participatory Action Research (CPAR) on Integrated Rice + Winged Bean + Yellow, White Corn + Mungbean + Cattle Fattening in Batac City, Ilocos Norte

Implementing Agency: DA-RFO 1



The limited knowledge of farmers on new farming technologies urged the DA-Regional Field Office in Region 1 to introduce CPAR particularly in Barangays Sumader and Camguidan, Batac, Ilocos Norte. The CPAR project, which aims to enhance farm productivity and profitability through

improved production systems, enabled the farmer-cooperators to practice new technologies on rice and corn production, integrated nutrient and pest management, waste management utilization, vermicomposting, and basic farm recordkeeping.

For corn and rice production, the farmers integrated improved practices through the use of biological control agents instead of chemical pesticides, utilized crop residues for compost and feed for animals, and nutrient management practices that have equally contributed to the increase in their harvest.

For farmer-cooperator Rosalinda Basamot, the thing she appreciated the most about CPAR is the way it empowered them, involving them especially in the decision-making process. For the rest of the farmer-cooperators, beyond the increase in their income is the acquired knowledge in improving what they know, which will benefit them in the long run. DA-RFO 1 CPAR focal person and project leader Ms. Melinda Calumpit shared how the farmers responded to the project. "The farmers really valued the learnings they gained enough to change their way of farming. They really appreciated it," she said.



5

CPAR on Integrated Rice + Ampalaya + Corn + Goat Production Farming Systems

Implementing Agency: DA-RFO 1



and to promote appropriate technologies and improved production system. To prepare the farmers with such technical knowledge, they were provided with trainings on crop production for rice and corn, goat production, and crops + livestock integration. They also participated in the Farmer Livestock School (FLS) to enhance their learning capability and discover-learn through the conduct of participatory technology development.

The concept of integrated farming system enabled the farmers to learn that they could produce more by maximizing the potential of their land. Compared to their old farming practice, the intervention of CPAR brought them to the proper use of certified seeds which minimizes the spraying of insecticides in the field, organic fertilizers, planting distance, and the use of crop residue as feed for animals and materials for composting to minimize farm waste.

Low productivity is often the result of production systems not being optimized. This is exactly the reason why a CPAR project is implemented in selected barangays in Umingan, Pangasinan. The farmers' lack of knowledge and skills on improved production technologies led to ineffective production results.

Rosemarie Fulgosino is just among the successful farmer-cooperators of the CPAR project in Umingan. Her experience in CPAR made her improve her rice production from a harvest of 30 cavans to 50-51 cavans in her half hectare land. In addition to that, CPAR taught her to practice integrated farming for crops such as corn and *ampalaya*, which she sells to local markets.

The CPAR project aims to increase farm productivity and profitability through introduced farming system



6

Community-based Participatory Action Research on Banana Production and Processing in Alfonso Lista, Ifugao

Implementing Agency: LGU of Alfonso Lista, Ifugao



Banana production is already a common place in Ifugao. However, the farmers' practices called for improvement in order for them to level up their production especially in the quality and safety of their produce.

The implementation of CPAR in the municipality of Alfonso Lista gave the banana growers technologies to adopt that will help them in upgrading the quality of their produce. The farmer-cooperators underwent trainings on farm management and organic production technologies during which they learned the use of tissue-cultured plantlets, proper planting distances, clean cultivation through periodic weeding, desuckering, removal of the male bud,

propping of banana plants, trimming of leaves and care for banana bunches, bunch covering, harvesting, and even marketing. Trainings on organic foliar formulation and preparation of botanical pesticides from indigenous plants were also included.

The intervention became effective as the farmers were able to produce high grade bananas fit for export. The project linked with Cooperative for Rural Development or CORDEV, a Nueva Vizcaya-based multipurpose cooperative that provides a wide range of product development and marketing strategies. They assisted the farmers in field validation, plantation establishment, farm care and maintenance, and harvest.

Aside from the growing demand of bananas in both local and international markets, the zero-chemical policy that this CPAR project introduced to the farmer-cooperators in Alfonso Lista is one of the main reasons why their produce became attractive to marketing organizations such as the Alter Trade Corp. ATC is a marketing arm of people's organizations involved in providing livelihood programs, addressing hunger incidence, helping alleviate poverty and uplifting the lives of marginal communities.

ATC then partnered with the association of CPAR farmer-cooperators, the Santa Maria Banana Producers Association (SABAPA) in Alfonso Lista, in marketing their bananas in Japan particularly in Osaka and Tokyo.



7

Community-based Participatory Action Research on Organic Vegetable Production

Implementing Agency: Provincial Agriculture Environment and Natural Resource Office, Lagawe, Ifugao



The Ifugao province is among those few provinces in the Philippines where the campaign for organic farming is a serious business. For the last few years, the local government unit of Ifugao intensified the call for organic agriculture because farmers have been dependent on the immense use of chemicals in the field, affecting soil and human health.

Vegetable growing is the main livelihood of many farmers in Asipulo. For one, the area is highly favorable for planting vegetables. Common vegetables grown are snap beans, pechay, winged beans, string beans, squash, cabbage, tomato, and eggplant.

The conduct of the CPAR project particularly in Asipulo, Ifugao substantiates this campaign. Aimed

to increase production and profits through efficient application of improved farming technologies and the adoption of sustainable, ecologically-sound, and economically-viable production system, the project was able to introduce approved package of technologies on organic production, train farmers on organic production technology, and provide marketing assistance to the farmers' produce.

With the provision of inputs and technical assistance from the LGU through the CPAR program, the farmers were able to grow vegetables organically. Also, a market outlet was constructed at the provincial capitol in Lagawe to serve as market outlet for the harvests of the farmers.

Nicolas Dulawan, a farmer-cooperator of the CPAR project, actively advocates organic farming in his community. He demonstrated the benefits of growing organic vegetables, attesting that there is really profit in it as opposed to the notion of other farmers that organic farming entails high production cost and low yield. He shared how CPAR helped him, *"Mas malaki ang kita mo sa organic! Sinasalungat ko nga yung common notion ng mga tao na walang pera sa organic farming. Hindi lang nila alam ang mga tamang paraan pero pag natutunan na nila, makikita nila ang magandang epekto ng organic farming hindi lang sa kita, pati sa kalusugan ng tao at sa kapaligiran na rin."*



8

CPAR in Enhancing Productivity and Income in the Coastal and Upland Farming Areas of Batanes

Implementing Agency: DA-RFO 2



A successful CPAR project can be often credited to the empowered farmers it generated, living up to the saying, "knowledge is truly power." This is likely the case of the CPAR project implemented in two development zones of Batanes to accelerate promotion of appropriate technologies of viable farming enterprises within the context of an integrated farming system to increase productivity and profitability of farmers.

One of the strengths of this project is the successful implementation of the participatory rural appraisal involving the farmer-cooperators themselves. This became an important factor in the success of this project as the farmers' engagement in the conduct of the CPAR project solicited their full commitment, creating a sense of ownership, thus empowerment.

CPAR introduced package of technologies including the adoption of appropriate cropping practices and integrated nutrient management strategies, information dissemination and promotion of indigenous organic fertilizer and pesticide sources, promotion of year-round vegetable production in areas with water source, and the intensification of organic farming practices. These technologies were welcomed by the farmers which have greatly made an impact in their productivity.

The adoption of the year-round organic vegetable production intervention resulted in the 84.91 percent increase in income of farmers as compared to their conventional practice. Also, the camote-garlic-mungbean cropping pattern in the upland areas with organic garlic production technologies increased income by 221.89 percent.



NATIONAL TECHNOLOGY COMMERCIALIZATION PROGRAM

The NTCP has been an instrumental banner program of the bureau since its institutionalization in 2006. It has generated a number of technologies that yielded positive outcomes from improved productivity, economic profitability to benefitting farmers, fisherfolk, agripreneurs, communities, and stakeholders.

Complementing the CPAR, the NTCP highlights R&D breakthroughs and mature technologies generated and developed by research institutions. Technology commercialization serves as one of the fundamental parts of the RDE continuum, it complements all other activities. It also serves as a vital tool for the development of enterprises and the improvement of

agriculture and fisheries related industries anchored on appropriate activities emphasizing particularly, better technology transfer, promotion, adoption, utilization, and commercialization.

Coordinating the projects under NTCP is the Technology Commercialization Division (TCD). As the focal division, it managed 123 projects in 2014 from various fund sources (Table 1). The approved-funded projects came from the pool of 105 projects reviewed and evaluated. Fifty-six of these are newly-funded projects in 2014 which is higher compared to the 42 new projects in 2013. The new projects are on top of the 67 on-going projects being coordinated by TCD in 2014 (Figure 1 and 2).

Table 1. 2014 NTCP projects coordinated according to fund source

Fund Source	CY 2014 Physical Accomplishments	
	New	On-going
Regular	23	54
HVCDP	18	9
Organic Agriculture	14	4
Corn	1	-
Total	56	67
Grand Total		123

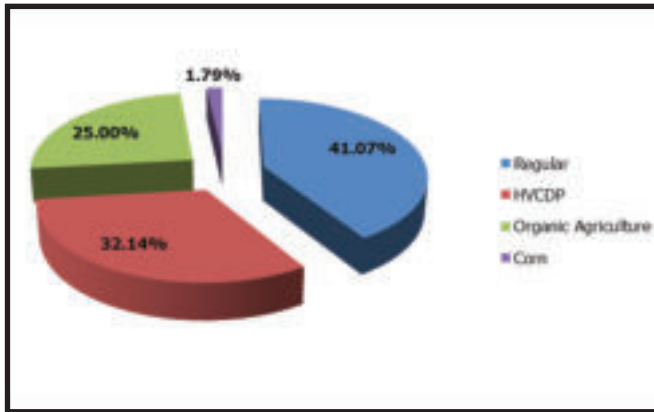


Figure 1. New NTCP projects coordinated by fund source

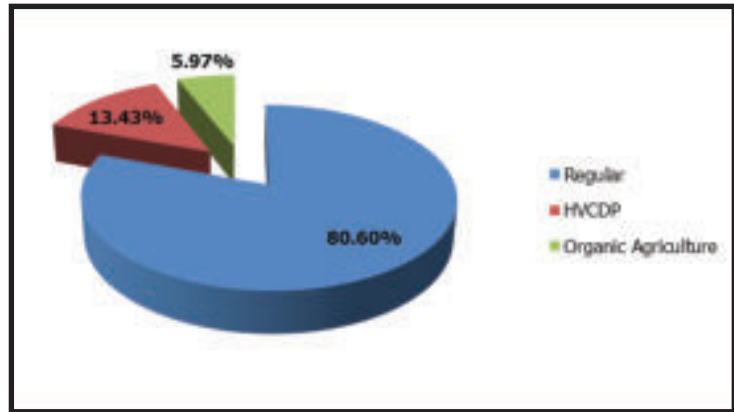
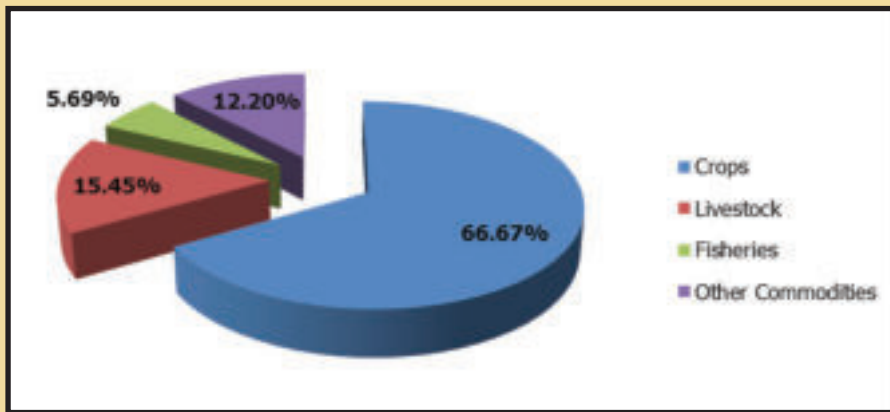


Figure 2. On-going NTCP projects coordinated by fund source

In 2014, majority (66.67 percent) of NTCP projects coordinated were on crops. These 82 projects under crops was breakdown to 43 new and 39 on-going

projects. Livestock, fisheries and other commodities reflected 19, 7, and 15 projects, respectively (Figure 3).



Under AFMA regular funds, BAR, through TCD, funded 23 new projects and continuously supported 54 new projects (Table 2). These were divided into crops, livestock, fisheries, and other commodities. Other commodities included soybean, biofuels, rainfed agriculture, apiculture, rubber, PNAD, and capacity building.

Figure 3. 2014 NTCP projects coordinated by commodity

Table 2. 2014 NTCP projects funded under AFMA regular funds

Commodity	CY 2014 Physical Accomplishments	
	New	Ongoing
Crops	14	28
Livestock	2	12
Fisheries	3	4
Other commodities	4	10
Total	23	54

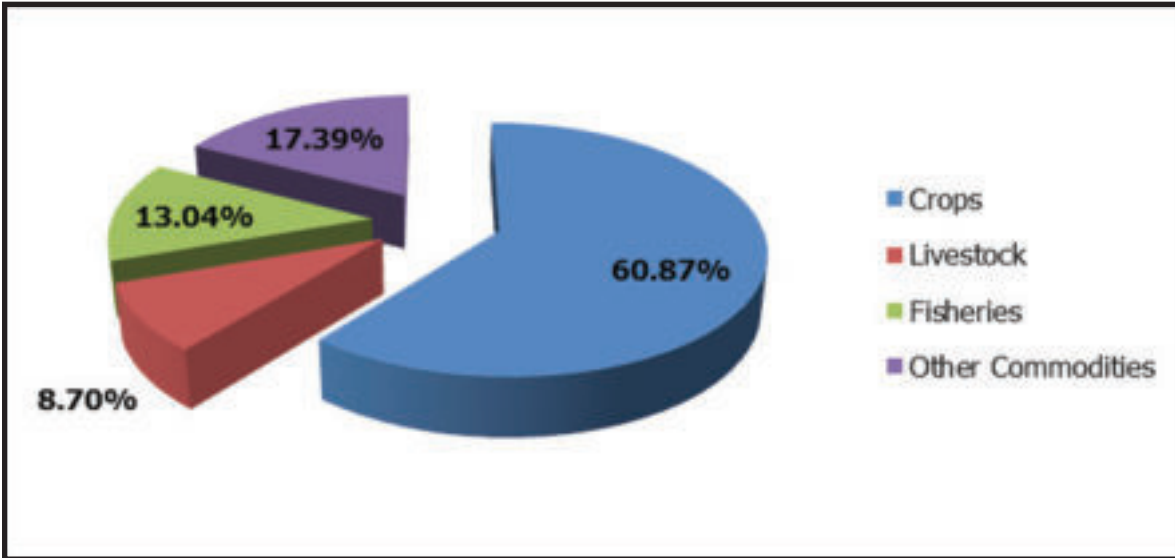


Figure 4. New NTCP projects under AFMA regular funds

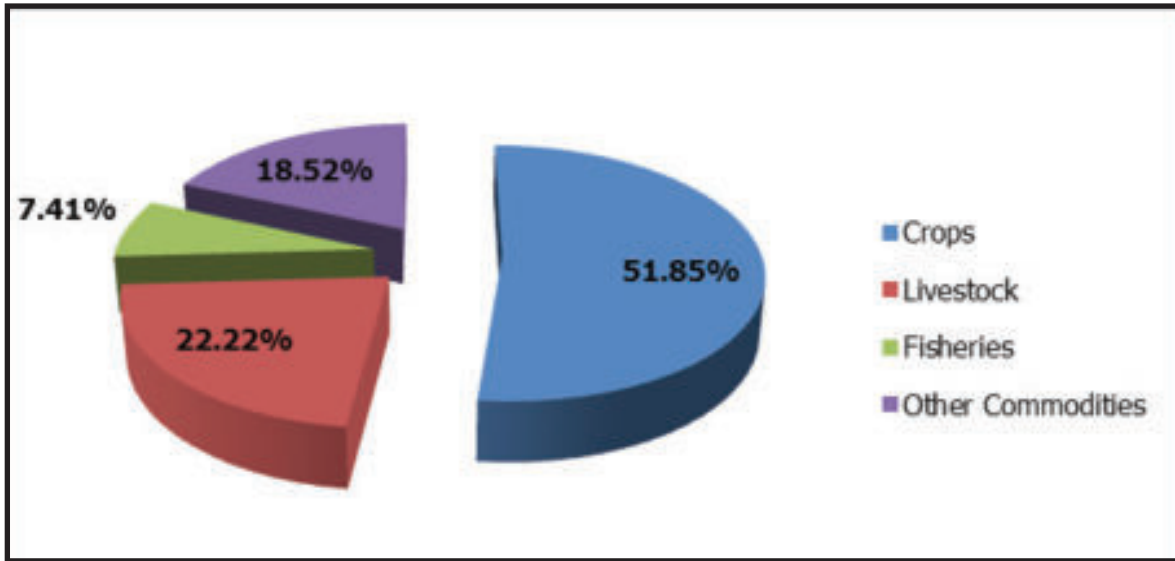


Figure 5. On-going NTCP projects under AFMA regular funds

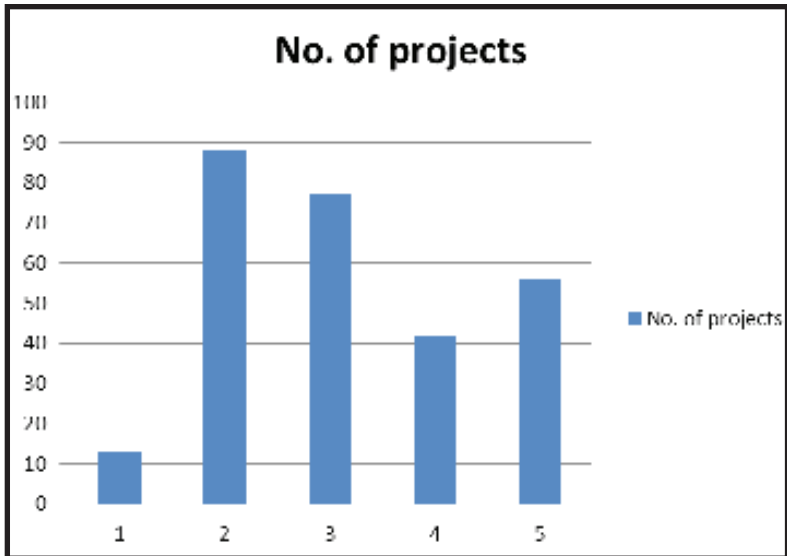


Figure 6. Number of NTCP Projects (2010-2014)

Since its inception, NTCP supported 443 projects (see Figure 4 and 5). Over the last five years, technologies generated included high-value crops, livestock, fisheries, natural products/ natural ingredients for health and wellness, organic agriculture, climate change, apiculture, biofuels, and PNAD.

The strengthened partnerships among different R&D institutions and implementing agencies brought significant impact and developed various programs and projects benefitting the agriculture and fisheries sector and its industries. The generated technologies also led to development of different products and by-products, hence, create agribusiness venture.

TCD intensified the conduct of on-site visits and field monitoring activities as well as the conduct of Progress and Terminal Review of BAR-NTCP projects. Visited project implementers include DA-Regional Field Offices, BFAR Regional Offices, and SUCs, as well as those implemented by local government units, partners outside the DA family, and farmer cooperatives/associations. A total of 87 NTCP

projects were monitored and reviewed in 2014.

This served as an effective intervention and strategy not only for the bureau but more importantly, for the implementing agencies to understand whether strategic changes are needed to further develop and improve the project. It also allowed the bureau to see which projects have embraced the core goals of NTCP—that is, making commodity products and by-products profitable and marketable.

Sustainability of the projects is likewise given emphasis on each assessment as this will determine not only the strength of the project and its results but also the sustainability of the NTCP and its contribution to the modernization of the agriculture and fisheries sector.

Market Research

Aimed to study the gaps, risks and problems encountered by selected BAR funded products under commercialization and develop competitive production, marketing and promotion strategies, a market research for cashew products was conducted on November 18-21, 2014 for the activity titled, "Marketing and Promotion Strategies for Selected Products under the National Technology Commercialization Program".

A marketing plan will be developed ready for implementation by PAES. Other products for market research this year are *malunggay*, marang, tuna, jackfruit, and goat meat products.



Financial Viability

To assess the viability or feasibility of the projects for technology adoption of investor, BAR prepared and packaged financial viability studies of various agricultural commodities. These are sweet sorghum, adlay, native swine, *sapinit*, beekeeping, tomato, goat's milk, poultry egg, cacao, fruit wine, garlic, lettuce, mango, oregano, pole sitao, squash, sweet tamarind, ubi, queen pineapple, cashew apple, lanzones, peanuts, coffee, sweet potato, seaweed pickles, cassava, soybean, chickpea, yellow fin tuna and bangus.

In 2014, 21 studies were added up to the previous 16 financial viability studies published in 2008. Out of the total 37 financial viability scenarios, 19 are on crop production technologies and 13 on crop processing technologies while livestock production has 4 and fish processing has one.



NTCP Success Stories

1

Collection, propagation techniques of indigenous herbs, spices and medicinal plants and establishment of demo nursery

Implementing Agency: DA-BIARC

According to Ms. Luz Marcelino, research manager of the DA-BIARC, it is of significant contribution to the agriculture sector to explore the potentials of herbs and spices for entrepreneurial opportunities. Thus, these plants should be conserved and utilized for their medicinal value. In terms of their nutritional value, they should be promoted as additives to local and national food cuisines.

In line with the DA's Indigenous Plant for Health and Wellness Program, BIARC, in collaboration with BAR embarked on the project aimed to further explore the potentials of indigenous herbs, spices, and medicinal plants in the Bicol region.

As part of the postharvest processing activities, BIARC through its Product Development Unit developed suitable drying, dehydration, and powdering techniques for the local use of the herbs and spices. This resulted in the production of various by-products including tarragon mint tea, cool mint tea, sweet basil dalandan juice, and 6-in-1 herbal juice, among others.

To date, 11, 831 assorted kinds of herbs and spices, and medicinal plants have been propagated. Of these, 3,039 have been distributed to interested clients and stakeholders.



Kapis, or windowpane oyster, is known in making Christmas lanterns, doors and wall decors, decorative items such as lamps, and other novelty items. However, in April 2013, a member of Kaliwanag Rural Improvement Club, a cooperative in Samal, Bataan that engages in the development of *kapis*-based products, thought of finding a way on how the *kapis* meat can be turned into a useful and edible product. This gave birth to the *kapis* chips. The project aims to utilize and to promote *kapis* and *kapis*-based products through product development; packaging, labeling, and facilities improvement; and capability building on marketing and enterprise development.

Currently, there are two available flavors of the *kapis* chips, one is original and the other is sweet and spicy. Aside from chips, *kapis* meat is also turned



2 Technology utilization and promotion of windowpane oysters products

Implementing Agency: DA-BFAR 3

into other home-made Filipino food products such as *adobo*, *afritada*, *shanghai*, *daing*, and *bagoong*.

As of now, plans on improving the product are underway. "The *kapis* chips is new. We still need to identify its nutritive value and shelf life, and improve its packaging and labeling to make it more competitive. Once our product is ready, we will also introduce it extensively to the markets through promotion and marketing especially to the *balikbayans* and local tourists. In fact, some *balikbayans* in Bataan usually look for *kapis* chips whenever they go home and make it as their *pasalubong*," said by Dr. Lilian Garcia of DA-BFAR 3.

The increasing curiosity of people to try new products is one of the factors that will help boost the Philippine *kapis* industry. "Our *kapis* industry is just a budding industry. With the right interventions, the development of *kapis* chips and new *kapis*-based products would provide additional income to the fisherfolk of Bataan, thereby helping make the industry better," Dr. Garcia shared.

3 Development and commercialization of chickpea-based food products *Implementing Agency: BSU*

Putting a twist of taste for garbanzos, Benguet State University (BSU) is currently exploring the product development aspect of this crop. The project aims to explore alternative utilization techniques for chickpea, thereby increasing its product potential in the market. Product development of chickpea includes promotion, production, utilization, and marketing.

Chickpea is now being processed into different product lines including chickpea cookies, tart, waffles, crackers, linguas, fingerfood, eggdrop, pulveron, oatmeal bar, and chickpea in brine/ in syrup. Chickpea seeds were also tested as a beverage like a hot coffee drink. These products are being marketed at the BSU marketing centers, trade fairs, and elementary school canteens. Walk-in visitors showed positive acceptance for the products.

Technology demonstrations on the package of technology (POT) for chickpea production were established in La Trinidad, Sagada, Loo, Buguias, Bokod, and Sablan planted with the following chickpea varieties: ICCV 92311, ICCV 93512, ICCV 95332 ICCV 94954, ICCV 2, and ICCV 95334. Aimed at enhancing chickpea production and developing acceptable chickpea-based food products, 200 farmer beneficiaries from Ifugao, Benguet, and Sagada, Mt. Province were trained under the project.

To help reduce importation, chickpea production is being introduced in the Philippines. Initial results showed that a yield potential of 800-1200 kg/ ha is higher than the average global production of 700-800 kg/ ha," Dr. Fernando Gonzales reported.

Dr. Gonzales added that the findings showed that chickpea can be grown under Philippine conditions, and can therefore serve as an alternative high value crop for farmers that offer nutritious and healthy food for the family. Production and processing can also provide alternative livelihood opportunities to farming households.



4 Increasing farm productivity through product diversification: pilot scale commercialization of wine products from indigenous fruits *Implementing Agency: UP Kappa Phi Sigma - Conservation and Development Society*

In 2005, Mr. Jaime M. Goyena, Sr., a former farm technician in Albay, sent his harvested rambutan and abiu fruits at the Institute of Food Science Technology, University of the Philippines Los Baños for processing. A year after, he started processing his own wine at their old house. His garage was renovated into a winery with all the needed equipment for wine processing. The processing plant in Calauan, Laguna was certified by FDA as Good Manufacturing Practices (GMP) compliant.

Since then, "Goyena's Wine" received awards and recognitions from various agencies and exhibitions. His wines are made from Philippine indigenous fruits including rambutan GR-5, lipote, abiu, and bignay. The fruit trees are commonly grown in his farm in Calauan and Cavinti, Laguna while the source of his lipote is being bought from the Bicol region.

Other fruits like papaya, balimbing, cashew, marang, doromon, jackfruit, and macopa. From these fruits, macopa was selected as best by the panel to which we included it in our list of commercial wine.

From the 1,500 bottles initially produced, the winery is able to produce 9,000 bottles. The wine products are being sold in various Pasalubong centers and even in malls in Metro Manila.

Even private individuals purchase the wines which are either sold to others, used during special occasions/ events, or as gifts to family members or friends here and abroad.



5

Pilot-testing integrated soybean production and processing technologies towards accelerating the development of the local soybean industry in the Philippines *Implementing Agency: DA-PHILMECH*

After three years of successful implementation, DA's Soybean Program has reached another milestone as it embarks on another public-private partnership (PPP).

A newly-organized cooperative in Sumacab Sur, Cabanatuan City, Nueva Ecija, the Golden Beans and Grains Producers Cooperative (GBGPC), recently conducted the "Pinoy Soya Products and Cooking Festival". This is another realization of strengthened public-private partnership in government initiatives.

The GBGPC chairman, Dr. Leonilo Severino dela Cruz, had shown an earlier interest in the government soybean program. After attending trainings on soybean production and processing organized by various agencies that he re-echoed to a group of seventeen other farmers, interest grew to include 36 farmer-members of the cooperative.

Owning 1.5 hectares planted with rice and soybean, Mr. Dante Tumibay, one of the GBGPC Board of Directors became more interested on the health benefits more than the economic returns. He added that his family enjoys soybean products which he himself learned to produce and process. He was encouraged to plant CLASOY, a variety produced

by CLSU which is adaptable to the soil conditions of Central Luzon and is the best variety for soybean processing.

Mr. Israel Teaño, a former seaman and current GBGPC secretary, decided to stay in the country for good to continue farming. Looking beyond rice, he learned of soybean's big potential. With his wife, Jane, they attended trainings on processing. During one of their church's activity, they produced soy jelly and soymilk. Jane's health-conscious friends were delighted and ordered some.

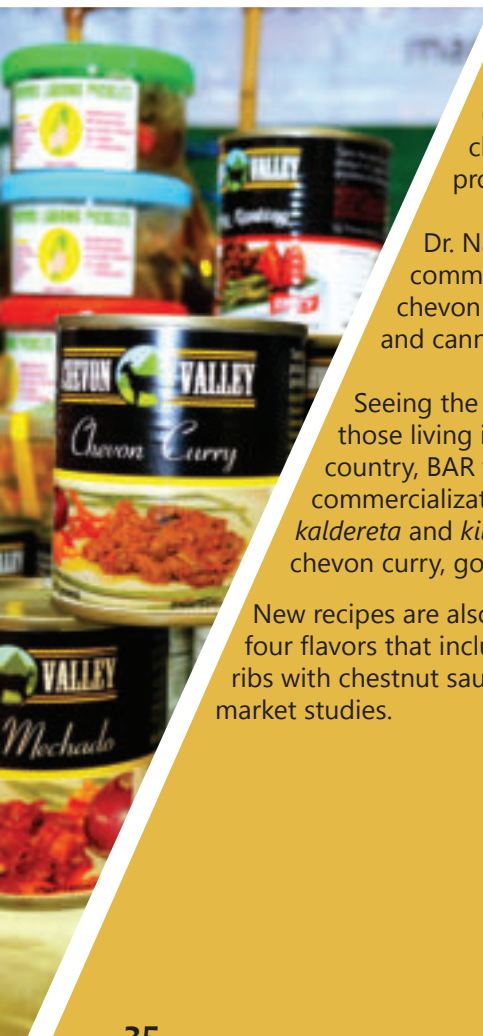
The coop's farmer-members own or lease a total of 75 hectares distributed in the Nueva Ecija municipalities of Cabanatuan, Laur, Rizal, Llanera, Sta. Rosa, Peñaranda, General Tiño and Gapan.



6

Commercialization of chevon value-adding technologies in the province of Isabela

Implementing Agency: ISU



Goat raising is one of the fastest growing industries in Region 2, thus, it become one of the valuable commodities in Cagayan Valley. The common practice for goat raisers is to sell their goat on a per head basis, and usually the meat is sold fresh, chilled or frozen.

Even though there are continuous researches being conducted to ensure availability of quality stocks of goat, and increase its production and productivity, the price of goat meat remains high in the market. According to Dr. Jonathan Nayga, goat meat is sold at Php200 – Php500 per kilogram (kg) depending on the cuts, and the price may even get higher depending on the seller. The ISU-CVSRRC is selling vacuum-packed chevon prime cuts at the minimum price of Php350 per kg.

Realizing that there are still untapped markets for goat meat and can be sold in a much affordable price, ISU developed the technologies on small ruminants meat processing that includes the chevon prime cuts and canned chevon.

This initiative on product development is made possible with the support from the CHED, DOST-PCAARRD, DOST-ITDI, BAI-APDC.

In 2010, ISU released to the market the canned chevon under the brand name Chevon Valley with the funding support from DOST-PCAARRD. The canned chevon are available in three flavors – *adobo*, *kaldereta*, and *kilawin*. The canned products are packed in tin cans at 200 grams and sold at Php100 each.

Dr. Nayga mentioned that one advantage of their canned chevon over the other commercially-available canned meat is that, it has no preservatives. The canned chevon *kaldereta* will last up to 7.7 months; canned chevon *adobo* is up to 12 months; and canned chevon *kilawin* is up to 15.6 months.

Seeing the potentials of Chevon Valley to capture larger Filipino consumers, especially those living in the urban areas and at the same time to help the goat raisers in the country, BAR funded in 2013 the technology transfer of chevon product processing and commercialization of new chevon products. Aside from the original three variants of *adobo*, *kaldereta* and *kilawin*, Chevon Valley will offer five more new flavors of canned chevon including chevon curry, goats "happy feet", pounded chevon, chevon *mechado*, and chevon *asado*.

New recipes are also being developed that will be served in microwaveable packaging. There are four flavors that include chili-garlic chevon, chevon meat balls, chevon with white sauce, chevon ribs with chestnut sauce. At present, these new products are still undergoing various analysis and market studies.

Technology on citrus disease-free planting materials production in Nueva Vizcaya

Implementing Agency: NVSU

7

Citrus is one of the fruit crops commercially grown in the province of Nueva Vizcaya, particularly concentrated in the highlands of Kasibu. Contributing to the province's economic development, citrus production and marketing is considered to be one of the fastest growing industries in the region.

However, the province is facing gradually declining productivity of citrus trees. While hectareage of production continues to increase, not all orchards remain to be productive due to poor management particularly of insect pests and diseases. Citrus greening and citrus *tristeza virus* are major diseases aggravated by vector transmission and continuing production and use of infected planting materials.

The project aimed to produce disease-free planting materials of various citrus species and cultivars that are commercially grown in Nueva Vizcaya. The strategy is considered to be one of the most viable solutions to managing incidence and spread of greening and virus diseases.

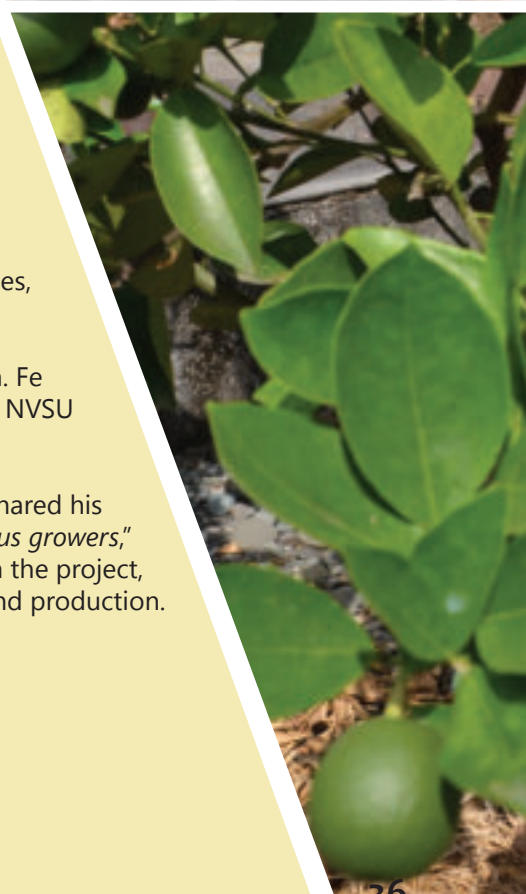
NVSU was able to purchase the equipment for disease indexing and established the foundation block (fb), budwood increase block, and nursery in NVSU.

The PCR-based disease indexing laboratory provides services to nurseries and citrus orchard and is capable of both serology and DNA-based disease detection.

To date, 200 citrus mother trees of various citrus cultivars are grown and maintained in the NVSU facility. A total of 5,873 budded seedlings have been produced and 1,475 sold to clients. The mother trees are indexed for *tristeza virus* (CTV) at least twice a year. The FB serves as sources of budwood for multiplication of planting materials. Among the cultivars include are: Mandarins (Gayunan, Satsuma, Poncan, Okitsu), Orange (Washington Navel, Navelate, Navelina, Hamlin, Trovita), Lemon (Meyer), and Pummelo (Magallanes, Siamese)

Citrus growers from the municipalities of Belance, Bayombong, Villaverde, Sta. Fe in Nueva Vizcaya and Tabuk, Kalinga established new citrus orchards utilizing NVSU seedlings that sum up to 14 hectares of farm land.

Mr. Jonathan P. Pugong, secretary of the Kasibu Citrus Growers Association, shared his gratitude to the project. "*Napakalaking tulong ng proyekto sa aming mga citrus growers,*" [The project is a big help to us citrus growers] he said. He hopes that through the project, infected citrus trees will be replaced with disease-free seedlings, hence, expand production.



8 Technology commercialization of protein-enriched sweet potato as feed for aquaculture

Implementing Agency: TCA

One of the problems facing the aquaculture industry today is the high cost of fish feed. Nutritionists all over the world are constantly searching for the dietary protein sources of fish to maximize growth and increase production within the shortest possible time and at lowest cost.

The project aimed to commercialize and provide fishpond operators/ owners with affordable and high quality feed formulation for aquaculture specifically in bangus, crabs and prawns.



Based on the studies conducted by TCA, the protein-enriched sweet potato was done through fermentation which paved the way for the production of inexpensive, high valued aquafeeds. The use of microbial fermentation to produce high protein feed is becoming increasingly important as a means of backstopping the high cost and seasonal availability of conventional feed ingredients. The TCA researchers reported as much as 17-fold increase in the protein content of sweet potato pulp after enrichment by fermentation was achieved.

The project has produced approximately 16.8 tons of the PESP to supply the requirements of the technology showcase for bangus, tilapia, crabs and prawns.

The technology showcased was conducted with pure feeding of PESP to bangus, tilapia, crabs and prawns. It was compared with the fishpond operators' practices. All feeding trials in commercial ponds were done for the entire grow-out period until the bangus, tilapia, crabs, and prawns were ready for harvesting.

According to Dr. Manuelo Agsaoay, the cost of production is reasonable and can be mass produced in a village level through technology transfer agreement. The cost to produce a kilo of PESP is Php12.25 or Php612.50 for every 50-kilo bag.

9 Pilot-testing Integrated Soybean Production Processing Technologies Towards Accelerating the Development of the Local Soybean Industry in the Philippines

Implementing Agency: DA-PHILMECH

Addressing the distraught brought by typhoon Yolanda in 2013 particularly in the agriculture sector of Eastern Visayas (Region 8), the ARADO Foundation, Inc. led by Sister Eloisa David tied up with DA, through BAR, HVCDP, and RFO 8, and other local agencies to help uplift the lives of affected Filipinos in the region. Specifically,

the group introduced soybean production and processing as potential source of livelihood and income in the area.

As an offshoot activity, a Farmers' Field Day was held in Brgy. Hisam, Jaro, Leyte gathering more than 360 farmers.

Members of the ARADO Foundation received the Certification of Award for the multi-crop thresher, PhilMech soybean cleaner/sorter, moisture meter, hand tractor with implements, and other soybean processing facilities and equipment. BAR, through PhilMech, provided the funds for the purchase of the equipment. The farmer-attendees were also informed on the postharvest and processing systems for soybeans.

Representatives from various member-organizations under the Saint Benedict Association for Organic Farming in Leyte also received soybean seeds from DA-CVIARC. Furthermore, a cooking demonstration was facilitated by Ms. Castañeto on okara-raisin cinnamon cookies, burger patties, soy lumpia, tokwa, and soymilk which the audience tried for taste tests.

Farmers in attendance showed their enthusiasm and interest on soybean production and processing. According to them, these could help uplift their lives after the experienced typhoon.



10

Apitherapy in animals: clinical testing and therapeutic application of formulated bee products as anti-microbial and wound healing enhancing agent using animal models *Implementing Agency: UPLB-College of Veterinary Medicine*

The research project in 2012 which aimed to: 1) compare the efficacy of ethanol extracted propolis (EEP) with the conventional antibiotic dressing in incisional wound healing, 2) compare the efficacy of newly developed gamma-radiated propolis-alginate patch with the antibiotic-laden patch in incisional and sutured wounds, and 3) compare the efficacy of newly developed gamma-radiated honey-alginate patch with the antibiotic-laden patch in incisional and sutured wounds.

Based on the research results, it can be concluded that 30 percent EEBP from the Philippine stingless bee possesses antimicrobial property against certain bacteria and it promotes faster incisional wound healing in cats. Furthermore, propolis-alginate

dressing promotes faster and better healing of sutured and incisional wounds in mouse. These results showed the potential of propolis-alginate dressing as an alternative product for wound healing management of animals and humans.

Due to the significant results, the project team conducted various commercialization activities through standardization of medical grade honey and propolis as well as the product development of wound patch. Market prospecting was also initiated by the researchers by scouting partner veterinary and human pharmaceutical companies who may show interest in using or even distributing the new alternative products.



This particular research breakthrough will definitely capture the attention of various institutions such as medical and veterinary community, private and government hospitals, military, and pharmaceutical companies. As the advantages and benefits of the products were realized, there will be an increasing demand of bee products particularly the locally-produced propolis which will add commercial economic value and can further preserve and strengthen the Philippine apiculture industry.

11

Pilot testing of belt dryer for granulated cassava

Implementing Agency: DA-PHILMECH



PhilMech, with the support from DA Corn and Cassava Programs, through BAR, developed a mechanized belt dryer for granulated cassava that can efficiently produce high-quality granulated dried cassava and address the lack of drying facilities that hinder the development of cassava production in the country.

The freshly granulated cassava has moisture content (MC) of 60 percent and it takes three to four days to sun dry it. A delay in drying for three days could result to lower drying recovery which is from 40 percent down to 34 percent. This loss if converted in monetary value is equivalent to Php10, 530 per hectare.

The PhilMech commercial cassava belt dryer has the capacity to produce granulated dried cassava with a MC of 13 percent and with a loading capacity of 1,000 kilograms per hour.

The belt dryer is much efficient compared to the traditional sun drying as drying recovery using the mechanized dryer can get as high as 50 percent and an average of 46 percent as compared to sun drying with highest output recovery of 38 percent. Also, a 1000-kilogram freshly granulated cassava will only take around 100 minutes to dry using the technology as compared to sun drying which needs three to four days.

Given the economic viability of the machine and its significant impact to the smallhold farmers and the cassava industry, DA is planning to distribute the technology to cassava farmers' cooperatives. The Department has already included on its 2014 and 2015 budget the allocation for provisions on units. It is targeted to distribute 30 units to the regions nationwide this year.

With the PhilMech cassava belt dryer, it is hoped that this will encourage farmers to venture into cassava production. Aside from not only improving the quality of produced granulated dried cassava and the cost-benefit derived from using the technology, it also gives assurance to the farmers that they can harvest and dry their cassava anytime they want.



Empowering women and understanding the roles they play in the society is one of the current agenda of the government. Women are left at home performing the roles of a typical housewife. Men, on the other hand, are task to financially provide for their families. But in the modern time, men and women have pertinent responsibilities in the society and are now exploring equal roles and opportunities. In particular, housewives can now provide income for their families.

One group that epitomizes empowered women in modern time is the KALIPI Tagkawayan Chapter, Inc., a successful recipient of government support. The group is based in Tagkawayan,

Quezon wherein members are mostly composed of women who are engaged in abaca handicraft-making. Their projects include "Promotion and Commercialization of Abaca Handicrafts" "Utilization and Conservation of Indigenous Natural Fibers towards enterprise Development for Women".

Members attended "Livelihood Training for Women Leader" to equip them with the know-how on abaca papermaking, macramé (knotting) making, and handicraft weaving including bags, baskets, and planters. A similar training was also hosted for KALIPI members.

Men, particularly husbands of women members, also attended trainings and they themselves enjoyed the production of abaca handicrafts. The group has seen the potential of indigenous plants and widely cultivated natural resources in their area, maximizing potential and utilization. KALIPI members are exploring other local materials like pandan plant, *ting-ting* (coconut midrib) and rattan leaves.

KALIPI Tagkawayan Chapter is now producing a total of 15 pieces of lampshades which are being sold during trade fairs. A 38-inch tall lampshade costs Php1,500 while bags made from abaca scrunch is sold for Php25.00 each. The pandan bags are sold at Php100 a piece. Kilog and uway, on the other hand, are used for basket-making.

According to Ms. Myra Frondoso, the project has improved the quality of their produce providing them a relatively good price and profit. Handicraft making and selling is already in the hands of members. Former housewives now gained confidence and able to augment their source of income for their families. Husbands who are known for farming or doing the production aspect are now also into *tambo*-making.

To be able to have an established outlet and able to be a well-known export product, the group never lost hope in attaining these goals. The KALIPI Tagkawayan Chapter is now locally making a name in the handicrafts industry with their scrunch for handicrafts, lampshades, souvenir leis, abaca special paper, scrunch sheets, pandan bags, and baskets among their many already known products.

Promotion and commercialization of abaca handicrafts; and Utilization and conservation of indigenous natural fibers towards micro-enterprise development for women
Implementing Agency: KALIPI Tagkawayan Chapter, Inc.

12



13

"Commercialization of fishery products (tuna in oil and bangus French-style) through improved packaging and labeling; and Technology Commercialization and Promotion of Some Fishery Products of MinSCAT Bongabong, Campus *Implementing Agency: MinSCAT*

Since the first production of canned tuna in oil and bangus French-style in 2011, MinSCAT, Bongabong Campus in Labusan, Bongabong, Oriental Mindoro now regularly produce and market said products locally and even abroad through "*pasalubongs*" or "*pang-regalos*". They maintain the quality, palatability, and even sanitary standards in order to continue the growing consumer market for their products.

The technology package showcasing the canning of different fish species such as tuna, bangus and sardines are among the Filipino-made products promoted by the Department of Agriculture locally and internationally.

These BAR-MinSCAT projects have helped fisher folks, adults, out-of-school youth, and other people in the community to engage in livelihood activities using the transferred technology. Some of the participants have since engaged in small scale enterprises by producing and selling canned products and other processed fish products.

According to Dr. Edna Piol, the training provided opportunities to gain knowledge and insights on preserving fish like canning. She added that it enhanced the entrepreneurial spirit of the fisher wives in the community, maximizing the use of fish caught by the local fishermen in the process.

To date, 3,364 cans of tuna and 2, 721 bangus in cans were produced and packaged since 2011. Despite a much higher price to commercially-available canned products, the MinSCAT Bongabong Campus were able to can more tuna in oil and bangus French-style in order to cope with the consumers' demand while improving its packaging and labeling. Also, they were able to innovate their packaging using glass jars of which 113 and 160 tuna and bangus French-style were in glass jars, respectively.



Women and the role that they play in the society are contributory to the changing agricultural landscape. Women-led organizations are gaining stature, influencing agribusiness operations and other livelihood activities, which were used to be dominated by men.

The Rural Improvement Club (RIC) Federation of Mulanay is one good example of an organized group that is providing economic opportunities to their members, neighboring barangays and municipalities. The Mulanay RIC is a barangay-based women's organization supported by the local government through the Office of the Municipal Agriculturist (OMA). Although it was created in 1995, the RIC did little contribution in terms of livelihood development not until the federation was selected as one of the direct beneficiaries of government-funded projects.

These projects aim to maximize the use of *Sakwa* or the bulb of *Gabing San Fernando*, a locally available feeds for native swine production, which can be given fresh or boiled along with feed concentrates at the finishing stage. It also supports the breeding operation and improves the supply chain system starting from animal feed production, breeding, fattening, marketing, processing and distribution until it reaches the end-consumers.

Prior to their involvement in the project, most of the women were engaged in vegetable farming, tending small ruminants, assisting their husbands in coconut de-husking (*pagkokopra*), and vending fruits and vegetables. It was in 2009 that the federation received financial support from BAR for the implementation of the two projects.

To date, there are 35 active members of the RIC in Brgy. Lantangan, Mulanay and most of them are all

Native swine for lechon de leche production project: Improving feed availability through integration of *Sakwa* as forage feed in coconut-based production systems in 2009; and Agricultural systems approach to the commercialization of native swine in Quezon

Implementing Agency: RIC Federation of Mulanay

successful swine raisers. The entire membership in the whole municipality has now reached 569, all of which are engaged in various livelihood activities.

Strings of success followed the RIC as the project-cooperators were able to utilize their 1,000 to 3,000 sq.m. area for *sakwa*, *Trichantera*, and *kangkong* – which they use as alternative sources of feeds. Based on economic indicator assessment conducted by the project proponents, the estimated additional annual income of the farmer-beneficiaries for piglet production (two-sow level) is Php20,000.00, while the lechon size production is Php33,000.00 over a period of 28 months. Moreover, the native swine production in the province is becoming a lucrative business.

The native swine project in Mulanay is doing well in terms of project implementation and production, and thus generating economic activities. These are in the form of selling hogs to the market, reduced production cost due to cheaper feeds and more importantly the availability of swine for the roasted sucking pig (*lechon de leche*) domestic market.



Client-driven R&

Organic Agriculture



reviewed. During the end of the year, 7 projects have been completed. The highlights of the completed projects were focused on recycled materials, fertilizer production, and enhanced farming systems.

In terms of determining the technologies developed and validated, BAR has assisted project proponents in the identification and compilation of technologies that aid

The National Organic Agriculture Program (NOAP) was established to provide a comprehensive organic agricultural program through the promotion and commercialization of organic farming practices, cultivation, and adoption of production and processing methods. R.A. 10068 or the Organic Agriculture (OA) Act of 2010 continues to recognize and support the role of farmers, indigenous people, and other stakeholders at the grassroots level. As mandated, BAR is tasked to facilitate the funding and coordination of research projects related to OA. In support to the program's objectives and to align with the strategies set forth, BAR produced and upgraded relevant OA technologies that have been entered into the OA R&D Program.

In 2014, 33 projects have been accounted for, of which, 24 projects were monitored and 15 were

farmers on the proper use of OA materials and techniques. These were:

- Trichoderma microbial inoculants technology
- Corn/sorghum + cowpea intercropping technology
- Nipa palm sugar processing technology
- Native cattle breeding
- POT for organic cacao production and POT for organic rice and muscovado production
- Technology promotion of Vesicular Arbuscular Mycorrhizal Root Inoculant (VAMRI) in Region IVA – IVB
- Protocol improvement and product development of liquid organic fertilizers from fermented plant extracts
- Use of organic waste as substitute for carrier in Bio-N production
- Upland rice-based organic agriculture

R&D Programs

To assess the progress of all OA BAR-funded projects, the agency spearheaded two major activities, namely: 1) National Organic Agriculture R&D Assessment and Planning Workshop conducted on 7-10 April 2014 in Clark, Pampanga; and 2) Project Review and Planning Workshop on Apiculture in Support to Organic Agriculture on December 9-12, 2014 in Clark, Pampanga.

BAR took active role as panel of evaluators during the series of screening process for the selection of the new National Organic Agriculture Board (NOAB) members and the search for the National Organic Agriculture Achievers Award.

The agency also attended a series of training and capacity building activities sponsored and spearheaded by various DA agencies. Among them included:

- Appreciation Course on Organic Agriculture and Internal Control System for Smallholder Groups on 15 – 19 September 2014 at Nature Village, Talisay City, Negros Occidental;
- 11th National Organic Agriculture Congress on 10 - 13 November 2014 at SMX Convention Center, Lanang, Davao City; and
- Groundbreaking ceremony for the OA R&D

Center project of CLIARC, DA-RFO 3 on 9 December 2014 in Paraiso City, Tarlac.

BAR also led the conduct and assessment of the proposed sites and/or consultation for facility needs for the OA R&D Center project implementation of five regions: 1) Region 5-BIARC, Pili, Camarines Sur, 5 March 2014; 2) Region 10-NOMIARC, Malaybalay City, Bukidnon, 25 February 2014; 3) Region 11-SMIARC, Manambulan, Davao City, 13 February 2014; 4) Region 12-CEMIARC, Amas, Kidapawan City, 11 February 2014; and 5) CARAGA-Regional Office, Butuan City, 26 February 2014.

BAR also monitored the OA R&D Center project implementation of: Region 1-ROS, Sual, Pangasinan, 10 December 2014; Region 4A-STIARC, Maraouy, Lipa City, Batangas, 9 May 2014; Region 8-EVIARC, Babatngon, Leyte, 20 March 2014; and CAR-CIARC, Baguio Stock Farm, Baguio City, Benguet, 9 December 2014.

Adhering to the principles of RA 10068 and towards the implementation of OA R&D plans and programs, the agency shared the vision of the NOAP with regard to the attainment of the five percent converted agricultural lands by 2016 and increase the production of healthy and pesticide-free agricultural products.



Climate Change



degradation and the effects of climate change. The project was being implemented by the Bureau of Soils and Water Management (BSWM).

As of 2014, the bureau continually coordinated 3 short-term adaptation and 2 long-term adaptation projects, and had completed 2 projects.

The bureau also took part in the following activities: 1) 16th Quarterly PCAF Committee on Climate Change Industry Meeting on 7 February 2014 at the Apacible Hall, PCAF, Quezon

The challenge in addressing the peculiarities of climate change in the agriculture and fisheries sector is deemed important and urgent. The weather patterns brought about by the changing environment could directly or indirectly contribute to food production, sustainability of food resources, and livelihood of farmers and fishers.

Recognizing the seriousness of the matter, a need for a climate change mitigation and adaptation of R&D initiatives must be put in place. BAR has aligned its Climate Change R&D Program with the DA's Climate Change Program, which is anchored on mitigation and adaptation thrusts, with adaptation as the anchored strategy and mitigation measures as a function of adaptation.

The agency's Climate Change RDE Agenda and Program for Agriculture and Fisheries was anchored on the following components: 1) short-term adaptation strategies, 2) long-term adaptation strategies, 3) other adaptation strategies (from DA Climate Change Program), and 4) mitigation strategies.

Specific to this undertaking, BAR funded a short-term adaptation (STA) initiative on the "Development of Decision-Support Tools on Sustainable Land Management as a Key to a Biotic Stresses in Areas Vulnerable to Climate Change" in 2014. The project aimed to develop sustainable land management decision support tools for combating land

City; 2) Workshop on Tagging/Tracking Government Expenditure for Climate Change in the Budget Process on 27 February 2014 at FPA, Quezon City; 3) Committee on Climate Change Special Meeting on 18 March 2014 at BSWM, Quezon City; 4) Focus Group Discussion on Impact of Climate Change on the Philippine Rice Sector: Supply/Demand Projections and Policy on 24 March 2014 at SEARCA, Los Baños, Laguna; 5) Meeting with DA-SWCCO, ACPC and ICRISAT on DA-BAR's Inventory of CC Tools, Technologies and Practices and List of Farmers Cooperators on 27 May 2014 at DA, Quezon City; 6) *Wikang Seguridad ng Kapaligiran: Pambansang Seminar sa Pagbabagong Klima* organized by the Komisyon sa Wikang Filipino on 21 – 23 October 2014 in Bicol.

BAR continued to conduct inventory of CC projects and adaptation tools, technologies and practices as well as the continuation of tagging/tracking of CC projects and activities.



Rice

Rice is the country's main staple which is being consumed by almost 95 million Filipinos. Ensuring a stable supply of rice and boosting its production lies within the purview of the DA's *Agrikulturang Pilipino (Agri-Pinoy)* Rice Program. The program is one of the banner components of DA that is also concerned in rice farming and in uplifting the lives of Filipino farmers. Guided by its principles and framework, the program integrates government initiatives and interventions particularly on food security and self-sufficiency, sustainable resource management, support services, road-based local partnerships, and research and development.

Complementing the program, BAR has worked and coordinated with other rice-led agencies of DA to ensure that through rice R&D development, relevant and updated information, technologies and products were generated, verified, disseminated and promoted to help and support DA's *Agri-Pinoy* Rice Program.

In 2014, a total of 58 rice R&D projects were being handled and coordinated by BAR. Table 3 shows the breakdown of rice projects from 2011 to 2014.

In addition, BAR also facilitated the final release of 18 on-going projects under the Rice Program.

The bureau also participated in the following meetings and activities:

- 2015 Budget Proposal Preparation for DA Banner Programs and Refinement of the Rice Program Preparation on 9 – 10 January 2014 in Quezon City
- Field Day and Planning Workshop/Meeting on the IRRI project on Ecological Engineering on 28 – 30 April in Bukidnon
- Review and Planning Workshop of the PhilRice projects under the DA IRRI Partnership and Strategic Rice RDE FSSP Support Projects on 21 August 2014 in PhilRice, Muñoz, Nueva Ecija
- Rice Industry Roadmap Preparation on 4 June 2014 at DA, Quezon City
- Validation Workshop for Mechanization, Postharvest and Processing RDE Agenda for Selected Priority Crop Commodities (Rice) – Luzon Cluster on 10 June 2014 at PhilMech, Munoz, Nueva Ecija

The bureau continues to support the program thrusts of the DA Rice Program and will be actively involved in all its undertakings.

Table 3. Projects on rice coordinated by BAR, 2011-2014

Year	Number of Projects
2011	4
2012	3
2013	14
2014	37



Corn & Cassava

Corn, like rice, is an important crop in Philippine agriculture. Aside from being a food staple, it is also a necessity for the livestock and poultry industry as the primary source of raw materials for feeds. It is also being processed into high value products including corn starch, corn syrups, corn oil, gluten, and snack foods. Corn farmers depend on it as their major source of livelihood, while some traders and processors were also directly benefiting from corn production, processing, marketing and distribution.

The Corn R&D Program of BAR intensified its R&D involvement and collaboration with DA and various agencies of government and other stakeholders in unison with the DA's National Corn Program that aims to increase production of quality corn for human consumption, feeds, and industrial uses.

In order to reap the full potential of corn in the R&D spectrum, BAR realizes that technologies need to be generated, developed, and validated. In 2014, cognizant of this role, BAR funded 13 new projects and coordinated 8 projects, benefitting 1,600 farmers. In terms of technologies developed and validated, BAR in coordination with PhilMech, has completed the project, "Belt Dryer for Granulated Cassava and Compact Corn Mill."

Ten on-going corn and cassava projects were reviewed and evaluated including the evaluation of 19 proposals. BAR also conducted a series of meetings with the DA Agri-Pinoy Corn Program together with UPLB, BPI, and selected RFOs for the planning and implementation of the National Corn Germplasm

Utilization through Advanced R&D (CGUARD) Program for 2015.

Other salient accomplishments for 2014 included the 1) National Review and Planning Workshop on 2013-2014 SSNM WS White Corn National Review and Planning Workshop on 6-9 May 2014 in Baguio City; 2) 2014 Agri-Pinoy Corn Program Performance Review and Planning Workshop on 12-14 February 2014 in Puerto Prinsesa City, Palawan; 3) 2014 First Quarter Performance Review and Planning on 12 -1 6 May 2014 at Cielito Hotel, Sta. Rosa, Laguna; and 4) Corn Congress and National Quality Corn Achievers Award on 21 – 24 October 2014 in Cagayan de Oro City.

BAR also participated in crafting the guidelines for the development of the following:

- Philippine National Standards (PNS) for corn silage and corn grits
- Corn Code of Practice for the reduction of hydrocyanic acid in cassava and cassava products
- Code of Practice for the prevention and reduction of mycotoxin contamination in cereals
- PCAF Committee on commercial crops: Rootcrops industry development sub-committee meeting

The overall strategy was to fasttrack the expansion of corn production areas as well as boost its production to harness agricultural resources. BAR was tasked to stay focused on those R&D deliverables.



Biofuels

The growing concern towards a cleaner and greener environment has directed the government to search for sustainable and yet alternative renewable sources of fuel and energy. RA 9367 or the Biofuels Act of 2006 mandates the use of biofuels in support to the government's goal in reducing dependence on imported fuels. The law also calls for the development and use of indigenous renewable and sustainably-sourced clean energy sources to reduce dependence on imported oil.

To ensure the availability of alternative and renewable energy without the detrimental effect to the natural ecosystem, biodiversity, and food reserves of the country, BAR's Biofuels R&D Program, which is in sync with the DA's Biofuel Feedstock Program, has identified and supported feedstock development projects and processing technologies in cooperation with other government agencies, local government units and the private sector.

In 2014, the agency funded 3 projects, of which, 2 were on sweet sorghum-based forage crop production system for cattle feedlot fattening and quality grade ethanol from sweet sorghum, while the other one is on the production of bio-gasoline from biomass-derived oils, forest, and agricultural wastes for agricultural machinery fuel utilization. As of 2014, four projects were monitored and the project on the cost-efficient spray drying technology for sweet sorghum syrup had already been completed.

BAR attended and participated in various biofuel-related meetings and symposiums including the "Zero Waste Biofuel and High Protein Feed Conversion Program Using BioTork's Evolutionary Technology" organized by the Department of Foreign Affairs on 10 February 2014. In the meeting, BAR provided a briefing on current initiatives for Biofuel R&D. BAR also joined the "National Biofuels Board Meeting" with delegates from Columbia on 1 September 2014



held at the Sugar Regulatory Administration. The bureau also provided inputs for the development of the National Cooperative Testing (NCT) Guidelines for variety release of sweet sorghum during the "Corn and Sorghum TWG Meeting" organized by the National Industry Seed Council on 12 -14 November 2014 at the Bay View Park Hotel, Manila.



High Value Crops

The High Value Crops Development Program (HVCDP) is one of the banner programs of DA designed to seek measures in addressing food security, alleviate poverty, and sustain the growth of the fruits and vegetables industry.

As a proof of collaboration and support to the program, BAR and HVCDP worked hand-in-hand to promote not just only the traditional fruits and vegetables, but also the underutilized fruits and vegetables including adlay, breadfruit, soybean, and rootcrops, among others.

The gradual shift of appreciation from traditional crops to underutilized crops, and boosting further other fruits, vegetables, and industrial crops, has resulted to the funding of 224 projects from 2008 to 2013.

In 2014, BAR funded 98 new and on-going projects and completed 41 projects. These projects were being implemented by DA-RFOs, SUCs, DA-bureaus and attached agencies, and private sector. Further, technical and financial assistance had been provided to individual farmers and organized farmers

association to improve not only their crops, but their livelihood as well.

The R&D component of the program has assisted the HVCDP in the development of sustainable cropping patterns and specific packages of environment-friendly technologies for the production of high-quality products. The technology promotion and the commercialization schemes for some selected high value crops had been developed as well in coordination with the other divisions of the bureau.

In support to the implementation and coordination of HVCDP funded project, BAR participated in the following activities: 1) Briefing on BAR's HVCDP and Rubber R&D Programs with the Commission of Audit on 13 November 2014 at BAR, Quezon City; 2) IRRDB International Rubber Conference and Annual Meetings on 24-28 November 2014 at Hyatt Regency Hotel, Manila; 3) 9th and 10th Phil Rubber Technical Working Group Meetings on 27 January 2014 and 6 May 2014, respectively, at the Department of Trade and Industry, Makati; 4) Meeting on the Creation of a TWG on Addressing Banana Fusarium Wilt in Mindanao on 28 July 2014 at DA-RFO 11, Davao



City; 5) 9th BAPNET Steering Committee Meeting and International Banana Symposium on 17-22 November 2014 in Davao City. 6) Legumes R&D Program Planning Meetings on 21 April, 23 May, and 18 September 2014 at BAR, Quezon City; 7) Soybean Program Review and Planning Workshop on 11 February 2014 in Iloilo City; 8) Adlay TWG Meetings on 11 – 15 March 2014 in Bukidnon and on 14 – 17 October 2014 in Dipolog City; 9) National Adlay Grand Field Day on 2-5 September 2014 in Zamboanga del Sur; 10) 4th PMG Yamang Lupa Program Meeting and Orientation for Usec. Palad on 9 September 2014 at BAR, Quezon City.

The positive reception of the government and the research communities in mobilizing resources was a good starting point to explore the potential of the fruit and vegetable industries in triggering economic activity in the country.



Rainfed Agriculture



It has been studied that in order for agriculture to meet future food demand, water productivity improvements must be given attention not only in irrigated areas, but among rainfed sites as well. Investments in innovative farming systems coupled with enhanced water and seed management are both

essential for the growth of the agriculture sector since a large percentage of the country's food supply is produced in rainfed areas.

BAR, in partnership with ICRISAT, launched the Philippine Rainfed Agriculture Research, Development

Table 4. Demo farms and list of improved management practices

	Region 4A	Region 8	Region 9
Demo Farms	rice, tomato, bittergourd, onion	rice, corn, vegetables, rootcrops	rice, corn, taro, peanut, ampalaya, eggplant, lady finger, sweet potato, sweet pepper
Improved Management Practices	fertilizer recommendations based on SHC application of micronutrient fertilizers reduced seeding rate for rice (from 4-8 cavans/ha to 40-80 kg/ha) application of organic fertilizers for farms with deficient OC and OM	use of NSIC recommended varieties fertilizer application based on soil analysis results with emphasis on the micronutrient needs of the soil culture and management up to postharvest practices of the crops based on the DA recommended production protocols	use of quality planting materials incorporation of micro- and macro-nutrients cropping system use of <i>Trichogramma evanescens</i> and <i>Trichogramma japonicum</i>

and Extension Program (PHIRARDEP) in August 2011. The program aims to develop, coordinate, monitor and evaluate the implementation of rainfed agricultural RDE.

In 2014, in support to the promotion and development of PHIRARDEP, BAR funded and coordinated 11 projects, from which 5 are being implemented by DA-RIARCs, 5 by SUCs, and 1 by ICRISAT. Integral to this undertaking was the bureau's Yamang Lupa Program (YLP) which was implemented in 2014.

The "Yamang Lupa Program: Adoption of the Boochetana Principles and Approach in Boosting Agricultural Productivity," which has served as the cornerstone of the rainfed R&D program of the bureau, was officially launched and piloted in the three major island groups: 1) Zamboanga-Sibugay on 4 - 7 February 2014; 2) Sariaya, Quezon on February 27, 2014; and 3) Samar and Leyte on 4 - 5 May 2014. Bhoochetana, which started in India, is an integrated and a holistic approach that systematizes all best-bet soil, water, crop and nutrient management techniques including improved cultivars to improve farm and area productivity of smallholder and marginal farmers in the country.

YLP was complemented by series of capacity building activities among the stakeholders on sustainable management of natural resources and enhancing

productivity in rainfed areas. This activity resulted in the identification of 39 farmers who served as facilitators, 26 leader-farmers, and 152 farmer-cooperators across the regions.

Soil samples were collected and analyzed based on target areas leading to the development of Soil Health Cards (SHC). Regions 4A, 8, and 9 have produced 85, 94, 60 soil samples and distributed 89, 67, 60 cards, respectively.

On 9 September 2014, Undersecretary Emerson U. Palad, chair of the YLP Steering Committee, was oriented by BAR officials led by Director Nicomedes P. Eleazar on the current status and on-going implementation of the program.

The bureau conducted several reviews and meetings to discuss results of the BAR-ICRISAT project "Field Testing of ICRISAT Legume Varieties and Technologies in Selected Regions of the Philippines". The efforts and strategies of the project were completed on 31 December 2014 in support to the production of legumes in the country.

BAR also facilitated and commissioned three batches of Bhoochetana educational and scientific tours at ICRISAT on 9-15 July 2014, 10-13 November, and 8-13 December 2014. These scientific tours were participated in by 19 individuals composed of government officials, YLP implementers, members and partners from DA, SUCs, and LGUs.



Adlay



Adlay is an indigenous crop that belongs to the family Poaceae, or the grasses, the same family to which rice and corn belong. Since the inclusion of the crop in the BAR's R&D programs in 2010, several actions had already been undertaken to promote and explore the potential of the crop.

The DA's call for food staples self-sufficiency, which was aimed to promote the country's traditional crops such as rice, white corn, banana, cassava, and sweet potato, was already being aggressively campaigned. Finding more alternatives to these crops was a given option and Adlay was not far from being considered as one. Adlay can be eaten as an alternative for staple foods like rice and corn. It can also be processed into flour for bread making and for wine production.

Maximizing the potential of the crop as food, medicine, feed for livestock and poultry, and for other uses, raised the bar of its acceptability for farmers, producers, and consumers.

Adlay has contributed significant accomplishment in 2014 in terms of farm productivity improvement, and increased seed inventory to ensure farmer's competitiveness. In coordination with the HVCDP, BAR coordinated 37 projects with the proponents and other implementing agencies, of which, 9 were

being implemented by the SUCs and 28 by DA-RFOs. BAR monitored four projects, namely: 1) Enhancing Adlay Production and Food Utilization in Region 2; 2) Development and Promotion of Adlay in Region 9 (Phase 3); 3) Evaluation and Promotion of Existing Rice Micromill into Adlay Milling Machine; and 4) Product Development and Promotion of Adlay in Region 9 (Phase 2).

The bureau facilitated the Adlay TWG Meetings on 11-14 March 2014 at DA-NOMIARC, Malaybalay, Bukidnon, and on 14 – 17 October 2014 in Dapitan, Zamboanga del Sur. Among the highlighted agreements reached during the said meetings were the submission of a quarterly report on Adlay seed inventory; nutrient analysis of Adlay grits and bran; registration of Adlay; and the establishment of Adlay Centers.

To ensure the continuing success of the program, BAR facilitated the "Adlay Review and Planning Workshop" on 15-18 July 2014 at Hotel Kimberly, Tagaytay City; and spearheaded the consolidation of the "Two-Year Adlay Adaptability Yield Trials (AYT)" based on the top three performing varieties and their respective yields per hectare: Gulian (2.73 tons); Ginampay (2.33 tons); and Tapol (2.27 tons).

Rubber

The rubber tree (*Hevea brasiliensis*), a member of the spurge family, Euphorbiaceae, is widely used particularly in the automotive industry. Rubber is generally cultivated in large plantations and is considered as a profitable agro-industrial crop. It can also be integrated in the agroforestry system that encourages the sustainable use of land.

The importance of rubber, as an industrial crop and its promising potentials and benefits especially to small rubber holders, has been given preferential attention and recognition by the government. Thus, BAR's partnership with the HVCDP, research networks, and other rubber stakeholders resulted to improved rubber production and management protocols through R&D.

The increasing demand for rubber and rubber products has given the bureau an edge to promote the development of the rubber production through funding and coordinating activities. In 2014, six production related projects have been funded and coordinated with the various rubber stakeholders.

Narrowing down its contribution to the industry, BAR's intervention was focused on two disciplines: 1) technology adaption and performance trial of

On 3 September 2014, Agriculture Secretary Proceso J. Alcala served as keynote speaker during the conduct of the "First National Adlay Grand Field Day" held in Zamboanga del Sur. Sec. Alcala said that Adlay is an important crop and can be called as the "Philippines' Best Kept Secret". Close to 1,500 farmers, LGU technicians, and visitors from the different barangays and municipalities of the province attended the event.

Other than organizing series of meetings, the agency focused on maintaining seed inventory and thus, in 2014, a total of 24,239 kilograms of seeds were produced, of which 8,621 kilograms were distributed to RFO 2, 4A, 9, 10 (old Adlay sites); and 5, 6, 8, 11, 12, 13 and ARMM (new Adlay sites). The total number of beneficiaries and availability of seeds were recorded at 5,922 and 15,618, respectively.



different rubber clones in North Cotabato, wherein close to 5,000 rubber seeds were sowed at the University of Southern Mindanao screenhouse; 20,000 seedlings packed using the standard black polyethylene bag of 7x14 inches; and budded 500 seedlings; and 2) technology-demo on rubber production and management and utilization to farmers.



Apiculture



The word *apis* is a Latin word meaning bee. Apiculture therefore is the keeping or rearing of bees, which are important component in the cross-pollination process of agricultural crops. Bees pollinate flowering plants, fruits and vegetables; and help in maintaining and promoting biodiversity, which can effectively improve and increase crop yields.

The importance of bees to the sector in sustaining biodiversity and employment generation, as well as in the production of honey and other bee products such as propolis, beeswax and pollen, among others, as raw ingredients for food and materials for non-food items, have contributed immensely to the development of the industry.

Considering the potential of bees, BAR has included apiculture as one of its major R&D programs. The bureau also capitalized the benefits of bees in agriculture and pushed forward its multiple benefits to small- and medium-scale farmers. As of 2010, BAR, in coordination with the HVCDP and other agencies, has funded and coordinated 16 projects, monitored 7 projects while 3 projects had already been completed. In 2014, additional five projects have been added.

BAR sponsored the "20th Annual BEENET Conference and Techno-Fora held" on 19-21 June 2014 in San Jose, Puerto Princesa City, Palawan. The conference aimed to address the many challenges and problems besetting the industry's growth particularly in the conservation and protection of the native species. In the conference, the Philippine Apiculture Status and Research and Development, and Extension Agenda 2012-2016, also known as the "Bee Road Map"

authored by Dr. Cleofas R. Cervancia and Mr. Alejandro C. Fajardo of the UPLB Bee Program, was launched.

The bureau conducted on-site trainings and capacity building initiatives among local government units, local cooperatives and associations in coordination with the UPLB Bee Program. BAR monitored and evaluated seven on-going projects which were implemented by Pampanga Agricultural College, Don Mariano Marcos Memorial State University, Cagayan State University, Central Bicol State University, Southern Luzon State University, and the LGU-Batac. Some of the bureau's interventions with these SUCs were the establishment of demo apiaries and technology processing centers.

In terms of product promotion, BAR has been instrumental in staging the various products made out of honey bees including bee soaps, massage oils, lip balms, bees wax, propolis, among others, in several agri-trade fairs and exhibitions.

BAR also conducted "Project Review and Planning Workshop on Apiculture in Support to Organic Agriculture" on 9 – 11 December 2014 held at Widus Hotel in Clark, Pampanga. The activity was attended by 46 participants from SUCs, DA agencies and private beekeeper organizations.

Soybean

Soybean, also known as *utaw*, is rich in protein, vitamins A, E, and minerals. It is also a good source of edible oil and contains other medicinal properties.

Building a sustainable soybean industry is one of the primary agenda of the Soybean R&D Program of BAR. Being the R&D arm of DA, the agency has been braving the path towards improving and optimizing the full potential of soybean. The bureau believes that building a strong community-based farming and production system will enable industry players promote the many benefits and industrial uses of this high-valued crop.

In collaboration with the HVCDP, other government agencies, private sector, and NGOs, the upsurge in soybean production and processing had been realized in 2014. With the program, the production of organically-grown soybean seeds increased from 422 tons in 2013 to 641 tons in 2014, of which 98.67 tons were distributed to farmer-beneficiaries. There was also a significant increase in terms of production area from 2,615 hectares in 2013 to 3,991 hectares in 2014. As of 2014, the number of soybean adopters/beneficiaries, including IP communities like the Mangyans Subanen Tribe, increased to 13,182. In 2014, 13 new soybean related projects have been funded and coordinated, while four projects are still on-going.

As part of the government's efforts to assist and uplift the lives of typhoon Yolanda victims, which

struck Eastern Visayas in 2013, a farmers' field day was conducted on 10 June 2014 in Brgy. Hisam, Jaro, Leyte. The field day was spearheaded by DA-RFO 8 in collaboration with BAR, HVCDP and the Agricultural Rural Alternative Development Option Foundation, Inc. (ARADO). Among the highlights of the activity were visits in Brgys. Yapad, Sapsap, Bahay, Caninoan, Manaybanay, Capillaat Tolawin in the Municipality of Pastrana, Leyte, where the initial planting of soybean took place on 10 February 2014. Planting of soybean in the areas jumpstarted livelihood in the province.

Another historical feat was BAR's participation in the "Golden Beans and Grains Producers Cooperative's First Tokwa Festival," wherein soybean preparation served as official entry to the Guinness Book of Records for making the biggest tofu. The event was held on 25 November 2014 in Barangay Sumacab Sur, Cabanatuan, Nueva Ecija.

BAR also participated in the "Soybean Annual Review and Planning Workshop" on 10-14 February 2014 in Iloilo City. The activity was focused on the presentation of soybean projects, interventions applied to soybean production in various regions, and plans for the year 2014-2015. The bureau facilitated the requests from Micro Soya Philippines, which was organized by former DA Usec. Ernesto Ordoñez, GBGPC, Kapampangan Development Foundation based in Pampanga; and the Pangarap Makabud Farmers Association in Calocan City regarding the R&D initiatives of the agency.



Biotechnology



The Philippines is one of the richest countries in the world as far as biodiversity is concerned. Biodiversity is an important characteristic of the ecosystem that is related to the number of different species it contains. It is the wealth of all life-forms that is the product of evolutionary years.

BAR has been supporting the DA-Agriculture and Fisheries Biotechnology R&D Program through the Biotechnology Project Implementation Unit (PIU) in funding priority R&D projects and activities of the different agencies of DA and other stakeholders such as the NAST, UPLB-BIOTECH, SUCs, and private organizations.

Biodiversity is a huge resource that can be tapped using biotechnology in creating new and innovative products to address the growing demands of the nutraceutical, cosmeceutical, and pharmaceutical industries. As a result of the continuing collaboration of BAR and DA-Biotechnology-PIU, 36 new projects have been funded, 38 projects are on-going, and 6 have been completed in 2014.

Strengthening agricultural biotechnology paved the way for the development and validation of technologies which have been highlighted in some of the bureau's funded and coordinated projects such as: 1) Protocol for Identifying and Authenticating Durian Cultivars Growing in Mindanao and other parts of the Country – which uses molecular techniques in evaluating and identifying durian clones which

can be performed in two weeks; 2) Enhanced Vesicular Arbuscular Mycorrhizal (VAM) Inoculants (biofertilizer) – which involves mass production of effective strains of Mycorrhizal fungi that can act as agents of nutrient transport between plants and soil and biocontrol of soil- and root-borne diseases; 3) Field Validation of Bt Cotton. Transgenic cotton fused with Bt genes against cotton bollworm – which was validated in the field expecting to encourage renewed participation in local cotton growing; and 4) Identification of Molecular Markers for *Musa balbisiana* – which was used for diversity assessment

and identification of economically important Philippine Saba cultivars.

BAR participated in the following activities: 1) DA Biotechnology Program Steering Committee Meeting on 17 February 2014 at DA, Quezon City; 2) DA Biotech Project's Assessment and Planning Workshop for CY 2014, on 21 – 23 May 2014 in Nasugbu, Batangas; 3) Inventory and Tagging of Equipment of DA-Biotech Projects on 20-21 October 2014 at Philippine Coconut Authority-Zamboanga; and 4) Series of Consultation Meetings for the Fisheries Biotechnology Center on 20 August 2014 at NFRDI, Quezon City and on 23-26 September 2014 at Oracle Hotel, Katipunan Avenue, Quezon City.



Native Animals

The Philippine Native Animal Development (PNAD) Program, launched in 2010, aimed to develop programs, projects and activities for the conservation, production and marketing of native animals. It hoped to strengthen the sector and more importantly to empower the farmers to be locally- and internationally-competitive.

To harmonize with the works of DA and other government agencies engaged in the program, BAR as the lead coordinator for R&D and member of the PNAD-Technical Working Group, has contributed to the funding of several projects geared towards the generation of technologies on livestock production, management and post-production. In 2014, six projects have been funded, coordinated and monitored with various livestock agencies ranging from the upgrading of organic and free-range native chickens, and selected strains of native pigs as well as the processing of technologies for meat and skins from selected strains. Seven livestock and poultry projects had also been monitored.



To strengthen the conservation and preservation of native animals, the agency regularly attended the PNAD TWG Meeting. The bureau was involved in the following meetings and activities: 1) PNAD Sub Committee Meeting on Native Pigs, Animal and Dairy Sciences on 3 February 2014 at UPLB; 2) Training-Workshop on Crafting of PNAD Regional Plans and Programs 2014 to 2017 on 21- 25 April 2014 at Golden Berries Hotel, Tabuk City, Kalinga Apayao; 3) 1st Quezon Native Pigs Stakeholder Forum on 7 August 2014 in Lucena City, Quezon; 4) Training Workshop on Science-based Production of Native Chicken, Pig and Duck on 23-25 September 2014, BAI-NSPRDC, Tiaong, Quezon; 5) 2nd Philippine PNAD Summit on 24 October 2014, Grand Caprice Restaurant and Convention Center, Lim Ket Kai Center, Lapan Cagayan de Oro City; and 6) Inception meeting of the project titled, "Production of Organic Feeds for Native Chicken: A Pilot Corn/Sorghum + Cowpea Intercropping Scheme Integrated with Village Feedmilling and Native Chicken Production" on 15 December 2014 at BAR Conference Room.

Government support was an essential component in order for native production to be sustainable for our farmers. BAR supports the DA in ensuring that the country's native chickens and native pigs are conserved.

BAR R&D

Priority Programs

In addition to BAR's task of handling the R&D component of the different DA National Banner Programs, the bureau also prioritizes basic and strategic researches, research policies and advocacies that are geared towards enhancing the agriculture and fisheries sector. International

partnerships, human resources and facilities development, information and communication technology, and knowledge management are also being supported in helping accelerate agriculture and fisheries research and development.



Support to Basic and Strategic Researches

To contribute to the continuing efforts in enhancing the productivity of the country's farmers and fisherfolk, BAR facilitated in-house screening and en banc reviews of R&D proposals on different areas ranging from high-value crops, CPAR, organic agriculture, corn and cassava, fisheries, livestock/poultry, rainfed agriculture, to food-safety related. Aside from the projects supported under the DA National Banner Programs, BAR also supports researches under the bureau's regular funds. In 2014, six new and on-going projects under basic research were given funding support. While most of the basic on-going researches are on food safety, the new project supported was on high-value crop, specifically dealing on the characterization of coffee varieties in the Philippines being led by Cavite State University.

Under applied research, 31 new and on-going projects were supported (see Table 5). Such researches were on diverse topics focused mostly on crops, livestock and poultry, fisheries and aquaculture, and water and soil management. All of the CPAR projects supported in 2014 were on-going, and one new project under policy research.

BAR also facilitated the funding of 57 new and on-going projects under biotechnology with researches on applied biotechnology, information education communication, institutional capacity enhancement, policy, and program administration (see Table 6).

Table 5. Number of new and on-going funded projects in 2014 under AFMA-BAR

P/A/P	CY 2014 Physical Accomplishments	
	New	Ongoing
Basic Research	<u>1</u>	<u>5</u>
Applied Research	<u>6</u>	<u>25</u>
Crops	1	15
Livestock	3	2
Fisheries	1	2
Others (soil, water etc.)	1	6
CPAR	<u>0</u>	<u>8</u>
Policy Research	<u>1</u>	<u>0</u>
TOTAL	8	38

Table 6. Number of new and on-going funded projects in 2014 under AFMA-Biotech

PAPs	CY 2014 Physical Accomplishments	
	New	Ongoing
Applied Biotech Research, IEC, ICE, Policy, Program Administration	<u>33</u>	<u>24</u>



Research Policy and Advocacy

Providing inputs and policy recommendations to address emerging issues and concerns in agriculture and fisheries R&D is also one of the bureau's functions as the research coordinating agency of DA. As such, BAR coordinates and facilitates the implementation of impact assessment studies and socio-economic researches – outputs of which are important in public expenditure prioritization for agricultural researches and aligning the targets and objectives to the development program implementation processes.

Impact Assessment and Focus

In 2014, a project was supported by the bureau under policy research that aimed to assess the sustainability of 10 CPAR projects being implemented by the LGUs in different areas in Luzon, Visayas, and Mindanao.

Specifically, the project aimed to: 1) identify the factors that affect the sustainability of CPAR projects at the local government level; 2) determine the ways on how enabling factors can be highlighted and how deterrents can be downplayed; 3) identify capacity development programs for LGUs to sustain CPAR projects; and 4) promote policies and strategies for promoting sustainability of CPAR projects after project disengagement. With almost 60 percent of the objectives attained, the project is nearing completion as of writing.

Policy Research and Analysis

To aid in the crafting of legislations concerning the agri-fishery sector, the bureau provided valuable inputs on the following: 1) An Act Establishing the Small Ruminant Center, 2) An Act Creating the Department of Fisheries and Aquatic Resources, and 3) An Act Institutionalizing the Convergence Strategy for Sustainable Rural Development.

Pertinent data on R&D expenditure and human resources have also been provided for the study on "Optimizing the Contributions of Science and Technology to Poverty Alleviation and Inclusive Growth through Collaborative Governance". The project was commissioned by the Department of Science and Technology and was implemented by the Center of Integrative and Development Studies, National College of Public Administrations and Governance, University of the Philippines Diliman.

Priority research focus with corresponding suggested projects was also prepared as inputs for the 2015-2020 Food and Nutrition Agenda spearheaded by the Food and Nutrition Research Institute of the Department of Science and Technology.





R&D Governance and Quality of Science

For 2014, the inventory of data and information of BAR and other DA Operating Units for consolidation and assessment was continuously accomplished to aid BAR, DA, and other oversight agencies in formulating plans, policies, and programs.

These included the 1) DA-Regional Field Offices' regional allocation, 2) DA R&D investment level that contains information on supported researches and studies, and 3) climate change adaptation tools, technologies and practices consolidated from the different DA Operating Units that provides information on existing and available technologies to help farming and fishing communities on climate change mitigation.

BAR also facilitated the SEARCA-implemented projects titled, "An Assessment of Smuggling on Selected Agricultural Commodities in the Philippines (Informal International Agriculture Trade in the Philippines)," that examined the dynamics of smuggling in the country; and the third phase of the project on "Productivity Growth in the Philippine Agriculture" that aimed to examine the different scenarios for productivity growth to aid in formulating an outlook on the overall state of Philippine agriculture.

Results-based Planning and Evaluation

In abidance to the requirements of offices and agencies under the DA, BAR has complied to the periodic preparation and submission of plans, accomplishments, and other related documents including Budget Execution Documents, Budget Accountability Reports, Physical Performance Reports, Agency Performance Measures, Budget Hearing Portfolio, and Cost Standards for Major Final Output (MFO) 2.3 on Extension Support, Education, and Training Services (ESETS), among others. This also included accomplished reportorial requirements as requested by oversight agencies such as the Department of Budget and Management (DBM), National Economic Development Authority (NEDA), and other legislative offices.

BAR, being the DA MFO focal agency for R&D, is working in close coordination with the national and regional members and representatives of the DA MFO 2.4 Research and Development Services comprising of clusters under the DA that deal with R&D. The group conducts regular meetings to discuss and to come-up with a Cost Standards of the RDS. As of writing, the costs for the following items have already been drafted: services rendered, incentives to respondents, establishment and upgrading of R&D facilities, and R&D equipment. Through the series of meetings, BAR was requested to lead the Magna Carta for DA Researchers and the drafting of Standardized Guidelines/Rates for DA R&D Services.

International Partnerships

Establishing linkages and partnerships with other countries on agricultural research encourages synergy and sharing of resources to help improve the lives of farmers and fisherfolk. It is for this reason that BAR continues to collaborate with international partners for the advancement of agriculture and fisheries R&D.



Asian Food and Agriculture Cooperation Initiative



The AFACI, based at the International Technical Cooperation Center of the Rural Development Administration (RDA) of the Republic of Korea, is one of BAR's international partners that continues to support the thrusts of DA.

BAR serves as the partner organization for the Philippines in AFACI's project titled, "Establishment of Agricultural Technology Information Network in Asia," that aims to facilitate web-based agricultural information and knowledge sharing among its member countries including Bangladesh, Cambodia, Indonesia, Korea, Lao PDR, Mongolia, Nepal, Sri Lanka, Thailand, and Vietnam.

For the second phase of the project being implemented in 2014, BAR facilitated the conduct of several activities that would provide information on the latest technologies in the sector. Part of these activities were on updating the AFACI Philippines' Agricultural Knowledge Website wherein eight technologies and related topics on agriculture and fisheries were uploaded; publication of a book titled, "Enhancing Awareness about Proper Postharvest Handling through the Development and Production of Information and Educational Materials," in partnership

with UPLB-Postharvest Horticulture and Research Center; reproduction of an agricultural crop calendar of 10 highland crops; distribution of 21 technologies packaged in CDs among research managers during the 4th Quarter Research Managers' Meeting held in Bicol, and co-sponsorship for the conduct of the 3rd Regional Farmers' Field Day, Exhibit, and Technology Forum held in UPLB.

Alternatively, on 4-5 June 2014, BAR spearheaded the "1st AFACI Evaluation Meeting" at View Park Hotel, Tagaytay City to review all AFACI-funded projects being implemented by DA attached agencies and staff bureaus and UPLB.

One AFACI-funded project handled by DA and BAR is on "Strengthening PGR Management Systems: Conserving the Diversity of Priority Vegetables (Solanaceous crops) Germplasm of the Philippines" aimed at conserving the genetic identity of Solanaceous crops such as tomato, eggplant, and pepper. In an assessment made by Dr. Myung-Chul Lee, RDA scientist, he noted that the traditional Solanaceous crops thriving in the country have better eating qualities and are more resistant to diseases as compared to commercial varieties.

The WorldFish Center



The partnership between WorldFish and BAR became instrumental in the development of projects and activities towards the sustainable management and development of the country's fisheries and aquatic resources.

For 2014, different activities were implemented and coordinated by WorldFish under the project on "Aquatic Agriculture System (AAS) Capacity Development". In its commitment to support the implementation of AAS, BAR participated in various capacity-building activities that involved enhancing skills in integrated natural resource management and resilience which included attendance to conferences and scientific visits; strengthening organizational capacity of national research partners through workshops and trainings; and creating and strengthening a learning network or guiding coalition for AAS.

In September 2014, a "Training on Scenario Building and Gender Transformative Approaches" was held in Cebu City that sought to introduce Gender Transformative Approaches and Scenario Building Tools in agricultural research, and to provide new perspectives in the conduct of project monitoring and evaluation. The training equipped and improved the capacity of 15 BAR technical staff members in addressing development challenges and ensuring that appropriate research efforts are being complemented.



Southeast Asian Regional Center for Graduate Study and Research in Agriculture



Known for providing quality learning events, SEARCA is one of BAR's partners in the conduct of capacity-building ventures and other R&D initiatives towards an empowered Philippine agricultural research sub-sector. In February 2014, SEARCA, in collaboration with the ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD) and BAR, held its first national consultation meeting on the ASEAN Network on "Promoting Climate Resilience of Rice and Other Crops". The meeting served as a venue to discuss the objectives of the research project, identify the roles of each agency for the conduct of the project, and gather information for the creation of the research timeline.

SEARCA also organized the "2nd International Conference on Agricultural and Rural Development (ARD) in Southeast Asia" held in November at Makati Shangri-La, Manila wherein BAR participated and served as one of the sponsors.

Attended by ARD experts from the academe and various research institutions and other interested stakeholders from Southeast Asia, the conference became a means for ARD experts and stakeholders to share and discuss issues on climate change, unbalanced economic growth, and the scheduled ASEAN Economic Integration in 2015.

Bioversity International



Biodiversity Conservation

DA and BAR supports the initiatives related to the conservation of agricultural biodiversity. Aside from the support for the conservation of agricultural biodiversity sourced out from BAR's regular core funds and funds of the DA's National Banner Programs, the bureau likewise initiate fund-sourcing from international organizations in coordination with other government agencies.

One of the projects in which BAR actively participates in was on "Partnerships for Biodiversity Conservation: Mainstreaming Biodiversity into Agricultural Landscapes or Biodiversity Partnership Project (BPP)," a project funded by the Global Environment Facility (GEF) and supported by the United Nations Development Program (UNDP). As a member of the DA-TWG for BPP, BAR provided inputs in the drafting of the Joint DA-DENR Administrative Order titled, "Mainstreaming Biodiversity-Friendly Agricultural Practices In and Around Protected Areas and Key Biodiversity Areas and Promoting the Same in Wider Agricultural Landscapes". The bureau also led in the drafting of the training module component on 'Conservation of Indigenous Crops' and participated in a series of meetings and consultation workshops concerning the project.

Another project funded by the Benefit Sharing Fund of the International Treaty of Plant Genetic Resources

for Food and Agriculture (ITPGRFA) of the Food and Agriculture Organization (FAO) through the UNDP Philippines to support the bigger BPP was on "Integrating the Conservation of Plant Genetic Resources for Food and Agriculture into Decentralized Landscape Management for Food Security and Biodiversity Conservation in Critical Eco-Regions in the Philippines (ITPGRFA)" is being coordinated by BAR and implemented in collaboration with UPLB Foundation, Inc. (UPLBFI) and Department of Environment and Natural Resources-Biodiversity Management Bureau (DENR-BMB).

Given the tasks of overseeing and coordinating the overall implementation of the project, BAR facilitated the pre-implementation activities such as signing of a Memorandum of Agreement, and the preparation of the Implementation Plan and Work and Financial Plan in consultation with PGR experts. As part of the monitoring and evaluation role of BAR in the project, the bureau also coordinated the submission of reports and the conduct of the "First Quarter Progress Review and Evaluation" to ensure technical quality and soundness of the report prior to endorsement to the DENR-BMB. The Pool of Experts for plant genetic resources for food and agriculture was created to assist BAR in ensuring quality reports. Since the ITPGRFA Project is a support to the bigger BPP, BAR



BAR and Bioversity International's collaborative efforts are aimed at addressing the Fusarium wilt that threatens the Philippine banana industry. Through the projects, "Mitigating Banana Fusarium Wilt Tropical Race 4 through a Farmer-Participatory Approach of Developing Disease Management Strategies" and "Enhancing Capacities of Farmers, Extension Agents, and Local Researchers towards the Effective Management of Foc for Small-Scale Cavendish Banana Sector," the Giant Cavendish Tissue Culture Variant (GCTCV) 219 was introduced in the country which was found to be resistant against the Fusarium wilt Tropical Race 4 that attacks banana varieties.

For the second phase of the project, the introduced Fusarium resistant banana variety gains acceptance in the Japanese market as reported by Dr. Agustin B. Molina of Bioversity International. Through the Philippine Fresh Fruits Corporation, one of the farmer-cooperators of the projects, the GCTCV 219 bananas are being sold as premium Cavendish under the Miyabi brand and tagged as "elegant taste bananas". Many of the collaborators have also harvested their crops and were also able to export them outside the country. The Mauro and Sons Farm in Calinan, Davao, with its successful production of GCTCV 219, are selling the "sweet bananas" to Japan through a multinational company whereas other cooperators were also able to sell their fruits to other markets such as in China.

continuously harmonizes the project activities and integration of results.

For 2014, the project already accomplished site scoping in Quirino Province, Iloilo, Antique, and Davao Oriental. Apart from inception meetings carried out, an inventory of locally-grown traditional varieties of rice, sweet potato, yam and taro, that includes market, utilization, and consumption components have also been gathered through household surveys and focus group discussions. Also, Conservation Field School in Quirino Province has been initially conducted. Also in line with the agricultural biodiversity conservation initiatives, the Philippine government, in partnership with the FAO of the United Nations, with

funding from the GEF, is currently embarking on a project titled, "Dynamic Conservation and Sustainable Use of Globally Significant Agro-biodiversity in Traditional Agro-ecosystems of the Philippines." BAR has been one of the collaborating institutions since conceptualization participating specifically in the packaging of the project, and works along with other government agencies such as the DA, Department of Environment and Natural Resources, Department of Trade and Industry, National Commission on Indigenous Peoples, National Commission for Culture and the Arts, Department of Education, Civil Society Organizations, Municipal/Provincial LGUs of Ifugao and South Cotabato.



Human Resource Development

Recognizing human resource as an important component in advancing agriculture and fisheries R&D, the bureau awards scholarship grants and assistance to qualified students taking up agriculture-related courses, and staff and employees of NARDSAF-member institutions.

Degree Scholarship

Under the Degree Scholarship Program, BAR awarded 18 scholarship grants to 11 students taking up Bachelor of Science in Agriculture and 7 employees of NaRDSAF-member institutions pursuing their Master's and Doctor's degrees in agriculture- and fisheries-related fields.

Mr. Roden Carlo M. Lizardo and Mr. Mark Paul Rivarez, two undergraduate scholars of BAR, earned the academic merit of Magna Cum Laude for BS Agriculture and BS Agri-Biotechnology, respectively, during the 42nd Commencement Exercises of the University of the Philippines Los Baños (UPLB) held on 26 April 2014.

To personally award and congratulate the BAR scholars, a team from the bureau, headed by BAR Director Nicomedes P. Eleazar and Assistant Director Teodoro S. Solsoloy attended the UPLB-CA Breakfast Reception held at the Agronomy-Soils-Horticulture Lobby, College of Agriculture, UPLB. Also present during the event was Agriculture Undersecretary for Policy, Planning, Project Development, Research and Regulations, Dr. Segfredo R. Serrano, who suggested and recommended for the DA-BAR Undergraduate Scholarship Program to be implemented.

2 BAR undergrad scholars graduate Magna Cum Laude from UPLB



Table 7. Grantees of the degree scholarship program for 2014

Name of Scholar	Agency/ Institution	Course/School
1. Hilda G. Tomas	PhilMech	PhD Rural Development/CLSU
2. Lovelle DS Ramos	PhilMech	MS Psychology/DLSU
3. Joyce Paulit Galleros	LGU-Misamis Occidental	PhD Sustainable Development Studies/ MSU-Naawan
4. Cecilia Basser	LGU-Marawi	PhD Sustainable Development Studies/ MSU-Naawan
5. Maynard Boncayao	LGU-Droquieta	PhD Sustainable Development Studies/ MSU-Naawan
6. Lalaine Barrot	LGU-Lanao del Norte	PhD Sustainable Development Studies/ MSU-Naawan
7. Mishael Joy Barerra	MMSU	MA Economics/UP Diliman

Table 8. Grantees of the DA-BAR-UPLB undergraduate scholarship program for 2014

Name of Scholar	Course
1. Nadine B. Coronado	BS Agriculture
2. Arvie John Cuizon	BS Agriculture
3. Bon August F. Decena	BS Agriculture
4. John Daryll E. Dumaraos	BS Agriculture
5. Elvin John G. Galmo	BS Agriculture
6. Christine Grace Angela R. Lapitan	BS Agriculture
7. Jerome D. Masa	BS Agriculture
8. Irish S. Meñolas	BS Agriculture
9. Crissa B. Montero	BS Agriculture
10. Ralph Zeus J. Recio	BS Agriculture
11. Heway Christian A. Serra	BS Agriculture



Non-degree Assistance

For the non-degree assistance program, BAR supported the participation of 82 researchers, scientists, key officials, and technical staff in various conferences, trainings, workshops, presentations, and other R&D undertakings held locally and internationally, as well as those who are conducting short-term basic researches through postdoctoral or fellowship awards.

Three grants from DA and BFAR Regional Offices have also been approved for thesis/ dissertation assistance.

Table 9. Grantees of the thesis/dissertation assistance for 2014

Grantees	Agency/ Institution	Course/School	Title of Research Study
1. Jessel F. Cardines	DA-RFO 11	MS Horticulture/ USM	Growth Response of Robusta Coffee and Cacao Seedlings to Application of Organic and Bio-fertilizers
2. Nelson C. Gallentes	DA-BFAR 10	MS Marine Biology/MSU-Naawan	Fisheries, Population Dynamics, Biology, and Morphometric of Scads Caught by Ring Sea in Northern Mindanao, Philippines
3. Dennis DL. Bihis	DA-RFO 4A	MS Agriculture: Crop Science/ LSPU	Effects of α -Naphthalene Acetic Acid and Indole-3-Butyric Acid Treatments on the Root and Root Formation of Wild Raspberry Stem Cuttings

Productivity Enhancement

Under the program, the bureau facilitated the initial evaluation and endorsement for conferment and rank upgrading of Dr. Arnel N. del Barrio and Dr. Rosalinda M. Lapitan of Philippine Carabao Center-UPLB and Dr. Edwin C. Atabay and Dr. Eufrocina P. Atabay of PCC as Scientist I; Dr. Mudjekeewis D. Santos of National Fisheries Research and Development Institute (NFRDI) and Dr. Claro N. Mingala of PCC as Scientist II; and Dr. Dionisio D. Alwindia of PhilMech as Scientist III under the DOST-Scientific Career System.

BAR also chaired the selection for this year's Gawad Saka, a DA-led competition that gives due recognition to individuals, groups, and organizations that made significant contributions to overall agricultural growth and development.

Dr. Jonar I. Yago of the Nueva Vizcaya State University and Ms. Emily A. Soriano of the Central Luzon Integrated Agricultural Research Center, DA-RFO 3 were hailed as the 2014 Gawad Saka Outstanding Agricultural Scientist and Outstanding Researcher, respectively.



R&D Facilities

Through the Institutional Development Grant (IDG), the bureau supports the acquisition of equipment and establishment/upgrading of laboratories and facilities of the NaRDSAF-member institutions to effectively and efficiently cater to the needs of the sector's stakeholders.

In 2014, BAR facilitated the approval of funding support of 31 IDG projects from the DA-attached agencies and staff bureaus, RFOs, SUCs, and LGUs.



Table 10. Grantees of the thesis/dissertation assistance for 2014

Agency	Project
1 MSU-Marawi	Establishment of Tissue Culture Laboratory for Banana and Abaca
2 SLSU	Establishment of Integrated Research Laboratory in Quezon Province
3 PhilMech	Enhancing the Research Capability of Postharvest Patolog and Mycology Laboratories of PhilMech Through the Acquisition of Scientific Equipment
4 BPI-LBNCRDC	Institutional Development Support for the 975 Linear Meter Boundary Perimeter Fence of BPI-LBNCRDC
5 PhilFIDA	Establishment of FIDA Biotechnology Laboratory
6 DA-CVIARC	Improvement of the Research and Development Building into Regional Integrated Agricultural Research Center
7 SSC	Upgrading of Agricultural Equipment
8 PhilMech	Enhancing the Research Capability of Bioprocess Engineering Research Laboratory of PhilMech Through the Acquisition of Scientific Equipment
9 CLSU	Establishment of Climate Change Center in Central Luzon

Agency	Project
10 CNSC	Institutional Development Support Phase I: Establishment of Seed System Facilities in CNSC
11 DA-EVIARC	Institutional Development on Strengthening Capacity of R & D Centers for RFU-8
12 DA-RFO 5	Renovation of Research Station Facility in Sorsogon Dairy Farm
13 DA-BIARC	Institutional Development Support for the Completion of the Dormitory Building at ROS Masbate Breeding Station
14 DA-RFO CARAGA	Establishment of Organic Agriculture R&D Center in CARAGA Region
15 DA-NOMIARC	Establishment of the Organic Agriculture R&D Center in Region 10 (Malaybalay, Bukidnon)
16 PAC/PSAU	Establishment of Nutraceutical Research Laboratory in PAC
17 DA-NOMIARC	Strengthening Information and Communication Technology Facilities and workplace Support System of the DA-NOMIARC for Efficient and Effective R&D Technology Transfer
18 DA-CIARC	Establishment of the Organic Agriculture R&D Center in Cordillera
19 DA-BFAR 6	Establishment and Operation of Blueswimming Crab Hatchery
20 UPLB-IPB	Improvement of Laboratory Facilities of the Analytical Services Laboratory, IPB-CSC, CA UPLB
21 SKSU	Upgrading of Tissue Culture Laboratory in Support to Organic Agriculture
22 DA-ARMMIARC	Establishment of the Organic Agriculture R&D Center in Bangsamoro
23 DA-CEMIARC	Establishment of the Organic Agriculture R&D Center in Region 12
24 DA-BIARC	Establishment of the Organic Agriculture R&D Center in Region 5 (Pili, Camarines Sur)
25 DA-CLIARC	Establishment of Organic Agriculture R&D Center in Region 2
26 DA-5 ROS-Sorsogon	Establishment of Technology Commercialization and Development Center in Cabid-an, Sorsogon Phase 2
27 DA-WESVIARC	Establishment of Organic Agriculture R&D Center in Region 6
28 DA-SMIARC	Establishment of Organic Agriculture R&D Center in Region 11
29 DA-VB (MIMAROPA)	Establishment of Organic Agriculture R&D Center in Region 4B
30 UPLB	Rehabilitation of Seed Conversion Facility for the National Corn Germplasm Collection of National Plant Genetic Resources Laboratory (NPGRL)
31 MSU-Marawi	Establishment of Tissue Culture Laboratory for Banana and Abaca

Information and Communication Technology

Network administration, and web and system development and maintenance comprise the ICT-related activities of BAR to promote a conducive and effective working environment to its staff members and contribute to the efficient delivery of services to the bureau's stakeholders

Network Administration

In relation to network administration, the Local Area Network (LAN) was continuously monitored and maintained to give the bureau's staff members access to ICT-related resources such as the internet, intranet, and information systems, among others. Connected to it are 123 computers which were maintained, wherein 8 accounts have been added and updated in the Active Directory for network resource access,

4 Microsoft Windows were activated, and 36 server incidents were resolved.

For IT support services, different divisions and units were supported in deploying and relocating equipment, reformatting, and troubleshooting activities which were mostly during the conduct of meetings, presentations, and major events.

Web Development and Maintenance

As one of the bureau's strategies to connect and reach more of its clients, BAR maintains its website called BAR Online to become visible in the World Wide Web. For 2014, a template is being customized for BAR Online to comply with Administrative Order 39 mandating government agencies websites to migrate to the Government Web Hosting Service (GWHS) of the Department of Science and Technology-Information and Communications Technology Office. This is, according to the provisions of the order, "to provide effective, transparent, and accountable governance, in particular speedy enforcement of rules and delivery of accessible public services to the people."

Yearly, BAR makes it a point to monitor website usage based on the indicators set through Google Analytics. In 2014, majority of the indicators increased notably compared in 2013.



Table 11. Comparison of website usage between 2013 and 2014

Indicator	Jan-Dec 2014	Jan – Dec 2013	Difference	% change
Sessions (Visits)	356,670	209,493	147,177	70.25 ↑
Users (Unique Visitors)	278,056	160,292	117,764	73.47 ↑
Pageviews	745,700	462,832	282,868	61.12 ↑
Unique Pageviews	583,643	360,613	223,030	61.85 ↑
No. of Downloads	5,654	5,573	81	1.45 ↑
Ave. Session Duration	00:02:40	00:02:51	-00:00:11	-6.01 ↓
Pages per Session	2.09	2.21	-0.12	-5.37 ↓
Average Time on Page	00:02:27	00:02:21	00:00:06	4.42 ↑
New Sessions (Visits)	76.71%	75.82%	0.86%	1.17 ↑

In 2014, the BAR website was also accessed in 220 countries and dependent territories worldwide. The top 10 countries with the most number of visits/sessions were the Philippines, United States, India, Malaysia, Saudi Arabia, Australia, Canada, Singapore,

United Kingdom, and Indonesia. Total downloads reached 5,654 with R&D Grants Forms obtaining the most number of downloads, followed by BAR Digest 2013 and IDG Grant Forms.

Table 12. Number of downloads in 2014

Downloads	No. of Downloads	% Total download
R&D Grant Forms	1,533	27.11%
Digest 2013	633	11.20%
IDG Grant Forms	440	7.78%
Suitability Map	339	6.00%
RDEAP 2016	207	3.66%
IDG Project Preparation Guidelines	170	3.01%
CRG Manual	169	2.99%
Degree Scholarship Program	129	2.28%
Non Degree Assistance Program	89	1.57%
Chronicle 2012	87	1.54%

Knowledge Management

To ensure that information and knowledge generated from its supported R&D researches and projects will reach the clientele, BAR produces and packages various information, IEC materials intended for use by the bureau's stakeholders including farmers, fisherfolk, researchers, extension workers, policymakers, students, and other interested individuals.



Publication

For 2014, one of the most significant feats of the publication section was the recognition given to BAR Chronicle, the official monthly publication of the bureau as the "Agricultural Newsletter of the Year" given by the Philippine Agricultural Journalists-San Miguel Corporation through the Binhi Awards. Written in this publication were news and feature articles about the activities and supported projects of the bureau and of the NaRDSAF community.

In 2014, under the publication section, 165 articles were written in the bureau's publications with various topics covering significant events and promising R&D technologies under BAR's major programs. In conjunction to these were 121 R&D projects and activities documented for agriculture and fisheries; 36

speeches, messages, and talking points prepared for BAR and DA top-level management; 34 photo releases uploaded and posted in the BAR website; and 37 kinds of publications packaged in the form of newsletters, magazines, proceedings, books, souvenir programs, brochures, and flyers which were disseminated during the conduct of major activities and participation in local and international exhibits.

The bureau has increased its media mileage by 67 percent this year. From the 71 news and feature articles released to media partners, 55 articles were published in major dailies and agricultural magazines, as compared to last year with only 37 published articles.



Educational Communication



To further enhance information and knowledge sharing, BAR tapped its partner scientists, researchers, and experts to share the significant findings and results of their studies and researches through the conduct of seminars. This paved the way for the conduct of 26 in-house seminars and 2 regional seminars in Regions 4A and 7 with varied topics ranging from food plant biodiversity, poultry and livestock animals, packaging and labeling, edible landscaping, fisheries, and many others.

In partnership with various government and non-government agencies, BAR also participated in 11 local and international exhibitions wherein the bureau's CPAR and NTCP banner programs were featured.

Two of the most important exhibits for 2014 were the 10th National Technology Forum held on 8-11 August at SM Megamall, Mandaluyong City and 21st Agrilink/Aqualink/Foodlink held on 9-11 October at the World Trade Center, Pasay City. BAR, together with the UPLB Edible Landscaping Group, adopted the edible landscaping technology for the central setting display for both exhibits which attracted numerous visitors including VIPs for its uniqueness and innovativeness. Featured were success stories from BAR's two banner programs, as well as technologies on beekeeping, seaweeds, kapis, organic soybean, arnis, abaca, fruit wines, sweet sorghum, native pig, coco sap sugar, mushroom, and agri-mechanization.

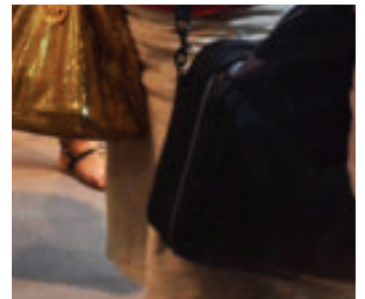
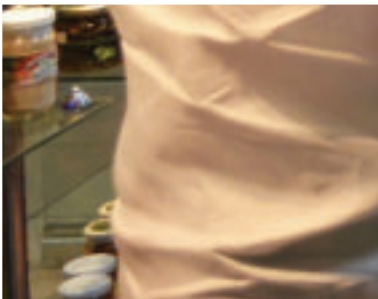
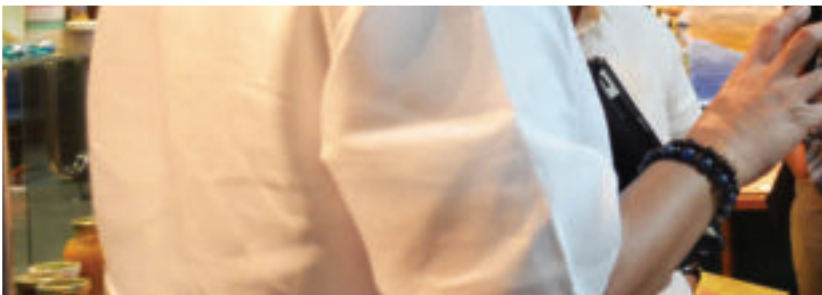
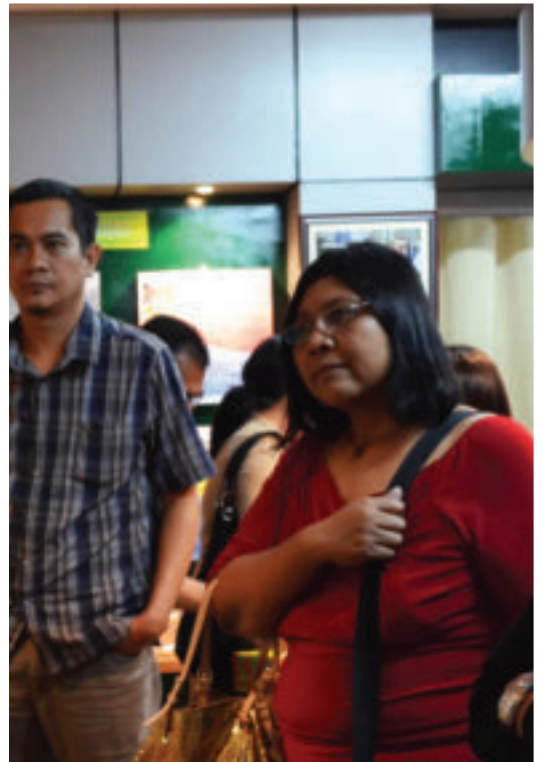


During the conduct of exhibits and other R&D undertakings, technologies generated from R&D projects were promoted through the dissemination of 132,327 copies of IEC materials which were distributed to walk-in clients, booth visitors, national and regional partners, and other stakeholders.

Aside from seminars and exhibits, BAR also partnered with PTV 4's Mag-Agri Tayo and Ating Alamin in the production of 12 segments for television featuring BAR-supported projects and activities to reach wider scope of audience.

Under educational communication, Scientific Publication Grant (SPG) is also being awarded to institutions, organizations, and scientific/professional societies to support their respective publications and other relevant R&D activities. This year, BAR facilitated the funding of 6 books and 4 KM-related projects, while 30 local and international events that include scientific conferences, conventions, fora, and workshops were supported through the SPG.

Client-Oriented Services and Assistance



R&D Technology Commercialization Center

Six years ago, the R&D Technology Commercialization (Tech Com) Center started as a classic showroom where more than a hundred products and technologies produced by the bureau's major banner programs were displayed. Partner-agencies continuously present and provide products for promotion at the said Center.

Table 13. List of new products displayed in 2014

Product/s	Agency
Vege-based <i>GOURmix</i>	DA-CVIARC
Seaweed noodles	BFAR Region 5
Moringga capsule from	DA-RFO 2
Green mango soap, <i>a-gugo</i> bar shampoo, turmeric and ginger natural healing cream and turmeric and oregano multi-purpose tea from	GRO
Mango jam and candy, tamarind candy and dragon fruit jam from	MMSU
Cashew wine, jam and jelly	DA-PAES
Honey wine and lotus by-products such as shower gel, oil, soap, scrub and tea from	PAC
Tambis wine	NOMIARC
Pouch, shoal, bag and placemat made of abaca from KALIPI and <i>kapis</i> handicrafts	BFAR Region 3

Even after meetings and conferences held within the bureau, it has always been part of the itinerary to visit the center. Early this year, delegates from Bhutan and ICRISAT were able to see the technologies that BAR has coordinated. On the later part of the year, other R&D institutions the officials from ASEAN Bioversity and Climate Change Commission (CCC) were surprised with the numerous accomplishments of the

In 2014, the center received 617 visitors with 126 in the first quarter, 262 in the second quarter, 313 in the third quarter, and 154 in the fourth quarter. The visitors were diverse and included staffs and heads from various government agencies, local government units, and other foreign government ministry heads, researchers from local and international institutions, students, professors, farmers, and entrepreneurs.

It was highly significant that more than half of the visitors are private individuals, which implies that more clients are interested on various information related to agriculture and fisheries research and development. In fact, many of them are regular clients who frequently visit the bureau due to prompt delivery of services and more accessible R&D information.

bureau in terms of technology generation and product development.

Aside from accommodating the visitors, the center also responded to telephone calls wherein they received a total of 722 inquiries about BAR's R&D projects specifically on different agricultural and fishery commodities like sweet sorghum, mango, cacao, stevia, oregano and seaweeds. Telephone inquiries also included BAR-funded projects on organic agriculture, beekeeping, adlay and soybean. Clients were also asking for schedule of other BAR activities like Seminar Series, National Technology Forum and other events that will be participated by the bureau.



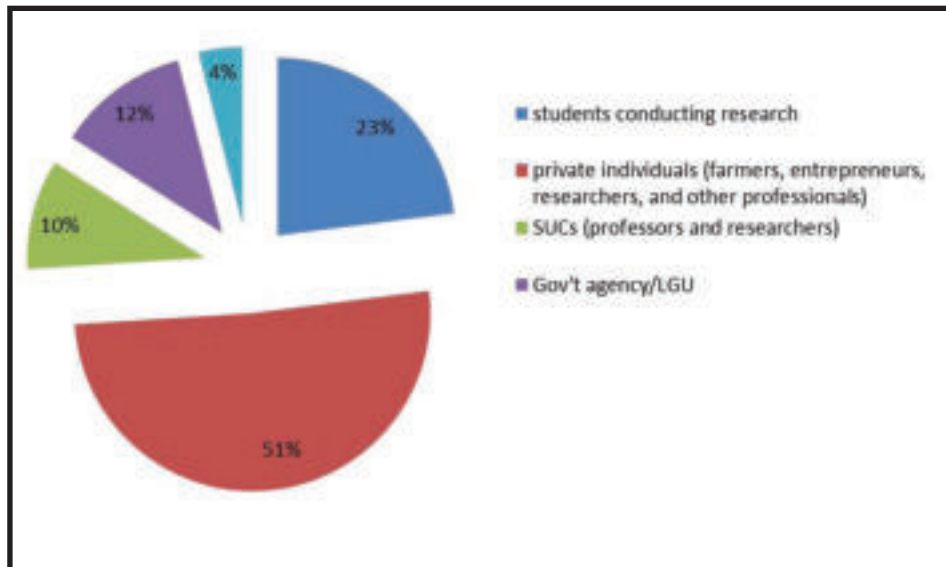


Fig7. Breakdown of Tech Center Visitors

In response to the emerging needs and changing demands of R&D clients, the Tech Com Center's service delivery continuously evolved and eventually became one of BAR's one-stop information shop.

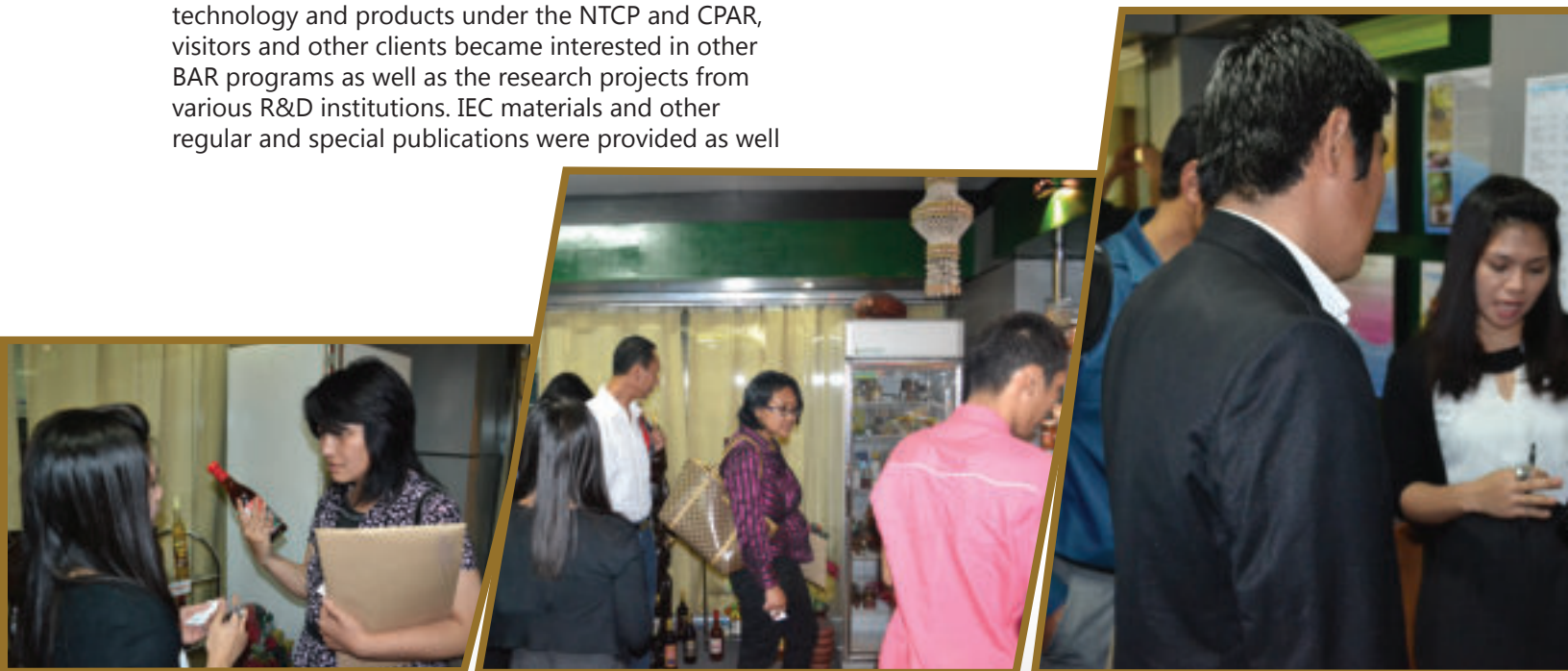
From the significant R&D outputs particularly the technology and products under the NTCP and CPAR, visitors and other clients became interested in other BAR programs as well as the research projects from various R&D institutions. IEC materials and other regular and special publications were provided as well

as technology and product database which can be requested by the visitors.

Tech Com Center is also continuously conducting promotional activities by distributing NTCP products during BAR activities especially during trade fairs and exhibits. During the 10th National Technology Forum and Product Exhibition (NTF) and Agrilink, the events showcased various wines and other newest innovative products developed by R&D institutions through free taste

activity.

Since clients are the major priority, the Tech Com attendants ensure to extend their outmost service by providing the necessary referrals to other agency/institution and contact person in case that the client's needed information is not available.



Scientific Literature Services

As part of the bureau's continuing efforts of providing better service delivery, BAR ensures that the research outputs are well-organized and easily accessed by our R&D clients through the Scientific Literature Services (SLS).

One of the SLS's ongoing projects is the Philippine Agricultural and Information Network (PhilAgrinet) wherein the researchers particularly students, farmers, researchers, and employees from different public and private institutions can now access significant R&D results without going directly to the library. Further, PhilAgrinet members and non-members can determine the availability of research materials and can be viewed depending on the researcher's preference on certain categories: communities and collection, issue and date, author, title, and subject. The basic information about research theses and dissertation such as author, description and even abstract can also be viewed by online guest.

Aside from PhilAgrinet, digitization of thesis and dissertation abstracts also started in 2013 for a more

organized and accessible database. In 2014, a total of 252 thesis and dissertation abstracts and title pages were scanned and then converted into text formats so that researchers can now conveniently check for thesis and dissertation abstracts in the database.

In 2014, the library has also received a total of 141 walk-in visitors wherein most of them are students and researchers from the academe. Among the most common information being searched by the visitors are mango, cacao and mushroom production, cattle farming and goat production, post-harvest machineries, organic concoctions, local culinary herbs, urban agriculture, vertical gardening, underutilized fruits, hydroponics and aquaponics.

Intellectual Property Management

It has been the bureau's continuing effort of promoting an effective Intellectual Property (IP) management to establish business enterprise as well as to easily identify and attract market prospects particularly the local and foreign investors. Thus, as the lead and coordinating agency in research and development, BAR ensures that all R&D clients and other private and public individuals recognize the importance of IP and that their technologies

and products generated should be given proper IP protection.

In 2014, BAR assisted clients who seek for consultation, evaluation and improvement of various IP applications such as trademark, patent and utility model. Also, the BAR-IPRO identified patentable inventions, technologies, processes, products of completed and ongoing projects and new proposals from PMED and PPDD.

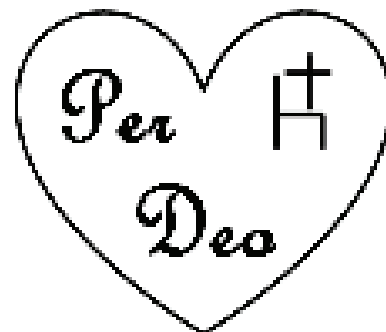
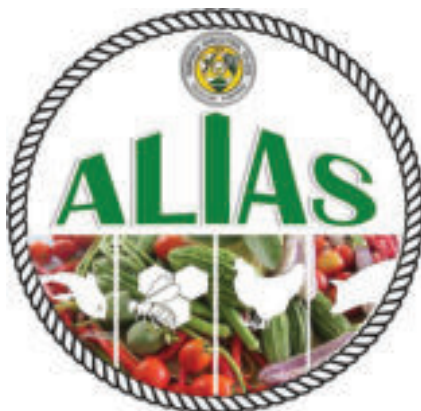


Table 14. PMED Ongoing and completed Projects for potential IPR

Title	Potential IPR
1. Improvement of yam production through tissue-derived plantlets and microtubers and breaking tuber dormancy for continuous production of planting materials/ Villaluz Acedo, VSU	Advised to submit protocol for breaking dormancy for possible IPR application after further evaluation.
2. Enhancing productivity and viability of arrowroot industry in Marinduque/ Michael Capina/MSC	Copyright
3. Postharvest quality maintenance of pummel (<i>Citrus maxima</i>) fruit using chitosan and 1-methylcyclopropene/ Emma Ruth Bayogan/UP Mindanao	Copyright
4. Assessment and analysis of the cacao supply chain in Mindanao/ Magdalena Guiamal/ USM	Copyright
5. Determination of the incidence of field and postharvest pests and diseases of rimas or breadfruit and documentation of its crop production and management practices adopted by farmers/ Conrado Evangelista/USM	Copyright
6. Prevalence, distribution, biology, natural enemies, alternate host and control of scale insect in lanzones in Region XI/ Juanito Lupiba/ DA-SMIARC	Copyright
7. Survey, characterization, evaluation and management of breadfruit from nursery to bearing stage in Region XI/ Merly Salaver/ DA-SMIARC	Copyright
8. Rimans (breadfruit) biodiversity research, conservation, propagation and utilization in the Bicol Region/ Luz Marcelino/ DA-BIARC	Copyright
9. Sustainable utilization of indigenous Philippine orchids as source of antimicrobials and antioxidants for health and wellness/ Eufrocino Marfori/UPLB	Monitored for possible novelty
10. Conservation and sustainable utilization of indigenous vegetables in Region 2/Reynaldo Raymundo/ ISU	Copyright materials
11. Collection, propagation techniques of indigenous herbs, spices and medicinal plants and establishment of demo nurseries/ Luz Marcelino/ DA-BIARC	Copyright materials
12. Ethnopharmacological resource valuation in the Indigenous People (IP) communities of SOCSARGEN Region/ Ma. Luisa Non/ MSU	Monitored for possible novelty
13. Establishment of Pteridogarden and utilization of indigenous Mindanao Edible ferns as an alternative food source/ Victor Amoroso/CMU	Copyright materials



BAR-IPRO noted new interesting projects potential for IPR application. Thus, the proponents were advised beforehand with regards to prior arts from patent documents in order to capture their interest and to recognize the importance of the potential invention.

Table 15. Other agencies assisted on the evaluation of potential IPs

Potential IPs	Potential IPR
1. Adlay machine/ Region 2	Preliminary evaluation
2. Go Green Giveaways	Possible UM or TM
3. GOURmix brand and logo/Region 2	Preliminary evaluation

Aside from identifying patentable R&D outputs from BAR-funded and ongoing projects, BAR-IPRO also provides direct assistance to IP right holders through direct advising as well as facilitating and coordinating other IP applications which promotes hassle-free transactions.

Table 16. List of clients in compliance with on-going prosecution of IP application

Client	Action
1. CLSU	Revisions of the claims and title due to re-application to Utility Model of Production of <i>Schizophyllum commune mycelia</i> and <i>schizophyllan</i>
2. CLSU	Notice of Publication of the Utility Model
3. Eder Cruz Chua	Revival of the already withdrawn TM application of a logo
4. Okey na Okoy	Notice of Allowance, Publication Compliance
5. UPLB	Registrability Report Compliance in disclaiming the phrase "Crop Production" in "Edible Landscaping, the artistic technique in Crop Production" Logo and Design for Trademark.
6. UPLB	Notice of Allowance, Publication compliance for Edible Landscaping
7. Dr. Edie Cruz Chua	Notice of Allowance, Publication compliance for fmStation
8. Michael Melendres	Notice of Allowance, Publication compliance for Earthman
9. Edie Chua	Notice of Allowance, Publication compliance
10. Dr. Bonifacio Comandante, Jr.	Notice of Allowance, Publication compliance for IGLAP
11. Organic Options	Disclaimed "organic"
12. Dr. Judith Rodriguez/inventor	Galactomannan patent ongoing prosecution for revival and action of the Report of Substantive Examination



During the closing ceremony of 10th Agriculture and Fisheries Technology Forum and Product Exhibition held on 8-10 August 2014, certificates were awarded to the five IPR applicants namely CLSU, PAC, Mr. Enrique Bucog of Okey na Okoy and Mr. Eder Cruz Chua.

CLSU's Utility Model for "Production of Schyzophyllum commune mycelia and schyzophyllan" is one of the technologies generated by the said academe wherein beta glucan, one of the by-products in mushroom production, was discovered as a good ingredient in

manufacturing, pharmaceutical and wellness industry. Pampanga Agricultural College's PAC-ALIAS logo represents the Alternative Low Input Agricultural System (ALIAS) Center and all the technologies and products produced by the academe. Mr. Bucog's Okey na Okoy logo is the product's brand which uses squash as the primary ingredient in making okay. Mr. Eder Cruz Chua, on the other hand, received two IP applications for Per-Deo and a Cross Logo. Per-deo, meaning "for God", represents the manufactured and preserved agricultural products while a Cross logo, a mark of a cross, represents his agricultural products.

Table 17. New IP applications received by BAR-IPRO

Client	IPR Application
1. Dr. Bonifacio Comandante, Jr.	IGLAP logo and device for Trademark
2. Mr. Michael Melendres	OrganicOptions logo for Trademark
3. Eder Cruz Chua	Cruz-Eder for Trademark
4. Dr. Edie Cruz Chua	Edie Chua, M.D. Logo for Trademark



Generating and sustaining awareness on Intellectual Property among technical staff is one of the continuing efforts of BAR-IPRO through the conduct of "Patent Search and Documentation Training-Workshop" on 4-6 January 2014 at UP Diliman Statistics Center followed by "Copyright Training"

on 5-7 November 2014 at Hillcreek Hotel, Tagaytay City. IPR staff members, namely Dr. Andrea B. Agillon and Merlinda S. Martinez attended the Asia Pacific Innovation Conference held at the University of Technology Sydney, Australia on 27-29 November 2014.

BAR

Annual Events

To continuously provide Filipinos with the relevant information and latest technologies in agriculture and fisheries, BAR conducts two of its annually-held, major events, the Agriculture and Fisheries National Technology Forum and Product Exhibition (NTF) held every August, and the National Research Symposium (NRS) held every October.

10TH AGRICULTURE AND FISHERIES NATIONAL TECHNOLOGY FORUM AND PRODUCT EXHIBITION

In 2014, BAR celebrated the 10th year of showcasing the technologies developed by SUCs, DA national and regional offices, the academe, and other R&D partner institutions. NTF becomes a valuable avenue for the R&D institutions to collaborate with the private sector regarding the wider promotion and dissemination of the information and technologies generated and create a viable agribusiness enterprise. Particularly, the event is organized as a way to promote the technologies generated under NTCP.

Held on 8-10 August 2014 at SM Megatrade Hall 2, the NTF carried the theme, "*Isang dekada ng mga angkop na teknolohiyang kaakibat ng agri-preneur tungo sa maunlad na agrikultura.*" The event was participated in by 98 exhibitors from DA staff bureaus, attached agencies, and regional offices; SUCs; international organizations; partner agencies; and private sector.

The three-day event was attended by Representative Evelina G. Escudero of the First district of Sorsogon;



ICRISAT Director General William D. Dar; and DA Assistant Secretary for Policy and Research Romeo S. Recide.

On behalf of DA's Secretary Proceso J. Alcala, Mr. Recide delivered a message which centered on urging BAR to continuously uphold its mandate in progressing the agriculture and fisheries R&D as to benefit a greater number of Filipinos.

The intensification of DA interventions particularly on the delivery of technologies and marketing at the grassroots level in partnership with organized groups was the emphasis of the message of Dr. Dar during the NTF opening ceremony. He also shared his advocacy – the Inang Lupa Movement which focuses on inclusive agriculture, increase in R&D investments, market orientation, and resilient agriculture.

On the other hand, Rep. Escudero talked about the need to further intensify the presence of the Department at the grounds as there are still plenty of agricultural and fisheries products that needs to be promoted in both domestic and global markets.

The event was also graced by the visit of Mrs. Felicidad Tan Sy, wife of Mr. Henry Sy, Sr., owner of SM Supermalls. Mrs. Sy has been a frequent visitor of the event and patronizing the various products and technologies displayed on the exhibitors' booths.

Highlight of the opening ceremony was the awarding

of international partner organizations wherein they were recognized for their valuable contributions to BAR in achieving its goals. The awardees were: 1) ICRISAT (received by Dr. Dar); 2) IRRI (received by Deputy Director General for Communication and Partnerships V. Bruce J. Tolentino); 3) The WorldFish Center (received by Regional Director for Asia and Country Manager-Philippines Maripaz L. Perez); 4) Bioversity International (received by Regional Coordinator for Asia and the Pacific Agustin B. Molina); and 5) SEARCA (received by Director Gil C. Saguiguit). Moreover, the bureau also gave due recognition to PTV 4's Mag-Agri Tayo for being its long-time media partner in featuring and promoting BAR's programs, projects, and activities.

The Edible Landscaping (EL) Starter Kit, a simple kit containing information and tools on how to do edible landscaping on their own yards, was also launched during the NTF. The starter kit contained brochures on EL, sample garden design, and readily available seeds. The included seeds depended on the chosen garden design that includes pinakbet garden, herb garden, go, grow, glow garden, or a salad garden.

Moreover, the NTF seminar series featured projects that made a huge impact on the lives of their farmer beneficiaries. The project leaders presented the technical aspect of the project while the farmer beneficiaries shared their personal experiences and lessons learned during the conduct of the project (Table 18).



Table 18. NTF seminar series featuring high-impact BAR-funded projects

SEMINARS	
TOPIC	SPEAKERS
Enhancing the Productivity of Abaca Farms in the Bicol Region through Integrated Farming System: Abakayamanan Program	Dr. Editha O. Lomerio <i>Project Leader</i> Ms. Salvacion Alemania <i>Chairman, MAPA</i>
Soybean Production and Processing in the Hilly Lands	Ms. Rosemary G. Aquino <i>Chairperson, DA-Soybean TWG</i> Mr. Diosdado Estocapio <i>MASREDECA, Maddela, Quirino</i>
Intellectual Property	Ms. Carmen Peralta <i>Director, DITTB, IP Philippines</i>
Apiculture/Beekeeping Technologies	Dr. Cleofas Cervancia <i>UPLB-Bee Program</i>
CPAR on Organic Chicken Production	Dr. Jaime Cabarles <i>CPU</i> Mr. Geronimo Laguna <i>Samahan ng Lupon ng mga Magsasaka, Jaro, Iloilo</i>
Kapis for Progress	Dr. Lilian Garcia <i>BFAR 3</i> Mr. Mark Capili <i>Project Beneficiary</i>
CPAR on Improved Arrowroot Production Technologies under Coconut-based Farming Systems in Catanauan, Quezon	Ms. Rosemarie Olfato <i>DA-STIARC</i> Ms. Alodia Rey <i>Project Beneficiary, MSSK</i>
CPAR on Production of Seed Potato Planting Materials	Ms. Berly Tatoy <i>DA-NOMIARC</i> Mr. Gabriel Bandao <i>Potato Raisers Association</i>

Most Innovative Product and Best Booth were announced during the culmination of the three-day event. The Gourmix of DA-RFO 2 bagged the first place for "Most Innovative Product". The cashew prunes of DA-PAES and pigeonpea products of CBSUA won the second and third place respectively. On the other hand, DA-RFO 10 declared as the "Best Booth" while DA-RFO 4B and DA-RFO 5 got the second and third place, respectively.

Five IP certifications were also awarded to the BAR partners during the culminating activity. The certificates were proofs that the Intellectual Property Office of the Philippines (IPOPHIL) grant the approval of Intellectual Property Rights on the following: 1) Utility model for production of Schizophyllum commune mycelia and schizophyllan to the CLSU; 2) PAC-ALIAS Trademark to the PAC; 3) Okey na Okoy Logo; 4) Per-Deo Logo and Device and; 5) Cruz-eder Logo.

26TH NATIONAL RESEARCH SYMPOSIUM



For 26 years, BAR continues to gather and support research studies that can contribute significantly to the progress of agriculture and fisheries sector. NRS becomes the venue for BAR to give recognition to these research studies and the man and women behind them.

NRS is an annual R&D paper competition joined in by researchers and scientists from different R&D institutions from the NaRDSA throughout the country. For its 26th year, "Agriculture and Fisheries R&D: Facing the Challenges of Agricultural Landscape for Sustainable Development," was the NRS' theme which captures the importance of R&D in addressing the various challenges faced by the sector.

In 2014, a total of 101 paper entries were received to compete under the following categories: 1) basic research; 2) applied research – technology/information generation (agriculture); 3) applied research – technology/ information generation (fisheries); 4) applied research – technology adaptation/verification

(agriculture); 5) applied research – technology adaptation/verification (fisheries); 6) socio-economics research; 7) development research (agriculture); and 8) development research (fisheries).





Out of these 101 paper entries, 17 entries qualified for oral presentations during the opening and symposium proper held on 22 October 2014 at BAR. Thirteen of these paper entries won the AFMA R&D Paper Awards. The finalists were also asked to submit a poster presentation which also has corresponding award. (Table 19).

The winners received cash prizes and plaques. For the AFMA Best R&D Poster, the gold awardee received P50,000 while the Silver and Bronze awardees received P35,000 and P25,000 respectively. The Gold awardees for AFMA Best R&D Paper received P100, 000 while the Silver and Bronze awardees received P75, 000 and P50, 000, respectively.

The awarding ceremony was held on 24 October 2014 at Sequoia Hotel, Diliman, Quezon City and was attended by Agriculture Secretary Proceso J. Alcala and ASEAN Centre for Biodiversity Executive Director Roberto V. Oliva.

In his message, Secretary Alcala applauded the bureau for being an institution that quickly adjust and adapt on the changing time. He also encouraged the

partners in research especially the academe to do research that has more impact on the farming and fishing communities. Dr. Oliva, on the other hand, said that sustainable development true meaning lies on how well the government goals and initiatives harmonize with preserving biodiversity as not to endanger the needs of the future generations.

Finalist of 2014 Gawad Saka Search for Outstanding Achievers in Agriculture and Fisheries under the category Outstanding Agricultural Scientist (OAS) and Outstanding Agricultural Researcher (OAR) were also recognized in the awarding ceremony.

Two BAR-supported publications through its SPG were launched. These were: 1) Edible Ferns and Fern Recipe Book authored by Dr. Victor B. Amoroso, Dr. Annabelle P. Villalobos, Ms. April Joie D. Lagumbay, and Mr. Rainear A. Mendez of Central Mindanao University and; 2) Process Documentation of CPAR Projects: Learnings for Future Planning authored by Dr. Marideth R. Bravo and Dr. Dina C. Magnaye of the University of the Philippines-School of Urban and Regional Planning.

Table 19. Winners of the 26th NRS

AFMA Best R&D Paper

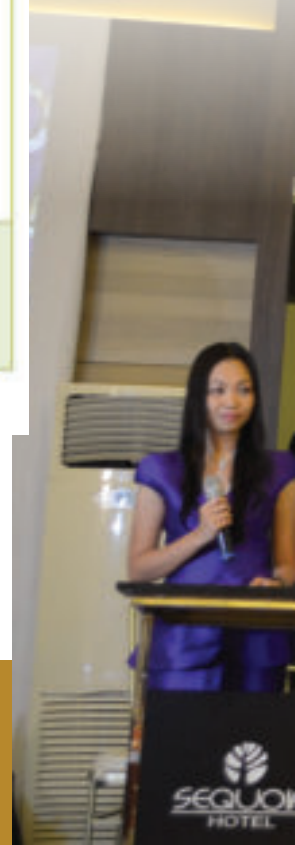
	TITLE	AUTHORS	AGENCY
A. APPLIED RESEARCH TG/IG – AGRICULTURE			
GOLD	Development and Evaluation of Functional Beverage with Germinated Brown Rice as Base Ingredient	Rodel M. Bulatao Jody V. Chavez Marissa V. Romero	PhilRice
SILVER	Evaluation of Crude Plant Extracts against Major Insect Pests and Diseases in Organically-grown Eggplant	Pio A. Javier Evangeline G. Punzalan Carlos L. Padilla	UPLB
BRONZE	Development of New Rice Varieties for High-temperature Tolerance in the Philippines	Norvie L. Manigbas Luvina B. Madrid Corazon C. Cardenas Evelyn S. Ladia Ferdinand B. Enriquez	PhilRice DA-Region 2 SCRC
B. APPLIED RESEARCH TG/IG – FISHERIES			
GOLD	<i>Sargassum oligocystum</i> as Immunostimulant: Effects on the Immune Response and Disease Resistance of Nile Tilapia <i>Oreochromis niloticus</i> L against <i>Aeromonas hydrophila</i> Infection	Francis N. Baleta Mary Joy Libatique	ISU CSU
SILVER	The Spatial Distribution of FAD Fishing Effort and Short-term Decision Making of Tuna Fishers from General Santos City, Philippines	Ricardo Babaran Edison Roi Macusi	UP Visayas
C. APPLIED RESEARCH TA/TV – AGRICULTURE			
SILVER	Tricoderma-based Management of Soil-borne Pathogens of Potato and Strawberry in the Highlands	Teresita K. Mangili Rhonda M. Oloan Trenesie M. Lorezco	BPI- BNCRDC
D. APPLIED RESEARCH TA/TV - FISHERIES			
GOLD	Refinements in Hatchery Management of Nile Tilapia (<i>Oreochromis niloticus</i> L) for Increased Seed Production	Emmanuel Vera Cruz Eddie Boy Jimenez Bethzaida Apongol Jose Abucay Zaldy Bartolome Adrian Deil Manlicic	CLSU

E. SOCIO-ECONOMICS RESEARCH

GOLD	Impact and Risk Assessment of Climate Change on Food and Environmental Security in Polillo Islands, Quezon Province	Glenn Banaguas Raeyan Ramos John Matthew Glico Marlon Co John Abdul Rahman Naguit Victor Angelo Fuentesbella Ralph Alejaga Anton Racela	DLSAU
SILVER	Corn Post-production Modules for Farmer-based Agribusiness Enterprises	Renita dela Cruz Sandy Bobier	
BRONZE	Economic, Socio-Institutional and Environment Impacts of Commercializing the Land-based Milkfish Hatchery in the Philippines	Yolanda T. Garcia Maria Esperanza T. Garcia	UPLB

F. DEVELOPMENT RESEARCH – AGRICULTURE

GOLD	Peanut MAGIC; CPAR Approach towards Enhanced Productivity in Corn-based Areas of Region 2	Rose Mary G. Aquino Orlando J. Lorenzana Norma A. Nerona Vanessa Joy F. Calderon Cristy dela Cruz Vilam U. Atalin	CVRC DA-RFO 2
SILVER	Community-based Participatory Action Research: An Effective Strategy in the Development of Rural Communities in San Nicolas, Ilocos Norte	Melinda Calumpit Jovita Datuin Luciana Cruz Mark Ariel Agresor Mary Ann Rarogal Wilhelmina Castañeda Evelyn delos Reyes Consuelo Belarmino Norma Calamayan Cecilia Sambrano Ric Salviejo Eva Bonilla	ILIARC DA-RFO I
BRONZE	Technology Piloting and Commercialization of Microcontroller-based Coffee Roasting Machine	Ruel M. Mojica Gerry M. Castillo Maryjane D. Tepora	CaVSU



Best Poster

	TITLE	AUTHORS	AGENCY
GOLD	Development and Evaluation of Functional Beverage with Germinated Brown Rice as Base Ingredient	Rodel M. Bulatao Jody V. Chavez Marissa V. Romero	PhilRice
SILVER	Optimization of Parboiling Conditions of Local Rice Varieties	Andres M. Tuates Jr. Shiela Marie A. Villota Aileen R. Ligisan Ofero A. Capariño	PhilMech
BRONZE	Community-based Participatory Action Research: An Effective Strategy in the Development of Rural Communities in San Nicolas, Ilocos Norte	Melinda Calumpit Jovita Datuin Luciana Cruz Mark Ariel Agresor Mary Ann Rarogal Wilhelmina Castañeda Evelyn delos Reyes Consuelo Belarmino Norma Calamayan Cecilia Sambrano Ric Salviejo Eva Bonilla	ILIARC DA-RFO I



ANNEX

ANNEX A: Awards and Recognitions

BAR wins 2 Binhi awards



Outstanding works of Philippine journalists covering major development issues in the agriculture, environment, and agribusiness sectors were recognized in this year's PAJ-SMC Binhi Awards Night held on 2 December 2014 at the Diamond Hotel, Manila.

BAR Chronicle, the official monthly publication of the Bureau of Agricultural Research (BAR), won as the Agricultural Newsletter of the Year. Written in this publication are news and feature articles about the activities and R&D supported projects of the bureau and of the National Research and Development System for Agriculture and Fisheries (NaRDSAF) community. Also featured in the publication are technologies and breakthroughs that emanated from BAR-funded researches.

Meanwhile, Ms. Rita T. dela Cruz was hailed as the Agricultural Photojournalist of the Year. Ms. dela Cruz, a photo hobbyist, is the head of the Publication Section of the Applied Communication Division and serves as the editor-in-chief of the bureau's regular publications, BAR Chronicle and BAR Digest.

Three's a charm for both BAR Chronicle and Ms. dela Cruz as this year marked their third win under the same respective categories, and are now considered as Hall of Famers. Both won first in 2007, then in 2010.

Spearheaded by the Philippine Agricultural Journalists, Inc. (PAJ), the Binhi Awards is known as a prestigious and one of the most awaited agricultural journalism contests in the country which started in 1978. Established in 1976, PAJ is a non-stock, non-profit professional organization of agriculture sectors and reports from the print and broadcast media, as well as information writers from government and private agencies involved in agriculture. This year, PAJ partnered with San Miguel Corporation (SMC), offering bigger prizes and more attractive incentives to agricultural journalists.

Over 100 participants, comprising of editors, writers, and journalists covering agriculture and environmental beats coming from Luzon, Visayas, and Mindanao, vied for recognition under 14 categories.

It was in 2007, under the leadership of its current director, Dr. Nicomedes P. Eleazar, when BAR started to join the contest. To date, it has already won 8 awards under different categories. ###

DA receives “pasasalamat” from UP as one of its active research partners

A certificate and a plaque of appreciation were awarded to the Department of Agriculture (DA) during the “Pasasalamat 2014: A Celebration of Research Partnership,” a thanksgiving dinner hosted by the Office of the Chancellor, University of the Philippines Diliman on 15 January 2014.

Receiving the award on behalf of DA was Dr. Teodoro S. Solsoloy, assistant director of the Bureau of Agricultural Research (BAR). The bureau, as the research and development (R&D) arm of the Department, plays a crucial role in the implementation of various research projects of various state universities and colleges including that of the UP System.

Welcoming the visitors and attendees was Dr. Benito M. Pacheco, vice-chancellor for Research and Development, UP Diliman.

This was followed by the messages of Dr. Rowena Cristina L. Guevara, executive director of Philippine Council for Industry and Energy Research and Development (PCIERD), conveyed a message in behalf of the Department of Science and Technology (DOST).

This was followed by the messages of Engr. Alfonso M. Azurin, president of the Asian Semiconductor Electronics Technologies (ASET) Corporation; Atty. Susan D. Villanueva, senior partner of Cruz Marcelo and Tenefrancia; Atty. Nelson P. Laluces, deputy director general of Intellectual Property Office of the Philippines (IPOP HL); and Mr. Anselme Motcho, Chief of Operations of the United Nations’ Children’s Fund (UNICEF) Philippines.

UP Diliman Chancellor, Dr. Caesar A. Saloma, also gave his response to the messages of their esteemed partners.

Aside from DA, other awardees, which are also UP’s partners in research, were: DOST, Department of Environment and Natural Resources (DENR), Commission on Higher Education (CHED), IPOP HL, Department of Energy (DOE), Department of Public Works and Highways (DPWH), ASET Corp., Cruz Marcelo and Tenefrancia, UNICEF Philippines, The OML Center, UP Technology Transfer and Business Development Office, UP Diliman Legal Office, and UP Diliman Enterprise Program for Technopreneurship. ###



Philippines and ICRISAT far-reaching partnership celebrated

To recognize the extensive and fruitful partnership between the Philippines and the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT), the Bureau of Agricultural Research (BAR) held the "Celebration of ICRISAT-Philippines Partnership" on 15 December 2014.

The celebration was conducted to honor and to recognize the 45 agencies/organizations that became instrumental in supporting the various research and development (R&D) initiatives of ICRISAT into the country. Among them were: 8 from the Department of Agriculture-Regional Field Offices (DA-RFOs), 3 from DA-attached agencies and staff bureaus, 13 from the local government units (LGUs), and 19 from state universities and colleges (SUCs). The awardees contributed to the success of bringing various technologies developed by ICRISAT to be implemented and used in the Philippines.

Two special citations were also awarded to Dr. Nicomedes P. Eleazar, director of BAR and the Dr. Patricio S. Faylon, executive director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), in recognition of their conscientious efforts and determinations in promoting rainfed agriculture for smallholder farmers in the Philippines.

In a speech delivered by Dr. William D. Dar, director general of ICRISAT, he reiterated the need for a holistic approach, which ICRISAT is doing, and that hopefully, he wanted for the Philippines, particularly the National Agricultural Research Centers (NARS) to also try. "We need a very holistic way of tackling the very problem that is confronting the rainfed farming in the country. You can no longer depend on conventional approaches. We need to bring in newer and holistic approaches to bring the communities. At the end of the end it is the farmer who will sustain the interventions, the technologies, and the delivery system that we are trying to promote," he said.

Dr. Dar suggested the Philippine-partners to strengthen the relationship with the international agricultural research centers to bring in technologies that will be beneficial to the Filipino farming communities. He also urged them to continue advocating for increase in investment in research for development because "no nation can succeed if we only invest so little for research and development." And while a good number of technologies have been promoted and commercialized in the country, scientific farming is not yet a common way of life in countryside according to Dr. Dar. ###



ANNEX B: BAR Event Highlights

JANUARY

Yamang Lupa Program 1st ManCom Mtg held

BAR holds the first meeting of the Yamang Lupa Program Management Committee on 9 January 2014 to continue tracking of its full implementation in the country. The program is a partnership of ICRISAT with the DA through BAR, HVCDDP, BSWM, BPI, ATI, and selected DA-Regional Field Units and state universities and colleges.

Present during the meeting was BAR Director Nicomedes P. Eleazar who emphasized the need for the country to have modernized facilities such as a plant and soil analytical laboratory to support the implementation of the program. Also attending was ICRISAT Director General William D. Dar who emphasized that the program will not only focus on soil but, at the broader context, the endeavors that will be undertaken should lead to increased productivity, assured profitability, and ensured sustainability of the environment that includes water resources.

ICRISAT Scientist Dr. Junel Soriano presented the updates and status of the ICRISAT experience in implementing the Bhoochetana program in India and the current status of the implementation of YamangLupa program and the future activities that will be undertaken.

Participants updated the group on the conduct of the program in the pilot regions (Regions 4A, 8, and 9). With BSWM as the lead implementing agency of the program, Engr. Samuel Contreras, chief of the Soil Conservation Management Division of BSWM, was designated as the chair of the YamangLupa Program Management Committee. ###

FEBRUARY

First CPAR Congress concluded; close to 400 participants in attendance

Filipino farmers and fishers from across the country gathered to personally tell their stories of success as the Bureau of Agricultural Research (BAR) staged its first ever "CPAR National Congress" held on 20-21 February 2014 at the Manila Hotel. With the theme, "*CPAR: Pagtutulungan ng mga Mananaliksik, Magsasaka't Mangingisda tungo sa Malawakang Pag-unlad ng Pamayanan*," the congress showcased the accomplishments and success stories from selected CPAR projects nationwide through product promotions, exhibits, project presentations of researchers and project leaders, and testimonials from the farmers and fishers themselves.

Director Nicomedes P. Eleazar welcomed the close to 400 participants composed of researchers, CPAR implementers, representatives from local government units (LGUs), DA attached agencies, farmer and fisher cooperators, and representatives from the private sector. Secretary Proceso J. Alcala served as the keynote speaker during the opening ceremony who was joined by Dr. Rex Cruz, chancellor of the University of the Philippines Los Baños; and Atty. Denis Habawel, governor of Ifugao.

Aside from the farmers' testimonies were plenary sessions of various CPAR projects, launching of CPAR primer, and exhibit of products generated from various CPAR projects implemented nationwide. ###

MARCH

BAR joins National Women's Month celebration

BAR took part in the celebration of the National Women's Month. This year's theme "*Juana, ang Tatag Mo ay Tatag Natin sa Pagbangon at Pagsulong!*" reflects and honors the resiliency, strength, and contributions of women to progress.

As a kick-off activity, the human formation of gender's symbol which aimed to get the Guinness World Record for the highest number of participants forming the woman's symbol was organized. BAR staff joined more than 10,000 delegates representing government agencies, academic institutions, private sector and civil society groups, to assemble and gather at the Quirino Grandstand and make this historical undertaking possible. BAR also prepared several activities in observance of the women's month. One of these was a photo exhibit at the BAR's lobby capturing the women in the field of research and development (R&D) underlining their significant contributions in the progress of agriculture and fisheries R&D.

BAR Director Nicomedes P. Eleazar, Asst. Director Teodoro S. Solsoloy, STIARC Manager Digna Narvacan, and EVIARC Manager Elvira Torres, led the ribbon-cutting ceremony and opening of the photo exhibit on 26 March 2014 at BAR's lobby. Twenty three women in R&D were featured in the photo exhibit including the Regional Integrated Agriculture Research Centers (RIARCs) managers, and prominent scientists and researchers in the country. The observance of National Women's Month is led by the Philippine Commission on Women (PCW), the lead agency in the country that forwards the causes for gender equality and empowerment. ###

APRIL

2 BAR undergrad scholars graduate MagnA Cum Laude from UPLB

BAR takes pride as two of its undergraduate scholars graduated Magna Cum Laude during the 42nd Commencement Exercises of the University of the Philippines Los Baños (UPLB) held on April 26, 2014.

Mr. Roden Carlo M. Lizardo and Mr. Mark Paul Rivarez earned the academic merit of Magna Cum Laude for BS Agriculture and BS Agri-Biotechnology, respectively. The two were the only ones in junior standing when the scholarship grants were awarded—making them the first of their batch to graduate. The two did not only graduate on time but also showed utmost excellence, proving them worthy of the support that DA has given them.

To personally award and congratulate the BAR scholars, a team from the bureau, headed by Dir. Eleazar attended the breakfast reception to congratulate and honor them. Also present during the event was Agriculture Undersecretary for Policy, Planning, Project Development, Research and Regulations, Dr. Segfredo R. Serrano. It may be recalled that the DA-BAR Undergraduate Scholarship Program was the result of a suggestion and recommendation of DA Undersecretary Serrano.

The Breakfast Reception, which was done to honor its graduating students, was attended by the graduating students and their parents and the UPLB-CA Cluster directors, UPLB vice chancellors, national scientists, former deans of UPLB-CA, and UPLB professor emeriti.

The DA-BAR-UPLB Undergraduate Scholarship Program started in June 2012 with 12 B.S. Agriculture students as its first batch of scholars. For the following year, another 12 BS Agriculture students were given the grant along with 12 BS Agriculture-Biotechnology, a recently-instituted course in at UPLB. ###

MAY

BAR, WorldFish strengthen ties for smoother R&D partnership

Strengthening ties with its partner institutions has been one of the strategies of the Bureau of Agricultural Research (BAR) in ensuring that agriculture and fisheries research and development (R&D) projects in the country are being implemented effectively.

On 21 May 2014, officers from the WorldFish Center, an international research center for fisheries and aquaculture, and one of the core partners of BAR, visited the bureau. Ms. Diane Shohet, director for communications and marketing of WorldFish based in Malaysia was joined by her colleagues in the Philippines: Dr. Lily Ann Lando, country communications officer; Dr. Lutgarda Tolentino, knowledge and action researcher; and Mr. Len Garces, research fellow.

A brief meeting was held between BAR and WorldFish to discuss on the opportunities that can lead to the improvement of the collaboration. It was suggested that projects which were successfully implemented be replicated to other areas of the country. The different communication strategies that are being employed by BAR in promoting information regarding its projects were also discussed.

Mr. Anthony Obligado, head of the Technology Commercialization Division (TCD) of BAR, talked about the bureau's strategic directions, framework, and approaches for R&D, as well as its major R&D programs while Ms. Ellen Garces, also from TCD, presented the joint initiatives of BAR and WorldFish to ensure that collaborative projects are still aligned to the mandates and priorities of the two research institutions. ###

JUNE

Soybean production bears fruit in Tacloban

Addressing the distraught brought by typhoon Yolanda in 2013 particularly in the agriculture sector of Eastern Visayas (Region 8), the Agricultural Rural Alternative Development Option (ARADO) Foundation, Inc. led by Sister Eloisa David tied up with DA, through BAR, High HVCDP, and Regional Field Office 8, and other local agencies to help uplift the lives of affected Filipinos in the region. Specifically, the group introduced soybean production and processing as potential source of livelihood and income in the area.

Three months after typhoon Yolanda hit Tacloban in November 2013, soybean, a low maintenance crop with considerable health benefits, was planted in February 2014. Among the techno-demo sites were situated in Brgys. Dumarag and Brgy. Aringit in Pastrana, Leyte. Other areas planted with soybean were in Brgys. Yapad, Sapsap, Bahay, Caninoan, Manaybanay, Capilla at Tolawin, also in Pastrana and other municipalities of Babatnon, Leyte.

As an offshoot activity, a Farmers' Field Day was held on 10 June 2014 at in Brgy. Hisam, Jaro, Leyte gathering more than 360 farmers.

Since the implementation of the DA Soybean Program in 2012, production areas for soybean increased across all regions. Farming communities and peoples organizations likewise benefitted from the technology. Regions also established strong collaborations with their local government units and other government agencies in implementing their respective projects and activities.

Present during the field day were members of the Benedictine Sisters; Ms. Rosemary Aquino, chair of the Soybean Technical Working Group (TWG); Mr. Elmer Enicola, vice chair of Soybean TWG; Ms. Jennilyn Castañeto, BAR Soybean focal person); Father Edwin Perito, social director of Palo, Leyte; Mr. Larry Sultan, Regional HVCDP coordinator; Mr. Noel Burtisa, municipal agricultural officer of Pastrana, Leyte; Dr. Carlos S. dela Cruz of DA-RFO 8; and Dr. Leonarda Londina, asst. manager of DA-EVIARC. ###

JULY

Adlay R&D program readies to expand

"A lot of things have been done. Now, the question is, are we ready to expand the program?" Thus, challenged by Director Jennifer Remoquillo of the High Value Crops Development Program (HVCDP) of the Department of Agriculture (DA), during the review and planning workshop for the Adlay R&D Program on 15-18 July 2014 in Tagaytay City.

Dir. Remoquillo, commended BAR and all the implementers of adlay projects for their efforts exerted in view of the program. According to her, before adlay can be introduced on a commercial scale, market researches and benchmark studies should first be considered to which BAR Director Nicomedes Eleazar agreed. Consequently, she mentioned about tapping experts from the academe in the conduct of this endeavor.

BAR through the Project Monitoring and Evaluation Division (PMED), in collaboration with HVCDP, spearheaded the conduct of the review and planning workshop to assess the accomplishments of on-going projects being implemented under the Adlay program. Likewise, the activity sought to specifically point out issues and concerns during implementation; recommend solutions to identified problems; and identify research outputs for promotion, dissemination, piloting, and possible intellectual property application.

During the four-day activity, adlay proponents, coordinators, and representatives from the DA-Regional Field Offices (RFOs), Philippine Center for Postharvest Development and Mechanization (PhilMech), and selected state universities and colleges presented on the status of their on-going projects and discussed their future plans and activities. Ms. Priscilla Jover of DA-RFO 9 also gave updates for the upcoming Adlay Grand Field Day which will be held in September in Zamboanga del Sur.

Technical Working Group members Mr. Elmer Enicola of the University of the Philippines Los Baños, Ms. Rose Mary Aquino of DA-RFO 2, and Ms. Juanita Salvani of DA-RFO 10 served as the evaluators and provided comments and suggestions as to how project implementation could be improved. ###

AUGUST

IPOPHL awards 5 IP certifications thru BAR's assistance

Five IP certifications were awarded to two state universities and colleges (SUCs) and three individuals from the private sector during the conduct of this year's Agriculture and Fisheries Technology Forum and Product Exhibition held on 8 August 2014 at the Megatrade Hall 2, Megamall in Mandaluyong City.

The Intellectual Property Office of the Philippines (IPOPHL), through the assistance from BAR's IPR Office granted the Central Luzon State University (CLSU), through its inventor Dr. Renato G. Reyes, the Certificate of Registration of Utility Model for the research titled, "Production of Schizophyllum commune Mycelia and Schizophyllum." Dr. Reyes has been pleased of the outcome because this is the first IPR awarded to their university.

Meanwhile, another SUC, the Pampanga Agricultural College (now the Pampanga Agricultural State University), was granted a Trademark certificate for Alternative Low Input Agriculture System (ALIAS) logo. Dr. Norman De Jesus, director of the PAC-ALIAS Center, is the person behind the creation of its logo and device which is now the Trademark of the university's technology center.

From the private sector, Mr. Eder Cruz Chua, a businessman, received two Certificates of Registration of Trademarks for "Per Deo Logo and Device" and "A Mark of Cross Logo." His business line includes health supplements derived from fruit and vegetable concoctions.

Another recipient of Trademark certificate was Mr. Enrique B. Bucog, owner of the "Okey na Okoy Logo and Device". Already an established food business with a number of kiosks around the metro, Mr. Bucog is grateful to BAR for the assistance provided to him, and takes pride that not only is he generating income from Okey na Okoy, but it is also benefiting squash farmers in four provinces in the country. ###

SEPTEMBER

Adlay going mainstream; 1st Nat'l Grand Field Day held

"Adlay is no longer the 'Philippines' Best Kept Secret," said Agriculture Secretary Proceso J. Alcala during the conduct of the "First National Grand Adlay Field Day and Technology Forum" held on 3-4 September 2014 at Barangay Legarda Uno, Dinas, Zamboanga del Sur.

With the theme, "Harnessing the Potentials of Adlay as Additional Staple Food for Filipinos," the two-day event served as the launching of adlay initiatives which aimed to promote the crop making it a mainstream crop alongside Filipino staples and all-time favorite crops such as rice and corn.

Showcasing various adlay products and technologies through exhibits, raising awareness through the conduct of short seminars and farmers' forum, and almost 1,500 participants composed of farmers, community members, researchers, and other stakeholders from all over the country, the grand field day brought adlay into a higher notch.

The program is now on its fourth year of implementation, which is a collaborative partnership of DA through BAR, High Value Crops Development Program (HVCDP), and DA regional offices, and other adlay proponents.

The event was spearheaded by the Zamboanga Peninsula Integrated Agricultural Research Center, in collaboration with BAR, HVCDP, Mindanao Zonal RDE Network, Northern Mindanao Integrated Agricultural Research Center, National Adlay Technical Working Group, and the local government of Dinas, Zamboanga del Sur. ###

OCTOBER

BAR joins 2014 World Food Day celebration

In an effort to increase awareness on the incidence of hunger and malnutrition worldwide and to make proactive stance in combating the prevalence of such problems, the Department of Agriculture (DA), in collaboration with Food and Agriculture Organization (FAO) and United Nations (UN), held the annual celebration of World Food Day in the Philippines.

This year's theme "Family Farming: Feeding the world, caring for the earth" focused on the significant role of family farming in eradicating hunger and poverty, providing food security and nutrition, improving livelihoods, managing natural resources, protecting the environment and achieving sustainable development in rural areas.

On 13 October 2014, the World Food Day Celebration formally started with an opening program which was held at the Department of Agriculture (DA) grounds and was participated in by DA attached agencies and staff bureaus. Secretary Proceso Alcala and FAO Representative to the Philippines Jose Luis Fernandez spearheaded the ribbon cutting ceremony and opening of photo and product exhibit.

The culminating activity was held on 16 October 2014 wherein the DA family, together with FAO and UN officials, gathered at the Quezon City Memorial Circle to celebrate the annual global event. The BAR delegation was headed by Assistant Director Teodoro S. Solsoloy. The celebration was concluded by the lighting of candles and reciting of the 2014 World Food Day Pledge. ###

NOVEMBER

CPAR in Ifugao brings Phi bananas to Japan

Ifugao province has been known to be an advocate of organic farming. Amazingly, this endeavor opened doors for farmers to showcase their produce in the international arena. And when a country like Japan – whose standards when it comes to ‘safe foods’ are very strict – nods at organically-grown bananas in the Philippines, it sure is something to take pride of, especially by farmer-growers themselves.

This is exactly what the Santa Maria Banana Producers Association (SABAPA) in Alfonso Lista, Ifugao felt when they began exporting their produce to Tokyo and Osaka, Japan.

It all started with CPAR project titled, “Community-based Participatory Action Research on Banana Production and Processing in Alfonso Lista, Ifugao” which aims to increase productivity among farmers in Alfonso Lista, Ifugao, through the introduction of new banana production and processing technologies.

Prior to the implementation of CPAR in Alfonso Lista, farmers were already into banana production. However, there was a pressing need for the growers to level up their knowledge in terms of quality improvement to meet the growing demands for bananas not only locally, but also internationally.

The association’s data on marketed bananas showed that as of February 2014, the volume of production of all 23 farmers reaches 5.81 metric tons (5,812.21 kgs). To date, the Ifugao province contributed 11 percent of the Balangon banana for export, yet the demand continues to rise. ###

DECEMBER

Philippines and ICRISAT far-reaching partnership celebrated

To recognize the extensive and fruitful partnership between the Philippines and the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT), the Bureau of Agricultural Research (BAR) held the “Celebration of ICRISAT-Philippines Partnership” on 15 December 2014.

The celebration was conducted to honor and to recognize the 45 agencies/organizations that became instrumental in supporting the various research and development (R&D) initiatives of ICRISAT into the country. Among them were: 8 from the Department of Agriculture-Regional Field Offices (DA-RFOs), 3 from DA-attached agencies and staff bureaus, 13 from the local government units (LGUs), and 19 from state universities and colleges (SUCs). The awardees contributed to the success of bringing various technologies developed by ICRISAT to be implemented and used in the Philippines.

Two special citations were also awarded to Dr. Nicomedes P. Eleazar, director of BAR and the Dr. Patricio S. Faylon, executive director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), in recognition of their conscientious efforts and determinations in promoting rainfed agriculture for smallholder farmers in the Philippines.

Another highlight of the celebration was the launching of the book, “Greening the Grey: Expanding the Green Revolution” authored by Dr. William D. Dar and Dr. Arun K. Tiwari, a technology manager from India. The book is a much anticipated follow-up to the “Feeding the Forgotten Poor” also by Dr. Dar and Prof Tiwari, published in 2011 and was also launched at BAR in April 2012. ###

ANNEX C: ACRONYMS

ACD	Applied Communication Division
ACPC	Agricultural Credit Policy Council
AFACI	Asian Food and Agriculture Cooperation Initiative
AFMA	Agriculture and Fisheries Modernization Act
ALIAS	Alternative Low Input Agricultural System
APDC	Animal Products Development Center
ARADO	Agricultural Rural Alternative Development Option
ARD	Agricultural and Rural Development
ARMMIARC	Autonomous Region in Muslim Mindanao Integrated Agricultural Research Center
ATM	Automated Teller Machine
ATWGARD	ASEAN Technical Working Group on Agricultural Research and Development
AYT	Adaptability Yield Trials
BAPNET	Banana Asia Pacific Network
BAI	Bureau of Animal Industry
BAR	Bureau of Agricultural Research
BEENET	Beekeepers Network of the Philippines Foundation Inc.
BFAR	Bureau of Fisheries and Aquatic Resources
BIARC	Bicol Integrated Agricultural Research Center
BIOTECH	National Institute of Molecular Biology and Biotechnology
BMB	Biodiversity Management Bureau
BPP	Biodiversity Partnership Project
BSU	Benguet State University
BSWM	Bureau of Soils and Water Management
CAR	Cordillera Administrative Region
CaVSU	Cavite State University
CC	Climate Change
CCC	Climate Change Commission
CDA	Cooperative Development Division
CEMIARC	Central Mindanao Integrated Agricultural Research Center
CENVIARC	Central Visayas Integrated Agricultural Research Center
CGUARD	Corn Germplasm Utilization through Advanced R&D
CHED	Commission of Higher Education
CIARC	CAR Integrated Agricultural Research Center
CLIARC	Central Luzon Integrated Agricultural Research Center
CLSU	Central Luzon State University
CNSC	Camarines Norte State College
CBSUA	Central Bicol State University of Agriculture
CPAR	Community-based Participatory Action Research
CPDAD	Cooperative Program Development Assistance

CMU	Central Mindanao University
CPU	Central Philippine University
CSU	Cagayan State University
CVIARC	Cagayan Valley Integrated Agricultural Research Center
CVSRRC	Cagayan Valley Small Ruminants Research Center
DA	Department of Agriculture
DBM	Department of Budget and Management
DENR	Department of Environment and Natural Resources
DITTB	Documentation, Information and Technology Transfer Bureau
DLSU	De La Salle University
DLSAU	De La Salle Araneta University
DOST	Department of Science and Technology
EEP	Ethanol Extracted Propolis
EL	Edible Landscaping
ESETS	Extension Support, Education, and Training Services
EVIARC	Eastern Visayas Integrated Agricultural Research Center
FAO	Food and Agriculture Organization
FDA	Food and Drugs Administration
FPA	Fertilizer and Pesticide Authority
FSSP	Food Staples Sufficiency Program
GBGPC	Golden Beans and Grains Producers Cooperative
GCTCV	Giant Cavendish Tissue Culture Variant
GEF	Global Environment Facility
GMP	Good Manufacturing Practices
GRO	Green Rescue Organic
GWHS	Government Web Hosting Service
HVCDP	High Value Crops Development Program
ICRISAT	International Crops Research Institute for the Semi-Arid-Tropics
ICT	Information and Communication Technology
IDG	Institutional Development Grant
IEC	Information, Education and Communication
IP	Intellectual Property
IPB	Institute of Plant Breeding
IPOPHIL	Intellectual Property Office of the Philippines
IPRO	Intellectual Property Rights Office
IRRDB	International Rubber Research Development Board
IRRI	International Rice Research Institute
ISU	Isabela State University
ITDI	Industrial Technology Development Institute
ITPGRFA	International Treaty of Plant Genetic Resources for Food and Agriculture
KALIPI	Kalipunan ng Liping Pilipina, Inc.
LBNCRDC	Los Baños National Crop Research and Development Center
LGU	Local Government Unit
LPSU	Laguna State Polytechnic University
MAGIC	Market Attractive to Growers and Import Competitive
MAPA	Malilipot Abaca Planters Association
MFO	Major Final Output

MinSCAT	Mindoro State College Agriculture Technology
MMSU	Mariano Marcos State University
MSC	Marinduque State College
MSSK	Matanadang Sabang-Silangan/Kanluran
MSU	Mindanao State University
MRB	Malaysian Rubber Board
NaRDSAf	National Research and Development System for Agriculture and Fisheries
NAST	National Academy of Science and Technology
NCT	National Cooperative Testing
NEDA	National Economic Development Authority
NFRDI	National Fisheries Research and Development Institute
NGO	Non-government Organization
NIA	National Irrigation Administration
NOAB	National Organic Agriculture Board
NOAP	National Organic Agriculture Program
NOMIARC	Northern Mindanao Integrated Agricultural Research Center
NSIC	National Seed Industry Council
NSPRDC	National Swine and Poultry Research and Development Center
NTCP	National Technology Commercialization Program
NVSU	Nueva Vizcaya State University
OA	Organic Agriculture
OAS	Outstanding Agricultural Scientist
OAR	Outstanding Agricultural Researcher
OFR	On-Farm Research
OTOP	One Town One Product
PAC	Pampanga Agricultural College
PAENRO	Provincial Agriculture, Environment and Natural Resources Office
PAES	Palawan Agricultural Experiment Station
PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
PCAF	Philippine Council for Agriculture and Fisheries
PCC	Philippine Carabao Center
PhilFIDA	Philippine Fiber Industry Development Authority
PhilMech	Philippine Center for Postharvest Development and Mechanization
PhilRice	Philippine Rice Research Institute
PLGU	Provincial Local Government Unit
PMED	Project Monitoring and Evaluation Division
PMG	Program Management Group
PNS	Philippine National Standards
PNAD	Philippine Native Animal Development
POT	Package of Technology
PPDD	Planning and Program Development Division
PPP	Public-Private Partnership
PRA	Participatory Rural Appraisal
R&D	Research and Development

RDA	Rural Development Administration
RDE	Research, Development and Extension
RFRDC	Regional Fisheries Research and Development Center
RFTC	Rice Terraces Farmers Cooperative
RFO	Regional Field Office
RIARC	Regional Integrated Agricultural Research Center
RIC	Rural Improvement Club
ROS	Research Outreach Station
SCRC	Southern Cagayan Research Center
SEARCA	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
SKSU	Sultan Kudarat State University
SLS	Scientific Literature Services
SLSU	Southern Tagalog State University
SPG	Scientific Publication Grant
SSC	Sulu State College
STIARC	Southern Tagalog Integrated Agricultural Research Center
SUC	State Universities and Colleges
SWCCO	Systems-Wide Climate Change Office
TARRC	Tun Abdul Razak Research Centre
TCA	Tarlac College of Agriculture
TCD	Technology Commercialization Division
TM	Trademark
TWG	Technical Working Group
UNDP	United Nations Development Program
UPLB	University of the Philippines Los Baños
UPLBFI	University of the Philippines Los Baños Foundation, Inc.
UM	Utility Model
USM	University of Southern Mindanao
VSU	Visayas State University
WESVIARC	Western Visayas Integrated Agricultural Research Center
YLP	Yamang Lupa Program
YTPI	Yokohama Tire Philippines, Inc

ANNEX D: BAR KEY OFFICIALS 2014

Office of the Director

Dr. Nicomedes P. Eleazar, CESO IV

E-mail: neleazar@bar.gov.ph or od@bar.gov.ph

Phone: +63 2 928-8624 local 2011, 2021, 2022

Fax: +63 2 927-5691

Office of the Assistant Director

Dr. Teodoro S. Solsoloy

E-mail: tsolsoloy@bar.gov.ph

Phone: +63 2 928-8624 local 1012

Fax: +63 2 920-0235

Planning and Project Development Division

Joell H. Lales

Email: jlales@bar.gov.ph

Phone: +63 2 928-8624 local 2112 or 2128

Fax: +63 2 928-8624 local 2124

Project Monitoring and Evaluation Division

Salvacion M. Ritual

Email: sritual@bar.gov.ph

Phone: +63 2 928-8624 local 3112

Fax: +63 2 920-0227

Institutional Development Division

Digna L. Sandoval

Email: dsandoval@bar.gov.ph

Phone: +63 2 928-8624 local 2111

Fax: +63 2 920-0219

Technology Commercialization Division

Anthony B. Obligado

Email: aobligado@bar.gov.ph

Phone: +63 2 928-8624 local 2311

Fax: +63 2 928-8624 local 2222

Applied Communication Division

Julia A. Lapitan

Email: jlapitan@bar.gov.ph

Phone: +63 2 928-8624 local 3012 and 3026

Fax: +63 2 920-0227

Information Management Unit

Melissa A. Resma

Email: mresma@bar.gov.ph

Phone: +63 2 928-8624 local 3029

Fax: +63 2 928-8624 local 2124

Administration Unit

Leoncia B. del Mar

E-mail: ldemar@bar.gov.ph

Phone: +63 2 928-8624 local 2022

Fax: +63 2 927-5691

Finance Unit

Roberto S. Quing

E-mail: rquing@bar.gov.ph

Phone: +63 2 928-8624 local 1211

Fax: +63 2 927-5691

Internal Audit Service

Gretel F. Rivera

Email: grivera@bar.gov.ph

Phone: +63 2 928-8624 local 1241

Fax: +63 2 920-0227





Citation:

2014 BAR Annual Report. (2015). Achieving a Client-driven R&D. Department of Agriculture-Bureau of Agricultural Research: Diliman, Quezon City, Philippines.

This report was prepared and packaged from the reports of the different divisions and units of the Bureau of Agricultural Research.

Production Team

Editor: Rita T. dela Cruz

Consulting Editors: Julia A. Lapitan and Victoriano B. Guiam

Writers: Ma. Eloisa H. Aquino, Liza Angelica D. Barral, Daryl Lou A. Battad, Anne Camille B. Brion, Rita T. dela Cruz, Diana Rose A. de Leon, Victoriano B. Guiam, Patrick Raymund A. Lesaca, Mara Shyn M. Valdeabella

Layout: Diana Rose A. de Leon

Photos: BAR Archives

Print Manager: Anthony A. Constantino

Adviser: Dr. Nicomedes P. Eleazar, CESO IV

For more information, write, call or visit us at:

Applied Communication Division
DA-Bureau of Agricultural Research

Visayas Ave., cor Elliptical Rd.,

Diliman, Quezon City 1104

Email: acd@bar.gov.ph

Tel. Nos.: (02) 928-8505, 927-0226, 928-8624

This report is published by DA-BAR and can also be viewed or downloaded from www.bar.gov.ph

ISSN 1655-3950

© Bureau of Agricultural Research, Department of Agriculture 2015



RDMIC Bldg., Visayas Ave., cor. Elliptical Road
Diliman, Quezon City, Philippines 1104
Telephone: +63 (2) 928-8505, 928-8624, 920-0226
Fax: +63 (2) 927-5691, 920-0231
Email: rd@bar.gov.ph
Website: www.bar.gov.ph