SMAARRDEC
Innovate. Engage. Connect.

The 2021-2022 SMAARRDEC ANNUAL REPORT

Southern Mindanao Agriculture, Aquatic and Natural Resources Research and Development Consortium

CELEBRATING

years

"Strengthening Agriculture, Aquatic and Natural Resources (AANR) Industries and communities towards a resilient and economically competitive Davao Region"

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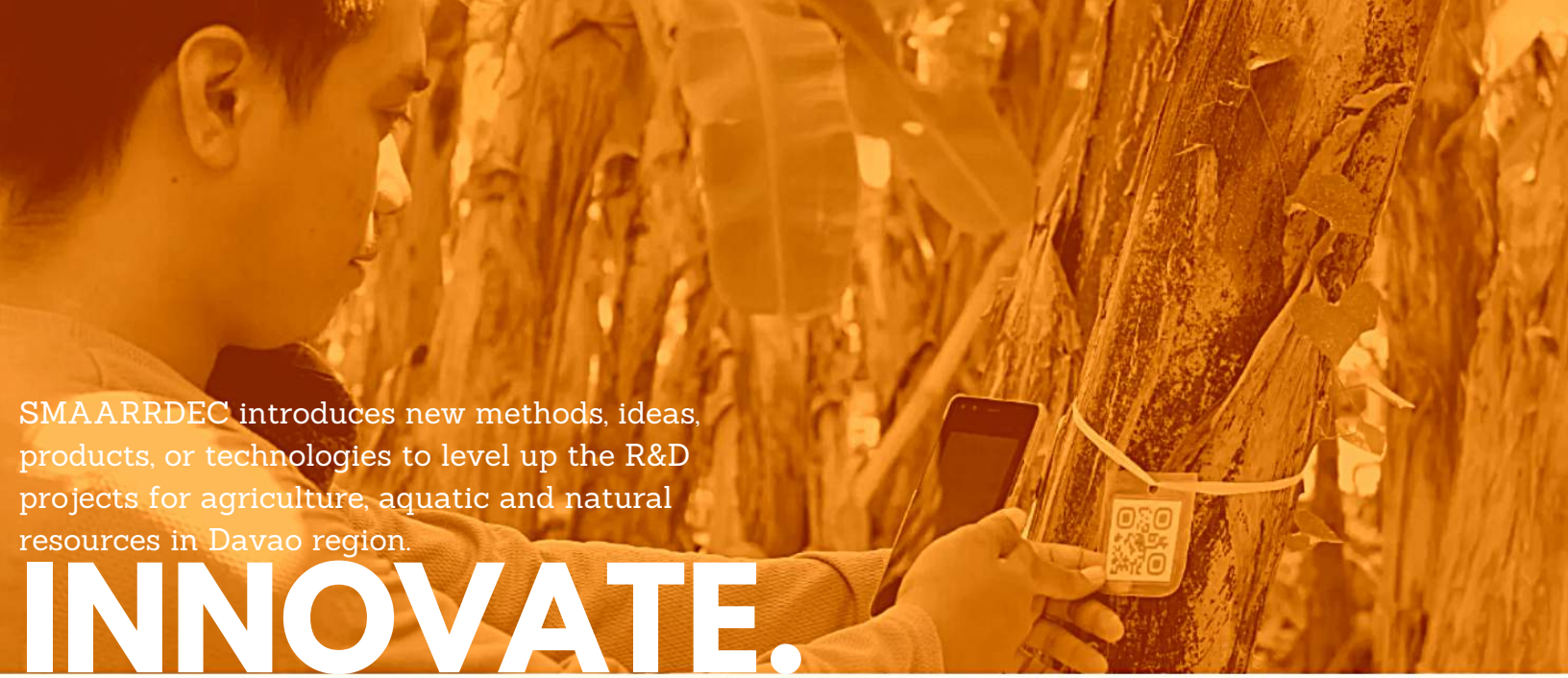

SMAARRDEC introduces new methods, ideas, products, or technologies to level up the R&D projects for agriculture, aquatic and natural resources in Davao region.

INNOVATE.

SMAARRDEC makes sure that the R&D projects are presented to the stakeholders namely, farmers, processors and investors wherein collaboration and interaction takes place.

ENGAGE.

SMAARRDEC ties up with the twenty-eight (28) Consortium Member Institutions to continuously have a well-managed and improved research outputs, developmental services and operation within its internal and external consortium network.

CONNECT.

ABOUT SMAARRDEC

Established on August 13, 1987, the Southern Mindanao Agriculture, Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC) is a not-for-profit R&D organization under the orchestration of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development(PCAARRD) serving as a partner in managing R&D efforts to accelerate the generation, utilization, and commercialization of technologies in agriculture, aquatic, and natural resources of Davao Region.

With twenty-eight multidisciplinary member agencies, the Consortium's major efforts are dedicated to knowledge and technology generation, R&D results utilization/technology transfer, capability building, and governance and policy advocacy for science and technology (S&T) development.

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MESSAGE

As SMARRDEC aspires to be a relevant and value-adding regional research and development and extension leader for tropical agriculture, aquatic and natural resources (AANR), I am pleased to share with you the SMAARRDEC Annual Report 2021-2022, which details the Consortium's accomplishments on research and development (R&D), technology transfer, and S&T innovations in the agriculture, aquatic and natural resources sectors (AANR).

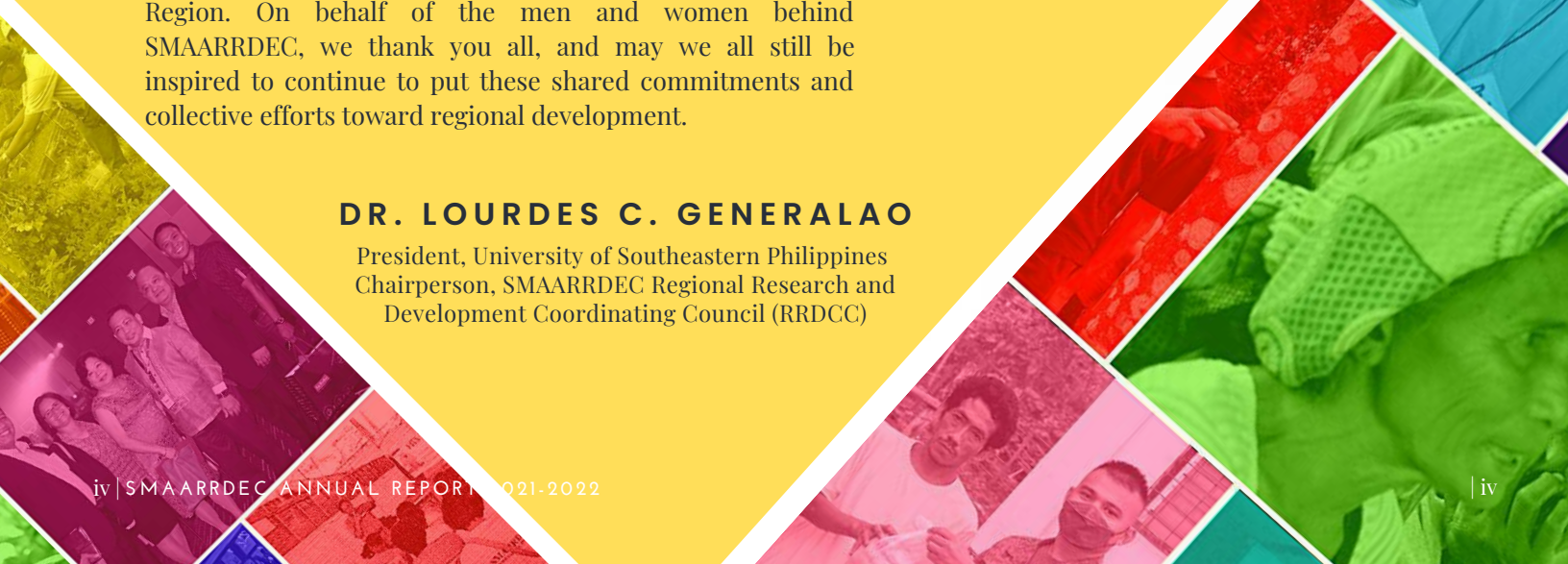
The Consortium reached yet another important turning point in 2022, which also commemorates the 35th anniversary of its formation. Traversing the still ongoing challenges of the pandemic, SMAARRDEC works diligently to make the most of what each member can contribute, developing regional innovations system that enhances and flourishes the regional AANR. The paradigm of S&T projects in this report covers a broad range of chances to accomplish regional goals and benefit the public and commercial sectors, research institutions, partners in the academe, researchers, extension workers, and ultimately, the farmers and fisherfolks.

SMAARRDEC has continuously resolved to do its purpose with its vision to generate ideas, best practices, and updates on agricultural standards and emerging markets that contribute to the development of the Davao Region's AANR sector. This can be credited to the dedicated men and women behind the Consortium with their immense effort and participation to attain the yearly targets. I strongly encourage the Consortium member organizations to reaffirm their dedication to helping realize the Consortium's mission.

More challenging years are ahead but us and difficult times thus, call us to become more resilient and innovative than ever. I am confident that we can surpass these challenges together through our collaborative efforts driven by our common vision for an economically sustainable Davao Region. On behalf of the men and women behind SMAARRDEC, we thank you all, and may we all still be inspired to continue to put these shared commitments and collective efforts toward regional development.

> *"Traversing the still ongoing challenges of the pandemic, SMAARRDEC works diligently to develop regional innovations system that enhances and flourishes the regional AANR."*

DR. LOURDES C. GENERALAO
President, University of Southeastern Philippines
Chairperson, SMAARRDEC Regional Research and Development Coordinating Council (RRDCC)



FOREWORD

Indeed, 2022 was a remarkable year for the Consortium as it sustained its presence and relevance in steadfastly working for the development of the Davao region amidst the challenges of the new normal brought by the pandemic. Celebrating its 35th founding anniversary on 2022, this year's achievements presented SMAARRDEC's emerald harvests as our beloved Consortium thrives greener than ever.

Adapting to the new normal setting, the Consortium considers the ongoing pandemic as an avenue of strengthened interest and commitment among its member agencies in sustaining the consortium's programs and initiatives. As SMAARRDEC evolves into an organization with its vision to be a relevant and value-adding regional research, development, and extension leader for agriculture, aquatic and natural resources, it looks into a promising paradigm anchored into a system of complementation towards sustainable interventions to deliver its promise. As PCAARRD in the region, SMAARRDEC will continue to innovate ways to mobilize scientific knowledge, support local scientists and extension workers, and create an enabling environment for S&T/R&D innovations through more productive and ingenious means than ever.

Thus, this report hallmarks all SMAARRDEC initiatives, from knowledge generation, utilization, and capacity building to knowledge management and how it affects its regional stakeholders. Articles documenting and leafing in these pages exhibit how the Consortium contributes to mitigating the impact of the pandemic on industries by ensuring business and research continuity, carrying on project implementations, and providing commodity assistance and supply for vulnerable communities.

Truly, 2022 has been a year filled with positive ingenuities and synergies in the agriculture, aquatic and natural resources (AANR) sectors. Let us continue innovating, engaging, and connecting toward a resilient and economically competitive Davao Region.

> *"Celebrating its 35th founding anniversary, this year's achievements presented SMAARRDEC's emerald harvests as our beloved Consortium thrives greener than ever."*

DR. GILBERT A. IMPORTANTE

Director, Southern Mindanao Agriculture, Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC)

EXECUTIVE SUMMARY

Celebrating its 35th founding anniversary with the theme "Strengthening Agriculture, Aquatic and Natural Resources (AANR) industries and communities towards a resilient and economically competitive Davao Region", the Consortium reckons the 35 years of nurtured R&D harvests in Davao Region. Thus, encapsulating the Consortium initiatives and accomplishments for the years 2021-2022, SMAARRDEC remains the forerunner of carrying out significant impacts and results of integrated and rationalized research, development, and extension efforts in the pursuit of advancing S&T- based knowledge towards broader sustainable development responsive to the needs of its grassroots.

As PCAARRD in the region, the Consortium remains abreast with PCAARRD mandates and R&D programs. For R&D management and coordination, SMAARRDEC carries on with its planning and monitoring amidst the challenges of the pandemic through a series of meetings and round-table discussions among Consortium member agencies for the crafting and implementing projects. Foremost are the participation of the Consortium in the crafting of iSTRIKE Davao Operations Manual in coordination with the private and government academe, industry, and consortia representative and the inception meeting on RAISE-UGMARA Program funded by DOST-PCAARRD. In consonance, monitoring and evaluation of various R&D Projects through different in-house reviews provided an opportunity for researchers and in-house evaluators to present and improve research and extension projects in the AANR sectors.

Also, SMAARRDEC successfully conducted its Regional Symposium on Research, Development, and Extension Highlights (RSRDEH) providing an avenue for its member agencies to present and pitch research and development studies and outputs that are relevant and value-adding to the AANR sectors of the region. A total of fourteen (14) were presented under research category, while Development and Policy brief had seventeen (17) and eight (8) presentations, respectively. The Consortium actively pursues project monitoring and field evaluations. Noteworthy are visits from PCAARRD team, DOSTS4CP team, and UseP-RDE team on projects specifically, Dimpas Agri-Tourism Farm, Falcata Gull-Rust -Mindanao, and AGAK project, a Consortium-initiated project. In connection, field visits with AGAK farmers has also been implemented and the secretariat, led by its Consortium Director Gilbert A. Importante, conducted series of CMI visits to discuss financial matters, possible projects and commercialization of technologies.

Moreover, the Consortium appreciated the importance of partnerships and networks, and saw the value lies in plurality and diversity, as well as sharing of knowledge and resources. Hence, this year, the conduct of Techno Transfer Activity of DENR-ERDB-ARDEC participated CMIS and stakeholders transpired. DSSC, declared as Regional Center of Expertise (RCE) in Mindanao, launched the center this year and the project "Lidar-Based Online for Fusarium Reconnaissance and Disease Prediction System (LOURDES)" was presented during the DA En-banc review for possible funding.

In the same manner, SMAARRDEC's networks and linkages have been continuously cascading various research and development services among its members in the most innovative and life-changing means possible. Strengthening relationships with new partners and current linkages paves way for SMAARRDEC to continue broadening its outreach. To cite, SPAMAST forges collaboration with DSSC, DOST, OCEANA on Water-Food-Energy Nexus and Memorandum of Agreement (MOA) signing of Province-Led Agriculture and Fisheries Extension System (PAFES). Equally thriving is the SMAARRDEC's database and information system. The Consortium's e-based information and technology services namely its database server, website and e-library are continually maintained and updated to effectively serve its clienteles and stakeholders.

The Consortium recognizes the importance of mainstreaming aquatic and marine R&D to SMARRDEC banner programs. Hence, in strategic priority areas of R&D, the project "Near-realtime Monitoring of Banana Nutritional Status and Yield Forecasting using Airborne Multispectral Imaging" funded by DOST-PCAARRD in cooperation with Hijo Resources Corporation (HRC), Provincial Agriculturist Office in Tagum City, and UPLB-SARAI, aims to explore the use of airborne multispectral imaging to monitor near real-time nutritional status of 'Cavendish' banana to improve yield and reduce fertilizer inputs. Equally significant is the project "Regional Agri-Aqua Innovation System Enhancement (RAISE) Program for Southern Mindanao: UGMARA: Uplifting the Grassroot-based Minadanaoans in AANR Initiatives through Regional Approach" which successfully accomplished in 2022 its first year of implementation.

In partnership with Leadtech, Inc, the USeP-led project "Pisolar: Payment Innovation for SHS Ownership by Lay Away Routine (Pisolar)" contributes a significant breakthrough in lighting up the lives of Lumads in the mountains and other unelectrified local communities of Marilog, Panabo, and Sta Cruz in Davao. Pisolar is a project funded by the Department of Science and Technology (DOST) under CRADLE Program, which aims to design, develop, and deploy a pay-as-you-go solar home system (PAYG-SHS) using alternative wireless technologies thus, helping in the electrification of communities far from commercial power lines.

Another DOST-funded project under the CRADLE program has also eminently showcased its uses and significance towards its clientele. The mechanical coconut climber or CocoClimber by USeP is a safe, user-friendly, and gender-flexible device for tree climbing to gradually replace manual climbing and the pole method for picking locally-produced coconuts. USeP's CocoClimber bagged the grand pitch winner award during the 2022 Agri-Aqua Innovation Pitch Fest (AIPF) of DOST-PCAARRD. Also, as the first collaboration between the University of Southeastern Philippines (USeP) and Hijo Resources Corporation (HRC), the CRADLE project ROSANNA once again embodies its impacts in mitigating the prevalence of various banana diseases and threats as it seized the "Outstanding R&D Award" during DOST 64th Anniversary.

For R&D results utilization, SMAARRDEC also undertakes programs and activities to enhance the promotion and eventual utilization and commercialization of S&T outputs. The proposal on "Inclusive Science for Livelihood in Agri-Aqua (ISLA) for Small Islands" passed through the initial evaluation at PCAARRD level while the SUSTAIN-IPTBM completed its year two and was approved with 6-months extension. The USeP SciCAT team spearheaded a series of webinar activities and face-to-face trainings on various commodity production as part of the SciCAT project Phase II deliverables. These activities and training aim to inform and train various stakeholders involved somehow in the field of agriculture, the process of making the product, its health benefits, and market analysis.

Converting innovations into business and marketable products, forerunners of technologies commercialized and pre-commercialized initiatives include the "MangifeTek: Harvest Technologies for Mango Production" which encapsulates the three (3) technologies namely the mango power spray nozzle, V-Sigpao mechanical fruit picker, and integrated postharvest facility. The Pisolar, as a layaway system, only cost its beneficiaries in unelectrified communities a total of P200 which is shared by three to four households per month for electricity payments. On the other hand, the mechanical coconut climber is undergoing licensing negotiations with the Cocolink Industry Cluster and Franklin Baker.

Amidst the pandemic, the vibrant spirit of FIESTA continued. The Consortium forged collaboration with other consortiums namely ViCARP (Region 8) and SOCCSKSARGEN (Region 12) in celebrationg Mango FIESTA as the first-ever virtual science FIESTA in 2021. SMAARRDEC also commemorated its 35th founding anniversary, launching its first-ever history book. Both celebrations hold various activities such as product display, exhibits, technology demonstration, business mentoring, technology pitching, research presentations, and promotional competitions to increase the presence and demand for regional champion products and innovations.

In strengthening the capabilities of its pool of R&D and technology management experts, the Consortium puts-in several intervention strategies for members of its R&D network for human resource planning, development and management. These include non-degree trainings, webinar/seminar and workshops, research management involvement, and endorsements for scholarship grants and publication incentives. Collaborative efforts among members of the Consortium were streamlined to strengthen the complementation of its human resource development activities. Also, to effectively carry out its operations, SMAARRDEC maintained modalities for a continuous establishment, maintenance, upgrading scheme of its facilities, and equipment purchases. The Consortium has also received recognitions and awards from various institutions and agencies for its contributions in the region's AANR sector, insignia of the Consortium's continued relevance and presence in propelling S&T development.

The RRDCC, as the policy-making body of the Consortium spearheads the analysis and advocacy of important regional policy issues in AANR sector. For 2022, RRDCC held four (4) regular quarterly meetings and five (5) RRDCC resolutions were passed and implemented. The convergence of efforts among the member-agencies during the years has also broadened the initiation, continuation and strengthening of programs addressing the R&D policy needs of the Consortium.

Finally, as the Consortium evolves into an organization of service and cooperation, the years 2021-2022 hallmark SMAARRDEC's breakthroughs of harvesting its emerald R&D gains and bringing science and technology closer to the people of Davao Region.

RESEARCH AND DEVELOPMENT (R&D)

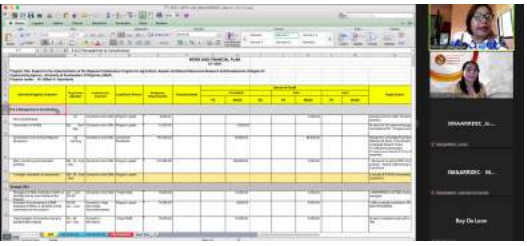
MANAGEMENT AND COORDINATION

For 35 years now, SMAARRDEC has untiringly responded to the demands for technological advancement needed to solve the regional problems in the agricultural, aquatic, and natural resources sectors. Abreast with PCAARRD's mandates, SMAARRDEC continuously conceptualizes, develops, and initiates the research and development activities of the region by taking an active role, in orchestrating a unified R&D agenda for S&T development.

COORDINATION

A. PLANNING AND PROGRAMMING

Setting direction and establishing a shared vision among stakeholders are crucial steps prior to the implementation of an activity or program. Thus, planning or programming plays a significant role in carrying out the Consortium's projects and programs.



Consortium Secretariat Meeting

Held on January 13, 2022 and March 3, 2022, the output of the said meeting includes the identification of activities for the year which translated into SMAARRDEC Work and Financial Plan 2022.

IPTBM Year-End Review and Strategic Planning

Consortium Director, Dr. Importante, gave his opening remarks and the direction, particularly on the timely settlement of financial reports. The activity was held on January 19-21, 2022.

Joint Cluster Meeting

The said meeting was held on March 24, 2022 and attended by the Consortium secretariat and focal persons of the CMIs. The discussion on the said meeting grounds upon the orientation of the deliverables for the year.

Meeting with the Philippine Army on Tatag IP Students Support Program

As an off-shoot of the partnership with Philippine Army on AGAK project, SMAARRDEC initiated a meeting with the 56th IB Phil Army, Airforce Reserve Center, USeP-School of Law and Extension Division on the possible interventions for "Tatag IP Students Support Program". The meeting was held on March 3 and 10, 2022.

Writeshop on the Crafting of Sustainable Project for Tatag IP Students

Conducted on March 25-26, 2022 at Sunny Point Hotel Ma-a Davao City, the said meeting was participated by a total of 17 faculty-researchers of USeP and four (4) focal persons of Philippine Army and Airforce Reserve Center. As a result, the participants crafted one project with P7.5M budget under LIFE Phase 2 project proposals of UPMin.

Participation to DOST-PCAARRD Meetings

- Mainstreaming of KM for AANR Meeting on September 2, 2021 (Thursday), 2:00 pm via Zoom
- Meeting on SAFE and ISLA on September 8, 2021 via Zoom
- PCAARRD Call for AANR Vlogs from the regional consortia on October 15, 2021 (Friday), 3:00 pm via Zoom.
- 2021 Annual Report Meeting on October 20, 2021 (Wednesday), 9:00 am via Zoom
- Attended the meeting on Joint RRDCC Meeting conducted on January 21, 2022 via zoom
- Implementation of the Regional Collaborative Program in 2022 conducted on February 3, 2022 via Zoom
- Facilitated by DOST-PCAARRD, the meeting was attended by SMAARRDEC Secretariat. The primary agenda has been discussed regarding on the adjustments to the consortium's physical plan for 2022. This was held on June 8, 2022, via Zoom.

PCAARRD RSCC & ICTC Meeting

Held on July 8, 2022, the meeting was attended by Regional Science Communication Cluster Coordinator Ms. Karen B. Geneston and ICT Cluster Coordinator Engr. Rey De Leon. PCAARRD oriented on the RSCC Term of Reference; plans and programs for the science communication in the region including resources available to the RSCC's and consortium member institutions

Hosting of PHILARM BOD Mtg and National Planning Workshop

Held on August 12–13, 2022 at DORSU. It was hosted by DORSU through Dr. Misael B. Clapano the newly-elected President for Southern Mindanao Cluster (Regions 11, 12 & Caraga)

Coordination meetings on the preparation for the SMAARRDEC 35th Founding Anniversary and RSRDEH cum Farmers and Fisherfolks Forum

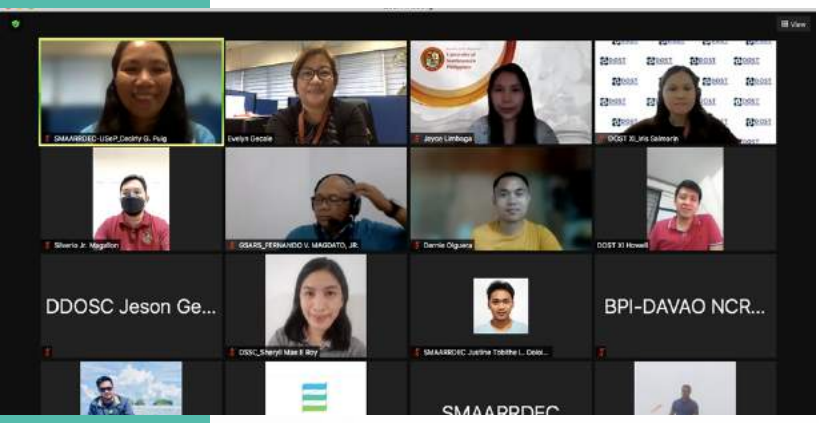
The coordination meeting for the SMAARRDEC 35th Anniversary was held on August 1 & 11, 2022 where it was participated by representatives of the CMIs and USeP-RDE staff/Event Management Committee.

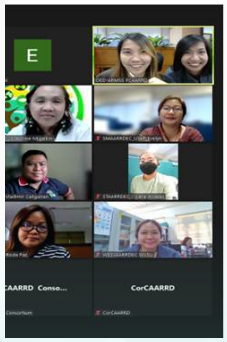
iSTRIKE Meeting with Industry

Held on August 23–24, 2022, the meeting was initiated by DOST XI where it called for the orientation of academe and industry on the opportunity to collaborate through S4CProjects – CRADLE. Offshoot of which are: presentation of Dr. Agudera (DSSC) about his study on Beauveria bassiana in the management of cacao pod borer; gathering of list of completed projects on cacao to be disseminated to cacao industry members and; farm tour at Gran Verde Farms in Calinan with DOST XI, DTI XI, and researchers from DdOSC, DSSC and USeP on September 14, 2022.

Agri 4.0 Project Meeting

Represented by R&D Cluster Coordinator Dr. Cecirly G. Puig, the said meeting discussed about seeking assistance in the implementation of UPLBled project Agriculture 4.0 Readiness among Philippine Research and Development Organizations





Coordination Meeting for Financial Management Seminar cum Orientation of the 2023 RCP Guidelines in November 2022

Held on August 31, 2022 and attended by SMAARRDEC Secretariat and PCAARRD-COO Staff. It was agreed that SMAARRDEC will host the Orientation with other four consortia in Mindanao.

Cacao Team Meeting

A follow-up meeting on the crafting of possible proposals under CRADLE on Cacao. The team composed of facultyresearchers from BPI, DDOSC, DSSC and USeP. Also in attendance were DOST XI and DTI XI reps for iSTRIKE. The said meeting was held on September 28, 2022 ; 2:00pm via Zoom.

Meeting with DOST XI and Tingog Party List

Held on October 6, 2022 at DOST XI Regional Office, the meeting was hosted by DOST Director and RRDCC Vice Chair Dr Anthony C. Sales with Atty. Mark Peter Quilaneta of TINGOG Partylist. It was conducted to discuss possible collaboration on various R&D projects in Mindanao.

Leveraging Gender Relations to Optimize Value-Adding Opportunities of Davao City Cacao

Held on October 12, 2022 at Apo View Hotel, the study was funded by ACIAR and implemented by UPMin. The RTD was participated by RRD Cluster Coordinator Dr. Cecirly G. Puig.

Communication Planning for PCAARRD Consortia

Held on October 12-14, 2022 at Los Banos, Laguna, it Hosted by PCAARRD-ACD and attended by Science Communication Cluster Coordinator Ms. Karen Geneston and OIC Dr. Evelyn Gecale. Output of the training was integrated in the crafting of the RCP Proposal.

Meeting with DSSC-REC and Oceana

Held on October 17, 2022 via Zoom, the meeting was spearheaded by Dr. Della Grace G. Bacaltos of DSSC, the meeting on Coastal Greening and Banning of Single Use Plastic was conducted on October 17, 2022. It was participated by representative faculty-researchers from DNSC, SPAMAST, DORSU and USeP. Likewise, representatives from DIDP and DENR-ERDB-ARDEC were present. Inventory of mangrove/MPA projects conducted in the region were tackled including the proposal of Mr. Francis Reginio of USeP on Mangrove Aquasilviculture submitted to DOST-PCAARRD for funding. The group also discussed the implementation of the banning of single use plastic in the SUCs and the initiatives of DIDP and ARDEC on the same issue

Joint Consortia Secretariat Meeting

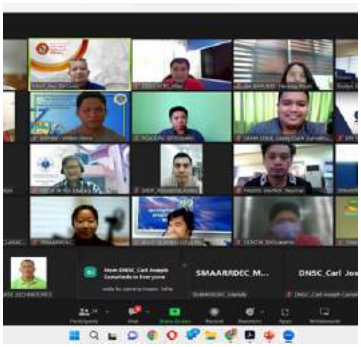
Held on October 19, 2022 via Zoom, it was initiated by DOST PCAARRD-ARMSS, the meeting was called for the orientation on the new manner of submission of the RCP proposal for 2023-2025 through DPMIS. Issues discussed: change of CD Honorarium from PhP 10,200 to P8,800; Trainings and big activities will be proposal based; Budget for the 3-yr implementation is purely for coordination.

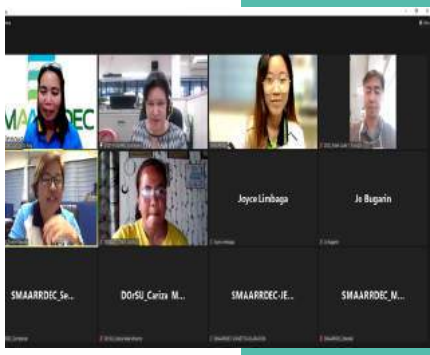
Seminar on PCAARRD-Awards New Guidelines

Held on October 24-25, 2022 via Zoom, DOST-SERD initiated the seminar on PCAARRD Awards' New Guidelines which was crafted by the DOST-PCAARRD Elders. The presenters were: Dr. Ernie Brown, Dr. Danilo C. Cardenas, Dr. Lily Ann D. Lando and Dr. Rodolfo Ilao. It was participated by selected members of the secretariat, Dr. Misael B. Clapano (DORSU) and BPI Center Chief Dr. Lorna Herradura.

ICT focal Persons Meeting

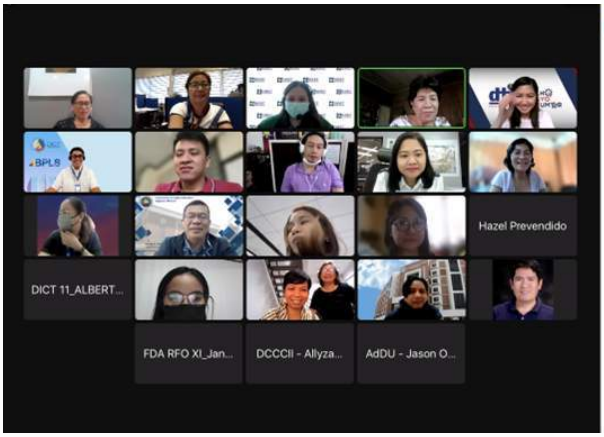
Held on November 11, 2022, the meeting was hosted by SMAARDEC Secretariat and was attended by CMI's ICT Focal Person. The said meeting was conducted for a briefing on the SMAARRDEC Website and on its functionalities including HRIS updating.





Pummelo Team Meeting

Held on November 11, 2022, the meeting was led by the RRD Cluster Coordinator Dr. Cecirly G. Puig. The meeting with Pummelo Team was conducted for the possible revival of Pummelo R&D Proposal as a Program. Citrus ISP Manager Maria Adelia Belen of DOST-PCAARRD-CRD attended the meeting. Dr. Joettedy Bugarin also presented his output on Pummelo Value Chain. The team agreed to hold a face to face meeting for the polishing and refinement of the proposed projects.

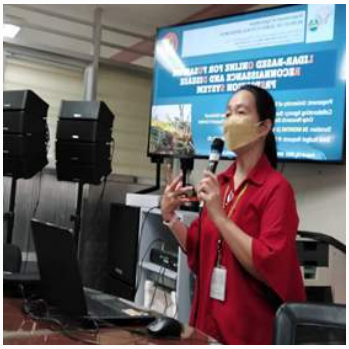


Crafting of iStrike Davao Operations Manual

Held on September 29, 2022 and November 23, 2022, this was facilitated by Dr. Della Grace G. Bacaltos, the crafting of the Operations Manual of the iSTRIKE Davao was done with the participation of the private and government Academe, industry and consortia representative.

Presentation of LOuRDES Proposal at DA-BAR

On November 25, 2022 via Zoom, the activity includes the presentation of the PhP52-M worth proposal to the DA-BAR titled "Development of Lidar-Based Online System for Fusarium Reconnaissance and Disease Prediction System Towards Increase Banana Productivity". Status of which is for review under DA-BAR En Banc.



Inception Meeting on RAISE-UGMARA Program

The team implementers of "Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao: UGMARA: Uplifting the Grassroot-Based Mindanaoans in AANR Initiatives through Regional Approach conducted the face-to-face regional inception meeting on March 4, 2022 at USeP-Training Hall, Obrero Davao City. Study leaders/representatives from SMAARRDEC-member Institutions such as BPI-DNCRDPSC, DNSC, DDOSC, DSSC, DORSU, KCAST, PCA-DRC, SPAMAST, UPMin and USeP were present and discussed matters pertaining to the implementation particularly on the financial aspect. This P30M-worth project is being funded by DOST-PCAARRD and will be implemented for two-years

B. MONITORING AND EVALUATION

Review of R&D Projects

(Please refer summary on Table 1)

- Represented by RDC Coordinator Dr. Cecirly G Puig as member of the panel of evaluators. This was held on Feb 17, 2022 via Zoom Meeting.
- Review of Terminal Report was represented by R&D Cluster Coordinator Puig as evaluator. This was held on April 11, 2022.
- Held on June 28, 2022, an Agency In-House Review was conducted where BPI-DNCRDPSC with Consortium Director Importante served as one of the evaluators.

SPAMAST In-House Review

Eight(8) completed researches and two (2) extension projects were presented on July 26, 2022.

DSSC In-House Review

Held on July 27, 2022, R&D Cluster Coordinator Dr. Cecirly G. Puig served as one of the evaluators.

USeP In-House Review

Represented by Techno-Transfer Cluster Coordinator Dr. Evelyn Gecale, seven (7) completed researches and two (2) extension projects were presented on July 27, 2022 at Ritz Hotel, Davao City.

Evaluation from the PRB of Food Technology on DSSC offering of BS in Food Technology

The Professional Regulatory Board of Food Technology spearheaded by Dr. Anthony C. Sales, CESO III, Chairperson of PRB Food Technology conducted an inspection and monitoring in Davao del Sur State College (DSSC) on November 23, 2022, in preparation for the college's offering of Bachelor of Science in Food Technology.

Also present were Dr. Remedios V. Baclig, Member of PRB Food Techology; Ms. Lynn A. Sarita, PRC-11 Representative; Lourdes D. Cesar, RQAT Education Supervisor for Agriculture Program represented CHED-XI; Dr. Siverlyn M. Camposano, Vice-President for Academic Affairs; Dr. Juan P. Agudera, Dean of the Institute of Agriculture and Related Sciences (IARS); Ms. Edralyn Catubay, BS Agriculture Program Head; Ms. Hazel Yuga and Ms. Larra Mae Testado, DSSC faculty members.

REGIONAL SYMPOSIUM ON RESEARCH, DEVELOPMENT, AND EXTENSION HIGHLIGHTS (RSRDEH)

In line with the celebration of the Consortium's 35th Founding Anniversary, SMAARRDEC conducted its Regional Symposium on Research, Development, and Extension Highlights to gather and pitch research and development workers of the SMAARRDEC member agencies to allow them to disseminate research outputs that are relevant and value-adding to the AANR sectors of the region. Recognizing local researchers and extension specialists' achievements in the areas of research and development and extension network, the Consortium indeed proved that it has kept abreast with the complex and multiple need environments in RDE notwithstanding limitations.

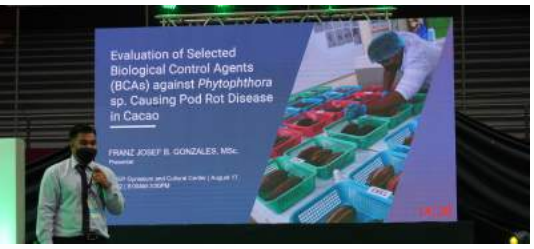
Participated by farmers, private sectors, faculty researchers, LGUs, NGOs, the RSRDEH was conducted on August 17, 2022 at the USeP University Gymnasium and Cultural Center (UGCC) where several studies were categorized into research, development, and policy brief were presented. 14 studies fell under research category, while Development and Policy brief had seventeen (17) and eight (8) presentations, respectively. Participating consortium-institutions also competed for the research and development poster category contest and exhibit booth- where participants displayed and disseminated information about their R&D projects and sell their products.

Under the research category, the "Evaluation and Characterization of Ten Promising Varieties of Cacao in Type IV Aro-Climatic Zones in Southeastern Mindanao" of DA-RFO XI emerged as the Best Paper. The study was conducted to assess the adaptability
and performance of different cacao varieties across the country and hence, it was found out that 92% success in asexual propagation through cleft grafting and highly skilled propagators, cacao nursery is feasible. The morphological attributes and characterizations revealed a significant information of the varietal profiles of each variety and PBC 123 was highly preferred among other cultivars as per the initial cacao sensory evaluation on cocoa liquor ("tablea') showing the important features on aroma, acidity, bitterness and astringency, flavor , after taste and taster's preferences.

Second best paper was bagged by researchers from DENR-ERDB-ARDEC on the paper "Risk Profiling of Consuming Mercury Contaminated Crops in Monkayo, Davao de Oro, Philippines" which sought to determine the concentration of THg in the crop samples and conduct projections for (1) elimination, and (2) accumulation of THg in the body as a result of their consumption. It was found out that constant consumption of mercury contaminated crops everyday can cause biomagnification of Hg in the body and can reach up to 8,614% at the 365th day.

(Please refer summary on Table 2a & 2b)




The third best paper was bagged by Christian Paul Escarian from USeP in his paper entitled “Hydrogeological Survey on Proposed Groundwater Extraction Sites in Barangay Kahayag-San Roques, Bislig City: A Collaboration Between Bislig City Water District and USeP”. The study study involves the conduct of a comprehensive hydrogeological assessment thru field observation and subsurface geophysical assessment (i.e., continuous electrical resistivity tomography) which is primarily aimed to identify viable groundwater extraction sites that may augment the existing water supply in portions of Bislig City.

For development category, the project entitled “Piloting Science for the Convergence of Agriculture and Tourism (SciCAT) to a Magsasaka-Siyentista Farm in Davao Region” by Bryl I. Manigo, Gilbert A. Importante, Gilbert M. Gordo, and Filman T. Simpao from USeP won the first place. The establishment of this project generally aimed to transform a Magsasaka-siyentista Farm (MSF) into a SciCAT Farm Tourism site that will serve as the community’s main tourist farm attraction leading to the creation of employment and entrepreneurship opportunities for both men and women in the community.

Ranked second was the project entitled “DSSC Trichoderma Project: Supports Banana Growers Manage Fusarium Wilt Disease (FWD)” by Juan Agudera Jr. from Davao del Sur State College. Hence, the DSSC established Trichoderma Project to innovate mass growing of Trichoderma using the coco water waste in volume readily availableto farmers.

The study by Arvin Andacao from DORSU clinched the third spot on the paper “University Disaster Response: Assistance Provision and Impact Assessment of Flood and Earthquake in Extension Campuses". Based on the results, the 2-storey Academic Building A was found non-functional but does not imply any structural damages in the Cateel Extension Campus. The depressed portion of the land became a water pond on the campus while the affected students were resilient to face the calamities despite fear and life safety.

For policy briefs, the “Managing the institutional mechanism for the future of Davao's pummelo industry” presented by Joeteddy B. Bugarin from USeP won the best paper. On the other hand, the papers “Securing the Future of the Endangered: Mega Bat’s Plea for a Home Security” presented by Amy G. Ponce from DORSU and the “Gender based Involvement in the Management of Marine Protected Areas in Sta. Cruz Davao del Sur” presented by Rodcel Malinao from DSSC won the second and third best papers, respectively.

For poster category, the “Special Purpose Rice Grown under Davao del Norte Condition” by USeP won the Best poster which is followed by “Preference of consumers to rice-corn blend in Region XI” by DA and “Development of Milk Replacer Using Soya Powder (Glycine Max) and Whey Powder for Early Weaned Kid Goats” by DSSC.

Lastly, the Philippine Coconut Authority-Davao Research Center (PCA-DRC) was awarded First place for exhibit booth category.

PROJECT MONITORING AND FIELD EVALUATION

(Please refer summary on Table 3)

Through continuous project monitoring, the Consortium steers documentation of outcomes, procedures, and impact as a foundation for decision-making and further improvements of the project. In collaboration of the Consortium's ever-active member agencies, it is in pursuit of ensuring all activities are carried out and inputs are well-utilized.

PCAARRD Team visits Dimpas Agri-Tourism Farm

On May 20, 2022, the Department of Science and Technology – Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) team, from Los Baños, Laguna, Philippines, visited the Dimpas Greentigrated Agri-Tourism Farm (DGATF) to conduct monitoring and evaluation (M&E) for the Science for the Convergence of Agriculture and Tourism program (SciCAT). The SciCAT program was established by DOST PCAARRD with the purpose of manifesting a new technology transfer modality to promote the science-based package of technologies developed through research and development (R&D) and help create employment and entrepreneurship at the community level. The visiting team was headed by Ms. Lucy L. Lastimosa along with Ms. Mary Ranzelle A. Pasang and Ms. Cherry B. Bundalian, under the DOST-PCAARRD – Technology Transfer and Promotion Division (TTPD). The M&E encompassed the following activities: Presentation of project status and updated, site visit and interview of Package of Technology's (POT) adaptors, office visit, facilities, and signage/marker, and photo documentation of the M&E.

Falcata Gull-Rust - Mindanao

USeP-RDE Monitoring Team with SMAARRDEC visited Falcata plantation in Alamada Cotabato on May 26, 2022

Project Monitoring: AGAK

Facilitated by SMAARRDEC secretariat/project implementers farm monitoring were conducted on May 24, 2022 n Mapula and June 2 in Talaingod

S4C Project Visit of DOST Team

Conducted on May 25, 2022 DOSTS4CP team visited Sitio Igang, Talaingod Davao del Norte for the PISOLAR project of USeP.

SciCAT-VIDA at Dimpas Greenintegrated Agri-Tourism Farm

Conducted by USeP-RDE Monitoring Team with SMAARRDEC represented by TTC Coordinator Evelyn A Gecale on June 10, 2022.

CHED-IKSM-MMSU Monitoring Team visit at Talaingod for AGAK Project

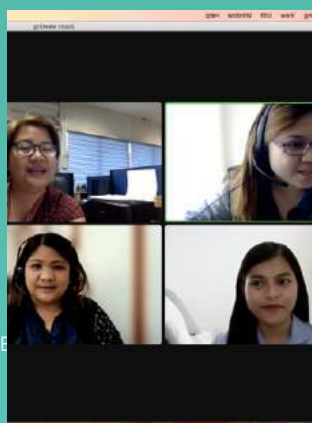
Held on July 7-9, 2022, the said visit was participated by AGAK Project Team/SMAARRDEC Secretariat where off-shoot of which is the approval of project implementation until December 31, 2022.

Techno-Gabay Program Midyear Assessment

Held on July 26, 2022 at Davao Oriental, the Techno-Gabay Midyear Assessment was attended by Techno Transfer Cluster Coordinator Evelyn Gecale. The participants agreed to revitalize the partnership of ATI with SUCS.

PCAARRD Monitoring on Project AGAK

Held on November 15, 2022, PCAARRD-SERD conducted monitoring on the status of the implemented AGAK project in 2021.



CMI VISITS

Courtesy Visit to the newly-appointed Regional Executive Director (RED)

SMAARRDEC Secretariat led by its Consortium Director Gilbert A. Importante, conducted a Courtesy Visit to the newly-appointed Regional Executive Director (RED) Abel James I. Monteagudo, of the Department of Agriculture-Regional Field Office XI on February 7, 2022. The Secretariat likewise had a very productive discussion with Research Director Melanie A. Provido together with Ms. Anecita I. Telabangco and Dr. Nida E. Gigayon at the DA- Research Center in Manambulan, Davao City.

Visited implementing CMIs

Visited implementing CMIs namely BPI, PCA and UPMin on February 11, 2022. Status of on-going researches and settlement of unliquidated completed projects were among the agenda discussed. Also, the secretariat visited MS Lao's Integrated Farm & MBLRC in Bansalan, Davao del Sur.

Visited the newly installed Davao del Sur State College (DSSC) President

The SMAARRDEC Secretariat through the leadership of Consortium Director Gilbert A. Importante visited the newly installed Davao del Sur State College (DSSC) President, Dr. Augie Fuentes with her RDE team. A productive discussion on the research endeavors of the college as well as the document compliance of the completed projects implemented by the faculty of the then SPAMAST-Matti. Likewise, the secretariat visited the Office of the Provincial Agriculturist of Davao del Sur and met with the Seed Coordinator and Former DavSur FITS Manager Evelyn D. Saraum. The secretariat concluded the activity with the last leg visit at Lao Integrated Farm of Magsasaka Siyentista at Eman Bansalan, Davao del Sur. This was conducted on April 12, 2022.

Field Visits

·AGAK Farmers' Field Trips

As part of the training culmination, the AGAK farmers were brought to USeP-Mabini campus for further exposure, on April 18 and 26, 2023 respectively.

CMI VISITS

Visited Agricultural Training Institute (ATI) XI

On its 3rd leg of agency visit, the SMAARRDEC Secretariat led by Consortium Director Gilbert A. Importante visited Agricultural Training Institute (ATI) XI at Datu Abdul, Panabo City, Davao Del Norte on April 20, 2022. ATI-XI Director Dante G. Esguerra showcased the new facilities of the center to cater its clients particularly, the farmers who are undergoing training in the area. The team was welcomed by no less than President Joy M. Sorrosa of Davao del Norte State College (DNSC) along with VPAA Dr. Girley S. Gumanao and REP Director Ronald Mark Manseguiao.

A fruitful discussion on the future collaboration notably the proposed LIFE Project for Tatag IPs of Talaingod Davao del Norte. In the afternoon the secretariat visited the Davao del Norte-Provincial Agriculturist Office and met Dr. Juliet Zambrano. The secretariat ended the activity with the last leg visit at Department of Environment and Natural Resources –Agroforestry Research Development and Extension Center (DENR-ARDEC) and met with the new Center Head, Ms. Minda S. Odsey, CSEE. The presentation of on-going projects of the Center was articulated by Ms. Lyrae Casidsid.

Fab Lab Regional Roadshow for RAPID Growth CIP

The Department of Trade and Industry-Competitiveness and Innovation Group (DTI-CIG) paid a visit to the University of Southeastern Philippines (USeP)- Obrero Campus in connection with the Regional Roadshow for Rural Agro-enterprise Partnership for Inclusive Development and Growth (RAPID Growth) Competitiveness and Innovation Project (CIP) on September 21-22, 2022. Usec Rafaelita M. Aldaba headed the DTI-CIG delegation and was welcomed by the USeP officials headed by Dr. Shirley S. Villanueva, Vice President for Research, Development, and Extension. Together with Dr. Villanueva were Dr. Eleonor T.

WESMAARRDEC visit to SMAARRDEC

Led by WESMAARRDEC Director and WMSU VP-RDE Dr. Teresita Narvaez, the team visited the consortium on October 3, 2022 at the OSIS Conference room and discussed the future collaboration on SERDAC's utilization at Region 9's

RESOURCE SHARING

1st Annual Technical Seminar (ATS)

To present relevant results of completed studies conducted on environment and natural resources (ENR), the Agroforestry Research, Development and Extension Center (ARDEC) conducted its 1st Annual Technical Seminar (ATS) on June 20, 2022 at the University of Southeastern Philippines (USeP) in Davao City in partnership with the Southern Mindanao Agriculture, Aquatic and Natural Resources Research & Development Consortium (SMAARRDEC) and the Office of the Vice President for Research, Development and Extension of USeP.

Fifty participants from DENR XI regional and field offices, USeP, and different member-institutions of SMAARRDEC in Region XI gathered at the USeP Social Hall to participate in the discussion as three researchers from ARDEC presented their papers with topics on environment and natural resources technologies. A total of P48,000 for catering expenses was generated.

SMAARRDEC joined PCA-DRC 56th Anniversary

SMAARRDEC joined the celebration of the 56th Founding Anniversary of the Philippine Coconut Authority-Davao Research Center (PCA-DRC) with a theme "Continuing Commitment through Research and Development". The activity highlighted the recognition of the women and men behind the existence of the Center including the external partner agencies in the region. It also highlighted the launching of "Integrated Crop Management for Coconut Agroecosystems: A Compendium of Information through the Years" – research breakthroughs since the Center was established.

Guden, Research Division Head; Engr. Filmann T. Simpao, Knowledge and Technology Transfer Division (KTTD) Director; Dr. Amiel Marata, AGILab FabLab Manager; and Dr. Evelyn A. Gecale, Southern Mindanao Agriculture and Resources Research and Development Consortium (SMARRDEC) Officer-in-Charge.

"*It is the DTI's strategic direction to pursue industrialization based on Science, Technology, and Innovation (STIs),*" shared Usec Aldaba during her talk on the rationale of their visit to USeP.

The DTI-CIG visit ended with the ocular visit of the facilities in the AGILab FabLab.

Meeting with DENR-ERDB-ARDEC for shared hosting

Held on May 31, 2022, a coordination meeting on the conduct of Techno Transfer Activity of DENR-ERDB-ARDEC on June 20-21 at USeP Social Hall was the main agendum. The said activity will be participated by selected Consortium Member Institutions (CMIs).

DOST USec Guevarra lauds USeP's S4CProjects

The Department of Science and Technology (DOST) Undersecretary Rowena Cristina L. Guevara lauded the Science for Change projects (S4CP) implemented by the University of Southeastern Philippines (USeP) under the DOST- Collaborative Research and Development to Leverage Philippine Economy (CRADLE) program during her visit to USeP last May 28, 2022.

USec Guevara and her team met with the project implementers and were welcomed warmly by the University President Lourdes C. Generalao. The said implemented projects under CRADLE program are the "PISOLAR: Payment Innovation for SHS Ownership by Lay Away Routine", implemented in a community in Sitio Igang Talaingod Davao del Norte; the "ChicIoT: An IoT-Based Smart Poultry Building Environment and Growth and Health Status Monitoring and Modelling" with Tetra Consulting Company as partner industry. These are implemented by Knowledge and Technology Transfer Division (KTTD) Director Engr. Filmann T. Simpao. And lastly, the "Development and Pilot Testing of Tree-Climbing-Harvesting and Mobile Dehusker for Coconut" which is being implemented by the team of USeP-College of Agriculture and Related Sciences (CARS) led by Dean Roger C. Montepio with Cocolink and Franklin Baker as partner industries.

The meeting was highlighted with the presentation of accomplishments and demonstration of technologies generated from the aforementioned three (3) projects. The visit of USec Guevarra forms part of the Regional S4CP Summit for Mindanao Cluster held on May 27, 2022, at the Apo View Hotel, Davao City. In the same event the CRADLE project "Development of Rosanna Banana Disease Surveillance System" with Hijo Resources Corporation (HRC) as partner industry, was awarded as number one (1) with the top Return of Investment (ROI) out of eighty-two (82) CRADLE projects in the country. Dr. Gilbert A. Important, SMAARRDEC Director and the project leader; Dr. Cecirly G. Puig, project staff and HRC representative; and President Generalao received the recognition trophies for USeP.

RESOURCE SHARING & GENERATION

(Please refer summary on Table 4)

DSSC-RCE Davao Launching

DSSC being declared as Regional Center of Expertise (RCE) in Mindanao launched the center on November 18, 2022 at Matti Davao del Sur. The goal is to share best practices in Educational on Sustainable Development (ESD) among the regional partner academe, to establish communities of practice towards the attainment of the Sustainable Development Goals (SDG). Attended by Office-In-Charge Dr. Evelyn Gecale, and Regional Science Communication Cluster Coordinator Ms. Karen B. Geneston. This was held on November 18, 2022.

RESOURCE GENERATION

Technology Transfer Day

Conducted on June 21, 2022, the activity includes techno clinic, exhibit and other IEC campaign. The one-day event aims at bringing ARDEC closer to its stakeholders through pro-active extension mechanisms that promote agroforestry technologies and create awareness on science-based approach in the rehabilitation of degraded areas through these technologies. CMIs, DENR, USEP and and students attended the event. A total amount of P48,000.00 was generated.

Presentation of the proposed "Lidar-Based Online for Fusarium Reconnaisance and Disease Prediction System" (LOURDES)

Held on August 12, 2022 at the USeP-RDE Conference Room the said project has been presented by R&D Cluster Coor & Proponent Dr. Cecirly G. Puig. It was attended by DA-RED Abel James I Monteagudo and RTD Andy Alemania, DA-Research Dir Melanie Provido and Research Staff Ms. Anecita Telabangco; USeP-VPRDE Shirley S. Villanueva and SMAARRDEC TTC Coordinator, Evelyn A. Gecale. Result of which is an Endorsement from the RRDEN to DA-BAR for possible funding amounting to PhP 51M.

(Please refer summary on Table 5)

LINKAGES

(Please refer summary on Table 6)

Considering the project-based resources and limited funds for its operations, mobilization and communication, the Consortium continued to pursue efforts in establishing linkage to generate resources. These linkages for resource generation and other purposes are translated into action by implementing collaborative activities for the year.

SPAMAST Forges Collab with DSSC, DOST, OCEANA on Water-Food-Energy Nexus

The Southern Philippines Agribusiness and Marine and Aquatic School of Technology (SPAMAST) forges partnerships and a collaborative dialogue on the links between water, food, and energy with Davao del Sur State College (DSSC), OCEANA, Department of Science and Technology (DOST) XI, and other agencies. The International Policy Dialogue: On Water-Food-Energy Nexus is anchored on the attainment of Sustainable Development Goals (SDGs) 2030 and understand the long-term impacts of the nexus on development, learn ways to improve coherence between national, regional, and local planning and priorities and forge national and international linkages between and among the involved agencies.

SPAMAST Director for Internationalization and Linkages, Dr. Ariel E. San Jose said that they are very optimistic that this event will pave the way to projects and research that support development through ecological balance. The event was conducted live via Zoom, Facebook Live, and oceana.ph on October 13, 2022.

MOA Signing: Province-Led Agriculture and Fisheries Extension System (PAFES)

On May 2, 2022 a Memorandum of Agreement Signing for the Province-Led Agriculture and Fisheries Extension System (PAFES) to be established in the pilot province which is the province of Davao del Norte was held at the Waterfront Insular Hotel in Lanang, Davao City.

The MOA aims to strengthen the collaboration between DA-RFOs, DA-BFARs, Provincial Local Government Units (PLGUs), State Universities and Colleges (SUCs), DA-ATI and private sectors. Each of the implementing agencies and partners play important roles in expanding the coverage of its programs and projects especially in the grassroots level.

PAFES shall integrate DA operations and strengthen research-extension-farmer/fisherfolk linkages in the province of Davao del Norte to spearhead agricultural modernization and industrialization, enhance rural livelihoods through the massive utilization of science-based innovations, and catalyze the establishment of robust agro-based enterprises.

The signing ceremony was attended by the signatories to the agreement, Department of Agriculture William D. Dar, DA RFO XI Regional Executive Director Abel James I. Monteagudo, BFAR XI Regional Director Raul C. Millana, ATI RTC-XI Center Director Dante G. Esguerra, USEP President Dr. Lourdes C. Generalao, and Engr. Ariel T. Cayanan, DA Usec for Operations. DA RFO XI Regional Technical Director for Operations Dr. Marila L. Corpuz and PMED Chief Maria Febe T. Orbe were also present at the event.

PAFES shall develop and pursue agro-enterprise development, location-specific technology development and demonstration, capacity building, information / knowledge sharing and institutional strengthening through the Collaborative Agriculture Fisheries Exension Program.

DATABASE AND INFORMATION SYSTEM

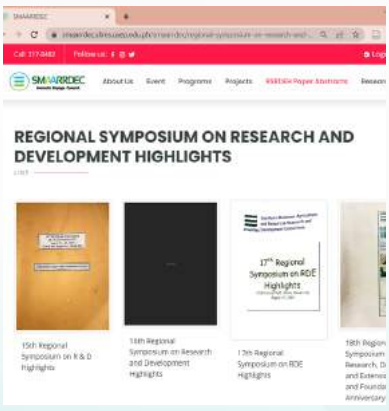
(*Please refer summary on Table 7a-7b)*

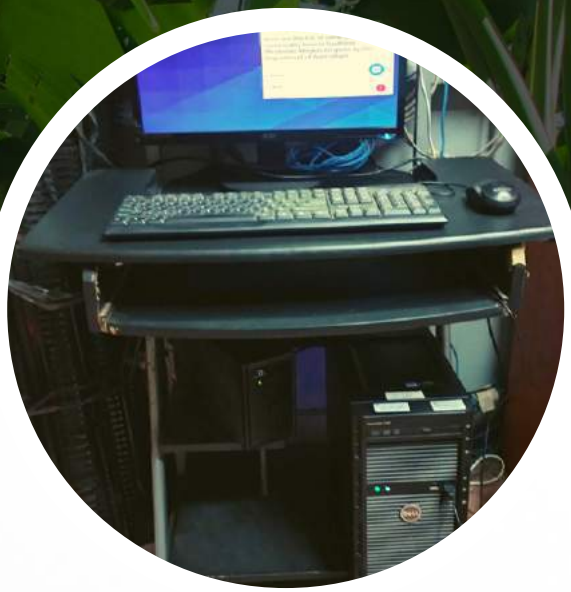
The Consortium's e-based information and technology services served as its virtual bureau of diverse e-based technologies including videos, news releases, consortium activities, and information exchange. The maintenance of the Consortium's website and the facilities needed is under the constant support of its member agencies which helped the consortium emanate its initiatives and share its technologies and information with its clientele.

SMAARRDEC Website

Designed and developed in-house, it includes the digitalized records of research projects kept in the OSIS library. Uploaded 1179 ongoing and completed projects from the year 1990 to the present, it was funded mostly by DOST and DOST-PCAARRD. It also digitized and uploaded 13 Regional Symposium on Research and Development Highlights. Conducted ICT meeting with CMIs ICT focal person for users training and website evaluation. It invited researchers and extentionists to register on the website to create a pool of experts in the region.

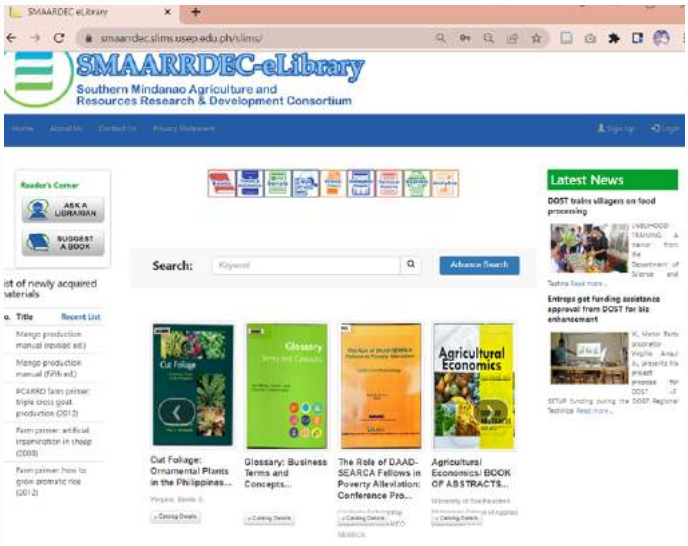
Other than the generated list of Regional Symposium on RDE Highlights, the website features the generated list and details of on-going and completed programs/projects uploaded by the researchers/extentionists in the region. It is also utilized to post SMAARRDEC events and pool of experts on Agri-Aqua related research and extension projects.





New SMAARRDEC Database Server

The Consortium has been continually upgrading its Web and Database Server. The server is housed in OSIS Library at SMAARRDEC. The Consortium's Web Server is hosted by USEP.



SLIMS-SMAARRDEC e-Library

The e-Library is recognized as one of the knowledge management tools to capture, codify, share, and apply PCAARRD's generated knowledge products and resources. The Consortium maintained its e-library through SLIM which facilitate efficient and prompt dissemination, sharing, exchange, preservation, access, and retrieval of its resources. The Consortium has been rolling out new updates in SLIMS. At present, it has digitized 789 combination of journals, books, serials, vertical files, and thesis/dissertation, which are all kept in the OSIS library.

STRATEGIC R&D ACTIVITIES

The Consortium's R&D programs and projects are crafted to address regional priorities. Align with PCAARRD's programs, SMAARRDEC had been continuously conceptualizing, developing, and initiating the research and development activities of the region.

CONSORTIUM-LED INITIATIVES

PACKAGED, APPROVED, AND IMPLEMENTED

(Please refer summary on Table 8b)

The Consortium held itself as a forerunner of R&D initiatives as it responds to the demand for technological advancement and strategic initiatives needed to solve the regional problems in agricultural, aquatic, and natural resources sector, its protection, and conservation towards modernization of the productive sector. Lifted from the efforts of the region's researchers and experts, the consortium-led initiatives packaged, approved, and implemented are the following:

Regional Agri-Aqua Innovation System Enhancement (RAISE) Program for Southern Mindanao: UGMARA: Uplifting the Grassroot-based Minadanaoans in AANR Initiatives through Regional Approach

UGMARA stands for Uplifting the Grassroot-based MSMEs of Southern Mindanao in AANR Initiatives through Regional Approach by RAISE Program. UGMARA is a native word of the Davao region that means "to cultivate".

With the theme of Southern Mindanao Agriculture, Aquatic and Resources Research and Development Consortium (SMAARRDEC) to innovate, engage and connect, UGMARA is envisaged to hasten the commercialization and development of S&T-based agri-aqua enterprises to the consortia member institutions (CMIs) and enhance the consortium being a one-stop hub for technology owners and generators, investors, end-users, and other stakeholders within the agriculture, aquatic, and natural resources (AANR) innovation system.

The Regional R&D Consortia mechanism has been an integral part of DOST PCAARRD's R&D management system.It has become the Council's platform for joint R&D planning, monitoring, evaluation, and sharing of resources among member institutions to achieve the development of the agriculture, aquatic and natural resources sector in the regions. The concept of the consortium is to mirror the function of the DOST-PCAARRD as a sectoral council in the region.

The SMAARRDEC is at the forefront of DOST PCAARRD in Region 11. Hence, RAISE-UGMARA aims to mirror the functions and initiatives of the DOST-PCAARRD Innovation and Technology Center (DPITC) in the Southern Mindanao by providing assistance to the regional consortia on intellectual property management and transfer of technologies of consortia member institutions (CMIs).

RAISE-UGMARA is composed of four major projects namely: Project 1- Regional IP-TBM; Project 2- Regional Agribusiness Hub; Project 3 and 3A- Regional ATBI and USeP's ATBI Facility and Services for Smart Farming, Pre- and Post-Harvest and Food Technologies; and Project 4- Regional KM Hub.

Project 1- Regional IP-TBM aims to establish the Regional IP-TBM in selected Consortium in intensifying the technology commercialization activities of participating SUCs. USeP served as the mentor, applying the mentor-mentee model in establishing IP management and technology transfer services. It plays a big brother to the newly formed IP offices who need guidance and mentorship in terms of IP identification and protection, streamlining their process and strategies by formulating appropriate policies and protocols on IP management and technology transfer.

Meanwhile, Project 2- Regional Agribusiness Hub aims to establish a regional agribusiness hub in Region XI. As a component of the Regional Agri-Aqua Innovation System Enhancement (RAISE) Program, the Regional Agribusiness Hub will serve as a center for activities that are geared towards facilitating regional capacity building and providing support for agri-technology business development.

On the other hand, Project 3 and 3A- Regional ATBI and USeP's ATBI Facility and Services for Smart Farming, Pre- and Post-Harvest and Food Technologies aims to o provide support to CMIs and other ATBIs in the transfer of technologies through capacity building, technology business incubation or co-incubation.

The Regional ATBI Hub (RATBIH) may also bridge the market, the research institution, the funding agencies and among stakeholders for regional development. Also, the plan to expand the reach of incubation services in external campuses such as USeP Tagum-Mabini and Mintal, as these are recognized centers of excellence by CHED will be realized if enough resources are available. Moreover, as this project is envisioned to become a hub of extending expertise to CMIs and with the given track record of the AGILAB, USeP can take the lead role in establishing the RATBIH.

Finally, Project 4- Regional KM Hub aims to enhance the knowledge management services to CMIs. The Knowledge Management (KM) Cluster of SMAARRDEC has a system that collects, stores, and analyses relevant AANR data of CMIs within the Davao Region. The proposed enhancement of a Regional KM Hub (RKMH) of SMARRDEC will supplement the needs of other regional hubs like IPTBM, Agribusiness and ATBI. It will serve as the regional repository of all IP-based technology briefs/knowledge resources for promotions, and dissemination that might lead into the commercialization.
Having completed its first year of implementation, RAISE-UGMARA program highlights the following accomplishments. For publication, four (4) national and regional training modules have been produced. Over a 100 IECs were developed by involved CMIs. For patent, 20 IP applications and the copyright of IECs have been carried on. In terms of the product, there is possible conduct of FS for coconut climber while for people and services, 20 CMI staff committed to attending the ABMC. For policy, researchers were able to collate references and guidelines for policy proposal. Full implementation of IP policy and Technology Transfer Protocol (with internal memos) has been achieved.

Regional Agri-Aqua Innovation System Enhancement in Southern Mindanao

Duration: **2 Years (January 1, 2022 – December 31, 2023)**

Project Title	Program/Project Leader/Agency	Y1 Budget	Y2 Budget	Total	Counterpart Funds
Project 1. Regional IP-TBM	Engr. Filmann T. Simpao / USeP	1,572,687.00	1,362,687.00	2,935,374.00	450,000.00
1A. IP-TBM in DA BPI-DNCRDPSC	Ms. Arceli G. Yebes	994,674.00	884,674.00	1,829,348.00	280,000.00
1B. IP-TBM in DdOSC	Dr. Lilybeth M. Matunhay	816,211.00	756,211.00	1,572,422.00	450,874.00
1C. IP-TBM in DNSC	Dr. Mark Roland S. Manseguiao	816,211.00	756,211.00	1,572,422.00	302,000.00
1D. IP-TBM in DOrSU	Dr. Cheryll Bautista	816,211.00	756,211.00	1,572,422.00	314,000.00
1E. IP-TBM in DSSC	Dr. Cherry Ann P. Roxas	816,211.00	756,211.00	1,572,422.00	438,874.00
1F. IP-TBM in KCAST	Engr. Mark C. Angeles	994,674.00	884,674.00	1,829,348.00	280,000.00
1G. IP-TBM in PCA-DRC	Ms. Johanna Orense	994,674.00	884,674.00	1,829,348.00	280,000.00
1H. IP-TBM in SPAMAST	Dr. Ariel E. San Jose	994,674.00	884,674.00	1,829,348.00	280,000.00
1I. IP-TBM in UP Min	Ms. Lynda A. Buenaobra	816,211.00	756,211.00	1,572,422.00	300,000.00
Project 2. Regional Agri-business Hub	Ms. Pamela Dawn Patayon / USeP	1,195,624.00	985,624.00	2,181,248.00	330,000.00
Project 3. Regional ATBI	Dr. Karl P. Campos / USeP	1,550,374.00	1,440,374.00	2,990,748.00	450,000.00
3A. ATBI in USeP	Dr. Karl P. Campos / USeP	2,827,509.00	2,217,509.00	5,045,018.00	770,000.00
Project 4. Regional KM Hub	Engr. Rey De Leon / USeP	978,999.00	918,999.00	1,897,998.00	286,000.00
TOTAL		**16,184,944.00**	**14,244,944.00**	**30,229,888.00**	**5,211,748.00**

Near-realtime Monitoring of Banana Nutritional Status and Yield Forecasting using Airborne Multispectral Imaging

Under the University of Southeastern Philippines (USeP) as its implementing agency, the project "Near-realtime Monitoring of Banana Nutritional Status and Yield Forecasting using Airborne Multispectral Imaging" commenced the start of its implementation on July 01, 2022. Funded by DOST-PCAARRD and in cooperation with Hijo Resources Corporation (HRC), Provincial Agriculturist Office in Tagum City, and UPLB-SARAI, the project aims to explore the use of airborne multispectral imaging to monitor near real-time nutritional status of 'Cavendish' banana to improve yield and reduce fertilizer inputs. Specifically, it aims to evaluate the use of multispectral remote sensing for site specific macronutrient (N, P, K) management for cavendish banana and develop a model to predict plant nutrition using processing and analytical methods. It also seeks to develop a machine learning algorithm for plant nutrient deficiency prediction, a mobile application for plant nutrition and a Decision Management System for plant nutrition and yield forecasting.

For year 2022, the highlights of the project includes: project proponent and private partner agency collaborative meeting for establishment of the project research site; first and second quarter project team meeting for preparation of experimental area for laboratory set up, implementation of scheduled activities, procurement of agricultural supplies and other materials for implementation, and the data gathering process; and selection and establishment of the research site for the project laboratory experimental set-up at the USeP Mabini Campus. The project has a total of year one approved budget of PhP 2, 994,998.00.

The project was presented by project leader James Jade S. Lasquites during the 113th Regional Research and Development Coordinating Council (RRDCC) Meeting back-to-back with the Year End Review of Ongoing Projects cum SMAARRDEC Annual Fellowship last December 2, 2022 at Worth Eat Café.

DSSC Trichoderma Project: Supports Banana Growers Manage Fusarium Wilt Disease (FWD)

Fusarium Wilt Disease leads to decreased volume of banana production, quality, and profitability incurring huge losses. Rapidly infected entire plantations, and caused a global collapse in the banana trade. Trichoderma have been widely studied and commercially marketed as biopesticides, biofertilizers and soil amendments however, liquid formulation was not fully explored.

Hence, to support banana growers within the region, the Davao del Sur State College (DSSC) established Trichoderma Project to innovate mass growing of Trichoderma using the coco water waste in volume readily available to farmers and establish field application demonstration.

Compared to solid formulation, the liquid Trichoderma can be harvested and used in just 7-10 days. Also, contaminated flat bottles are easily detected due to the presence of another color. The product contains 5.8M spores /L and remains active for 75 days under chiller conditions. It has a production cost per liter of 50.00 pesos and has an IPO Utility Model registration no: 2-2021 050166.

Upon the coordination meeting of DSSC team and farmer-partners team, 9 ha of banana plantation from Cagas Cavendish Farm in Igpit, Digos City has been chosen as the demonstration farm establishment. Out of 210 treated plants, only 12% showed symptoms of Fusarium, Due to its efficacy, banana growers have adopted the product from various banana farms and plantation in Digos City, Bansalan, Matan-ao, Sta. Cruz, and Sulop among others. The project has a gross sales of 73,214.40.

TECHNOLOGIES WITH IMPACT

(*Please refer summary on Table 9)*

The Consortium as PCAARRD's regional arm initiates innovations and interventions anchored on integrated and rationalized research, development, and extension efforts in pursuit of serving the interest of its target clientele. Improvement of the end-user's living conditions serves as the gauge of whether the technologies and information are relevant and beneficial. This is evident in the following initiatives which ripple positive impacts towards the consortium's grassroots:

Pisolar: Lighting up communities

Led by its project leader Engr. Filmann Simpao, the University of Southeastern Philippines has partnered with Leadtech Inc., a manufacturing company that fabricates solar home kits to come up with the now-completed project PISOLAR, an acronym for "Payment Innovation for SHS Ownership by Lay Away Routine." Funded by the Department of Science and Technology (DOST) under the Science for Change Collaborative Research and Development to Leverage Philippe Economy (CRADLE) Program, the program aims to design, develop, and deploy a pay-as-you-go solar home system (PAYG-SHS) using alternative wireless technologies.

It uses Radio Frequency Identification and Low Power Wireless Area Network technology to connect the PAYG-SHS with a control module to provide electricity and lighting to households in the selected community. The project received a total of P4.9 million in funding from the DOST and was in development for two years and six months. It was monitored by the DOST-Philippine Council for Industry, Energy, and Emerging Technology (DOST-PCIEERD), and was completed in June 2021.

Two (2) geographically isolated and disadvantaged areas (GIDAs) namely, Sitio Igang, Brgy. Palma Gil, and Sitio Salapion, Brgy. Sto. Nino, Municipality of Talaingod, Davao del Norte are part of the remaining communities which do not have access to electricity.
Before Pisolar, kerosene is the primary light source in their homes. However, such a practice is expensive and dangerous since their households are made of wood and other combustible materials. Using an SHS for the community is the practical solution as they only need electricity for lighting, basic services and for charging mobile devices. Today, the said communities benefitted from the project up to the present with 52 households being lit; 19 of which are from Sitio Igang and 33 from Sitio Salapion.

Compared to regular on-the-grid electricity rates, the beneficiaries of Pisolar only cost them P200 that is shared by three to four households per month. It already covers the lighting, use of a television and radio, as well as charging their devices.

Pisolar is operating on a lay away system which is similar to the build-operate-transport schemes in major infrastructure projects. Leadtech manufactures, installs and maintains the units, then the community gradually pays off the entire device by using the system until they own it. A village local entrepreneur is given the responsibility to collect all the payments of the households and is the lead contact to the operator of the control module.

Aprilyn Batuan, 9, also a resident of the Sitio Igang, is very thankful for Simpao for bringing electricity to their community. Her school, which still doesn't hold face-to-face classes, is still implementing module-based learning for its students and Aprilyn is among the many students struggling with remote learning, especially in off-the-grid locations.

"We owe a lot from what we have now because of Sir Filmann [Simpao]. He helped me study my lessons at night." Batuan said in the vernacular.

Besides the lighting system, families in the sitio can also watch television, listen to the radio, and charge their devices. Hence, families can now prepare for emergency situations by staying tuned to the news.

"On behalf of the team, we would like to thank the DOST for this grant as we are able to effect meaningful change in the lives of the Lumad people. Definitely, Pisolar doesn't end here." Engr. Filmann T. Simpao, PISOLAR project leader said during an interview with DOST. "I hope more researchers like me are open to collaboration with DOST as they have programs that support not only us but also the people," he added.

The said technology is a registered patent invention with Patent Registration Number 12017050082 and was adopted as an extension program of the USeP College of Engineering. Furthermore, the Regional Development Council XI supported the project's output through Resolution No. 90 s. 2022 to support and adopt the PISOLAR project for deployment in various GIDAs in Davao Region and in Mindanao with appropriate funds.

Mechanical climber to benefit millions of coco farmers

Professor Ryan Abenoja and his team from the University of Southeastern Philippines (USeP) crafted the mechanical coconut climber which benefit millions of coconut farmers in the country. In an interview with The Manila Times, professor Abenoja of USeP said his group that developed the mechanical coconut climber is now overwhelmed with orders as the innovation is really a big contribution and help to the industry.

The mechanical coconut climber won the best in the Agri-Aqua Innovation Fest of the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DoST-Pcaarrd) held at Acacia Hotel, Alabang, Muntinlupa City. Abenoja said that his group started to develop the mechanical coconut climber in 2019 but progress was delayed due to the pandemic.

"It took less than a year for us to develop it. It underwent many prototypes until we finally perfected the mechanical coconut climber," Abenoja said. He added that Cocolink approached his group and sought their help.

"We have a partner, the Cocolink, which has many members in the coconut and copra industry in the Davao Region. They have shortage of labor force, particularly the climbers. You need skilled climber as even those who have long experience in climbing can still fall from the coconut tree," Abenoja added.

He said Cocolink bought equipment abroad but was not suitable in the Philippines. "The mechanical coconut climber is already available in other countries but when this was tested, it was not suitable in our country as we have different sizes of coconut trees and the farmers were not happy as it was difficult to set up. That's what we tried to solve," Abenoja noted. He added that it only took less than one year for them to perfect the product as his group already has a design that needed to be revised to make it more suitable for the country's setting. He also said a set of mechanical coconut climber costs P7,500 compared to P15,000 to P25,000 sold in other countries.

Abenoja said Cocolink is now looking for fabricators in Luzon, the Visayas and Mindanao for the mass production of the mechanical coconut climber. His group already applied for a patent for the mechanical coconut climber. He thanked the DoST-PCAARRD for the support in the commercialization of their innovation. His group also continues to develop other products to help the agriculture sector.

Project ROSANNA: Mobile App for Banana Disease Surveillance

ROSANNA is a mobile application developed to monitor banana plantations with its agricultural disease surveillance system, capable of gathering and disseminating disease-related information at the farm level. As the first collaboration between the University of Southeastern Philippines (USeP) and Hijo Resources Corporation (HRC) a big banana company in the region, the said project was conceptualized to mitigate the prevalence of diseases such as black sigatoka, banana bunchytop diseases, Panama diseases, and moko, which have caused substantial threats to the region's banana industry.

The inception of the idea for Project ROSANNA traced back to the proposal "Synergize Academe Industry Research Undertakings to Improve Productivity through Development of a Banana Diseases Surveillance System" crafted by a team of USeP. The project was eventually funded by the DOST under its Science for Change (S4C) Program-Collaborative Research and Development to Leverage Philippine Economy (CRADLE). The S4C-CRADLE program emphasizes collaboration between academe and industry, which will readily utilize the technology generated out of the project. The team developed one (1) disease forecasting model and two (2) software applications namely ROSANNA Mobile App and CRADLE Web App technologies.

The mobile application system allows data collection of disease-related incidents and information dissemination with visualization of disease prevalence. The web-based application is a means to manage the entire surveillance system.

Using the ROSANNA mobile app, the "spotter" shall retrieve data in the field where the selected banana tree has its respective QR code representing every parcel of the experimental area. Data will be sent to the supervisor and manager to be processed and analyzed to determine the extent of damage caused by the disease. ROSANNA, thus, provides an apt and timely decision-making basis for managers to reinforce interventions to prevent disease spread and further threats.

Project ROSANNA was conducted in a 10-hectare area of Hijo Resources Corporation (HRC), a 340-hectare banana plantation in Madaum Tagum, Davao del Norte. Concluded in November 2019, the USeP-led project was successfully realized through the expertise of Dr. Val A. Quimno, Dr. Cecirly G. Puig, and SMAARRDEC Director Gilbert A. Importante. The project was monitored by DOST-PCAARRD-ARMRD in coordination with SMAARRDEC, which is also responsible in the fund approval of the said endeavor.
Project ROSANNA, embodying the spirit of innovativeness in the AANR sector, proves that early detection is, indeed, the best prevention. Captivating the interest and positive regard of various industry players in the region, this innovation may serve as an ideal precedent for further partnerships between the University and various key sectors to save the banana industry, one of the region's top commodities, from any potential threats of "sagging".

R&D RESULTS
UTILIZATION

SMAARRDEC also undertakes programs and activities to enhance the promotion and eventual utilization and commercialization of S&T outputs. Thus, technology transfer was the Consortium's frontrunner program in delivering appropriate information and technology services in the AANR sector. Through the program's information and technology services, initiatives in technology promotion, dissemination, transfer, and commercialization activities, the presence of the consortium in the region became more evident and continuously thriving.

TECHNOLOGY TRANSFER

PROPOSAL/S PACKAGED, APPROVED, AND IMPLEMETED

(Please refer summary on Table 10)

The Consortium fully captured the dynamism and collaborative process of technology transfer through enabling proposals, implementations, and packaging of technologies that will transform inventions and scientific outcomes into new products and services that benefit the grassroots.

SUSTAIN-IPTBM

The "Support to the USeP's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies" completed its Phase II on December 31, 2021 with its mentor project leader, Engr. Filmann T. Simpao. The program was approved for a 6-month extension from January 1, 2022 to June 30, 2022.

Department of Science and Technology
PHILIPPINE COUNCIL FOR AGRICULTURE, AQUATIC AND NATURAL RESOURCES RESEARCH AND DEVELOPMENT
ISO 9001:2015

OFFICE OF THE EXECUTIVE DIRECTOR

February 02, 2022

DR. ROY G. PONCE
President
Davao Oriental State University (DOrSU)
Guang-guang, Dahican
City of Mati, Davao Oriental

Attention: Dr. Wilanfranco C. Tayone
Project Leader

Dear President Ponce:

This refers to the concept proposal titled, **"Inclusive Science for Livelihood in Agri-Aqua (ISLA) for Small Islands: A Multi-Actor and Stakeholder Collaboration (MASC) for Climate Change Resiliency – ISLA-MASC"** under the leadership of Dr. Wilanfranco C. Tayone, submitted to PCAARRD for possible funding consideration under the PCAARRD-GIA program.

We would like to inform you that the En Banc Proposal Evaluation of the said proposal is scheduled on February 16, 2022 (Wednesday) at 8:30 AM to 4:00 PM via Zoom. In line with this, we would like to invite **Dr. Tayone** to present the said proposal during the said activity.

For confirmation, clarification, and other details, please contact our staff, Ms. Gerlie Joy N. Gutierrez, at ttpd@pcaarrd.dost.gov.ph.

Thank you.

Very truly yours,

NOEL A. CATIBOG
Director

En-banc Review of Proposed ISLA-MASC

Facilitated by DOST-PCAARRD –TTPD Director Noel Catibog, the DORSU proposal on Inclusive Science for Livelihood in Agri-Aqua (ISLA) for Small Islands passed through the initial evaluation at PCAARRD level before uploading at DPMIS. The meeting was conducted on February 16, 2022 with CD Gilbert Importante, TTC Coor Evelyn Gecale, DORSU VPRDE Dr. Wilanfranco Tayone, and Research Director Dr. Roy Padilla. The proposal was presented by Dr. Janessa P. Catam-isan

The Inter-Consortia Convergence in Socio-Economics R&D: Institutionalization of the Socio-Economics Research and Data Analytics Center (SERDAC) Updates

The Inter-Consortia Convergence in Socio-Economics R&D: Institutionalization of the Socio-Economics Research and Data Analytics Center (SERDACs) in Consortia Operations" Mindanao provided the list of services offered to the College of Information and Computing - USeP to promote the SERDAC laboratory that the students, faculty and staff can use.

SERDAC
SOCIO-ECONOMIC RESEARCH AND DATA ANALYTICS CENTER
MINDANAO
ISO 9001:2008

All in all, SERDAC conducted 14 trainings/seminars conducted nationwide. The Program Leader presented the services in every training/workshop conducted by SERDAC. Project Leader Jennifer E. Hinlo presented the SERDAC Mindanao services during the 4th quarter RRDIC XI Meeting last November 23, 2021.

In year 2022, the SERDAC- Mindanao has commenced its SERDAC ASTI Data Gathering Activity from July 19 – August 26, 2022 at the following institutions: Davao del Norte State College , USeP Tagum, Kapalong College of Agriculture, Science and Technology, Davao De Oro State College, Central Mindanao University, Northern Mindanao Consortium for Agriculture, Aquatic and Natural Resources and Research Development, Bukidnon State University, Caraga State University and Northern Eastern Mindanao State University – Tagbina , WESMAARRDEC, MSU- Buug, Zamboanga Sibugay, Zamboanga State College of Marine Sciences and Technology, J. H. Cerilles State College - San Miguel, Zamboanga del Sur, Jose Rizal Memorial State University – Main Campus (Dapitan), JRMSU – Katipunan Campus, and Department of Agriculture – Research Division, Zamboanga Sibugay.

Newly-Approved RAISE Program Updates

The Consorium conducted the National inception meeting on January 28, 2022 and the face to face Regional inception meeting on March 4, 2022 at USeP-Hostel Obrero Davao City.

Program Leader Engr. Filmann T. Simpao presented the updates on the implementation of RAISE: UGMARA in the region to PCAARRD-Directors' Council on September 5, 2022 for its year 2 implementation. All the CMIs involved already received funding from DOST-PCAARRD.

The gist of the presentation includes the learnings, problems encountered, and actions taken were introduced.

Problems Encountered:

- Late submission of required documents
- Delayed receipt of funds hence, late hiring of project staff; and
- No financial expenditures disbursed

Actions Taken:

- Being resourceful in finding ways to conduct activities
- Close communication with DOST-PCAARRD and the lead agency; and
- Fast track of the required documents to receive the the funds as soon as possible

Learnings:

- Effective communication/coordination and strong relationship between CMIs helped the program realized some 1 year targets
- Close physical monitoring with CMI provides context of the real situation about the perspective of IP-TBM operations, guidance is quickly provided

RAISE-UGMARA Program also conducted Learning Visit at CLSU, PhilRice and PhilMECH last November 21-22, 2022. The team attended the 2nd National ATBI Conference and 1st Incubatee Summit last November 23-25, 2022 to strengthen the ATBI ecosystem and serve as a venue to share best practices among ATBI stakeholders.

TECHNOLOGIES DEPLOYED THROUGH VARIOUS EXTENSION MODALITIES

(Please refer summary on Table 11)

SCICAT TRAININGS

Lecture on Precision Agriculture

On April 28, 2022, Mr. Bryl I. Manigo – a faculty-researcher from the University of Southeastern Philippines (USeP) – Tagum-Mabini Campus, and a farm tourism advocate working closely with the SciCAT project funded by DOST-PCAARRD, conducted a brief lecture about precision Agriculture to some of the graduating students of the Kolehiyo ng Pantukan.

The students are under the Bachelor of Science in Agribusiness and currently undertaking their On-the-Job Training (OJT) at Dimpas Greentigrated Agri-Tourism Farm. Precision Agriculture is a farm management method that employs information technology (IT) to ensure that crops and soil receive precisely what they require for optimal health and yield. PA's mission is to assure profitability, long-term viability, and environmental protection.

In continuance of the visionary purpose of the DOST-PCAARRD funded farm tourism program, the "SciCAT AGRI-VIDA" came into existence which seeks to hone a farm tourist site into a leading character in a community. This helped equipped participants of the program to acquire knowledge on the farm tourism operations to promote local agricultural destinations and house trainings and farm visits. This year, USeP SciCAT team, in active partnership with Dimpas Greentigrated Agri-tourism farm of MS Naomi Dimpas, has been thriving through its continued implementation of seminars and trainings, both online and face-to-face, which are all responsive to the needs of its target clienteles.

Training on Ginger Turmeric Tea Processing

On March 29, 2022 the USeP SciCAT team conducted a training on ginger turmeric tea processing with 35 participants attended the training. They are members of the Rural Improvement Club (RIC) of Brgy. Rang-ay and Caganganan, Banaybanay, Davao Oriental. The Turmeric and Ginger Tea is one of the value-added products of the Dimpas Farm made from organic materials and process. The objective of the training is to capacitate locals especially farmers to add value on their fresh produce from their farms and utilize it for extra income.

SCICAT TRAININGS

Face-to-face Training on Organic Vegetable Production

The USeP SciCAT team spearheaded a one-day face-to-face training activity on Organic Vegetable Production as a catch-up activity for the conduct of face-to-face trainings, as part of the deliverables of the SciCAT project Phase II. The training was conducted on Dec. 27, 2022 and were attended by 25 people composed of farmers from different barangays of the Municipality of Banaybanay. The resource speaker (Mr. Ehrlhan Mhelric G. Miralles) was the same person who spoke during the webinar training of this activity.

The Magsasakang Siyentista (MS) of the Dimpas farm, also shared her experience on producing organic vegetables in the farm. The objective of the training is to capacitate the participants on learning the ways and practices of producing organic vegetables. Also, a starter pack was given to each participant (courtesy of the SciCAT Phase II project), for them to easily adapt the introduced technology/system.

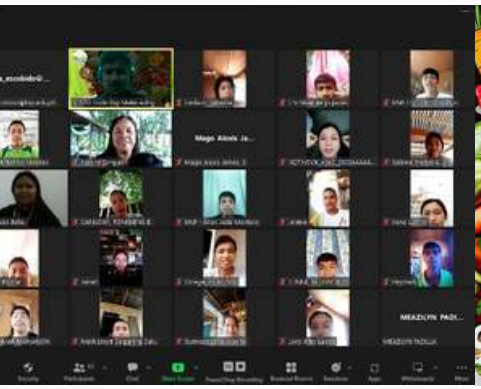
Training on Herbal Liniment Processing in the Province of Davao de Oro

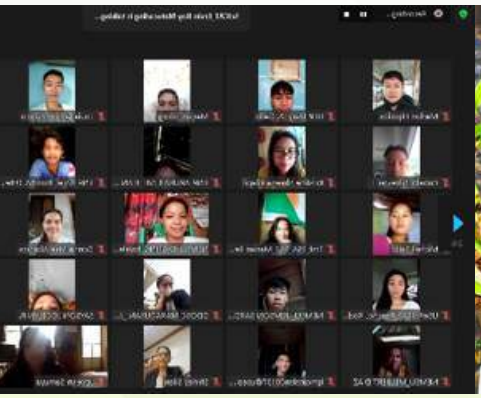
The USeP SciCAT team spearheaded a face-to-face training activity along with the Promoting Vtech's Strawberry Technology Towards Sustainable Farm Tourism in Davao de Oro Project of USeP. The full title of the training is "Training-Seminar on Strawberry Production and Herbal Liniment Making among Potential Farm-Tourism Sites in the Davao de Oro".

The one-day training is divided into two sessions, in the morning, the strawberry production was tackled with its resource speaker, Dr. Jayesh Samtani. While in the afternoon, the topic on Herbal Liniment Processing was presented by our very own MS Naomi D. Dimpas. The training was conducted on Dec. 1, 2022 and were attended by 55 people composed of farmers and agricultural technician from the different municipalities of Davao de Oro.

The main objective of the training is to promote Agri-Tourism in Davao de Oro, and introduce to farmers and agricultural technicians the technologies on strawberry production and herbal liniment processing, which are both proven to be a good asset in a farm tourism site.

SCICAT WEBINAR SERIES 2022





Webinar on Salted Egg Making

The USeP SciCAT team spearheaded a webinar activity on salted egg making which was held on March 15, 2022 and was attended by 23 people from different regions of the Philippines. The resource speaker for the webinar is a faculty of USeP and a professional expert on food processing. Also, the Magsasakang Siyentista (MS) of the Dimpas farm shared her experience on the process of making saltedegg from and utilizing it as a farm value-added product.

Webinar on Ginger Turmeric Tea Processing

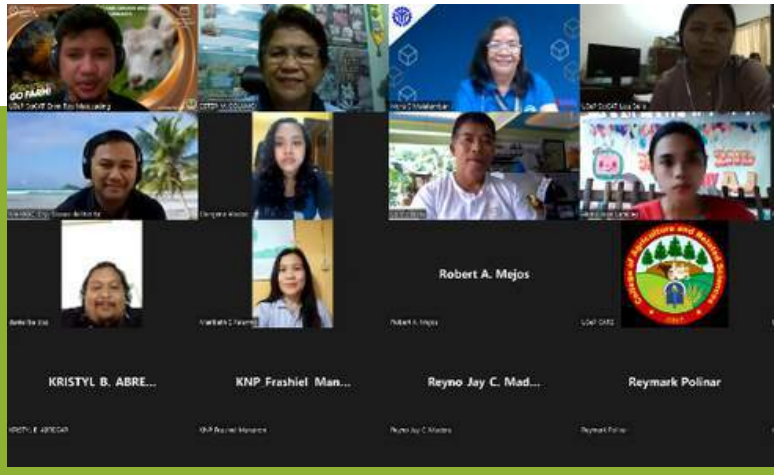
The USeP SciCAT team spearheaded a webinar activity on ginger turmeric tea processing. The webinar happened on April 12, 2022 and was attended by 31 people from different regions of the Philippines. The resource speaker for the webinar is the Magsasakang Siyentisa (MS) of the Dimpas Farm, Mrs. Naomi D. Dimpas. The objective of the webinar is to inform and train various of people who are involve somehow in the field of Agriculture, the process of making the product, its health benefits, and market analysis.

Webinar on Organic Vegetable Production

The USeP SciCAT team spearheaded a webinar activity on Organic Vegetable Production on Sept. 5, 2022 and was attended by 238 participants from different regions of the Philippines. The resource speaker (Mr. Ehrlhan Mhelric G. Miralles) for the webinar was a manager of a private owned farm. He is the alternate center manager of Adlawan Farms Corporation. Also, the Magsasakang Siyentista (MS) of the Dimpas farm shared her experience on growing vegetables organically. The objective of training is to inform and create a technical awareness to the participants of the different ways and the concept of organic vegetable production. Also, currently as people are seeking more ways to consume healthy foods, this webinar is very timely and appropriate.

Webinar on Organic Feeds Production

The USeP SciCAT team spearheaded a webinar activity on Organic Feeds Production held on Sept. 27, 2022 and was attended by 289 people from different regions of the Philippines. The resource speaker (Mr. Leo Jim L. Saludo) for the webinar is a teacher on the Maragusan National High School. He is also a trainer and assessor for TESDA trainings on Organic Agriculture. The Magsasakang Siyentista (MS) of the Dimpas farm, also shared her experience on making and processing organic feeds in her farm. The objective of the training is to inform and create technical awareness among the participants that there are natural alternatives for commercial feeds for our animals that have the same nutritional value. Also, as the prices of commercial feeds are rocketing currently, this webinar is very timely and appropriate.



Webinar on Raising Organic Chicken and Small Ruminants

The USeP SciCAT team spearheaded a webinar activity on Raising Organic Chicken and Small Ruminants on Nov. 10, 2022 and was attended by 147 people from different regions of the Philippines. The resource speaker (Ms. Nora S. Malatamban) for the webinar is an assistant professor IV on the Davao Oriental Polytechnic Institute (DOPI). She's also a trainer for TESDA trainings on Organic Agriculture.

The Magsasakang Siyentista (MS) of the Dimpas farm, also shared her experience on raising her goat and chicken in the farm, organically. The objective of the training is to inform and create a technical awareness to the participants on how to raise your animals in the farm, organically. Giving information on how to perform the organic way, from feeding, the building of the housing and the medication of the animals.

Dimpas Greentigrated Agri-Tourism Farm with the Technical Education And Skills Development Authority (TESDA) - Davao Oriental Office and through the support of the Municipal Agriculture Office of Banaybanay, conducted a series of training and orientation to the farmers/students of the different TESDA training offered by Dimpas farm.

Dimpas Greentigrated Agri-Tourism Farm is a TESDA Farm School Accredited that offers scholarships for the Qualification of Production Of High-Quality Inbreed Rice and Seed Certification and Farm Mechanization. Other trainings offered by the farm are the following:

- On December 19, 2022, the farm TESDA School Students performed follow up on Minus-One Element Technique (MOET) Application and Rotor Driving.
- On December 15, 2022, The Dimpas Greentigrated Agri-Tourism Farm TESDA School students performing Agro-Ecosystem Analysis (AESA)
- On December 10, 2022, the TESDA Davao Oriental Province conducted an Entrepreneurship Training Program at Dimpas Farm.
- On November 20, 2022 the TESDA Farm School of Dimpas Greentigrated Agri-Tourism Farm conducted a training about Farm Machinery Operation and Safety.
- On November 14, 2022, Dimpas Farm conducted a training on the operation of harvesting rice using a combine harvester machine.

TECHNOLOGIES COMMERCIALIZED

(Please refer summary on Table 12)

Seeing technology as a boon, SMAARRDEC had been continually maximizing its resources to its highest potentials to package and promote products and commodities for commercialization. Thus, in the advent of facilitating and strengthening S&T-based knowledge and information delivery, SMAARRDEC embarked on the development and packaging of technology information and value-adding products with valuable impacts to its stakeholders.

MangifeTek: Harvest Technologies for Mango Production

Envisioning to increase the potential of export yield of mango by reducing harvest-related losses, the MangifeTek harvest technologies are responsive to address the deteriorating profitability of mango production in farm level. MangifeTek is composed of three (3) technologies being used in different phenological stages of mango:

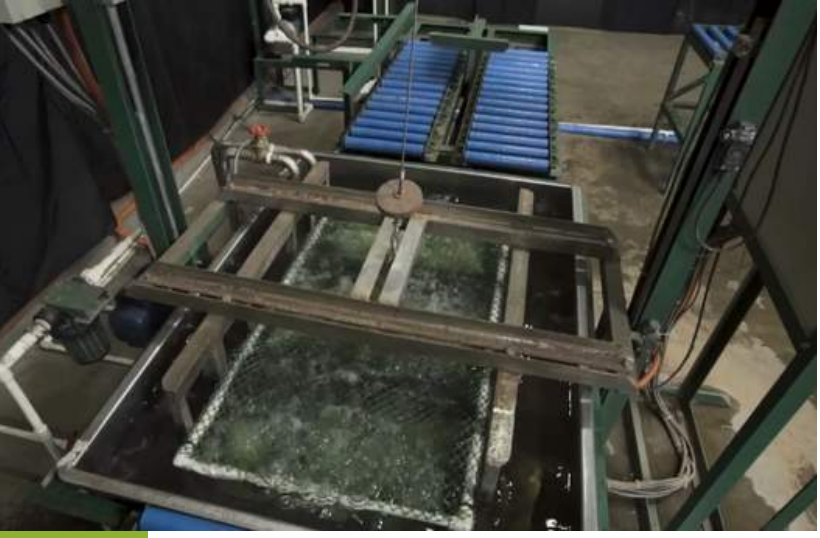
Mango Power Spray Nozzle (Preharvest)

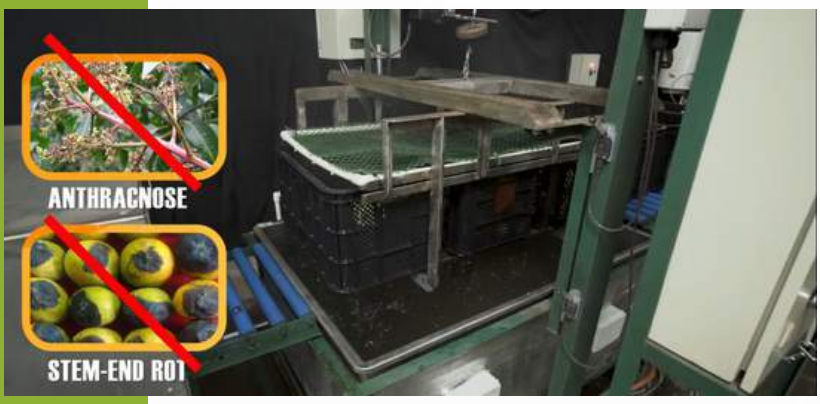
The Mango Power Spray Nozzle has one orifice at the top of two orifices nozzle forming an angle of 45 degrees for wider swath width compared to the scope of conventional sprays. It is more effective in reducing pests count while decreasing the volume of chemicals by half, thus significant reduction of input costs. It has a spray capacity of 2.79 ha/day.

V-Sigpao Mango Mechanical Fruit Picker (On-harvest)

Mango fruit harvesting is done through pulling which detaches the peduncles causin latex to flow on the fruit resulting in latex stain or if severe, latex burns. Compared to traditional "sigpao", V-Sigpao is a mechanical mango fruit picker that uses cutting and shearing mechanism which reduces the latex stain by 80% during harvesting and lessens the bruising damage caused by mishandling. It has two types; the pull type (double blade) and the trigger type. The mango fruit pickers are both attached to extendable poles.

Pull-type has a double blade for better shearing. Trigger type is provided with cutting wedges for better cutting. The harvesting capacity of the trigger type is 12 pieces per minute, while the pull type harvesting capacity is 21 pieces per minute. Thus, V-Sigpao aims to improve the shearing and cutting mechanism of fruit harvesting. Significant reduction in harvesting time is realized. The use of both pickers also helps reduce the number of fallen and mechanically damaged fruits. The frame is provided with less abrasive net and an extendable handle/pole is adopted for long-reached fruits. The technology is filed as patent with Patent Application number 12014000311.





Mango Integrated Postharvest Facility (Post-harvest)

The Mango Integrated Postharvest Facility includes a hot water treatment at a present time and temperature and bubbles for even distribution of heat. With an electric energy source, it increases mangoes' shelf life of 1 week by treating diseases caused by anthracnose and stem-end rot. Thus, mishandling is reduced since the facility is fully automated.

The MangifeTek products were pilot tested in three (3) mango farms in Davao region. The University of Southeastern Philippines (USeP) through its Knowledge and Technology Transfer Division (KTTD) would like to engage partnerships to interested entrepreneurs and is open for non-exclusive and domestic licensing to widen the product reach. Currently, the technologies are on its on-going licensing agreement.

Mechanical Coconut Climber

To eventually replace manual climbing and pole method (for fruit-picking), the mechanical coconut climber or CocoClimber by USeP is a DOST-funded project under CRADLE program. Developed by USeP professor Ryan Abenoja, the present invention relates to a tree climbing device, particularly a device for climbing coconut. It is a user-friendly and gender-flexible device made up of locally available and lightweight materials that are easy to construct and repair.

CocoClimber comprises a left assembly and a right assembly collectively as a climber assembly. A cable assembly operably connected to a footrest assembly by a thimble and ferrule snapped into a carabiner disposed at one end of said footrest assembly. The cable assemble is characterized by a single roller disc which rolls upon vertical movement carrying the cable assembly and keeping a cable wire from ensnaring to the tree's notch. The said cable assembly upon stepping on the footrest assembly provides a tension in the cable wire, thus, providing a grip on the tree while transitioning to make another step by pulling a handle to move upward or pushing said handle to move downward, either way leads the cable wire to loosen. The technology thus, provides easement of vertical movement, reduces risk and drudgery during operation, and can also be used in either rainy or dry condition. CocoClimber has a climbing capacity of 12 trees per hour.

At present, CocoClimber is undergoing licensing negotiations with the Cocolink Industry Cluster and Franklin Baker.

TECHNOLOGY PITCHING

During the conduct of Industry Forum and Technology Pitching During Regional Symposium the following technologies had also been pitched: Coconut Pest Management by PCA-DRC which was pitched during the conduct of Davao Region Coconut Conference and Exhibit on December 2, 2022 at SMX Lanang Davao City. On the other hand, Liquid Trichoderma by DSSC and Palay Paint by UPMin were pitched during the Agri-Aqua Innovation Pitch Fest on December 6, 2022 at Alabang Muntinlupa City.

TECHNOLOGY PROMOTION

APPROACHES PARTICIPATED, CONDUCTED, PRODUCED

FIESTA

(Please refer summary on Table 13)

(FIESTA served as a means in pushing the commercialization of regional S&T-based products to their target markets nationwide. Embodying prosperity and abundance, FIESTA helped the Consortium to showcase the finest results of its research and development (R&D initiatives); thus, providing a dynamic venue where science and technology products are commercialized and coordinated.

The Consortium performed continuous promotions of relevant and value-adding technologies and information in the advocacy of a vibrant agriculture and natural resources in the region. Bulk of the consortium's efforts in facilitating S&T-generated technologies, information exchange and promotion were recognized with joint activities among R&D implementers, PCAARRD, and other sponsoring government and private sectors. Thus, the Consortium intensified its technology transfer program by brining relevant R&D breakthrough generated in the region to farmers and technology adopters.

MANGO TAKES THE SPOTLIGHT IN THE FIRST-EVER VIRTUAL SCIENCE "FIESTA"

Mango is the front and center in the first-ever virtual Farms and Industry Encounters through Science and Technology Agenda (FIESTA) with the theme, "Sustainable, Well-Enhanced, and Efficient Technologies (SWEET) on Mangoes", from December 3, 9-10 & 16-17, 2021. The simultaneous banging of gong and ribbon cutting of the exhibit areas of the three consortia was the highlight of the event signifying the official start of the Mango FIESTA.

Spearheaded by Southern Mindanao Agriculture Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC) in collaboration with the Visayas Consortium for Agriculture Aquatic and Natural Resources Program (ViCARP) and the SOCCSKSARGEN Agriculture, Aquatic and Natural Resources Research and Development Consortium (SOXAARRDEC), the FIESTa gathered virtually about 100 mango farmers across regions, particularly those from regions 8, 11 and 12. Dr. Reynaldo V. Ebora, Executive Director of the Department of Science and Technology-Philippine Council for Agriculture Aquatic and Natural Resources Research and Development (DOST-PCAARRD) said that FIESTA is a platform for sharing science and technology research breakthroughs to stakeholders, linking farmers to the market.

The conduct of science FIESTA started in 2014 which is DOST-PCAARRD's initiative in disseminating and commercializing matured technologies generated by regional/local experts. As mango is considered a high-value commercial crop that provides livelihood to about 2.5M farmers nationwide; The DOST-PCAARRD invested about 15M for the development of ready-for-commercialization technologies implemented in the three (3) regions.

IThe Technology Business Forum transpired on December 09, 2021 where Technology Generators were the speakers of the event. Dr. Emma K. Sales and Ms. Marry Grace S. Balbuena of the University of Southern Mindanao (USM) talked about Molecular Markers for Mango Cultivar Identification and Genetic Characterization. Dr. Edgardo E. Tulin of Visayas State University (VSU) highlighted Dipstick Kit to Detect True-To-Type Philippine Carabao Mango. While Dr. Roger C. Montepio and Engr. Fillman Simpao of the University of Southeastern Philippines (USeP) speak about the topics on Pre and Post-Harvest Technologies for Mango and the Ways to Commercialize the Technologies generated, respectively These three technologies were pitched to the farmers and agripreneur participants who joined online. There were also participants from the press who asked questions to the technology generators.

The Webinar on Enhancement of Mango Production was conducted on December 10, 2021. It was participated by the selected mango farmers from Regions 8, 11 and 12. Mr. Rickson C. Olimpus shared his Good Agricultural Practices on Mango (A Farmer's Perspective). He is the owner/successful entrepreneur of Gabriel Mango and Fresh Fruit Farm located in Kabacan South Cotabato.

The topic on Canopy Management was discussed by Dr. Grace L. Caballero and Dr. Eddie Batoctoy of the Davao del Sur State College (DSSC). Both faculty-researchers conducted the study on mango canopy management in the selected areas in Davao del Sur which proven to have increased the fruit yields particularly those old mango trees. Technology Generator Dr. Roger C. Montepio of USeP presented the Low-cost Mango Picker and Noozle Sprayer and how it helped the mango farmers from Island Garden City of Samal (IGACOS). PostHarvest Management Techniques was shared by Dr. Marilou M. Benitez of VSU. The webinar aimed to share and transfer knowledge and technologies generated to the participating farmers in the online platform. True enough, there were questions raised and were answered during the open forum of the activity. Farming advocate and influencer Ruben Gonzaga highlighted the event through his 15-minute vlog on the technologies generated. The vlog contains facts about mangoes and interviews with the technology generators. The event was culminated on December 20, 2021 through the declaration of winners for the Video Infomercial and Digital Poster Making Contests which was participated by numerous participants from all over the Philippines. Online raffle draw of 500 Peso-load were given to the lucky participants of the virtual event.The pandemic continues to keep human beings distant but the three consortia worked hard through the use of the available alternative resources that made the Mango FIESTA vibrant and productive.

The development of these projects gave hope for better and enhanced productivity for the mango industry. Furthermore, these projects were funded with the ultimate desire to elevate the livelihood of the small-scale mango farmers using the low-cost technologies generated. With the conduct of this virtual cluster Mango FIESTA, the adoption and commercialization of these technologies will propel the increase of mango production in the country.

TECHNOLOGIES GENERATED

Mangifetek

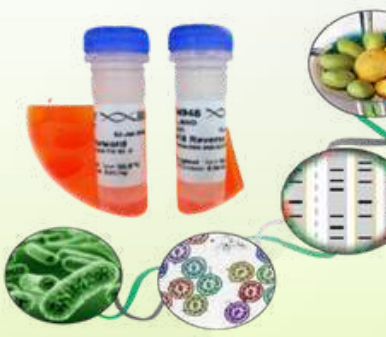
Mangifetek is a set of pre and post-harvest facilities of mango. |t is composed of three products at different stage of mango production. The MangifeTek power nozzle is effective and efficient in reducing pest counts while decreasing the volume of chemicals at a significant level, thus a significant reduction of input cost. The MangifeTek picker machine shows improvement in reducing the bruises and stain; thus the quality of mango is maintained without reducing picking capacity. The MangifeTek treatment facility increases the shelf life of harvested mango; meeting the requirement as well. These technologies were developed by Dr. Roger C. Montepio and Dr. Ben-Hur Rafosala of the University of Southeastern Philippines (USeP).

Dipstick Kit

The technology developed by Dr. Edgardo E. Tulin on Dipstick Kit to Detect True-To- Type Philippines Carabao Mango is a 40KDa protein band from leaf extracts of Carabao' mango isolated using the modified Phenol Extraction method. The kit was developed based on the principle of Competitive Dot-ELISA colorimetric assay wherein a colorless product indicates a positive result while a purplish color indicates otherwise. The efficacy of the kit was tested on the 'Carabao' and non 'Carabao' mango varieties including the USM-tagged mango trees collected in Guimaras, Iloilo City

SSR Marker Kit

The technology on "Molecular Markers for Mango Cultivar Identification and Genetic Characterization" developed by Dr. Emma K. Sales is about addressing Qproblem on mislabeling of Mango seedlings produced in the nursery. A diagnostic kit was developed to specifically identify elite variety like the Philippine Carabao mango. This diagnostic kit (Molecular Marker Kit) will ensure authenticity of the preferred mango variety cultivar as planting materials for dispersal.SSR markers can be utilized in determining the polymorphism and uniqueness of certain mango cultivars/strains over that of the other

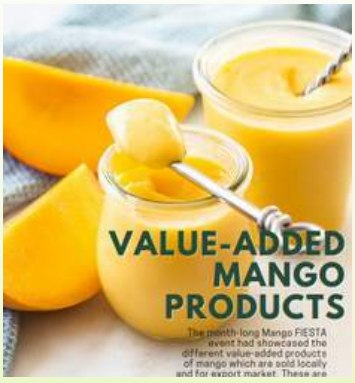


IEC MATERIALS

SMAARRDEC carried on with its multimedia approach in promoting awareness of and advocacy on information technologies and issues in the AFNR sectors through IEC and ICT such as publication and newsletter production, media linkage, educational communication, online news reporting through quick information dispatch in website and social networks.

Mango FIESTA Magazine

Through the collaboration of the three consortia, the Mango FIESTA magazine was crafted featuring the events of the successfully concluded Virtual Mango FIESTA, Program of Activities, Value-added mango products, technologies generated, and its generators, and winners and works of various online contests. It also includes feature articles about Mr. Nilo Nacua, a successful mango grower in Samal, Davao del Norte and the wonders of mango as the "Queen of Philippine Fruits".



SMAARRDEC launched first-ever history book during 35th Anniversary

SMAARRDEC: "Latas sa Katuigan" (Through the Years), the Consortium's history book, was written and compiled for the launch of this year's 35th-anniversary celebration. The history book is composed of four parts which are the following:

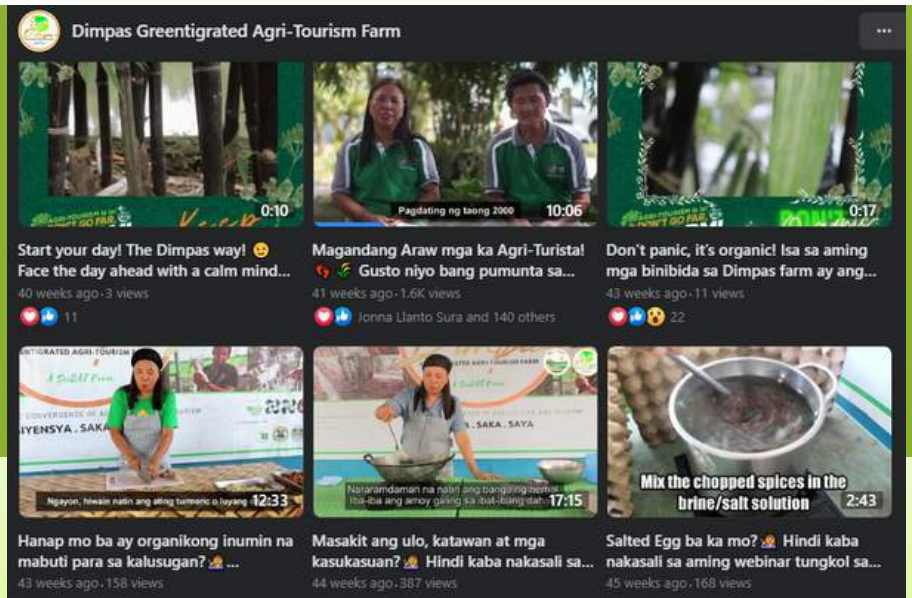
- ·"Sinugdanan" (beginning) commemorates the history of SMAARRDEC
- ·"Pakig-unongan" (allegiance) foregrounds the linkages of various initial/pioneer consortium member institutions and the harmony shared among the member agencies and leaders of the consortium through the years
- ·"Kalambuan" (flourishing) highlights the salient activities and accomplishments made possible by SMAARRDEC— the consortium's proven and time-tested services through the years.
- ·"Bangiitan" (esteemed) commends the notable contributions and accomplishments of the distinguished icons in the consortium.

Overall, it recounts the humble beginnings, triumphs, and collective efforts of the men and women of SMAARRDEC who have been instrumental in the development of the consortium's services and core functions. The said compilation was realized with the support of the RRDCC, the consortium member agencies, and the secretariat, who have offered their unwavering diligence and expertise to conceptualize and come up with SMAARRDEC's first-ever history book.

IEC MATERIALS

IEC Materials on Technologies Commercialized

IEC materials has been produced for mass dissemination to inform various stakeholders and technology adaptors about the various technologies commercialized by the Consortium such as the Mangifetek and USeP's Cococlimber, and others.



Dimpas Farm Promotional Videos

To boost its presence and endorse its facilities, programs, and training offered, Dimpas farm produced various promotional and educational videos to inform its clientele about the booming field of agriculture and business through Dimpas Greentigrated Agri-Tourism Farm. Its contents vary from knowledge dissemination, virtual toors, tutorial videos among others.

EXHIBITS AND FAIRS

SMAARRDEC COMMEMORATES 35TH FOUNDING ANNIVERSARY

Founded in August 1987, the Southern Mindanao Agriculture, Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC) celebrated its 35th Founding Anniversary at the University of Southeastern Philippines (USeP) on August 16-18, 2022 with the theme, "Strengthening Agriculture, Aquatic and Natural Resources (AANR) Industries and communities towards a resilient and economically competitive Davao Region".

Attended and participated by the consortium member-institutions, as well as farmers and fisherfolks hailing from the different parts of the Davao Region where SMAARRDEC operates, the founding anniversary centered on the continuing efforts of the consortium to work on intensifying and strengthening the regional Research and Development (R&D) system for AANR sectors.

"This has been a challenging pursuit and a noble effort to spur countryside development in the Davao Region. Through the strength of our unity, genuinity in our endeavors, and collaborative efforts, we remain steadfast and responsive to be relevant and effective in developing S&T programs and activities," said Dr. Shirley S. Villanueva, USeP Vice President for Research, Development, and Extension, representing Dr. Lourdes C. Generalao, USeP President and SMAARRDEC Regional Research and Development Coordinating Council (RRDCC) Chairperson, during the opening ceremonies of the anniversary.

Dr. Villanueva also recognized the past and present consortium officials and members for their coordination, commitment, and passion in promoting and making SMAARRDEC a strong partner in pursuing relevant research in the Region for the last 35 years.

"The world today is undergoing profound changes. Climate change and certain factors and challenges continue to rise, significantly affecting our local agriculture and the whole of humanity," shared by Dr. Kenneth D. Barroga, Assistant Regional Director of Department of Science and Technology Region XI (DOST-XI), representing Dr. Anthony C. Sales, RRDCC Vice Chairperson and DOST-XI Regional Director.
Dr. Barroga expressed his confidence that joint efforts of SMAARRDEC and its primary stakeholders can help the region rise above the challenges of Climate Change and continue to building strong foundations and making 'bold' steps toward the mission of providing strategic R&D, technology transfer, and knowledge management services for sustainable development of Mindanao.

SMAARRDEC facilitated the Techno-Gabay Conference on the later-half of the first day where Dr. Rolando V. Maningas, Officer-in-Charge (OIC) of Department of Agriculture-Agricultural Training Institute Region IV-A (DA-ATI IV-A), was invited to talk and share about the successes and best practices of the institutionalization of Techno-Gabay Program (TGP) in Region IV-A.

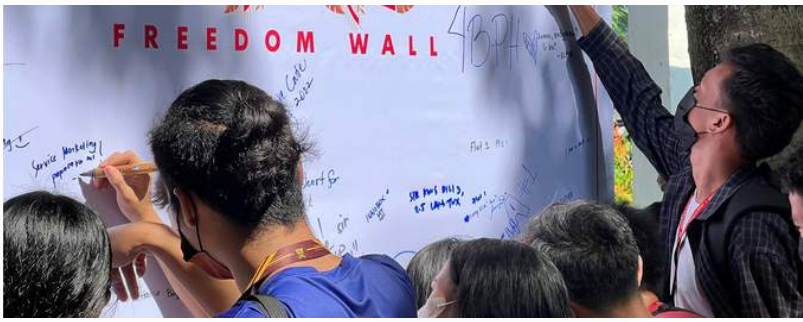
The 28 member-institutions, of which 16 are R&D implementing agencies and 12 are non-implementing agencies, as well as other partners of SMAARRDEC were awarded and recognized for their unceasing efforts in helping the consortium attain its goals during the Stakeholders Night at The Ritz Hotel, Davao City. SMAARRDEC also launched its history book, titled, "SMAARRDEC: LATAS SA KATUIGAN Through the Years" which recounted the events that transpired and shaped the consortium for the past 35 years.

The second day marked the conduct of the Regional Symposium on Research, Development, and Extension Highlights (RSRDEH) at the University Gymnasium and Cultural Center (UGCC) where several studies were categorized into research, development, and policy brief were presented. 12 studies fell under research category, while Development and Policy brief had six (6) and eight (8) presentations.

Technology Pitching and Industry Forum were also conducted to facilitate the presentation of technologies developed by the participating institutions to potential adapting and partnering agencies. The Industry Forum served as a platform to discuss the mechanism for industries of durian, cacao, and coffee that can cope with the challenges brought upon by the pandemic. Participating consortium-institutions also competed for the research and development poster category contest and exhibit booth- where participants displayed and disseminated information about their R&D projects and sell their products.

Farmers and fisherfolks attended the Forum on the third day of the anniversary celebration. Researches and technologies in the management of Fusarium, a fungus that causes wilting or root rotting of Banana, Adlay Production and by-product development, and Drone Technology were presented.

Also, other presentations included the effect and impact of climate change in the Aquatic Sector, and the methodologies in contour farming of suing Lemon Grass and Citronella as vegetable strips for erosion control were shared with the farmers and fisherfolks alike.



USEP CELEBRATES INNOFIESTA '22

The AGILab, together with the Knowledge and Technology Transfer Division(KTTD) launched the InnoFIESTA 2022- Market Day at the University Grounds with the theme, "A Celebration of the Fruits of USeP's Creativity and Innovation."

This display of innovation is in line with the University of Southeastern Philippines' 44th Founding Anniversary activities, where the University President, Dr. Lourdes Generalao, led the ribbon cutting to officially open the exhibit.

"The vision for this is to showcase the product... yung malaman natin kung ano yung nalaman nila during training in terms of marketing.", Joshua Adanza said, a Science Research Specialist and one of the organizers of the event.

This activity was organized under the AGIlab Innovation Challenge, where students are encouraged to create new and innovative food products from the resources available at hand.

This activity was organized under the AGIlab Innovation Challenge, where students are encouraged to create new and innovative food products from the resources available at hand.
"This experience will help me to know more about the entrep field, to know more about how to sell the product.", according to Yancey Claire Sanchez, a BS Hospitality Management student.

The participants were from the College of Agriculture and Related Sciences(CARS) and the College of Business Administration (CBA). Out of the 600 initial students under the AGILab program, only 31 groups prevailed. To add, the AGILab, under the KTTD, is a Technology Business Incubator that helps aspiring tech entrepreneurs in cultivating their business endeavors.

The AGILab Innovation Challenge has been going on for three months already. The organizers hope that the training provided for the students will make them better entrepreneurs in years to come.

3RD INSTITUTIONAL MULTIDISCIPLINARY RESEARCH CONGRESS

Davao de Oro State College, through the Research and Development Division headed by its Director, Mr. Jeson N. Geroche, MSc, officially opened the 3rd Institutional Multidisciplinary Research Congress and Techno-Exhibits with the theme, "Promoting Innovation and State-of-the-Art Technology through Future-proof Research and Development," through a ceremonial ribbon cutting, with the College officials, headed by the College President, Dr. Christie Jean Villanueva-Ganiera, CESE.

Also present are the guests and speakers, Dr. Randy A. Tudy and Dr. Chosel P. Lawagon, via Zoom platform, and the research coordinators of the different campuses, Mr. Khif Muamar M. Miranda, and Mr. Jeric Suguis, representatives of the partner agencies and institutions.

This event aimed at promoting the creation of new knowledge, building innovations, and generating advances in various disciplines through research presentation and exhibitions.

CAPACITY BUILDING
AND GOVERNANCE

As capability building requires a systematic management approach to learning and development as an integral part of its workforce planning, SMAARRDEC has been unceasingly committed to improve the knowledge, skills and expertise, and facilities of R&D and Technology Transfer key players in the region.

NON-DEGREE TRAINING

PROGRAMS CONDUCTED

(Please refer summary on Table 14)

SMAARRDEC has always relied on its empowered R&D core of researchers/experts and staff to successfully man the network and sees to it that the human resource development is holistic and encompasses the development of the physical well-being responsive to the sectoral needs of the region

DOST-PCAARRD conducts Cacao Training

The Department of Science and Technology- Philippine Council for Agriculture Aquatic and Natural Resources and Development (DOST-PCAARRD) spearheaded the conduct of the last leg training-workshop on Strengthening Sustainable Cacao Farming System in the Philippines in Response to Climate Change and in the Midst of the Pandemic on October 24-27, 2022 at the University of Southeastern Philippines (USeP), Obrero, Davao City.

Led by the DOST-PCAARRD -Forestry and Environment Research Division (FERD) in collaboration with experts from De La Salle University (DLSU) and in coordination with the Southern Mindanao Agriculture Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC), the 4-day training was attented by the different cacao researchers from academe, representatives of farmer-cooperatives, small scale cacao farmers and agriculturists in Regions XI and 12.

In his opening remarks, DOST-PCAARRD Deputy Executive Director for ARMSS Dr. Melvin B. Carlos, expressed his appreciation for the collaboration to realize the activity that was postponed due to the pandemic. Given the participation of various sectors, he hoped for the success of the activity.

SMAARRDEC RRDCC Chairperson and USeP President Lourdes C Generalao highlighted the need to assist the cacao industry in the Philippines with the effects of climate change in the production aspect. “Cacao, being the top priority commodity of the country has already penetrated the international markets such as Japan and the United States, thus, the need to sustain the production to meet the increasing demand globally”, Generalao added.

Five (5) modules were discussed as follows: Module 1 focused on Climate Change and Agriculture presented by Dr. Romulo Cena of USM; Module 2 is about the status of Cacao Industry as presented by Dr. Edwin O. Banquerico from the Philippine Cacao Industry Council and Mr. Kenneth Reyes-Lao of Cacao Culture; Module 3 is on Farmers' Perspective presented by Mr. Godofredo S. Rangas from BARBCO; Module 4 focused on Cacao Sustainable Farming and Bio-Intensive Cacao farming presented by Dr. Divina M. Analin of De La Salle University (DLSU) together with Dr. Alberto Barrion, Dr. Dionisio G. Alvindia from DA-PHILMEC and Dr. Lilia M. Fernando from UPLB-Biotech and; Module 5 on Cacao Post-harvest and Processing was discussed by Engr. Andres Tuates Jr of DA-PhilMec. Speakers and participants exchanged relevant ideas during the open forum.

During the writeshop, the participants were grouped to do Farm Planning and were presented afterwards for critiquing. They were also exposed to IPM Technology during the demonstration, specifically the Nano-Biosensor, Pheromone, and Particle Film Technology.

NON-DEGREE TRAINING

To culminate the activity, the participants together with the organizers explored the cacao farm of a retired mariner Mr. Rolando Bueno, located at Calinan, Davao City, where activities such as insect collection and detection were performed. The team also visited FARDECO and BARBCO both cacao manufacturing industries.

DOST-PCAARRD-FERD Director For. Faustina C. Baradas, being the lead implementer of this series cacao activity congratulated the participants and thanked the speakers for their active involvement. She hoped that the learnings in the training could effectively be applied in the participants' respective stations. The said training workshop was attended by 32 participants in face-to-face and 15 virtual participants from 27 different agencies and farmer organizations.

Training on Mainstreaming GAD in SMAARRDEC-CMIs

Conducted on November 4-5, 2021 with 30 junior researchers and extensionists trained, participants on the "Training on Mainstreaming GAD" were oriented about the basics of Gender Sensitivity and analysis tools to form part in crafting R&D proposals. Prof. Rioliza B. Molina, GAD Directress of USeP served as Resource Speaker.

Training on Gender Fair Language in IEC Materials

The Consortium initiated a training-workshop that aims to help researchers in crafting their information education communication (IEC) materials using gender-fair language. The 2-day activity was held on April 27-28, 2022 via Zoom platform with a total of forty (40) men and women participants from the implementing and non-implementing Consortium Member Institutions (CMIs). Prof. Rioliza B. Molina, GAD Directress of USeP and Robert A. Satorre, former graphic artist of SMAARRDEC and Record Officer of USeP, served as Resource Speakers. The said two-day training-workshop ended successfully with heart-warming feedbacks from the select participants who expressed their appreciation of the activity.

Training-Workshop on Strengthening Sustainable Cacao Farming in the Philippines in Response to Climate Change in the Midst of Pandemic

Held on November 24-28, 2022 at USeP and via Zoom, it was organized by PCAARRD– FERD and De La Salle University in coordination with SMAARRDEC. It was attended by Cacao growers in Regions 11 & 12, Cooperative Reps, Faculty-Researchers.

Participation to the Economic Development Council XI Writeshop

Held on October 25, 2022 at NEDA XI Function Hall, Bangkal Davao City and facilitated by the EDC XI secretariat, the writeshop was participated by the representatives of the HEIs, industry, LGUs and other stakeholders in the region. Output of the writeshop will form part of the RDRA of Davao Region for the period 2023 to 2028.

Writeshop on Crafting Proposal for External Funding

Hosted by the Davao Oriental State University (DORSU), the Writeshop on Crafting Proposal for External Funding was conducted on May 4-6, 2022. It was a hybrid training where participants for other CMIs attended via Zoom where more than 50 budding researchers were trained.

Financial Management Webinar

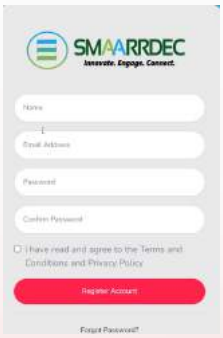
Held on November 3, 2022, the webinar was participated by SMAARRDEC and SOXAARRDEC. It was attended by the Consortium Secretariat, Project Leaders and Accounting Staff. Speakers from DOST-PCAARRD reoriented the participants with the DOST guidelines particularly on the reportorial and liquidation of research grants.

Training Workshop on R&D Results for Inhouse Reviews, RDE Symposia and other Fora

Held on November 3-4, 2022, RRD Cluster Coordinator Dr. Cecirly G. Puig served as the Resource Speaker of the Training. It trained 30 budding researchers from the implementing member institutions and some from the non-implementing CMIs

Training on ICT Web-based Application

The Consortium conducted series of ICT Web-based Application in different communities attended by farmers and technology developers to empower beneficiaries from these communities to apply S&T developments. For the said training, the ICT Web-based application team went and visited Mapula, Davao City on October 10, 2022; Paquibato, Davao City on October 20, 2022; and Talaingod, Davao del Norte on October 26, 2022.



ICT Training for SMAARRDEC Website

A Virtual Briefing/Training for the Consortium website commenced on November 11, 2022 via Zoom. The said event was attended by Engr. Rey M De Leon, SMAARRDEC ICT Cluster Coordinator Dr. Evelyn A. Gecale, Technology Transfer Coordinator and the Consortium staff on Consortium database and information sytem. The activities includes a walkthrough and orientation on the website admin page, website features and updates.

RESEARCH CONFERENCE FOR AANR STUDENTS

The Consortium held its very first Research Conference for agriculture, aquatic and natural resources (AANR) students with the theme "Shaping an Equitable and Resilient Future for the Youth through AANR R&D Initiatives" last December 7, 2022 at USeP Social Hall, Obrero, Davao City.

The conference highlights the outstanding technologies crafted by the student-researchers and present relevant R&D findings from their undergraduate thesis. During the plenary session, Dr. Glenn B. Gregorio, SEARCA Director and NAST Academician presented the Agribiotechnology which focuses on its development. On the other side, Engr. Ruel Carlo L. Tanquenco of DOST-PCAARRD enlightened the students regarding the Opportunities for Young Researchers. He emphasized the scholarship offerings of DOST and incentives that can be availed of in doing research. Entries were categorized into Agriculture and Natural Resources, Aquatic and Poster Category. Eight (8) studies fell under the Agriculture and Natural Resources Category while Aquatic and Poster categories had four (4) entries respectively.

Joshua D. Maslog from Davao Oriental State University (DORSU) with the study "Cytotic and Antibacterial Activities of Almaciga (Agathis philippinensis) Aqueous Resin Extract" bagged the first place in the Agriculture and Natural Resources Category. "Population Density and Survival of Trichoderma harzianum on Solid and Liquid Media: Effects on Fusarium Oxysporum F. sp. cubense TR4 Causing Banana Fusarium Wilt" presented by Ian Charls P. Cabrera from University of Southeastern Philippines (USeP) won the second place.

John Ryan C. Bongo from DORSU placed third presenting the study "Effects of Different Levels of Mango Seed Kernel Powder on Broiler's Production Performance and Carcass".

For the Aquatic Category, Utilizing Alternative Carbon Sources for Biofloc System for Growth and Survival of Pacific Whiteleg Shrimp (Litopenaeus vannamei) by Arien Jean M. Lopez from Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) placed first. Second was the study on Recruitment of Dascyllus spp. and Associated Reef Fishes in Pocl/opora Coral in MRP Samal lsland by Anselmo Anobong Jr from Davao del Norte State College (DNSC). Julie Anne Ortega from Davao del Sur State College (DSSC) with the study Development of Sea Urchin–Flavored Tapioca Kropeck won third.

On the other hand, Karl Fritze S. Sampiano poster "Utilization of a Sustainable Management Approach Against Spiralling Whitefly, Aleurodicus Dispersus Russell, 1965 (Hemiptera: Aleyrodidae) Infesting Guava (Psidium Guajava L.) and Its Effects on the Natural Enemy Complex" from USeP hailed first. Second placer was Maria Lyca Trangia from DORSU with the poster "Comparative Performance of Irradiated and Non- irradiated Carrageenan-Based Foliar Fertilizers on the Growth, Yield and Pest Incidence of Pechay". Reychell Joy Y. Casamayor from SPAMAST bagged third place with the poster Development of Seaweed (caulerpa sp.) Enriched Corn Coffee Powder.
The said hybrid conference was attended by student-researchers and research advisers representing their respective State Universities and Colleges hailing from different parts of Davao region where SMAARRDEC operates.

FACILITIES/ EQUIPMENTS

ESTABLISHED/INSTALLED/ACQUIRED/UPGRADED/IMPROVED

(Please refer summary on Table 15)

SMAARRDEC implemented and maintained modalities for a continuous establishment, maintenance and upgrading scheme of its facilities. This enables the Consortium to efficiently deliver the communication, house on-going projects, share and exchange relevant information and ideas with partners and clients.

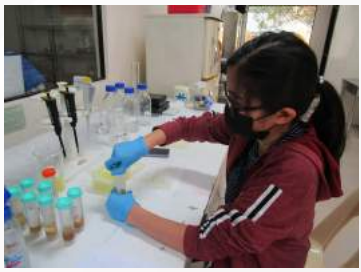
Equipment Purchased for the Secretariat

For effective implementation and documentation of the Consortium's activities and programs, SMAARRDEC purchase the following equipment for IEC maintenance, technology promotions and documentations. This includes a one (1) unit digital camera (Sony); one (1) unit tripod and external microphone; four (4) pieces headset and wired web camera; five (5) pieces of SSD and memory card; five (5) computer chairs and four (4) computer monitors; and two (2) printers.

PCR Laboratory Updates

Utilized to house the USeP-ACIAR Banana Fusarium Wilt Project and as classroom for graduate school in agriculture with laboratory subject in Crop Protection, the PCR Laboratory of University of Mindanao (UPMin) and its machines and equipment have been continually maintained to house the following activities:

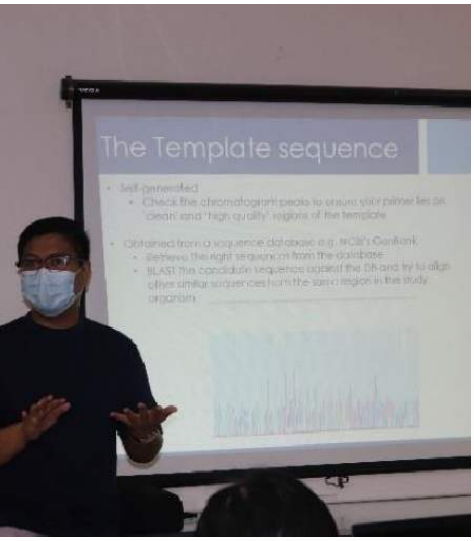
FOC-TR4 DNA EXTRACTION



SOIL HEALTH TEST: BETA-GLUCOSIDASE EXPERIMENT

PROCESSING OF COLLECTED SOIL SAMPLES FOR DNA EXTRACTION AND CULTUROMICS

CONDUCT OF TRAINING ON BANANA DISEASE DIAGNOSIS AND PATHOGEN DETECTION



REAGENTS PREPARATION

DECONTAMINATION AND HOUSEKEEPING

AWARDS AND RECOGNITIONS

(Please refer summary on Table 16)

The awards and recognitions received by the Consortium serves as testaments of SMAARRDEC's outstanding performances and dedication to be continually relevant and functional in the AANR sector.

Recognition during the PCA-DRC 56th Anniversary

Represented by CD Importante and TTC Coor Gecale
Held at PCA-DRC, Bago Oshiro, Mintal on February 28, 2022

Recognition during the S4CP Summit-Mindanao Cluster

Implementers of ROSANNA project were recognized during the S4CP Summit-Mindanao Cluster on May 27, 2022 at the Apo View Hotel. USeP President and RRDCC Chair Lourdes C. Generalao received the award on behalf of USeP; SMAARRDEC Director Gilbert A. Importante as Lead Implementer and R&D Cluster Coordinator Cecirly G. Puig received the award on behalf of Hijo Resources Corporation (HRC).

Recognition during the DOST 64th Anniversary

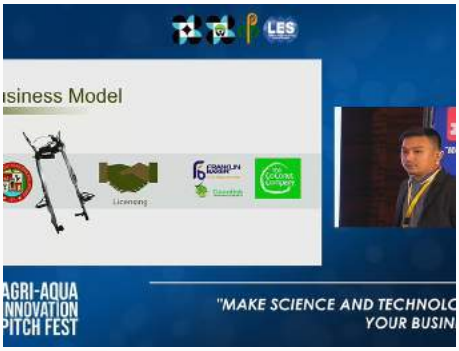
Consortium Director Gilbert Importante received the Science for People Award for the Outstanding R&D Project- AANR on CRADLE Project ROSANNA during the 64th DOST Gabi ng Parangal held at Sofitel Hotel, Pasay City on June 13, 2022.

Recognition from 10th Infantry (AGILA) Division

The 10th Infantry (AGILA) Division recognizes Dr. Importante for the implementation of AGAK Project and of Dr. Lourdes C. Generalao for various projects implemented in IP Communities of Talaingod and Paquibato. The activity was held on August 13, 2022.

Recognition from DOST-PCAARRD during its Golden Anniversary Celebration

Held on November 10, 2022 at DOST-PCAARRD, Los Baños Laguna, DOST-PCAARRD gives recognition to SMAARRDEC for its unwavering commitment and valuable connection as PCAARRD's partner in implementing banner programs of the Council, Ceremonial signing of MOA for the implementation of Regional Collaborative Program for Southern Mindanao in the next 3 years.



USeP-led project ROSANNA bags Outstanding R&D Award during DOST Anniversary

Another breakthrough has been seized by the team from the University of Southeastern Philippines (USeP) for the project ROSANNA or Real-time Online Surveillance for Banana, as it was hailed as the Outstanding R&D Project-Agriculture, Aquatic, and Natural Resources for its outstanding contribution to advancing Science, Technology, and Innovation (STI) in the country. The said award was given by the Department of Science and Technology (DOST) Secretary, Fortunato Dela T. Peña, during the DOST 64th Anniversary celebration on June 13, 2022, at the Sofitel Hotel, Pasay City.

USeP's CocoClimber secures Grand Pitch Award in the 2022 AIPF

USeP's CocoClimber pitched by Engr. Ryan Abenoja was heralded as the grand pitch winner of the 2022 Agri-Aqua Innovation Pitch Fest (AIPF) of DOST-PCAARRD) held at Acacia Hotel, Alabang, Muntinlupa City. The event featured selected technologies of the state universities and colleges (SUCs) and research and development institutes (RDIs) across 15 regions being supported by the programs of DOST PCAARRD on Intellectual Property (IP) protection and management and technology commercialization.

2021 National Symposium on Agriculture, Aquatic and Natural Resources Research and Development (NSAARRD)

- ***1st Place Best Development Paper Award*** on "Giving Farmers Uwen Fananafedew: Enhancing Livelihood Opportunities in Conflict Vulnerable Areas in Mindanao through the Livelihood Improvement through Facilitated Extension (LIFE) Model"— 2021 National Symposium on Agriculture, Aquatic and Natural Resources Research and Development (NSAARRD)
- ***2nd Place Best Research Paper*** on "Development of ROSANNA Banana Disease Surveillance System"—2021 National Symposium on Agriculture, Aquatic and Natural Resources Research and Development (NSAARRD)

GOVERNANCE

Guided by the vision to spur countryside development in Region XI, the intensified services and initiatives brought by the Consortium and development partners to the countryside have obtained explicit response to collaborate among member agencies for the common goal to improve lives of farmer and fisherfolks in Region XI. SMAARRDEC actively participated hold RRDCC meetings to translate the mission and goals of the Consortium in the implementation of S&T programs in the region.

RRDCC MEETINGS

111th RRDCC Meeting

Held on July 19, 2022, the meeting was attended by 29 participants composed of Head and/or Representative of Consortium Member Institutions (CMIs) together with the Secretariat. Three (3) resolutions were passed and approved.

Revival of PHILARM Region XI Chapter

PHILARM National office met the incumbent officers of Mindanao Chapters on February 9, 2022 with President Dr. Melvin Carlos. Regional meeting was conducted on February 10, 2022 and presided by Retired Consortium Director Danilo Pacoy. The activity includes the election of a new set of officers with Dr Khris June Callano of DSSC as Chapter President.

(Please refer summary on Table 17)

Joint RRDCC Chairpersons and Consortium Directors' Meeting

The joint RRDCC meeting was participated by RRDCC Chairperson Dr. Lourdes C. Generalao and the Consortium secretariat headed by Dr. Gilbert A. Importante as the Consortium Director. This was held on January 21, 2022.

112th RRDCC Meeting

SMAARRDEC conducted its 112th Regional Research and Development Coordinating Council (RRDCC) Meeting last September 28, 2022 at University of Southeastern Philippines (USeP), Davao City and via Zoom Conference. The said meeting was chaired by Dr. Anthony C. Sales, RRDCC Vice Chairperson and DOST XI Director. It was attended by 33 participants composed of Head and/or Representative of Consortium Member Institutions (CMIs) together with the Secretariat. Three (3) resolutions were passed and approved.

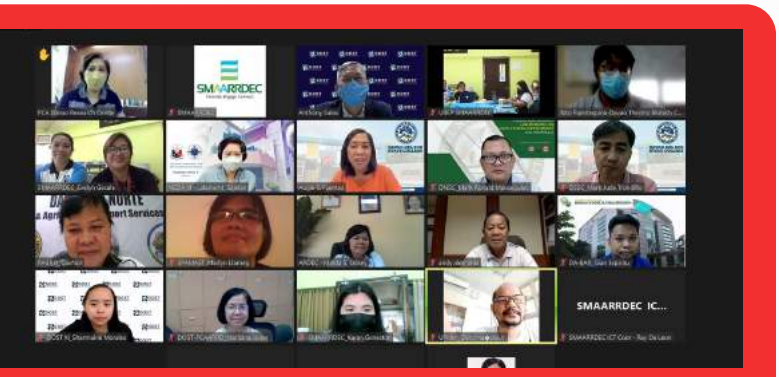
113th RRDCC Meeting

SMAARRDEC conducted its 113th Regional Research and Development Coordinating Council (RRDCC) Meeting back-to-back with the Year End Review of Ongoing Projects cum SMAARRDEC Annual Fellowship last December 2, 2022 at Worth Eat Café, Torres St., Davao City and via Zoom Conference. The meeting was presided by RRDCC Chairperson and USeP President Dr. Lourdes C. Generalao. The meeting was attended by the heads/representatives of the Consortium-Member Institutions (CMIs), together with the project implementers of on-going researches specifically those DOST-funded projects.

There were twenty-one (21) dost-funded projects presented and eleven (11) research directors presented the list of on-going researches funded institutionally or by other funding agencies.

The review provided the consortium data of the R&D investments in the region for the year 2022.

The face to face activity was concluded with Christmas fellowship where Chairperson Generalao expressed her heartfelt gratitute to those who actiively participated. She highlighted that the fellowhsip with the Cream of Crops of the region might be her last celebration as USeP President, for her term will end in November 2023. She encouraged the young researchers to actively conduct R&D activities citing her journey as a young and active researcher, became the Consortium Director and eventually President and RRDCC Chair. She wished that the researchers will instill in their hearts the burning passion to help those in the grassroots through research and innovations that would contribute to the regional development.



Membership Contributions

(Please refer summary on Table 18)

For year 2021-2022, USeP being the host institution of SMAARRDEC contributed one million pesos (1,000,000.00) to fund the operations of the Consortium. Sixteen (16) member institutions also contributed an equal amount of twenty-five thousand pesos (25,000.00). The member agencies are committed to continue its support to SMAARRDEC by providing resources cash or in-kind, especially its annual membership contributions to the consortium operations funds.

New Initiatives of the Consortium

(Please refer summary on Table 19)

For the Consortium's new initiatives in governance, the RDC XI Resolution No. 44, s. 2022 was crafted on August 25, 2022 to refer on the "Approving of the Development of a Regional Framework and Plan for Sustainable Management of Plastic Waste in Davao Region to be led by Davao del Sur State College and to enjoin all LGUs in Davao Region to Adopt Local Policies Banning the Single-Use Plastic and provide therein the necessary support and resources".

SMAARRDEC GIFT-GIVING ACTIVITIES

Manifesting the essence of Christmas as a holiday of giving and sharing, the Consortium conducted gift-giving activities for the beneficiaries of the AGAK Project.

The first leg of SMAARRDEC-USeP Christmas gift-giving at Sitio Kibalatong, Brgy. Pañalum, Paquibato District Davao City was conducted on December 20, 2022. The Ata community of Kibalatong, being the farmer-cooperators of the AGAK project funded by DOST-PCAARRD, were so happy to receive the grocery packs and used clothing given by the USeP community. Special thanks to the USeP Multipurpose Cooperative and the members of USeP Top Management for their generous heart.

The second leg of SMAARRDEC Christmas gift-giving to the AGAK farmer-cooperators was held at the Session Hall of Brgy. Mapula, Paquibato District, Davao City on December 23, 2022. Forty (40) farmers together with their family members were present during the activity and received the food packs, used clothing and loot bag of candies for the kids. The SMAARRDEC secretariat and AGAK project implementers initiated the gift-giving with the help of the USeP Top Management, USePMPC, and good friends from abroad.

Lastly, team AGAK also conducted the final leg of SMAARRDEC gift-giving to its IP-farmer-beneficiaries at Sitios Igang, Butay and Camaca, Brgy. Palma Gil, Talaingod Davao del Norte on December 27, 2022. The activity was realized with the help of the generous members of the USeP Top Management, USeP Multipurpose Cooperative, friends from abroad and the 27th and 56 IB Philippine Army. Eighty-three (83) AGAK farmer-cooperators in the identified areas received the food packs, vitamins C and candies for the children and used clothing solicited by the team.

POLICY ANALYSIS AND ADVOCACY

The Consortium played a significant role in promoting agricultural productivity and competitiveness by formulating policies and recommendations to enhance the management/operations of the consortium. It also served as backbone in promoting transparency in administering all programs and projects of the Consortium.

POLICY RESEARCHES CONDUCTED

(Please refer summary on Table 20a)

SMAARRDEC implemented policy research on priority commodities to prepare baseline projections for its research and development programs. Also, these researches are intended for use by farmers, government agencies, and officials, agribusinesses and others who do medium-range and long term planning. For 2021-2022, the consortium member institutions have eight (8) formulated policy researches. To highlight a few, the following were conducted:

1ST PLACE IN RRDEH 2022

Managing the Institutional Mechanism for the Future of Pummelo Industry

The study of Jeoteddy B. Bugarin from USeP was crafted in response to the pummelo supply chain in region 11 which faced declining production and area harvested coupled with a decline in productivity. With the above-mentioned policy-problem, the following alternative policy options were examined. First is the policy recommendation on Laser Marking Pummelo Products. Fresh pummelo products sold in the local market and grocery stores should be properly identified and labelled. Proper product labels specifically the source of its origin should be placed for both locally produced pummelos and imported pummelos. This could be done through the use of laser marking equipment, and this should be required among pummelos sold in the region as well as in the country.

Secondly, establishment of processing systems for pummelos under the Agriculture, Fisheries Modernization Act (AFMA) was recommended. Price discrimination through product reclassification is very hard to arrest aside from a very subjective evaluation on the pummelo classification. During bumper harvests, fresh looking pummelos would flood the market, and these fresh from the farm pummelos wouldn't show signs of aging, but after a while, signs of damages would start to show up and they would be demoted to lower classification brackets. The shift from fresh product to processed product will be able to benefit the producers thus, making them financially secured and resilient to market shocks. It will be wise for the government to help develop the processing of fresh pummelos to avoid selling of low quality pummelos in the market and improve the livelihood of pummelo producers in the region.

Lastly, the creation of a Task Force in the Implementation of PNS-BAFPS 11:2001was also part of the alternative policy options. In order to have a uniform implementation of the quality standards for pummelo, an institutional mechanism of the joint task force between the Department of Trade and Industry and the Department of Agriculture must be formed. This shall ensure the safeguard the welfare of the consuming public about the quality of pummelos that they are buying and arrest the problem of price discrimination.

Based on this criterion, policy alternative #2 is harder to implement due to the financial capitalization requirement. For efficiency both policy alternatives 1 and 2 would require more capitalization to address the policy problem of price discrimination. Policy # appeared to be the most effective while policy #3 was designed to affect the whole entire pummelo supply chain.

The study also recommended the following points. To maximize the role of the said task force, instead of just focusing on the pummelo industry, it could also serve the other banner and priority crops in the region. Equally important role of the task force is to facilitate the adoption of good agricultural practices among pummelo producers to ensure that the pummelo traders will just be selling good quality pummelos. It is also expected that losses due to pests and diseases and product handling will be minimized when good agricultural practices (GAP) for pummelo were fully integrated in the daily farm operations of the pummelo producers. To help the task force achieve its implementation goals, several policy incentive and disincentive mechanisms can be initiated and authorized for the industry. Specific interventions of the task force such as customized support mechanisms appropriate for each type of event that negatively impacts the pummelo industry should be determined.

2ND PLACE IN RRDEH 2022

Securing the Future of the Endangered: Mega Bat's Plea for a Home Security

Amy G. Ponce's policy brief entitled "Securing the Future of the Endangered: Mega Bat's Plea for a Home Security" from DORSU is responsive to the decline in the population of the golden-crowned flying fox (Acerodon jubatus) and the giant Philippine fruit bat (Pteropus vampyrus). The golden-crowned flying fox is endemic to the Philippine Islands and is classified as endangered; the giant Philippine fruit bat is an endemic subspecific member of a species that ranges throughout Southeast Asia and is considered vulnerable.

Hence, the brief advocates a call for protection of the Luban island (roosting site of the endangered golden Crown Flying fox and Giant Philippine Fruit Bat) before tourists flock to the area; policies should be immediately laid out to protect and conserve the habitat of this endangered species to ensure sustainability and conservation of the potential eco-tourism site.

It was concluded that the Luban island will undoubtedly bring thousands of tourists due to its untouched wildlife and breathtaking scenery. Hence, to preserve its outstanding value, the LGU should fast-track the policies for the protection of this island. A declaration of Local Conservation Area is a must, and policies should be laid down as soon as possible before this valuable species will leave its home.

The following points are recommended such as the declaration of the Luban Island and the surrounding waters to be a Local Conservation Area and to incorporate the area in LGU framework land use plan. Management of the propose LCA shall also atoned to the natural features and /on prevailing socio-economic conditions such as, tourism and cultural features. Also, it is recommended to craft policies and implement strict rules for resorts and hotels on environmental conservation and protection guidelines

3RD PLACE IN RRDEH 2022

Gender-based Involvement in the Management of Marine Protected Areas in Sta. Cruz Davao del Sur

The study entitled "Gender-based Involvement in the Management of Marine Protected Areas in Sta. Cruz Davao del Sur" by Rodcel Malinao, Jeanevive D. Gica, and Cecile Lofranco from DSSC was crafted to respond towards gender stereotypes in Marine Protected Areas (MPA) management. Gender stereotypes and expectations can create or breakdown women's barriers to participation in MPA management hence, inconsistency in upholding gender progressive national policies can limit women's empowerment.

Responsive to this problem, the following alternative course of action are proposed which includes the inclusion of equal representation among genders in the community to participate in the management of Marine Protected Areas. Information dissemination on the management of MPAs to men and women in the community and provision of sustainable livelihood programs to men and women with relevance to the preservation and protection of MPAs are laid down. Close monitoring and assessing of improved behavior on sustainable actions among community members and leaders concerned with MPAs and building and empowering people's organizations that encourages gender-involvement in MPA management are reinforced. Strengthening of gender-based involvement by crafting and passing of ordinances and resolutions in the local level was also mentioned as well as establishing strong accountability among enforcers and implementors of ordinances to be implemented.

It was concluded that the issues related to gender-based involvement in MPA management can be remedied, it not totally eradicated by creating solutions-based and community-based approaches backed up with legislations consistently implement by personnel in authority. This concern also requires collaborations among government agencies, non-government entities, people's organizations, community members and leaders of all genders with representations from the youth for sustainability.

POLICY FORMULATED

ADVOCATED/IMPLEMENTED/INSTITUTIONALIZED

(Please refer summary on Table 20b)

The RRDCC as the policy-making body of the Consortium spearheads the analysis and advocacy of important regional policy issues in AANR sector.

Recognizing Science-based Farm Tourism as a new Economic Development Strategy for Farming in Davao Region

Policies presented during the first RRDIC XI Meeting

Mr. Bryl I. Manigo of USeP presented the proposed policy "Recognizing Science based Farm Tourism as a new Economic Development Strategy for Farming in Davao Region" during the 1st Quarter RRDIC XI Meeting held on March 4, 2022 via Zoom. This policy is generated from the development project " Science for the Convergence of Agriculture and Tourism (SciCAT)".

Dr. Nympha E. Branzuela of USeP likewise presented her proposed policy on Geospatial Analysis of Gall Rust in Falcata and its Attempt to Reduce Pest Occurrence" during the 1st Quarter RRDIC XI Meeting.

Following the framework of the policy continuum, the RRDCC resolutions and policies helped translate the mission and goals of the Consortium in the implementation and pushing of regional S&T strategies and flagship programs. The following RRDIC and RDC Resolutions on Research-based Policies were approved and implemented:

RRDIC XI RESOLUTION NO. 05 S. 2022
Endorsing to RDC XI the development of a policy to adopt species-site compatibility and forest planting materials certification prior to planting activities, especially in protected areas (output of Geospatial Analysis of Gall Rust in Falcata and its Attempt to Reduce Pest Occurrence at Compostela Valley, Philippines")

RRDIC XI RESOLUTION NO. 06 S. 2022
Endorsing to RDC XI the adoption of Science for the Convergence of Agriculture and Tourism (SciCAT) approach in developing farm tourism sites in Davao Region, enjoin the engagement of DOT on the accreditation of science-based farm tourism sites including State Universities and Colleges, and enjoin DTI in the establishment of "One Town, One Farm Tourism Site (OTOFTS)" in each province in Davao Region.

RRDIC XI RESOLUTION NO. 14 S. 2022
Enjoin support of Local Government Units and stakeholders to strengthen the Marine Protected Areas and Giant Clams conservation efforts in the region.

RRDIC XI RESOLUTION NO. 15 S. 2022
Enjoining the Department of Energy and Local Government Units to support and adopt the Payment Innovation for Solar Home Systems (SHS) Ownership by Lay-away Routine (PISOLAR) for deployment to various geographically isolated and disadvantaged areas (GIDAs) in Davao Region and in Mindanao with appropriate funds thereof.

RDC XI Resolution No. 133, s. 2022
"Approving the Creation of a Regional Task Force in the Implementation of the PNS-BAFPS 11:2001 or the National Standard for Fresh Fruits - Pummelo"