



R and E Annual Report 2022

Research and Extension Activities

A. Research Implemented

The University through the Research and Extension sector recorded 462 research projects/studies implemented for the year 2022. These projects are funded by the University and outside funding agencies. The implementation of these researches is in collaboration with the different colleges in the university, national line agencies and other stakeholders.

Of these 462 research projects/studies, 23 research programs/projects with a total budget of 111.2 million pesos is being implemented by the different centers and colleges in the university. These researches are funded by DOST-PCAARRD, DA-BAR, CHED, Ministry of Science and Technology, Taiwan, Japan International Cooperation Agency Philippine Office (JICA-Philippines), and the DA Regional Field Office-CAR, Philex Mining Corporation and SRT La Trinidad Cooperative of Benguet.

Table 1. Externally Funded Researches

Title of Program/Project Proposal	Researchers (First name, M.I., Surname)	Duration		Source/s of Fund	Budget (Php)
		Start Date	Completion Date		
ATBI/IC					
Increasing Overall Capacity of BSU ATBI/IC to Provide Services to its Incubatees Towards their Empowerment in Managing their Agritechnology-based Enterprises	Ruth C. Diego	January 10, 2022	May 10, 2022	DA-BAR Counterpart	3,852,474.98
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region (CAR) (consists of 4 projects)	Ruth C. Diego (Program Leader)	January 1, 2022	December 31, 2023	DOST-PCAARRD	14,967,808.00
DOST-PCAARRD National Agri-Aqua Technology Business Incubation (ATBI) Program – Phase 2	Ruth C. Diego Gemma S. Das-ilen Richard P. Dumapis Karen B. Gaerlan Dallifer A. Gano Melchor S. Lumiked Gedion C. Ulban, Jr.	January 1, 2021	December 31, 2023	DOST-PCAARRD	10,106,763.20
Enhancing the Agri-Aqua Food Value Chain Through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in the Cordillera Administrative Region (CAR)	Ruth C. Diego Darwin A. Basquial Cheryll C. Launio Lesly Dale G. Umayat	January 16, 2021	January 15, 2022	DOST-PCAARRD	2,999,970.00
ATBI Networking and Capacity Building Phase 2	Ruth C. Diego Ana B. Mendoza Raymundo H. Pawid Jr.	January 1, 2021	June 30, 2023	DOST-PCAARRD	5,000,000.00
Technical Assistance of Proof of Concept under the Data Collection Survey for the Dissemination of Innovative Rural and Agricultural Finance by Digital Transformation	Ruth C. Diego Cheryll C. Launio Frey T. Orenca	September 2021	June 10, 2022	Japan International Cooperation Agency Philippine Office (JICA-Philippines)	4,832,479.90



Title of Program/Project Proposal	Researchers (First name, M.I., Surname)	Duration		Source/s of Fund	Budget (Php)
		Start Date	Completion Date		
GIS					
Towards Climate-Resilient and Sustainable Agriculture: Targeting & Prioritization for the Adaptation and Mitigation Initiative in Agriculture (AMIA) in Ifugao and Apayao Project 1 – Climate Risk Vulnerability Assessment of the Priority Crops in Ifugao and Apayao using GIS Project 2 – Climate Risk Agriculture Practices Assessment of Major Crops in Ifugao and Apayao Project 3 – Cost Benefit Analysis (CBA) of Priority Adaptation Technology of Major Crops in Ifugao and Apayao	Roscinto Ian C. Lumbres, Janet P. Pablo, Cheryl C. Launio, Quinerlyn A. Godio, Madeline S. Kingan, Lionel Pang-ot, Esther Josephine D. Sagalla, Joyce Leona Bandisa, Celeste Lidawan, Samuel L. Duyan, Jenifer P. Domolog, Jeftee Ben B. Pinos-an, Rashid B. Lokines	February 2, 2022	March 31, 2023	Department of Agriculture-Regional Field Office-CAR	2,600,000.00
Landslide Susceptibility Analysis, Monitoring, Mapping and Early Warning Systems for the Cordillera Administrative Region	Roscinto Ian C. Lumbres, Guillermo A. Mendoza, Kenneth A. Laruan, Lynn J. Talkasen	January 2, 2023	December 31, 2025	DOST-PCAARRD	6,945,334.50
Forest resource monitoring of high elevated mountains of Taiwan using integrated LAS data and Sentinel 2 imageries Project 1 - Improvement of the prediction bias of forest stand-level AGB kNN modeling using ALS data and Sentinel imageries Project 2: Development of Land use and land cover monitoring techniques and monitoring of environmental changes using the integrated Sentinel and ALS data	Chinsu Lin – Program Leader Nova D. Doyog - Study Leader			Ministry of Science and Technology, Taiwan	300,000.00
Urban forest cover and LST change monitoring through optical and thermal remote sensing approach	Nova D. Doyog - Study Leader Chinsu Lin - Co-researcher	January 5, 2022	Ongoing	National Chiayi University, Taiwan	20,000.00
NPRCRTC					
Institutions and Industrial Competitiveness: Niche Centers in the Regions for R&D (NICER) Program: Potato R&D Center		October 1, 2019	September 30, 2022	DOST-GIA	31,355,154.56
Establishment of the Potato R&D Center Molecular Laboratory for Increased Productivity and Efficiency	Jocelyn C. Perez Ammie D. Ngaotoy	September 1, 2021	August 31, 2022	DOST-PCAARRD	4,999,810.00
Purple Yam Quality Plant Material Production thru Aeroponics	Cynthia G. Kiswa Jophr L. Galian Jake L. Galian Gabby K. Dao-lnes	January 16, 2019	January 15, 2022	DOST-GIA	7,927,260.00



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Title of Program/Project Proposal	Researchers (First name, M.I., Surname)	Duration		Source/s of Fund	Budget (Php)
		Start Date	Completion Date		
	Winslet Ramos Vanessa Maye E. Kalinggan				
Commercialization of Quality Purple Yam (<i>Dioscorea alata</i>) Miniset Planting Materials Towards Enhance Productivity	Violeta Salda Grace S. Backian Dalen T. Meldoz Johnny G. Dati	July 2020	July 2022	DA-ACEF	5,000,000.00
Techno-transfer of the Improved Technology on the Propagation of Potato Quality Planting Materials to SRT Cooperative: A Participatory Assessment and Impact Evaluation	Cynthia G. Kiswa Teresita D. Masangcay Dalen T. Meldoz Arlene B. Bautista Gabby K. Dao-ines	January 2022	January 2023	SRT-PRDP	600,000.00
Massive Seedling Production & Dispersal of Quality Planting Materials of Potato under the Bayanihan II Project	Cynthia G. Kiswa Teresita D. Masangcay Arlene B. Bautista Gabby K. Dao-ines	February 2021	January 2022	HVCDP-DA-CAR-RFO	5,380,800.00
ISRD					
Social and Economic Impact Assessment of the Social Development and Management Program of the Philex Mining Corporation Padcal, Tuba, Benguet from 2018 to 2022	Kara S. Panolong, Maureen E. Gay-as, Janet Lynn M. Balagtey, Belinda A. Tad-awan, Cheryl C. Launio, Freda Kate D. Samuel, Kacy O. Labon, Gigy G. Banes, Shania S. Lucyao,	April 2022	March 2023	Philex Mining Corporation	1,846,000.00
Encyclopedia on Ethno-Linguistic Groups in Benguet		October 2021	October 2022	CHED	5,000,000.00
HERRC					
Evaluation and Adoption of Entomopathogenic Fungi and Nematodes as Biopesticides to Manage Coffee Berry Borer (<i>Hypothenemus hampei</i>) and Other Major Insect Pests of Arabica Coffee	Nordalyn B. Pedroche, Socorro L. Rulloda, Diwa B. Kingay, Jaime B. Codio Nora Hill Evasco, Joyce D. Mauricio	March 16, 2022	March 16, 2023	DA-BAR	2,706,480.98
CHET					
Market Assessment and Refinement of Cocoa Herb Mix Products	Project Leader: Cynthia D. Garambas Study Leader 1: Melchor S. Lumiked Study Leader 2: Michael Karl M. Barnuevo SRS: Maravilla M. Senado SRA: Jenelyn A. Martin	April 18, 2022	January 18, 2023	DA-BAR	2,909,608.00
Market assessment and refinement of etag-based food products using various processing technologies	Project Leader: Cynthia D. Garambas Study Leader 1: Jao-jao A. Somyden Study Leader 2: Dalifer A. Gano	April 18, 2022	January 18, 2023	DA-BAR	2,726,608.00



Title of Program/Project Proposal	Researchers (First name, M.I., Surname)	Duration		Source/s of Fund	Budget (Php)
		Start Date	Completion Date		
	SRS: Maripresa C. Banganan SRA: Niko P. Wakit				
Market Assessment and development of vacuum fried chopsuey chips	Project Leader: Jao-jao A. Somyden Study Leaders: Dalifer A. Gano, Leonardo D. Dumalhin, Rhea S. Contada Project Staff: Nestor C. Humiwat, Cynthia D. Garambas Research Assistants: Eunice B. Bantawan, Ruda Fe A. Suanding	April 2022	December 2022	DA-BAR	3,000,000.00
OES					
Analysis of the Agriculture and Fishery Extension System Landscape in the Cordillera Administrative Region (AFESCAR)	Constantino T. Sudaypan, Paul Joseph A. Nuval, Cheryl C. Launio, Marites D. Wakat, Jhelian T. Cabintos, Rhym B. Lucanti, May-Ann D. Pedro, Aurita S. Budikey, Christita P. Galagal	December 2021	May 2022	Agricultural Training Institute	1,000,000.00

B. Research Articles Published

A total of forty-five (45) research articles were published in research journals/books for 2022. Twenty-eight (28) articles were published in ISI, scopus and peer reviewed international journals, while seventeen (17) articles were published in the Mountain Journal of Science and Interdisciplinary Research, a biannual journal publication of BSU.

Table 2. Research Articles Published

	TITLE OF PUBLICATION/ARTICLE	AUTHOR/S	TITLE OF JOURNAL VOL (NO.)/ BOOK/PROCEEDINGS
1	Domestication of “Deguai” (<i>Saurauia bontocensis</i> Merr.) at La Trinidad, Benguet, Philippines	John G. Tacloy, Conrado C. Bao-idang, Sano L. Ngiwas, Marjie B. Esteban, and Milbrenne D. Yabes	Philippine Journal of Science 151 (1): 157-169
2	Assessment of the University Vision, Goals, Mission and Program Objectives: A Management Protocol for Quality Assurance	Bretel B. Dolipas*, Julie A. Buasen, Maria Azucena B. Lubrica, Phil S. Ocampo, Kenneth B. Pakipac, Marycel T. Sajise & Precious M. Valentin	Athens Journal of Business & Economics –Volume 8, Issue 2, Pages 139-158
3	Assessment of Quality Indicators of Pressed Biofuel Produced from Coarse Herbaceous Plants and Determination of the Influence of Moisture on the Properties of Pellets	Algirdas Jasinskas*, Vytautas Kleiza, Dionizas Streikus, Rolandas Domeika, Edvardas Vaiciukevičius, Gvidas Gramauskas and Marvin T. Valentin	Sustainability 2022, 14(3)



	TITLE OF PUBLICATION/ARTICLE	AUTHOR/S	TITLE OF JOURNAL VOL (NO.)/ BOOK/PROCEEDINGS
4	Ecosystem services through the lens of indigenous people in the highlands of Cordillera Region, Northern Philippines	Joyce N. Paing, Lenny G. J. van Bussel, Romeo A. Gomez, Jr., Lars G. Hein	Journal of Environmental Management Volume 308
5	Root growth potential and seedling growth of kamagong (<i>Diospyros blancoi</i> A. DC.) influenced by root pruning	Milbrenne D. Yabes, Gerry P. Alfonso, and Vida Q. Carandang	Israel Journal of Ecology and Evolution
6	Veterinary Medicine Students' Use of Library Resources and Access to Scientific Papers	Noel W. Cabfilan	Library Philosophy and Practice (e-journal)
7	Characterizing the Ideal Audio-Visual Learning Content of Writing Course Learned in Distance	Chester Esnara et al.	Lingua Cultura
8	Small-scale Demucilager Machine for Arabica Coffee (<i>Coffea arabica</i>)	Erickson N. Dominguez and Jeffrey A. Lavarias	Journal of Engineering Research and Reports
9	Mental Toughness and Character Building through Sports	Jumel C. Miller, Russell B. Dolendo	Journal of Positive School Psychology
10	Climate-Resilient Agriculture Assessment, Targeting and Prioritization for the Adaptation, and Mitigation Initiative in Agriculture (AMIA) in the Cordillera Administrative Region, Philippines	Elizabeth E. Supangco, Janet P. Pablo, Roscinto Ian C. Lumbres, Charis Mae Tolentino-Neric, Levi Ezekiel O. Daipan, Gillian Katherine Inciong & Ralphael Gonzales	Remote Sensing Application
11	<i>Boesenbergia igorota</i> (Zingiberaceae), a new species from the Cordillera Central Range, Northern Philippines	Rene Vincent B. Tad-o, Joanna I. Alafag, Jones T. Napaldet	Taiwania
12	Time-honored praxis in preparing smoked meat delicacy (kinuday) of the ibaloy indigenous people in Benguet, Philippines	Cynthia D. Garambas, Myrna Benita Z. Luna & Consuelo T. Chua	Journal of Ethnic Foods
13	Albubo Festival as a Tool to Enhance Community Engagement of Buguias, Benguet Residents	Jenalyn P. Oligo, Jaicelle P. Smith, Joseph B. Quinto	International Journal of Humanities, Literature & Arts
14	Native/Heirloom Rice in the Cordilleras: Status, Conservation, and Utilization	Romeo Jr. A. Gomez, Belinda A. Tadawan, Alexander W. Fagyan, Joyce N. Paing, Esther Josephine D. Sagalla	Plant Genetic Resources, Inventory, Collection and Conservation
15	Revisiting Philippine Folklore: Ba-diw as Discourse of Ethnicity in the Nonfolklorist Humanistic Lens	Chester B. Esnara	International Journal of Linguistics, Literature and Translation
16	Farmer-led Small-scale Irrigation Systems Management in Highland Vegetable Farming in the Cordillera Region, Philippines	Cheryll C. Launio, Marivic Abyado	Journal of Economics, Management and Agricultural Development
17	Example–conclusion map in teaching simple interest: A lesson study	Fleur De Cory Apasen Ngiwas, Daisy Lyn F. Mariano, Jayson G. Barsana, Michelle P. Cruz, Levi Elipane	International Journal of Evaluation and Research in Education (IJERE)
18	Comparative analysis of the leaf architectural characters of <i>Saurauia bontocensis</i> Merr. and <i>Saurauia polysperma</i> (Blanco) Merr. with the application of Digital Image Analysis Software	Bernard Peter O. Daipan, Inocencio E. Buot, Jr.	Biodiversitas Journal of Biological Diversity 23 (8):3869-3875



	TITLE OF PUBLICATION/ARTICLE	AUTHOR/S	TITLE OF JOURNAL VOL (NO.)/ BOOK/PROCEEDINGS
19	Toxicity and Antioxidant Properties of Pacific Rain Tree (<i>Samanea saman</i> (Jacq.) Merr.) Pods	James Kennard S. Jacob, Jennifer C. Paltayan, Hezekiah Mirielle P. Aguinaldo, Ron Patrick Cuagdan Campos	Journal of Applied Biological Sciences 16(1), 128-136
20	Liquid Crystal Display (LCD) based Instruction and Physics Performance	Bretel B. Dolipas, Freda Kate D. Samuel, Kenneth B. Pakipac	Athens Journal of Sciences- Volume 9, Issue 3, September 2022 – Pages 205-218
21	Organoleptic and Physicochemical Characterization of Ethnic Smoked Pork Delicacy (Kinuday) Produced by the Ibaloy Indigenous People in Cordillera, Philippines	Cynthia D. Garambas, Myrna Benita Z. Luna, Consuelo T. Chua	Philippine Journal of Science
22	Language Theses and Dissertation Landscapes: An Analysis of Research Analyses	Fermilyn D. Adais, Kara S. Panolong	Canadian Journal of Educational and Social Studies
23	The plant diversity of Mt. Ulap eco-trail in cordillera central range, Philippines: an insight on the effect of ecotourism in a secondary forest	Maricel A. Guron, Gideon Narvaez, Joanna I. Alafag, Jones T. Napaldet	J. Wetlands Biodiversity
24	Evaluating the species distribution patterns of the genus <i>Saurauia</i> Willd. in the Philippines using geospatial analysis	Bernard Peter O. Daipan, Inocencio E. Buot, Jr., Nelson M. Pampolina	Webbia
25	Translanguaging in the analysis of narrative techniques and discourse styles in selected Philippine short novels	Chester B. Esnara	Research Journal in Advanced Humanities
26	On Code-Switching in English Major Courses	Joseph B. Quinto, and Aiza Bheal M. Kitani	Innovations
27	Seize the day or seize theses? The challenges in undergraduate thesis writing	Joseph B. Quinto	Issues in Educational Research
28	CMO No. 15, S. 2019: Graduate Students, Are You Ready for This?	Joseph B. Quinto	Journal of International Education
29	Benguet State University-Buguias Campus in 17 Years (1998-2015): Graduate Employability and Student Satisfaction	Jayne B. Miranda, Martha C. Lagadan, Rio Ann B. Arceo, Samuel P. Reyes, and Julius B. Dominguez	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
30	Ang Paggamit ng Wikang Filipino sa Pagtuturo sa Larangan ng Agrikultura	Divinia K. Dominguez	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
31	Professional Development and Competence of School Heads in Urban and Rural Areas Leadership	Soraya T. Faculo and Divina M. Yango	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
32	Development and Evaluation of Task-Based Material in Business Mathematics for Senior High School	Jayne B. Miranda and Elsie M. Pacho	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
33	Utilization of Rice Hull Char-Based Compost for Potato (<i>Solanum tuberosum</i>) Production	Bennylyn B. Puyongan	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
34	Isolation, Characterization, Identification, and Preliminary Pathogenicity Test of Entomopathogenic Fungi Against Whitefly (<i>Bemisia tabaci</i>)	Rechelle B. Peningeo, Judith G. Lawilao, and Asuncion L. Nagpala	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1



	TITLE OF PUBLICATION/ARTICLE	AUTHOR/S	TITLE OF JOURNAL VOL (NO.)/ BOOK/PROCEEDINGS
35	Operations and Key Competencies of Micro-Scale Sewing Enterprises in Baguio City and La Trinidad, Benguet	Susan D. Ansibey	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
36	Morphological Fitness Profile and the Prevalence of Hypertension and Diabetes Among Benguet State University Employees	Eduardo P. Laconsay and Florence V. Poltic	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.1
37	Stress and Coping Strategies of University Employees in Buguias, Benguet	Elizabeth M. Bay-an*, Gracita N. Estocapio, and Melody C. Domalti	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
38	Civil Engineering Students' Problem-Solving Skills on Calculus-Based Problems	Nelson S. Banos	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
39	Diversity of Ricebean (<i>Vigna umbellata</i> L.) Germplasm in the Northern Philippine Highlands Based on Agromorphological Characteristics and Simple Sequence Repeat Markers	Belinda A. Tad-awan* and Hilda V. Palaes	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
40	Upscaling Organic Agriculture System of La Trinidad, Benguet Farmers	Christine Grace S. Fuchigami, Ruth S. Batani, and Faith N. Belingon	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
41	Pre-Service Teachers' Technology Literacy Skills for Blended Learning: Case of Four Universities in Baguio City and Benguet, Philippines	Almon B. Bokilis	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
42	Lesser Yam (<i>Dioscorea esculenta</i>) Grown and Knowledge Transfer Among Indigenous People in Northern Philippines	Grace S. Backian, Betty T. Gayao, and Dalen T. Meldoz	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
43	BSU Time Use: Engaging Faculty Researchers Before and After the Disallowance Disaster	Ruth S. Batani and Kacy O. Labon	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
44	Effects of Roast Levels on the Physical Properties, Microbial Contaminants, and Cup Quality of Arabica Coffee	Andres A. Basalong*, Von Y. Amado, and Hazen Lyn B. Talbino	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2
45	Stress, Anxiety, Depression Levels and Coping Mechanisms of Students and Teachers: A School-based Population Survey	Karryl Mae C. Ngina*, Ann Heather B. Kiwang, and Lance Angelo B. Layugan	Mountain Journal of Science and Interdisciplinary Research (MJSIR) 82.2



C. Papers Presented

A total of 328 research papers were presented by BSU researchers to international, national, regional and local/institutional conference/fora. Of the 187, 4 research papers were presented in international level, 3 - national, 19 - regional, and 302-local/institutional. Of the 302 research papers presented in the local/institutional level, 203 were presented in the Agency In-House Review which is being implemented yearly by the university.

Table 3. Summary of Research Studies Presented during the 2022 Agency In-House Review

CATEGORY	COMPLETED		ONGOING		TOTAL
	Outside Funded	BSU Funded	Outside Funded	BSU Funded	
S&T-AANR	17	14	19	46	96
FIET	3	4	10	1	18
DEVELOPMENT	2	2	10	8	22
SOCIAL NON-AANR			3	9	12
SOCIAL AANR	13	6			19
EDUCATION			12	24	36
TOTAL	35	26	54	88	
Completed	61 Completed studies		142 Ongoing		203 completed and ongoing studies presented

D. Awards/Recognitions

The Benguet State University – School-on-Air (BSU-SoA) Teleradyo is recognized as the Most Development-Oriented AM Station by the Philippines Community Broadcasting Society (UP ComBroadSoc) during the 16th Gandingan Awards held via online on April 2, 2022. BSU-SoA won the General Award on Radio category through its entry titled Animal Welfare Act and Anti-Rabies. In addition, the BSU-on-the-Air segment which featured the topic on Organic Fertilizer was recognized as Best Agriculture Radio Program during the 15th Bright Leaf Agriculture Journalism Award held on September 13, 2022 .

Dr. Ruth C. Diego was awarded as Outstanding Extensionist during the 2022 Foundation Celebration of Benguet State University.

Dr. Roscinto Ian Lumbres, Director of the Center for Geoinformatics, is recognized as one of the 2022 Outstanding Young Scientist (OYS) in the field of Forestry Resources by the National Academy of Science and Technology (NAST). Dr. Lumbres was also awarded as Distinguished Alumnus in Research (Biodiversity and Carbon Stock Assessment) during the 2022 Foundation Celebration of Benguet State University September 29, 2022. He also received the 2022 Distinguished Alumnus Award for Special Achievement from the College of Forestry and Natural Resources of the University of the Philippines Los Baños on October 8, 2022. On the same date, Dr. Lumbres received the Special Achievement Award and 2022 CFNR Distinguished Alumni Awardee from the University of the Philippines Los Baños.

Meanwhile, BSU researchers were recognized for winning Best Paper Awards in the different research categories in national, regional and institutional research conferences.

Table 4. Awards/Recognitions



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Awardee/s	Title of Award	Title of Research Paper	Date Received	Awarding Organization/ Conferring Body
OES				
Office of Extension Services	Most Development Oriented AM Station; BSU-on-the-Air TALKnology; Episode: Animal Welfare Act and Anti-Rabies		April 2, 2022	UP ComBroadSoc; 16th Gandingan Awards 2022
Nora C. Sagayo DZWT 540 KHZ Radyo Totoo BSU-on-the-Air	Best Agriculture Radio Program or Segment		September 13, 2022	University of the Philippines- Gandingan Awards
Constantino T. Sudaypan, Paul Joseph A. Nuval, Roscinto Ian Lumbres, Jake L. Galian, Leo S. Laruan, Rossini S. Guzman, Antonette C. Coliwet, May Ann B. Pedro, Angelics B. Batingal, Jhelian T. Cabintos, Benguet PLGUs & MLGUs	2nd Best paper, Social-AANR category (outside-funded)	Appraising Capabilities and Resources of Benguet Local Government Units: A Prelude to the Establishment of Province-Led Agriculture and Fisheries Extension Systems (ACRAFES)	October 6, 2022	Benguet State University
Constantino T. Sudaypan, Paul Joseph A. Nuval, Roscinto Ian Lumbres, Jake L. Galian, Leo S. Laruan, Rossini S. Guzman, Antonette C. Coliwet, May Ann B. Pedro, Angelics B. Batingal, Jhelian T. Cabintos, Benguet PLGUs & MLGUs	Best paper, Social AANR category	Appraising Capabilities and Resources of Benguet Local Government Units: A Prelude to the Establishment of Province-Led Agriculture and Fisheries Extension Systems (ACRAFES)	November 21-24, 2022	Cordillera Consortium for Agriculture, Aquatic and Resources Research and Development (CorCAARRD)
NPRCRTC				
Cynthia G. Kiswa Teresita D. Masangcay Arlene B. Bautista Gabby K. Dao-ines Dalen T. Meldoz	Best paper, Development category	Massive seedling production and dispersal of quality planting materials of potato under pandemic condition	October 6, 2022	Benguet State University
Cynthia G. Kiswa Jophr L. Galian Jake L. Galian John D. Dolinas Jr. Vanessa E. Kalingga	2nd Best paper, AANR category (external-funded)	Purple Yam (<i>Dioscorea alata Linn.</i>) Quality Planting Material Production through Aeroponics	October 6, 2022	Benguet State University
Cynthia G. Kiswa Jennie B. Balao Jophr L. Galian Nestor E. Pilayan Joyce K. Mama-o Jake L. Galian John D. Dolinas Jr. Patricia Akiate Viona Cadiog	2nd Best paper, AANR category (Internal-funded)	Development and Piloting of Rapid Multiplication Technique of Ginger and Turmeric	October 6, 2022	Benguet State University
Cynthia G. Kiswa Teresita D. Masangcay Arlene B. Bautista Gabby K. Dao-ines Dalen T. Meldoz	Best paper, Development category	Impact Evaluation of Dispersed Quality Planting Materials to Farmers Amidst Calamities/Pandemic	November 21-24, 2022	CorCAARRD
Cynthia G. Kiswa Jophr L. Galian Jake L. Galian John D. Dolinas Jr. Vanessa E. Kalingga	2nd Best paper, AANR category	Purple Yam (<i>Dioscorea alata Linn.</i>) Quality Planting Material Production through Aeroponics	November 21-24, 2022	CorCAARRD



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Awardee/s	Title of Award	Title of Research Paper	Date Received	Awarding Organization/ Conferring Body
Dalen T. Meldoz Teresita D. Masangcay Cynthia G. Kiswa Analiza V. Alzate Jennie B. Balao	3rd Best Poster	Impact of Technology Interventions in the Management of Sweetpotato Fusarium Wilt in Bauko, Mt. Province	November 21-24, 2022	CorCAARRD
IHFSA				
Andres A. Basalong, Von Y. Amado, Hazen Lyn B. Talbino	First Place-Poster Presentation: Research Category (S&T AANR)	Effect of Storage Durations on the Presence of Fungal Contaminants and CUp Quality of Roasted Arabica Coffee Beans	November 24, 2022	CorCAARRD
Jamesly T. Andres, Hazen Lyn B. Talbino, Archie D. Mendoza	Second Place-Poster Presentation: Research Category (S&T AANR)	Growth and Yield Performance of Ponkan Mandarin as Influenced by organic Plant Supplement through Modified Fertigation	November 24, 2022	CorCAARRD
Andres A. Basalong, Von Y. Amado, Hazen Lyn B. Talbino	Third Place Best Paper (Natural Sciences, Engineering & Technology Category)	Effect of Drying Methods and Load Volume on Microbial Contaminants and CUp Quality of Arabica Coffee	December 15, 2022	Cavite State University; ACDI/VOCA; National Coffee Research, Development and Extension Office; PhilCAFE
ISRD				
Gigy G. Banes, Kacy O. Labon, Romar A. Farcanao, Venus P. Bawiyen	1st Best Paper Award (BSU Funded: Social Non AANR)		October 6, 2022	Benguet State University
Constantino Sudaypan, Paul Joseph Nuval, Ruscinto Lumbres, Jake Galian, Leo S. Laruan, Rossini Guzman, Antonette Coliwet, May Ann Pedro, Angelica Batingal, Jhelian Cabintos	2nd Best Paper Award (Outside Funded: Social AANR)		October 6, 2022	Benguet State University
Gigy G. Banes, Kacy O. Labon, Romar A. Farcanao, Venus P. Bawiyen	2nd Best Oral Presentation	Indigenous Community Strategies in Response to Epidemics and Pandemics: The Case of Sadanga, Mountain province.	November 21, 2022	Benguet State University
ATBI/IC				
Ruth C. Diego	2022 Outstanding Extensionist	N/A	September 29, 2022	Benguet State University
Ruth C. Diego, Ana B. Mendoza, Monaliz M. Nagrampa	2nd Best Paper Award (Outside Funded: Development)	TBI Program Management, Networking and Capacity Building	October 06, 2022	Benguet State University
FSRIC				
Lesley Dale G. Umayat, Jeftee Ben B. Pinos-an, Sheena A. Wassig	Best Paper	Development of Osmo-Dried Ready-to-Eat Tomatoes for Micro Small and Medium Enterprise (MSMEs)	June 30, 2022	University of Southern Philippines, College of Business Administration
Lesley Dale G. Umayat Jeftee Ben B. Pinos-an Sheena A. Wassig	1st Best Paper Award	Development of Ready-To-Eat Tomatoes for Micro, Small and Medium Enterprises (MSMEs)	October 6, 2022	Benguet State University



Republic of the Philippines
BENGUET STATE UNIVERSITY

La Trinidad, 2601, Benguet Province

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Awardee/s	Title of Award	Title of Research Paper	Date Received	Awarding Organization/ Conferring Body
Lesley Dale G. Umayat Jeftee Ben B. Pinos-an Zinnia B. Das-ilen	2nd Best Paper Award	Development of Ready-To-Eat Dehydrated Carrots	October 6, 2022	Benguet State University
Lesley Dale G. Umayat Jeftee Ben B. Pinos-an Sheena A. Wassig	3rd Best Paper Award	Development of Low-Sugar Tomato-Lemon Marmalade	October 6, 2022	Benguet State University
Benguet State University/Lesley Dale G. Umayat	First Prize - Search for Socially Relevant Technologies	Development of Ready-To-Eat Dehydrated carrots/Process for Making Ready-To-Eat Sweetened Dehydrated Carrot	November 29, 2022	IPO PHIL
HERCC				
Belinda A. Tad-awan, Hector Gayomba, Hilda Quindara (†), Esther Botangen, Alver Claudio, Hilda V. Palaes, Danny T. Macyon, Jr. & Nida Indongsan-Gaqui	1st Best Paper Award (S&T-AANR)	Rediscovery of Underutilized Food Legume Species in Benguet and Mountain Province: Germplasm, Organic-based Seed Treatments, and Legume-based Food Products (4 Studies, 11 Sub-studies)	October 6, 2022	Benguet State University
Cheryll C. Launio, Erlinda Alupias, Cus M. Kilakil & Marivic C. Abyado	1st Best Paper Award (Social-AANR)	Adoption and Impacts of Drip and Sprinkler Irrigation Systems, and Other Water-Saving Practices for Highland Horticulture	October 6, 2022	Benguet State University
Froilan B. Manas & Esper L. Feliciano	3rd Best Paper Award (Education)	CTE Graduates Performance In The Workplace: Employers' Thoughts And Satisfaction	October 6, 2022	Benguet State University
Kara S. Panolong & Ronda B. Tullay	2nd Best Paper Award (Education)	Relevance of a Language Education Program: A Tracer Study Leading to Inputs to Curriculum Development, Pedagogies and Resources	October 6, 2022	Benguet State University
Luisita L. Ely	1st Best Paper Award (Education)	Teaching the Least-Mastered Chemistry Concepts through Validated 5E-Instructional Modules	October 6, 2022	Benguet State University
Nick W. Sibaen, Julie A. Buasen, Monica S. Alimondo, Bretel B. Dolipas, Ederson G. Bawang	Regional Symposium Qualifier for Poster Presentation	Principal Components of Students' Difficulties in Mathematics Flexible Learning	October 6, 2022	Benguet State University
GIS				
Roscinto Ian C. Lumbres, Lynn J. Talkasen, Myra Nieves T. Lingaling, Levi Ezekiel O. Daipan Quinerlyn A. Godio Imelda L. Gemino Susan A. Balanza	1st Best Paper Award (Outside Funded: Food, Industry, Engineering and Emerging Technologies (FIEET))	Climate Risk Vulnerability Assessment of Priority Crops in Apayao Province	October 6, 2022	Benguet State University
Roscinto Ian C. Lumbres	2022 Distinguished Alumnus Award for Special Achievement		October 8, 2022	College of Forestry and Natural Resources, University of the Philippines Los Baños



Awardee/s	Title of Award	Title of Research Paper	Date Received	Awarding Organization/ Conferring Body
Roscinto Ian C. Lumbres	Special Achievement Award		October 8, 2022	University of the Philippines Los Baños
Roscinto Ian C. Lumbres	2022 CFNR Distinguished Alumni Awardee		October 8, 2022	University of the Philippines Los Baños
Roscinto Ian C. Lumbres	Distinguished Alumnus in Research (Biodiversity and Carbon Stock Assessment)		September 29, 2022	Benguet State University
Roscinto Ian C. Lumbres	Outstanding Young Scientist 2022		July 14, 2022	National Academy of Science and Technology

E. Intellectual Property Rights

The BSU Intellectual Property Right Office was able to apply for copyright 106 research and non-research-based creations/compositions in the form of instructional materials, manuals, books, journals and other creative works to the National Library of the Philippines. Out of the 106 applications, 58 creations were registered for copyright by the National Library of the Philippines.

Meanwhile, the office also submitted this year 60 research outputs/technologies for Utility Model application to the Bureau of Patents, Intellectual Property Office Philippines and a total of 26 publications were registered for ISBN and ISSN.

F. Writeshops/ Trainings/ Seminars Conducted

The sector, in coordination with the different colleges conducted 232 training activities with 16,070 attendees/viewers. These activities were conducted on a blended approach which is face to face and online.

Table 5. Writeshops/ Trainings/ Seminars Conducted

CENTER/INSTITUTE	NO. OF TRAINING ACTIVITIES	NO. OF PARTICIPANTS
OES	25	1,529
ORS	7	682
NPRCRTC	8	418
HORTI	8	734
IHFSA	5	88
ATBI	62	1,982
COARDC	4	75
FSRIC	14	489
CSAC	13	486
CRAC	16	400
GIS	14	469
IPRO	6	455
CCARD	3	109
HERRC	21	3,487
ISRDC	20	3,913
REPO	6	754



G. Linkages

On linkages, the R and E sector has an ongoing collaboration with 71 partners composed of local government units, national and regional line agencies and international organizations. The collaboration focuses on the conduct of research and extension activities. The partner institutions include Japan International Cooperation Agency Philippine Office (JICA-Philippines), University of Guam, DOST PCAARRD, DA -BAR, Psychological Association of the Philippines, Department of Agriculture- Agricultural Training Institute in the Cordillera Administrative Region, Local Government of Benguet, Local Government of Mountain Province, Dep-Ed Baguio and Dep-Ed Apayao, among others.



Photo Documentations and Other R & E Highlights

a. Dr. Johnny G. Dati accepts the responsibility as Vice President for Research and Extension from Dr. Romeo A. Gomez during the turn over ceremony held on July 26, 2022 at the NPRCRTC Igorota hall. Dr. Gomez served as VPRE from January 2021 to June 2022. Dr. Dati was also the former VPUBA before his designation as VPRE effective July 1, 2022.



b. The Research and Extension spearheaded the University Exhibit which is part of the Benguet State University celebrated its 106th Foundation Day. A ribbon cutting ceremony and various display of products, posters and IEC materials of the R and E and Academic sector were highlighted during the exhibit





c. The Office of Extension Services launched the BSU on-the- Air Program Radio Room on September 29, 2022. Previous anchors of the program Dr. Silvestre L. Kudan and Dr. Johnny G. Dati Sr., BSU President Felipe Salaing Comila, and the present anchor Ms. Nora C. Sagayo graced the event. Commitment talks to continuously disseminate technologies and information on agriculture and other fields were shared in support to BSU on-the-Air Program.



d. The Research and Extension sector conducted the Annual Agency In - House Review on October 5-6, 2022. One hundred ninety-three (193) research papers were presented. Seventeen (17) completed research papers were awarded Best Papers during the closing program of the activity on October 6, 2022. The winning papers and the eleven (11) papers that were qualified for poster presentation will compete with other participating agencies in the upcoming 12th Joint Regional Symposium on Research and Development and Extension Highlights and 5th Student Congress, hosted by CorCAARRD on November 23-25, 2022.



e. The CNN will be featuring the Northern Philippine Root Crops Research Training Center on the program “SiyenSikat *Pinoy Popular Science Para sa Lahat*” early next year. Last October 10-13, 2022, the CNN crew filmed parts of the center as well as the activities related to the Potato R&D Program particularly the production of quality seed potatoes, from planting to trading and its effect in the community and GDP.





f. Dr. Roscinto Ian C. Lumbres received from the Department of Science and Technology thru Balik Scientist Program the certificate of appreciation for Benguet State University for its contribution in strengthening the science, technology, and innovation capabilities of the country during the 8th Annual Balik Scientist Program Convention held on October 14, 2022 in Pasay City.



g. The Benguet State University Intellectual Property Office conducted the Regional IP Masterclass on November 8–11, 2022 which was attended by 65 participants from the different State Universities and Colleges in CAR and other member agencies of the CorCAARRD. Dr. Jonathan L. Salvacion (right) served as the resource on the topic Patent Search and Patent Drafting.



h. The Institute of Highland Farming Systems and Agroforestry conducts a hands-on training on Arabica Coffee Nursery Establishment: Pricking and Potting held on May 24, 2022 at Ampusongan, Bakun Benguet.





i. The BSU through the Agribased Technology Business Incubator Center hosted the 2nd National Conference on Agri-Aqua Technology Business Incubation and 1st Incubatee Summit held at Newtown Plaza Hotel, Baguio City on November 23-25, 2022. Twenty-two ATBIs composed of state universities and colleges in the country converged during the activity and shared their best practices on how they were able to develop and improve their ATBI management in their respective areas. Different products and technologies were also showcased and promoted during the event.

