

RESEARCH SERVICES DIVISION

ACCOMPLISHMENTS





P I N Y A Program: **P**ineapple Industry prospects through **N**ew s**Y**stems of **P**roduction **A**nd **P**ost - harvest Handling and Processing

Queen Pineapple is a tropical fruit known for its sweet aroma and crispy-juicy characteristic grown in Camarines Norte. This is the flagship program of Camarines Norte State College. The ongoing projects of CNSC researchers under PINYA program are DOST-PCAARRD funded and are relevant to the DOST's Queen Pineapple Industry Strategic S&T Plan. CNSC's research projects have been granted a total budget of **P 9, 283, 232.50** for CY 2016-2017 as stipulated in the Memorandum of Agreement (MOA) made and entered into by and among DOST – Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (**DOST-PCAARRD**) duly represented by its Acting Director, Dr. Reynaldo V. Eborra; Visayas State University (**VSU**) duly represented by its President, Dr. Edgardo E. Tulin; Department of Agriculture – Regional Field Office 5 (**DA-RFO 5**) duly represented by its Regional Executive Director Engr. Abelardo R. Bragas, and; Camarines Norte State College (**CNSC**) duly represented by its President, Dr. Monsito G. Ilarde. The MOA had been duly notarized on March 15, 2016.

The projects are part of the DOST-PCAARRD funded research program which was approved by the DOST Governing Council last December 3, 2015 at DOST-PCAARRD Headquarters, Timugan, Los Baños, Laguna. The program is titled **Enhancing Productivity and Marketability of Queen Pineapple**, a collaborative research endeavors among researchers from Camarines Norte State College, Visayas State University, and Department of Agriculture Regional Field Office 5. The projects under said program are being conducted not only to respond to the needs of the queen pineapple industry but also to entice new farmers to venture on pineapple production making the industry more productive.

Three projects will be implemented in CY 2016-2017 at the CNSC College of Agriculture and Natural Resources (CANR) by CNSC Faculty Researchers. The project titled **Development of Various Products from Queen Pineapple Wastes** has three component studies with a financial grant from DOST-PCAARRD-GIA amounting to **P 3, 919, 338.00**. The project is led by the CNSC Research Director Michelle S. Carbonell with three component studies handled by Dr. Lilibeth A. Roxas, Dr. Sonia S. Carbonell and Ms. Ma. Kathrina M. Pobre. The said project intends to explore other possible methods of by-product utilization and value addition. Not only does said research initiative offer additional income for farmers and processors, it also promotes sustainable production and minimal or zero waste generation. The project titled **Evaluation of Queen Pineapple Grade Standards and Assessment**

of Implementation and Compliance in Camarines Norte as Basis for Policy Reforms and Formulations is led by Dr. Ma. Cristina C. Azuelo with grant from DOST-PCAARRD-GIA amounting to **P 1, 603, 849.00**. Said project will aid in crafting new and better policies that will secure farmers of a fair trade and will give them better access to both local and international markets. One project is considered as the twin research project of Visayas State University (VSU) titled **Morphological and Biochemical Characterization of Queen Pineapple (*Ananas comosus var. comosus*) Populations in Camarines Norte and Leyte** led by Prof. Tessie C. Nuñez of VSU, in which a faculty researcher from CNSC in the person of Ms. Rohilyn B. Egle, as a project staff, handles said twin research in CNSC-CANR. Their focus is on strategies to improve performance of Queen Pineapple through Crop characterization, and on the production of high quality and sufficient planting Materials. It has been granted with financial assistance amounting to **P 3, 760, 045.00**.

DOST-PCAARRD Funded Research Program
Approved on 03 December 2015

ENHANCING PRODUCTIVITY AND MARKETABILITY OF QUEEN PINEAPPLE

Duration: **3 YEARS (CY 2016 – 2018)**
Total Budget for the Program: Php 31,246,354.00
Total Budget for CNSC Projects: **Php 9,283,232.00**

Camarines Norte State College
Visayas State University
Department of Agriculture- RFO V

Project 1: Comparative Field Performance of Tissue Culture-Derived Plantlets and Suckers of Queen Pineapple (VSU)

Project 2: **Morphological and Biochemical Characterization of Queen Pineapple Populations in Camarines Norte and Leyte (VSU & CNSC)**

Project 3: Optimization of Planting Density Regulation for Queen Pineapple in Intercropped System (DA)

Project 4: Development of Site-specific Integrated Pest Management of Queen Pineapple under Different Cropping Schemes in Leyte and Camarines Norte (VSU)

Project 5: **Development of Various Products from Queen Pineapple Wastes (CNSC)**

Project 6: **Evaluation of Queen Pineapple Grade Standards and Assessment of Implementation and Compliance in Camarines Norte as basis for Policy Reforms and Formulations (CNSC)**



The DOST - PCAARRD Governing Council Chaired by **Hon. Mario G. Montejo, Secretary of Department of Science and Technology (DOST)**(9th from the Right) and Vice-Chaired by **Hon. Proceso J. Alcala, Secretary of the Department of Agriculture (DA)** (5th from the Right) with the PCAARRD Acting Director, **Dr. Reynaldo V. Ebor**a (3rd from the Right) and executives, as well as the VSU, DA-RFO 5, and **CNSC Researchers** namely **Michelle S. Carbonell, CNSC Research Director** (8th from the left) and **Dr. Ma. Cristina C. Azuelo** (8th from the Right) during the Governing Council Meeting held last December 3, 2015 at DOST-PCAARRD Headquarters, Timugan, Los Baños, Laguna.

Moreover, among the completed and/or presented/published research studies conducted by CNSC faculty researchers under this program are the following:

1. Correlates of Queen Pineapple (*Ananas comosus* Linn.) Farming Practices in Camarines Norte, Philippines by Dr. Sonia S. Carbonell – CE
2. Sensory Characteristics of Native Chicken Queen Pineapple – Cured Ham by Dr. Lilibeth A. Roxas & Nikko A. Roxas – CANR
3. Development of Vermicomposting Techniques for Pineapple Waste by Engr. Lemuel V. Aton – CANR

Research and Development Program along Food Security (RDPFS)

Basic and applied researches to support for enhanced access to a sufficient supply of safe and nutritious food, improved food production, alternative food sources for health, well-being and long-term economic prosperity among marginalized members of the community.

Among the completed and/or presented/published research studies conducted by CNSC faculty researchers under this program are the following:

1. 2015 Farmers' Satisfaction Survey (NIA-Funded) by OVPRE: Dr. Arlyn M. Magana – VP for Research and Extension & Michelle S. Carbonell – Research Director
2. Rambutan Kernels: As Potential Brunette Source and Chocolate Supplement by Dr. Lilibeth A. Roxas – College of Agriculture and Natural Resources (CANR)
3. Efficacy of Tarin from *Colocasia esculenta (L.) Schott* on the Histological Changes of Buffalo Meat (*Bubalus bubalis L*) by Dr. Lilibeth A. Roxas – College of Agriculture and Natural Resources (CANR)
4. Sweet Potato Pandesal Fortified with Malunggay by Ms. Lovewiserlyn A. Oliva – Institute of Trade and Industrial Technology (Jose Panganiban Campus)
5. Control of Damping- Off and Bacterial wilt of Tomato (*Lycopersicon esculentum*, Miller) with Mustard and Vermicast by Dr. Arlene C. Alegre – CANR
6. Stock Assessment of Christian Crabs (*Charybdis feriatus*, Linnaeus, 1758) in San Miguel Bay by Prof. Nelson S. Ofindo, Dr. Plutomeo M. Nieves (Bicol University), and Aldrin B. Macale
7. Growth Rate and Yield of *Lactuca Sativa* (Lettuce) Using Hydroponics and Traditional Gardening by Ms. Aiza L. Castañeda

The ongoing research study under this program includes:

1. Drying of Santol (*Sandoricum koetjape Merr.*) Grates for Sinantol Production in Camarines Norte, Philippines by Dr. Arlene C. Alegre, Engr. Roger Jay L. De Vela and Engr. Gelyn L. Bongabong– CANR

WRITE Program: Writing Resources as Innovative Tools in Education

This WRITE PROGRAM is aligned with the CNSC research priority thrust which is Education and Capability building. This program will provide opportunity for faculty members to upscale their academic ranks through writing books that may serve as textbook, module or laboratory manual in their classes. It has three components namely a) Writeshop Project; b) Learning Resource Validation Project and c) Publication and Commercialization Project.

One of the outputs in the Writeshop on Instructional Materials Development sponsored by Research Services Division is the **CNSC Laboratory Manual in Biology** authored by faculty members from the College of Arts and Sciences Biology Department which was approved by the Board of Trustees (BOT) will now be subjected to the process of commercialization. Laboratory Manuals and Modules from other delivery units are already in the process of evaluation and shall be endorsed to BOT upon compliance to the requirement of the evaluation committee.

A completed research study titled **Simplified Pedagogy in Solving and Analyzing Problems in Geometry** was conducted by Mr. Nelson B. Badillos along this program in which he was able to develop an Instructional Material in teaching Geometry to Secondary School students.

Generating Models and Prototypes for Technopreneurship Program (GMPTP)

The components of this program include developmental researches that merge intensively the technology and entrepreneurial opportunities to enhance lives of the community.

Among the completed and/or presented/published research studies conducted by CNSC faculty researchers under this program are the following:

1. Disaster Risk Profiling of Local Community with Vulnerability Analysis by Sharine T. Aquino – College of Arts and Sciences (CAS)
2. Design Mix of Pervious Concrete Using Aggregates From Barangay Dogongan Quarrying Site by Engr. Renato A. Canaria and Edgar Bryan B. Nicart – College of Engineering (CoE), & College of Arts and Sciences (CAS)
3. Fabrication and Validation of a Prototype Closed - type Activated Carbon Flake Burner by Engr. Aser N. Dino, Edgar Bryan B. Nicart – CoE, & CAS
4. An Intelligent SMS-Based Evacuation Center Designation System by Rosemarie T. Bigueras – CAS
5. Municipal Disaster Risk Reduction Management System by Edgar Bryan B. Nicart – CAS

6. Optimization of Reinforced Steel Bar Estimates through Modified Bin Packing and Cutting Stock Algorithm for Computer-Aided Estimation by Rosemarie T. Bigueras, Evelyn M. Baesa, Edgar Bryan B. Nicart – CAS
7. Assessment of the Corporatization Strategies of a State College in Accordance to RA 8292 by Melissa S. Carbonell – CBPA
8. Basic Literacy, Health Care, Culture and the Arts, and Livelihood Development: An ABCD Approach by Noel C. Alegre - CAS
9. CNSC Gender Audit: Basis for Advancing Gender Mainstreaming by Melanie D. Bacuño, Dr. Marcela B. Pajarillo, & Gehana D. Lamug – CAS/CE/CBPA
10. The Ethnomathematics of the Kabihug Tribe in Jose Panganiban, Camarines Norte, Philippines by Dr. Jennifer S. Rubio - CE

P O W E R Program

Promoting Opportunities With alternative Energy Resources

The program comprises of researches that would harness or utilize the available indigenous or natural resources as a renewable energy. The primary objective of this program is to explore possibilities of resolving critical issues on energy supply and mitigate the adverse effects of its depletion.

Among the completed and/or presented/published research studies conducted by CNSC faculty researchers under this program are the following:

1. Fabrication and Validation of a Wind Powered Street Light by Engr. Genaro B. Balane and Edgar Bryan B. Nicart – CoE & CAS
2. Fuel Oil Production from Waste Polystyrene (Styrofoam) Plastic Using Pyrolysis Method by Engr. Joselito A. Olalo–CoE
3. Environmental Audit of Camarines Norte State College: Basis for Environmental Management Interventions by Dr. Arlyn M. Magana & Dr. Rusty G. Abanto – CE & CANR

**TRACER PROGRAM: Tracking Records of Alumni Competencies and Employment
Status for Relevance and Excellence**

The TRACER Program responds to the CHEDs rationalization reforms. All HEIs need to study the impact of their program offerings as their graduates emerge in the work force of the country. The employability of the graduates and their performance in the industry are significant indicators of effectiveness.

Among the completed and/or presented/published research studies conducted by CNSC faculty researchers under this program are the following:

1. Tracer Study of Graduate School Graduates by Dr. Erlinda J. Porcincula – Graduate School/CBPA
2. College of Education Graduates Tracer Study by Dr. Sonia S. Carbonell and Wava Ann G. Baylon – College of Education (CE)
3. Camarines Norte State College Master's Degree Programs: Impact on its Graduates by Dr. Godofredo E. Peteza, Jr. – Graduate School
4. Classroom Assessment Skills and Practices in the College of Education by Dr. Ela N. Regondola and Leah N. Barbado – CE
5. Factors Affecting Students' Learning Achievement by Dr. Erlinda J. Porcincula and Dr. Rosalie A. Almadrones – Graduate School/CBPA/CAS

The ongoing research studies under this program include:

1. Employability of BS Biology Graduates of Camarines Norte State College SY 2010-2015 by Dolores C. Volante, Shirley A. Alberto, and Ruben R. Villaluz - CAS
2. Factors Influencing Retention and Degree in Completion Rates of Students in CNSC: A Case Study by Dr. Ela N. Regondola - CE

RESEARCH SERVICE / ASSISTANCE PROGRAM

The CNSC Research Services Division (RSD) with its pool of Faculty Research Experts provides the following services/assistance:

I. IP Protection Assistance

Security and intellectual property protection of the original and creative works of faculty and student researchers are given utmost importance and priority.

a. Copyright Registration

Research Journals:

1. CNSC Research Journal Vol. 1, Issue 1&2
(June and December 2015 Issue) – ISSN 2449 4623
2. Graduate School Research Journal Vol. 1, Number 1 (June Issue) – ISSN 2467 5687

10 Web Pages (ICS-CAS)

1. ICL Sch. of Daet Version 1.0 (Reg. No. N2015-258)
2. San Felipe Nat'l. High School Version 1.0
(Reg. No. N2015-259)
3. Today's Kids Learning Center Website Version 1.0
(Reg. No. N2015-261)
4. Mercedes Elem. School Website Version 1.0
(Reg. No. N2015-262)
5. Microsystem College Foundation Website Version 1.0 (Reg. No. N2015-263)
6. Jose Panganiban Elem. School Website Version 1.0 (Reg. No. N2015-264)
7. Batobalani Nat'l. High School Website Version 1.0
(Reg. No. N2015-265)
8. Moreno Integrated School Website Version 1.0
(Reg. No. N2015-266)
9. Pablo S. Villafuerte Nat'l. High School Version 1.0
(Reg. No. N2015-267)
10. Mercedes Technical Voc. High School Version 1.0
(Reg. No. N2015-268)

2 Computer Program Software (ICS-CAS)

b. Application for patent

c. Application for Industrial Design

d. Application for Utility Model

1. Chocolate from Rambutan Kernels – IP UM Registration No. 2 2015 000 255 (Dr. Lilibeth A. Roxas – CANR)
2. Chocolate Cake Brownie Composition Using Chocolate Powder from Rambutan Kernels – IP UM Application No. 2 2015 000 255 (Dr. Lilibeth A. Roxas – CANR)

II. **Publication Assistance**

Recognizing the importance of sharing mature technologies, new knowledge/discoveries and expertise which are generated and enhanced through research study/project/program of faculty and students, services on the following are provided by RSD.

a. **Packaging and repackaging of Proposal / Publishable Research Article**

1. **CNSC Research Journal Editorial Board**

<i>Editor-in-Chief:</i>	Dr. Jennifer S. Rubio
<i>Associate Editors:</i>	Dr. Adrian C. Guinto Michelle S. Carbonell
<i>Managing Editors:</i>	Dr. Ana B. Del Mundo Juanita C. Emata Nemia C. Puse
<i>Editorial Assistants:</i>	Engr. Floradelle V. Vega Rhodaviv V. Avila Rohilyn B. Egle Lovewiserlyn A. Oliva Engr. Aireen M. Babagay
<i>Circulation Managers:</i>	Dr. Lilibeth A. Roxas Dr. Pimeh C. Tolentino
<i>Layout Artists:</i>	Mary Grace B. Bolos Andrew A. Naranjo

2. **CNSC Graduate School Research Journal Editorial Board**

<i>Editor-in-Chief:</i>	Dr. Rosalie A. Almadrones
<i>Associate Editors:</i>	Melanie D. Bacuña Jocelyn E. Trinidad Dr. Sonia S. Carbonell Dr. Ma. Cristina C. Azuelo Dr. Ela N. Regondola Dr. Wenifredo T. Oñate
<i>Managing Editor:</i>	Dr. Erlinda J. Porcincula
<i>Production Manager:</i>	Dr. Nora J. Macasinag
<i>Circulation Managers:</i>	Dr. Corazon S. Fajardo
<i>Layout Artists:</i>	Daniel E. Maligat, Jr. Adrian G. Daniel

b. **Originality Check – Turnitin Software**

c. **External and Internal Refereeing –**

1. International Journal Referees:
Dr. Rusty G. Abanto - CANR, & Dr. Lilibeth A. Roxas - CANR
2. Institutional Journal Referees:
College of Arts and Sciences (CAS): Noel C. Alegre
CAS - Institute of Computer Studies: Daniel E. Maligat, Evelyn M. Baesa, Edgar Bryan B. Nicart, Mary Grace B. Bolos
College of Education: Dr. Sonia S. Carbonell, Sigfred Aler
College of Engineering: Engr. Aser N. Dino, Engr. Joselito A. Olalo

College of Business and Public Administration:

Dr. Corazon S. Fajardo, Raniel D. Zabala, Claudio R. Asis,
Dr. Ma. Cristina C. Azuelo, Jocelyn E. Trinidad

College of Agriculture and Natural Resources (CANR):

Jesus P. Cocal, Engr. Lemuel Aton, Juanita C. Emata

III. Proposal Packaging

With the current emergence of the different drivers of change, the RSD ensures that proposals are in line with the Research Agenda of the College and responsive to the national research thrusts. Proposals are ensured to be packaged in accordance with the required format of the Grants-in-Aid giving body through

- a. Eligibility Check
- b. Technical Evaluation
- c. Consultancy Services-Pool of Experts

IV. Capability Building

Taking cognizance of the importance of human resource, the following services are provided to ensure that faculty and student researchers' capability is continuously developed and is consistently at par with that of international standards

a. Writeshop for Faculty Researchers

1. Pre-Workshop on Multidisciplinary/Interdisciplinary Collaborative Research and Capability Building
2. Writeshop on Instructional Materials Development

b. Paper Presentation Travel Assistance

1. Management Styles of Women Managers: Its Effects on Job Performance – Ma. Angela G. Pioquinto (CBPA) in 49th PAGE (Philippine Association of Graduate Education) Annual National Convention at University of Santo Tomas, Manila on February 16-19, 2016
2. The Ethnomathematics of the Kabihug Tribe in Jose Panganiban, Camarines Norte, Philippines by Dr. Jennifer S. Rubio in the 7th International Conference on Research and Educations in Mathematics at Kuala Lumpur, Malaysia on August 25-27, 2015
3. CNSC Gender Audit: Basis for Advancing Gender Mainstreaming by Melanie D. Bacuño, Dr. Marcela B. Pajarillo, &Gehana D. Lamug in the 2015 International Conference on Gendered Development Intervention at MSU-IIT, Iligan City, Mindanao, Philippines on May 21-23, 2015
4. Environmental Audit of Camarines Norte State College: Basis for Environmental Management Interventions by Dr. Rusty G. Abanto, & Dr. Arlyn M. Maganain the 2015 International Conference on Gendered Development Intervention at MSU-IIT, Iligan City, Mindanao, Philippines on May 21-23, 2015

5. Fuel Oil Production from Waste Polystyrene (Styrofoam) Plastic Using Pyrolysis Method by Engr. Joselito A. Olalo in the International Research Seminar and Presentations on "Multidisciplinary Research as ASEAN Integrates" at Tamaraw Beach Resort, Puerto Galera, Oriental Mindoro on October 5-6, 2015
6. Basic Literacy, Health Care, Culture and the Arts, and Livelihood Development: An ABCD Approach by Noel C. Alegre in the 2015 National Research Conference on "Bridging Service Learning and Community Extension Programs through Research Activities" at Hotel Supreme, Baguio City on September 30 - October 2, 2015
7. Optimization of Reinforced Steel Bar Estimates through Modified Bin Packing and Cutting Stock Algorithm for Computer-Aided Estimation by Rosemarie T. Bigueras, Evelyn M. Baesa, Edgar Bryan B. Nicart in the National Conference on Methodological Advances in Research 2015 at Leyte Normal University, Tacloban City on October 21-23, 2015
8. Assessment of the Corporatization Strategies of a State College in Accordance to RA 8292 by Melissa S. Carbonell in the Council of Deans for Graduate Education (CODGE) - Region V Regional Research Forum at Regent Hotel, Naga City on August 22, 2015
9. Mining Laws Compliance & Small-Scale Gold Mining in Camarines Norte by Sarah Marie P. Aviado – Researcher; Co-authors: Dr. Maria Cristina Azuelo, Dr. Godofredo E. Peteza, Jr. and Dr. Rusty G. Abanto at Southern Luzon State University, Lucban Quezon on May 12-14, 2014
10. Information and Language for Effective Communication by Sammy P. Pitoy (CAS) at University of San Jose Recoletos Cebu City, Philippines on 5-7 December 2013
11. Control of Pre and Post-Emergence Damping – off in Tomato (*Lycopersicon esculentum*, Miller) with Biofumigation and Vermicast Application by Dr. Arlene C. Alegre (CANR) in International Conference on Sustainability of Watersheds, at Bicol University, Legazpi City, Province of Albay, Philippines on September 25-27, 2013,

c. Attendance/Participation in Seminars/Workshops/Training

d. R&D In-house Review

1. 6th R&D In-house Review – May 14, 2014 at GS-AVR
2. 7th R&D In-house Review – May 28, 2015 at BFSM Bldg.
3. 8th R&D In-house Review – December 28, 2015 at OP Boardroom
4. 9th R&D In-house Review / CNSC Research Conference – March 28, 2016 at GS-AVR