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**DOCTOR OF PHILOSOPHY IN
AGRICULTURAL SCIENCES**

Majors in Animal Science,
Crop Science, and Crop Protection

RESEARCH

*Accrediting Agency of
Chartered Colleges and
Universities in the
Philippines, Inc.
(AACCUP)*

September 02-04, 2025



1. Research

1.1 Research Agenda

The institution’s research agenda is in consonance with institutional, regional and national priorities such as DOST, CHED-National Higher Education Research Agenda, NEDA, etc.

Revised USM Research, Development and Extension Agenda (2022-2031)
Prepared by: Dr. Ma.Teodora N. Cabasan, Vice President for RDE

AS PER APPROVED BY THE USM BOARD OF REGENTS THROUGH BOR
RESOLUTION NO. 69, SERIES OF 2021

CHED MANDATE FOR RDE (as read)

- Pursuant to CHED Republic Act 7722, the national government’s commitment to transformational leadership puts education as the central strategy for investing in the Filipino people, reducing poverty, and building national competitiveness shall:
- **Sec a.** Promote relevant and quality higher education (i.e. higher education institutions and programs are at par with international standards and graduates and professionals are highly competent and recognized in the international arena);
- **Sec c.** guarantee and protect academic freedom for continuing intellectual growth, advancement of learning and research, development of responsible and effective leadership, education of high level professionals, and enrichment of historical and cultural heritages;
- Specifically, CHED aims to achieve that the overall societal goal is the attainment of inclusive growth and sustainable development while the higher education sub sector goals are: the formation of high-level human resource, and generation, adaptation, and transfer of knowledge and technology for national development and global competitiveness.

As indicated in Section 5. PROGRAMS, ACTIVITIES, AND PROJECTS and Article 5.1.1 Aligning HEI programs with national development goals the relevant and Responsive Research, Development and Extension (RDE), CHED supports the conduct of RDE aimed at generating, adapting and transferring or applying new knowledge and technologies for improving productivity and livelihood, promoting peace, empowering women, protecting the environment, reducing disaster devastation, and alleviating poverty.

The USM research agenda has thematic areas anchored of the regional and national priorities and the concerned units are specified as follows:

Table 1. USM Research Development and Extension Agenda 2015-2020.

THEMATIC AREA	UNIT CONCERNED
1. Access to education and literacy	CED, CENCOM, IMEAS, CIT, CAS
2. Promotion of peace, gender equality and development	CBDEM, IMEAS, CED, CAS, CA
3. Preservation of arts, culture, language and literature	CAS, IMEAS, CIT
4. Environmental protection and conservation	CAS, CENCOM, CBDEM, CA , CIT, GS
5. Food security and poverty alleviation	All Colleges, USMARDC, PCIRI
6. Health and proper nutrition	CHEFS, CHS, ISPEAR, CAS, CVM, CA , CBDEM
7. Engineering and Technology	CENCOM, KCC-CIT, DIT
8. Halal	IMEAS

The College of Agriculture is involved in four (4) thematic areas like promotion of peace, gender equality and development, environmental protection and conservation, food security and poverty alleviation, as well as health and proper nutrition. Six (6) focus commodities in Agriculture are Corn, Cacao, Banana, Rubber, Oil Palm and Goat.

2015-2020 RESEARCH AGENDA REVISION
(Excerpt from the Minutes of the Meeting)

B. Expiration of research agenda 2015-2020 as stipulated at 2015 USM RD'E Guidebook (2020 12th URDEC Regular Meeting New Business Office of the Vice President for Research., Development and Extension issue/sand concern/s No. 4)

Dr. Edward A. Barlaan presented the 2022-2031 research agenda and development p,an. Hearing no comments from the URDEC members, Dr. Efren E. Magulama moved for the adoption and approval of the research agenda for presentation to the Admin Council. This was seconded by Dr. Ma. Teodora N. Cabasan.

The research agenda was developed based on the following inputs: sustainable development goals, harmonized national research agenda, internal inputs (actual needs analysis of the university, including capabilities), external/stakeholder inputs, and other statutory and regulatory requirements. The research agenda should also complement the VMGO of the University and its expected organizational outcomes.

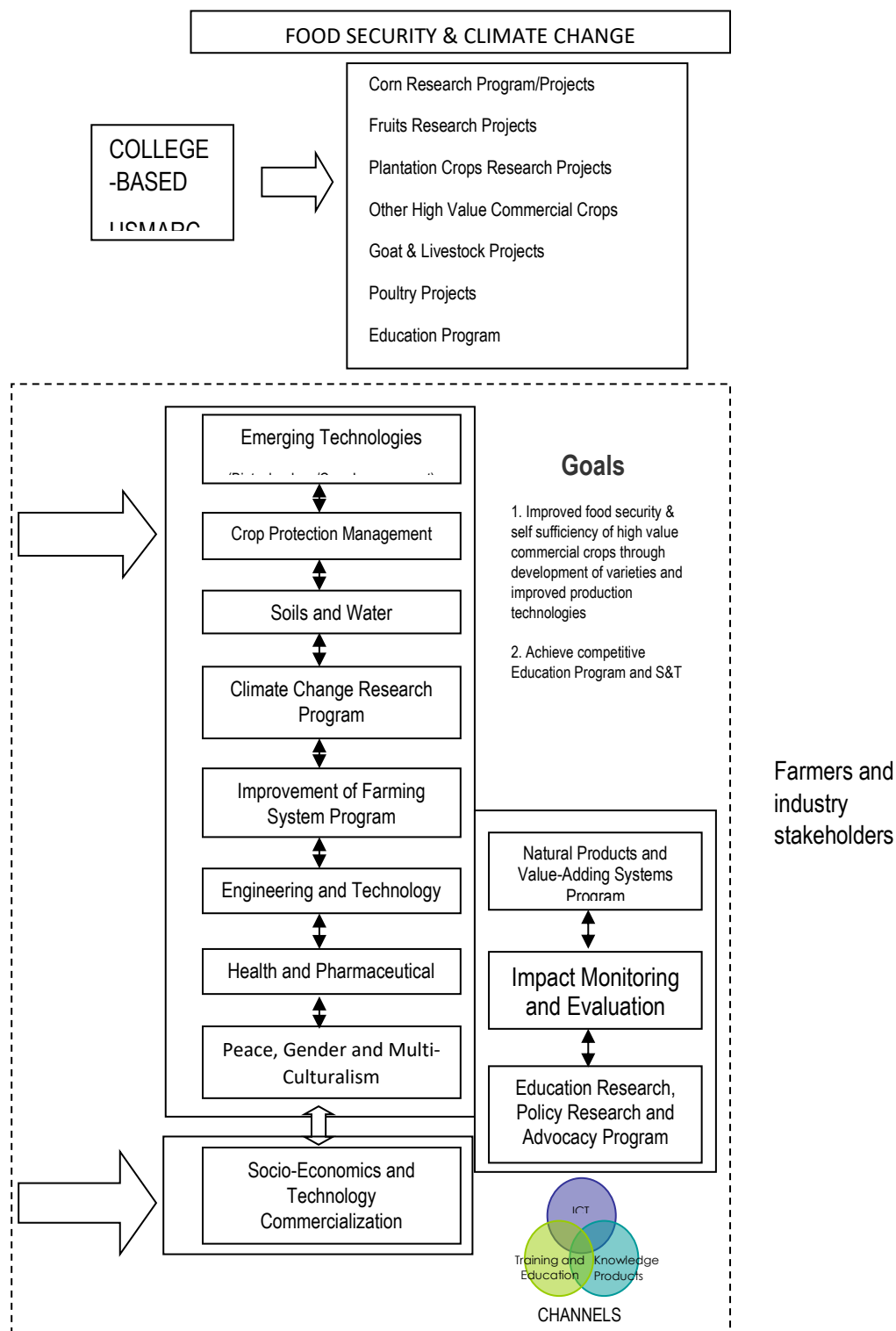
The formulation of research agenda in Region 12 was participated by various stakeholders like administrators, faculty, students, government organizations (GOs) and non-government organizations (NGOs) representatives to identify institutional thrusts and priorities in the region.

Table 2. University of Southern Mindanao Research, Development, and Extension Agenda.

	RDE THEMES	RDE PRIORITY AREAS
1	Quality Learning, Skills Development, and Literacy	Innovative teaching strategies; development and evaluation of functional education materials and modality; development of strategies/ approaches for increased learning interest, motivation and engagement; school management; knowledge management; special education; remedial education; alternative learning system; assessment, soft skills; practical skills; adult education; language literacy; numerical literacy; data literacy; computer literacy; international studies; tracer studies
2	Social Development, and Strong Institutions	Gender and development GAD; peace initiatives; community development; human security; justice; public policy and legislations; social rehabilitation; governance; organizational studies; behavioral studies; social institutions; ethics and public accountability; programs/ project assessment; community needs assessment and interventions; partnerships and linkages
3	Preservation and Culture	Multicultural studies; educational materials for IPs; indigenous knowledge systems and practices; development of materials for cultural knowledge and promotion; arts; language and literature studies
4	Environmental Protection, Conservation, and Risk Reduction	Environment rehabilitation studies; biodiversity; climate change adaptation; risk hazard and mitigation; biosafety; natural resources conservation and management; bioremediation; flood control; waste management; ecological

		preservation and care; environmental impact assessment;
5	Food Security and Poverty Reduction	Agricultural and fisheries research; biotechnology; innovations; quality food product development; technology development; halal food production; sustainable production; responsible consumption; organic agri-culture; food testing; smart agriculture; precision farming; livelihood programs; subsidy impact assessment; capacity building; capability building; farm machineries; post harvest facilities; vertical farming; indigenous food
6	Good Health and Well-Being	Nutrition; sports, physical education; resilience; psycho-social health; medical and medicinal studies; sanitation; functional foods; food and water quality and safety; mental and emotional health; therapy; coping mechanism; preventive measures; emerging diseases; health management; alternative medicine
7	Innovations in Science, Engineering, and Technology	Innovations; product and technology development; energy; materials sciences; nanotechnologies; robotics; artificial intelligence; internet of things; Science, Engineering, Communication, and Technologies (SECT) 4.0; biotechnology and OMIC technologies; Inventions and Discoveries; Basic research; Information technologies; electronics; drug discovery; mathematics; emerging technologies; fabrication; transport system; waste management; infrastructure; water systems; simulation studies; industrial and allied technology
8	Sustainable Entrepreneurship and Management	Economics; micro and macro scale business; product development; marketing commercialization; networking; franchising; financial management; business feasibility studies; risk and opportunities; value adding; value chain analysis; organizational management; quality service assessment; human resource management; production

USM Research, Development, and Extension Agenda 2017-2021



As indicated in Section 5. Programs, Activities, and Projects and article 5.1.1. Aligning HEI programs with national development goals the relevant and responsive Research, Development and Extension (RDE), CHED supports the conduct of RDE aimed at generating, adapting and transferring or applying new knowledge and technologies for improving productivity and livelihood, promoting peace, empower women, protecting the environment, reducing disaster devastation, and alleviate poverty.

A study entitled “Assessment on the Alignment of USM Faculty and Student Researches with the University Research Themes”, was conducted by FGNGarcia, PJBongcoy, RFPinsoy and AGMQuinero. [You may check and download the full paper from the site).

Main Objective: To assess the alignment of USM faculty members for the past 5 years.

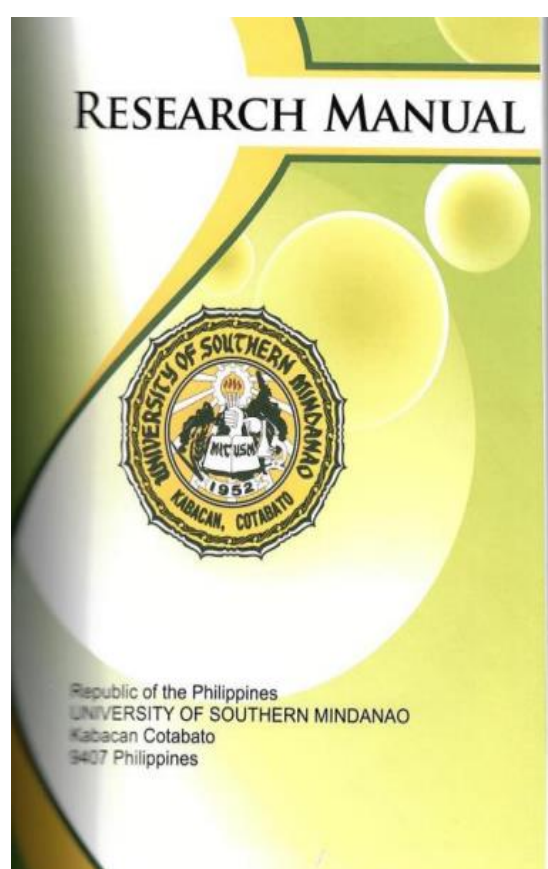
Specific Objectives

- Determine the research themes of researches conducted by USM for the past 5 years;
- Assess the research themes of researches conducted by USM students for the past 5 years;
- Suggest recommendation to solve problems and meet the grapes between the researcher conducted and the University research themes.

The institution has an approved Research Manual

The USM RDE Manual

There is an approved research manual (the [USM Research and Development Guidebook](#), approved by the BOR in 2016) and [Undergraduate Research Handbook](#) (revised 2019).



The 2015 USM Research and Development Guidebook

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Registration No. 0-2016-0721
October 5, 2016

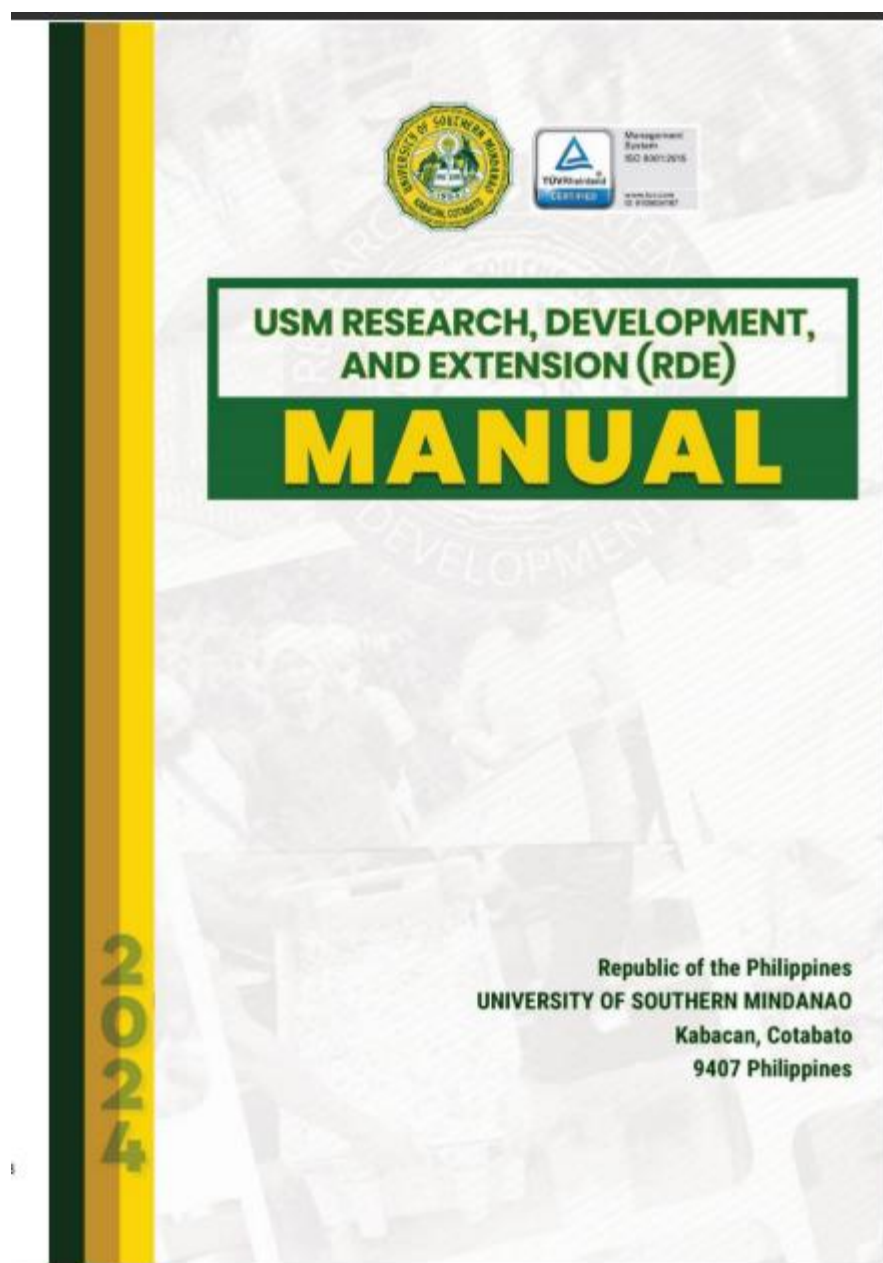
Approved by the USM Board of Regents (BOR) by virtue of Resolution No. 54, s. 2016

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Pomares, C.C. 2015. *The 2015 USM Research and Development Guidebook*, 2015 Edition, University of Southern Mindanao, Kabacan, Cotabato, Philippines. 171p.

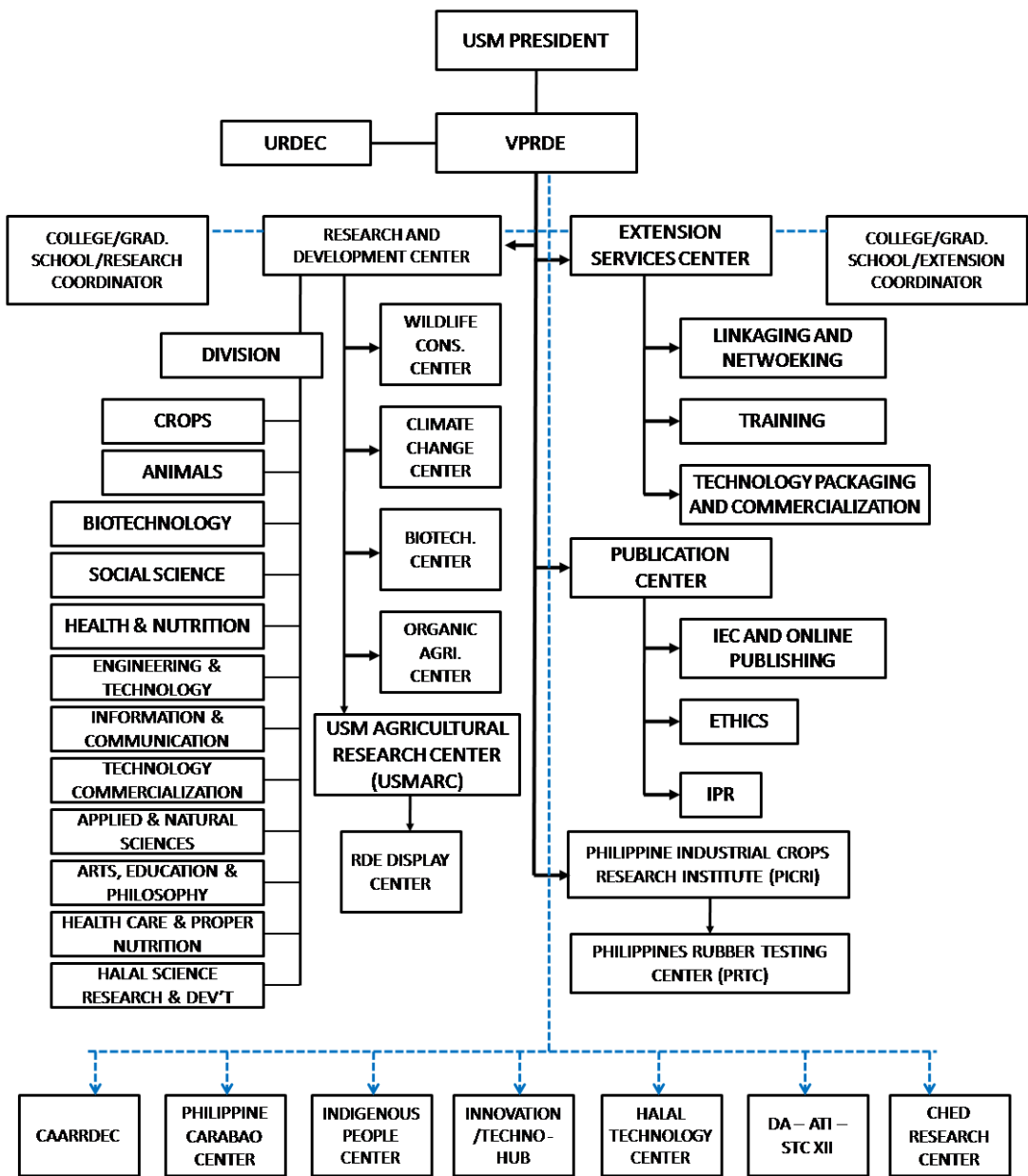
Recently, the University of Southern Mindanao has an updated research, development and extension (RDE) manual revised in 2024. Such manual was approved by the USM Board of Regents by virtue of Resolution No. 106, s. 2023. Moreover, the revision was approved by the USM BOR by virtue of Resolution No. 119 s. 2024. The manual is comprised of seven major topics, specifically pertaining to USM Research, Development, and Extension; Research, Development, and Extension Processes, Ethics in Research; Community Engagement and Outreach; Intellectual Property; Publication; and Policies and Guidelines.



https://drive.google.com/file/d/1HNL7dn_L0LYHtlaBlrdKsR4DMoLp0ozl/view?ts=68aeb7e0

Approved Organizational Structure of the Research Program

The institution has a Research Unit managed by competent staff. The figure below shows the USM Research and Development table of organization. The table shows the educational qualification, specialization, and length of experience of personnel managing the University research.



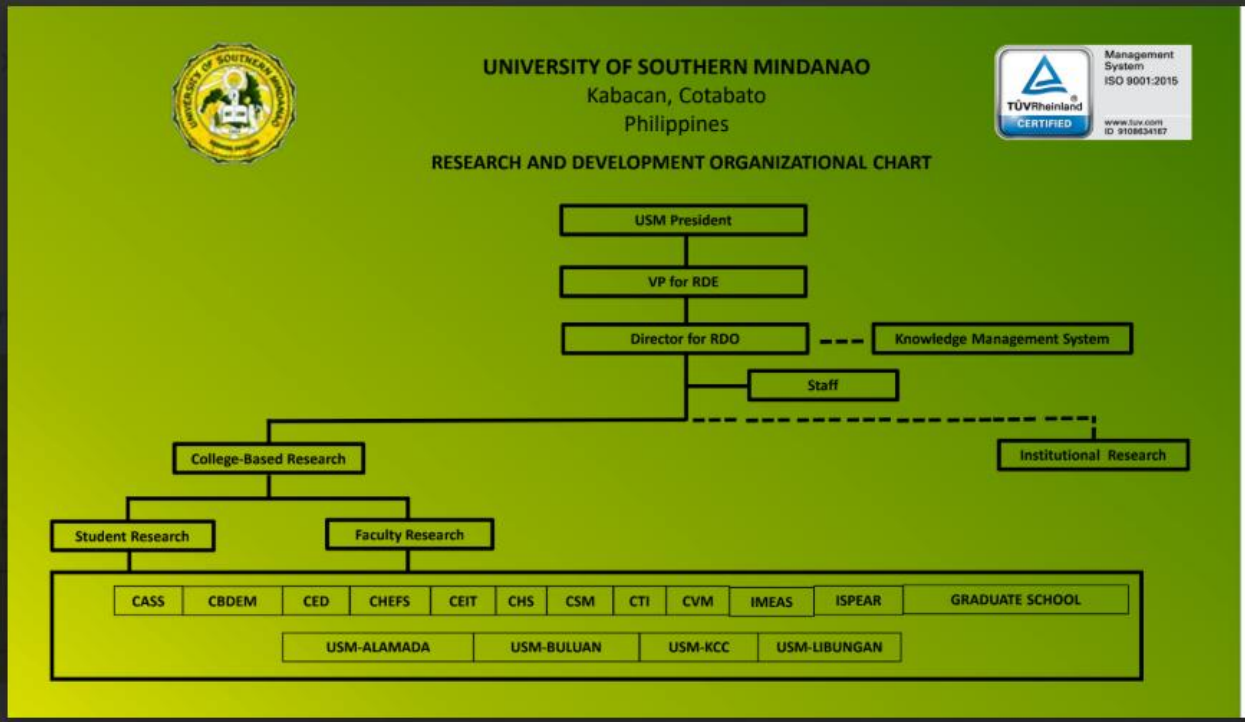


Table 3. USM Research, development, and extension (RDE) and academic R and D heads.

OFFICE	HEAD	EDUCATIONAL QUALIFICATION	SPECIALI ZATION	NO. OF YEARS OF R&D EXPERIENCE
A. Institution R & D Head				
VP for Research, Development, & Extension	Debbie Marie B. Verzosa	PhD	Mathematics Education	15
Director, USM R&D	Lydia C. Pascual	PhD	Chemistry (Biochemistry)	22
Director, USM Agricultural Research Development Center	Jurhamid C. Imlan	PhD	Animal Production (Halal Slaughter Management and Forensic Science)	27
Director, Phil. Industrial Crop Research Institute	Tamie C. Solpot	PhD	Plant Pathology (Molecular Plant Pathology)	20
Director, Publication Services Office	Florence Roy P. Salvaña	PhD	Botany (Economic Botany)	12
B. Academic Unit R & D Heads				
Graduate School Dean	Eimer M. Estilloso	EdD	Educational Management	15
Graduate School Research Coordinator	Debbie Marie B. Versoza	PhD	Mathematics Education	15
CA Dean	Efren E. Magulama	PhD	Agricultural Sciences (Crop Production and Management)	30
Program Heads PhD Agricultural Sciences Major in: Animal Science	Josephine R. Migalbin	PhD	Agricultural Sciences (CPM)	25

Crop Protection				
	Joan P. Sadoral	PhD	Plant Pathology (Mycology)	18
Crop Science	Lorelyn Joy N. Turnos-Milagrosa	PhD	Agricultural Sciences (CPM)	18

Congruence of the Institutional Agenda with National or Regional Priorities

The Institutional research agenda is in consonance with regional and national priorities such as CHED’s National Higher Education Research Agenda (2009-2018), NEDA’s Ambisyon Natin 2040, and DOST’s Harmonized Research and Development Agenda (2017-2022).

Table 4. National, regional and USM research agenda.

	NATIONAL RESEARCH AGENDA	INSTITUTIONAL (USM) AGENDA
National Higher Education Research Agenda (2009-2018)	Education and education management	Access to education and literacy
	Food safety and security	Food security and poverty alleviation
	Enhancing indigenous renewable energy source in the domestic energy mix	Environmental protection and conservation; engineering and technology
	Development of vaccines and diagnostic kits using indigenous material	Health and proper nutrition
	Disaster risk management	Engineering technology
	Pollution control	Environmental protection and conservation
	Climate change specifically on the issue of global warming	Environmental protection and conservation
	Future ASEAN	Preservation of arts, culture, language and literature
	Peace process and conflict resolution	Promotion of peace, gender equality and development
Ambisyon Natin 2040	Matatag (family is together, time with friends; work-life balance; volunteering	Food security and poverty alleviation; Preservation of arts, culture, language and literature
	Maginhawa (free from hunger and poverty; secure home ownership; good transport facilities; travel and vacation	Food security and poverty alleviation; Engineering and technology; Access to education and literacy
	Panatag (enough resources for daily needs; peace and security; long and healthy life comfortable retirement	Food security and poverty alleviation; Health and proper nutrition; Promotion of peace, gender equality and development

Excerpt from the Minutes of the Meeting

B. Expiration of research agenda 2015-2020 as stipulated at 2015 USM RDE Guidebook (2020 12th URDEC Regular Meeting New Business – Office of the Vice President for Research, Development and Extension issue/s and concern/s No. 4)

Dr. Edward A. Barlaan presented the 2022-2031 research agenda and development plan. Hearing no comments from the URDEC members, Dr. Efren E. Magulama moved for the adoption and approval of the research agenda for presentation to the Admin Council. This was seconded by Dr. Ma. Teodora N. Cabasan.

C. Creation of RDE Procurement and Disbursement Support Committee (2020 12th URDEC Regular Meeting New Business – Office of the Vice President for Research, Development and Extension issue/s and concern/s No. 5)

Dr. Edward A. Barlaan informed the URDEC Secretariat to prepare details of the procurement process and problem encountered for presentation to the BAC Chairperson. Thus, a proposal for creation of the RDE Procurement and Disbursement Support Committee will be lobbied to mitigate those problems. As further discussed, Dr. Edward A. Barlaan mentioned that part of the function of the committee is to check and keep procurement documents.

RDE Agenda Review/Consultation

a. With Faculty and Government Agency Representatives

With Faculty						With government agency representatives					
RDE AGENDA REVIEW/CONSULTATION						RDE AGENDA REVIEW/CONSULTATION					
USM Extension Conference Room DATE: April 13, 2021						USM Extension Conference Room DATE: April 13, 2021					
USM Extension						USM Extension					
No.	Name	Designation/Affiliation	Office Unit/Department	Mobile No./Email add.	Signature	No.	Name	Designation/Affiliation	Office Unit/Department	Mobile No./Email add.	Signature
1	Edward A. Barlaan	VP/PRO	OVPR/PE	0951540131	[Signature]	1	Mar B. Cabornida	Dean	CHIPS	0910782882	[Signature]
2	Princess	MAN.	PHC	0915159151	[Signature]	2	Gerardo H. Duka	Dean	PRODM	944-4497398	[Signature]
3	SIMSON C. RAPOZA	Res. Coord.	CTI	09612613963	[Signature]	3	Ma. Teodora N. Cabasan	RDD Director	RDD	0933041044	[Signature]
4	JEOPHINE R. MAGALIB W	DEAN	CA	09107440436	[Signature]	4	Archie A. Puyang	FS	ESD		[Signature]
5	MANUEL T. MONTERIL	Dean	CAGE	09267959180	[Signature]	5	Cheryl S. Ordoñez	Chief	ESD		[Signature]
6	Glyn G. Maglana	Extension Crr	ESG	09474440466	[Signature]	6	Alfonso B. B. B.	Chief	Extension		[Signature]
7	Laurence C. Tandang	GS Dean	GS	0946611558	[Signature]	7	Urbel G. T. Oña	PA I	DOST XII	0910644104	[Signature]
8	Belinda Marie Nolasco	Public Relations	Pub'n	09179540888	[Signature]	8	Emilia R. Sultana	SRA	SAXARDEC	0910644104	[Signature]
9	RONALD L. PIMENTEL	USM Dean	ESM	09107561365	[Signature]	9	Reges V. V. V.	RDD Student	RDD	0910644104	[Signature]
10	Tito T. T. T.	OFFICE	RDD	09107561365	[Signature]	10	Natalia, Dennis S.	Student	RDD	0	[Signature]
11	Joseph M. M.	RA	STUD	09107561365	[Signature]	11	Cadmosa, Ednel L. L.	Student	RDD	0910644104	[Signature]
12	NEXIA P. OLEO	ESM	USM	09107561365	[Signature]	12	Alfonso P. P.	Former	ESM	0910644104	[Signature]
13	JOSEPH L. P. P.	PRO	PRO	09107561365	[Signature]	13	Teo P. P.	Former	ESM	0910644104	[Signature]
14	MICHELLE CORADO	ESM Dean	ESM	09107561365	[Signature]	14	April Kimberly D. D.	Former	ESM	0910644104	[Signature]
15	Sonia F. F.	ED. OIC Dean	ED	09107561365	[Signature]	15	Regis A. A.	Former	ESM	0910644104	[Signature]



b. With Other Stakeholders

With other stakeholders (Parents, alumni, etc.)
















Attendance Sheet (RDE Agenda Review/Consultation)

Participated by other stakeholders (farmers, parent)

ACTIVITY: RDE AGENDA REVIEW/CONSULTATION
VENUE: USMA EXTENSION Conference Room DATE: April 13, 2021
SPONSOR: USMA EXTENSION

UNIVERSITY OF SOUTHERN MINDANAO
EXTENSION SERVICES CENTER
Davao, Cebu
ATTENDANCE SHEET

No.	Name	Designation/Affiliation	Office/Unit/Organization	Mobile No./Email add.	Signature
1	Mr. Mar B. Cabernido	Dean	CAETS	0910 78 28 382	
2	Jeannine H. Duke	Dean	PRODEM	8944-6897358	
3	Mr. Terence B. Casajan	ROO Director	RRO	0934 04 51000	
4	Dr. M. Anthony	FC	PLD		
5	Alfonso B. (Mr. Amos)	Principal	ESD		
6	Alfonso B. (Mr. Amos)	Principal	Behavioral/Students		
7	Mr. Lito S. Espinosa	PA-1	DOST XII		
8	Emmanuel P. Sultan	SEA	SE-ANAPRODEC	0950 64 9404	
9	Reges, Venerio S.	RRO Director	RRO	092252566	
10	Andres, Dennis P.	Student	EDD	0	
11	Candiano, Edel Lina C.	Student	EDD	0950 0933 00000	
12	Alfano, Piedad	Farmer	Milag	0991 305050	
13	Tosile, Paco	Farmer	Milag	0950 64 9404	
14	April Kimberly C. Limon	Farmer	Carmon	0900 555553	
15	Amor, A. Cecilio	Farmer	Antolan	0966 74 2279	



Linkages established with Research Agencies/Institutions

	Agency or Institution	Address	Level (Int'l, Nat'l, Reg'l, Local)	Nature of Assistance
1.	Australian Centre for International Agricultural Research (ACIAR)	Canberra, Australia	International	Financial assistance
2.	National Seed Industry Council (NSIC)	Quezon City	National	Seed testing and screening
3.	Department of Agriculture – Bureau of Agricultural Research (DA – BAR)	Quezon City	National	Financial assistance in the conduct of research and extension activities of various commodities (20 M) and improvement of research facilities
4.	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD)	UPLB	National	Provision of travel grants to USM research managers to observe different research centers in Asia; financial assistance in the conduct of research and extension activities of various commodities; scholarship grants to faculty- researchers.
5.	CHED	Quezon City	National	Financial assistance
6.	DA-RFO 12	Koronadal City	Local	Financial assistance
7.	ATI	Cotabato, Sultan Kudarat, South Cotabato and North Cotabato	Local	Collaborative technology transfer activities on various technologies developed by the Center and extending expertise of researchers in the implementation of local-based training activities
8.	Selected LGUs			

Research Budget

The institution has an approved and adequate budget for research.

Research Budget Allocation

Units	2016	2017	2018	2019	2020	2021
OVRDE	1,809,050.00	2,240,800.00	2,857,640.00	1,828,731.00	2,090,292.01	1,910,978.87
RDO	973,600.00	713,600.00	1,763,660.00	1,763,660.00	1,595,227.95	1,527,791.22
USMARC	2,836,760.00	2,729,420.00	2,780,000.00	2,780,000.00	2,591,440.73	2,472,850.52
Publication Office				1,092,000.00	1,206,785.81	1,159,275.39
Research projects	3,033,590.00	4,392,080.00	3,860,000.00	4,389,609.00	4,300,253.00	4,783,104.00

Actual Expenditures for Research of the Academic Unit

2016	2017	2018	2019	2020
10,180,000.00	11,854,000.00	11,854,000.00	11,854,000.00	14,007,000.00

Included on the expenditures for research: Research incentives, supplies and materials, [travel](#) and fuel, capacity building, acquisition of equipment, repair of facilities, communication/dissemination, miscellaneous.

Budgetary Allocation
MAINTENANCE AND OTHER OPERATING EXPENSES
Research Services
FY 2021
Fund 101

October 23, 2020

		RESEARCHERS	ALLOTMENT
	Distribution:		
	USMARC Overhead Cost		2,472,690.52
	VRDE Overhead Cost		1,910,948.67
	RDO Overhead Cost		1,527,791.22
	Publication Overhead Cost		1,159,275.39
	Sub-Total		7,070,696.00
	VARIOUS PROJECTS/STUDIES		
1	Enhancing RDE Indexing System (RDEIS) of USM. Design, Development and Evaluation	Melecio A. Cordero, Jr./Ryan Z. Gonzaga/Eugene G. Ranjo	100,000.00
2	Design and Development of USMCEE Online Registration	Arjay S. Agbunag, Jr./Alvin C. Mbaia/Clarence Dave Galas	100,000.00
3	Commercialization of Chayote (SAYOTE) Products	Jenny B. Mamacus/Emilie S. Esteloso/Janice E. Reynes/Jo Ann D. Santos/April Geraldine M. Quirionero/Ramil B. Purugganan	225,000.00
4	Productivity of crossbred Goats & Sheep fed with three varieties of Brachiaria grass	Josephine R. Magbini/Roy C. Rocobar	200,000.00
5	Development of Low Cost Tiling Machine	Joel V. Misanes	144,000.00
6	Development of On-Line Educational Contextualized Instructional Materials Supplementing IP Quality of Education	Arme Rose L. Blonto	190,000.00
7	Development of Innovative Approaches for Clonal Propagation of Industrial and Fruit Crops	Sheena B. Lucena/Ferdinand A. Duldulao	205,000.00
8	Development, Standardization and Packaging of Nutri Foods for Emergencies	Basoy, JD/Caborinda, JM/Piamonte, MN/Nacar, UM/Moscoso, L	225,000.00
9	Standardization Protocol for the Development of USM Food Products	Harem, Roca/Bryan Lloyd P. Bwela/Frederick John B. Navarro	470,000.00
10	Comparative Analysis of the Biochar Derived from Rice Straw, Rice Husk, Corn Stalks, Corn Cobs and Oil Palm empty fruit bunch on Soil Water Retention Capacity and Development and Growth of Pechay (Brassica rapa subsp. Chinensis)	Tito Jun T. Tixula/Rizal G. Cabantug	175,000.00
11	Development and Evaluation of Automated System for Profiling of Student Organization in the University of Southern Mindanao	Paul John B. Ongcoy/Vivonne V. Sallang/Ryan Z. Gonzaga/April Geraldine M. Quirionero	100,000.00
12	Digitalization of USM Faculty Workload	Soriano, Hazel Ann S/Ryan Z. Gonzaga/Arjay Agbunag	100,000.00
13	Development of Rapid Technique for Analysis of Adulterated Wholesome Food Products: A Combination of Spectroscopy and Chemometrics for Halal Food Analysis	Frederick John B. Navarro	225,000.00
14	Diversifying the Utilization of Corn as Food and Silage for Food Security	Ehen E. Magulama	335,500.00
15	Ecological Studies and Integrated Disease Management of Major Diseases of Dragon Fruit (2021)	Jasmin A. Pechol/Andriel A. Bolad/joy/Samsudin S. Panday	175,000.00
16	Development and Evaluation of an Instructional Materials for the IMEAS student	Saima M. Andil	100,000.00
17	Collection, Propagation, Evaluation & Maintenance	Nancy E. Duque	200,000.00
18	Educational Innovation in Rural & Remote Communities: A Multi-dimensional Approach	Leorence C. Tandog/Debbie Marie B. Verzosa/Emir M. Estiliso/Shandra C. Gonsang/Mito Aileen M. Alba/Joy Gloria Sabutan/Astrofi M. Alcala	191,504.00
19	CAS-Teacher Nanay, Mother of Today, Teachers of Tomorrow	Glyn G. Magbanao	100,000.00
20	Sustainable Human Development & Resiliency Framework for the COVID 19 Pandemic - affected Communities in North Cotabato Province	Ma. Dely P. Esberto	100,000.00

Report of Budget Obligations & Balances
MAINTENANCE AND OTHER OPERATING EXPENSES
Research Services Program
As of June 7, 2022
Fund 101

June 8, 2022

PROGRAM/ACTIVITY/PROJECT		RESEARCHERS	ALLOTMENT	OBLIGATIONS	BALANCES
Distribution:					
USMARC Overhead Cost			830,564.52	189,588.00	640,976.52
VPRDE Overhead Cost			793,253.16	176,840.22	616,412.94
RDO Overhead Cost			877,791.21	118,107.23	759,683.98
Publication Overhead Cost			606,070.21	153,038.55	453,031.66
Sub-Total			3,107,679.10	637,574.00	2,470,105.10
Support to RD&E					
VPRDE Support					
Counterpart to SOXAARRDEC			320,000.00	158,720.00	161,280.00
R & D Display Center			196,000.00	50,980.00	145,020.00
USM Wildlife Rescue Center			192,000.00	40,500.00	151,500.00
Agritourism			50,000.00	2,400.00	47,600.00
Faculty Development Assistance			120,000.00	700.00	119,300.00
Agency In-House Review (RDO)			550,000.00		550,000.00
Publication Incentive (RPSO)			553,205.18	553,205.18	-
USMARD Support			1,642,316.00	198,070.00	1,444,246.00
Sub-Total			3,623,521.18	1,004,575.18	2,618,946.00
VARIOUS PROJECTS/STUDIES					-
RDO PROJECTS					-
1	Design and Development of Online Pre-Registration System for University of Southern Mindanao	Arijay, Agbunag, Nelson Balneg, Ralph Butch Garidan	99,624.00	7%	99,624.00
2	Development and Implementation of Online Application for Graduation and Final Clearance System	Ryan Gonzaga, Alvin Mibalo, Elizabeth Genotiva, Danilyn Flores, Nor Aine Corpuz	153,576.00	21,650.00	131,926.00
3	Needs Assessment, Gap Analysis and Intervention Mappint: Streamlining Nursing Program's Implementation Outcomes	Marriane Meriales, Jza Taposok, Rocelle Jean Yongque, April Jxeel Palalay, Carlo Jason Dela Cruz, Emmalyn Mamaluba	192,000.00		192,000.00
4	Assessment on the Efficiency of Various Physical Exercises as Intervention Tool for Common Health Problems and Estimation of Economic Benefits of the Different Physical Activities, Dietary intakes and Health Conditions of USM Employees: Basis for Program Intervention & Development of Health & Fitness Database Management System	Moreno Java, Jr. Marlene Orfrecio, Urduja Nacar, Helen Grace Lopez, Carlo Jason Dela Cruz, Ryan Gonzaga	180,000.00	3,000.00	177,000.00
5	Research into Practice: Practical Applications of English for Specific Purposes (ESP) in the Workplace	Glyn Magbanua, Anamarie Uyangurin, Lawrence Anthony Dollente	180,000.00		180,000.00
6	Organic Based Interventions for selected Crops and Sheep Nutrition	Lorelyn Joy Turnos, Mark Al-Jamie Muttulani, Basser Mamalac, Tamie Solpot, Josephine Migalbin	320,000.00	71,529.00	248,471.00
7	Development of Rice Topping Product - "Kagikit" - from Chicken Meat	Julius Jerome Ele, Elma Sepelagio, Jalaloden Marohom	320,000.00	37,250.00	282,750.00
8	Assessment of Wildlife Encounters, Rescue and Trading in Protected Biodiversity Landscapes of North Cotabato	Florence Roy Salvaña	171,704.00	44,475.00	127,229.00
9	USM Education 4.0: Building Adaptive Higher Education through Technology in the New Normal	Elsa Gonzaga, Kharlo Subrio, Eugene Ranjo, Maria Luz Calibayan, Hazel Ann Soriano, Abubakar Murray	170,000.00		170,000.00
10	Exploring Indigenous Narratives from the South: the Pe'ngang and the Role of Datu in the Conflict Resolution among the Obo Manobo	Rowell Nitafan, Aljory Jhon Boje, Roselyn Clemen	170,000.00		170,000.00
11	Intersectionalizing K-12 Graduates Competencies: A Baseline for Tertiary Instruction, and Materials Development	Jacinta Pueyo, Kevin Ray Abesamis, Karizza Jane Pejaner, Jemima Atok	200,000.00	1,250.00	198,750.00
12	Integrating Gender and Development (GAD) Concepts Across Mandated Language, and Social Science Courses	April Rose Butalid, Elangbai Balawag, Estella Barbosa	128,000.00		128,000.00
13	Organizational Interventions on Halal Certification Systems towardsproduct Internationalization	Abubakar Murray	235,000.00	6,340.00	228,660.00
14	Development of e-LET Intervention Program for Professional Education	Dyane Rhea Bana-ay, Jean Millare, Ellen Joy Faralla	134,000.00	-	134,000.00
	Sub-Total		2,653,904.00	185,494.00	2,468,410.00

Budgetary Allocation
MAINTENANCE AND OTHER OPERATING EXPENSES
Research Services
FY 2021
Fund 101

October 23, 2020

		RESEARCHERS	ALLOTMENT
Distribution:			2,472,890.52
USMARC Overhead Cost			1,910,548.87
VPRDE Overhead Cost			1,527,791.22
RDO Overhead Cost			1,159,275.39
Publication Overhead Cost			7,670,896.00
Sub-Total			
VARIOUS PROJECTS/STUDIES			
1	Enhancing R&D&E Indexing System (RDEIS) of USM: Design, Development and Evaluation	Melecio A. Cordero, Jr./Ryan Z. Gonzaga/Eugene G. Ranjo	100,000.00
2	Design and Development of USMCEE Online Registration	Arjay S. Agbunag, Jr./Alvin C. Mbaio/Clarence Dave Galas	100,000.00
3	Commercialization of Chayote (SAYOTE) Products	Jenny B. Mamocut/Emilie S. Estaloso/Janice E. Reyes/Lo Ann D. Santos/April Geraldine M. Quironero/Ramil B. Purugganan	225,000.00
4	Productivity of crossbred Goats & Sheep fed with three varieties of Brachiaria grass	Josephine R. Magbina/Roy C. Ricabar	200,000.00
5	Development of Low Cost Tiling Machine	Joel V. Misanes	144,000.00
6	Development of On-Line Educational Contextualized Instructional Materials Supplementing IP Quality of Education	Anne Rose L. Blorito	190,000.00
7	Development of Innovative Approaches for Clonal Propagation of Industrial and Fruit Crops	Sheena B. Lucena/Ferdinand A. Duldulao	205,000.00
8	Development, Standardization and Packaging of Nuts Foods for Emergencies	Basoy, JD/Cabornida, JM/Piamonte, MN/Nacar, UL/Toscosa, L	225,000.00
9	Standardization Protocol for the Development of USM Food Products	Harem, Roca Bryan Lloyd P. Bvelzha/Fredrick John B. Navarro	470,000.00
10	Comparative Analysis of the Biochar Derived from Rice Straw, Rice Husk, Corn Stalks, Corn Cobs and Oil Palm empty fruit bunch on Soil Water Retention Capacity and Development and Growth of Pechay (Brassica rapa subsp Chinesis)	Tito Jun T. Tidula/Rezn G. Cabantug	175,300.00
11	Development and Evaluation of Automated System for Profiling of Student Organization in the University of Southern Mindanao	Paul John B. Ongcoy/Nwanna V. Salting/ Ryan Z. Gonzaga/April Geraldine M. Quironero	100,000.00
12	Digitalization of USM Faculty Workload	Soriano, Hazel Ann S/Ryan Z. Gonzaga/Arjay Agbunag	100,000.00
13	Development of Rapid Technique for Analysis of Adulterated Wholesome Food Products: A Combination of Spectroscopy and Chemometrics for Halal Food Analysis	Frederick John B. Navarro	225,000.00
14	Diversifying the Utilization of Corn as Food and Silage for Food Security	Ethen E. Magulama	335,800.00
15	Ecological Studies and Integrated Disease Management of Major Diseases of Dragon Fruit (2021)	Jasmin A. Pichol/Andriel A. Boladjay/Samsudin S. Panday	175,000.00
16	Development and Evaluation of an Instructional Materials for the IMEAS student	Soma M. Andil	100,000.00
17	Collection, Propagation, Evaluation & Maintenance	Nancy E. Duque	200,000.00
18	Educational Innovation in Rural & Remote Communities: A Multi-dimensional Approach	Learence C. Tandog/Debbie Marie B. Verzosa/Emel M. Estiloso/Shandra C. Gonsang/Mtzi Aileen M. Alba/Joy Gloria Sabutro/Astroff M. Alcala	191,504.00
19	CAS-Teacher Nanay, Mother of Today, Teachers of Tomorrow	Glyn G. Magbanua	100,000.00
20	Sustainable Human Development & Resiliency Framework for the COVID-19 Pandemic - affected Communities in North Cotabato Province	Ma Dely P. Esberto	100,000.00

			ALLOTMENT	OBLIGATIONS	BALANCES
	Sub-Total		2,069,204.50	1,112,326.09	956,878.41
	USMARC				
16	Corn R & D Program: Harnessing Potential of Non-Conventional Hybrids and Other Special Types in Improving Corn Productivity	Efren E. Magulama/Nenita Olero/Jasmin Pecho/Antonio Pasig	395,752.00	370,276.00	25,476.00
17	Enhancing Productivity of Lansium (Longkong) through Interactive Effects of Fertilization, PGR, Irrigation and Fruit Thinning Techniques	Nenita E. Olero/Antonio P. Pasig/Ferdinand A. Duldulao	228,085.00	175,047.97	53,037.03
18	Nanofertilization to Enhance Productivity of High Value Vegetables and Legumes	Nancy E. Duque	181,052.00	162,371.30	18,680.70
	Sub-Total		804,889.00	707,695.27	97,193.73
	PICRI				
19	Germplasm Collection, Preservation and Perpetuation of Philippine Indigenous Plants with Food and Medicinal Values	Rezin Cabantug/Samsudin Panday	339,848.00	237,732.03	102,115.97
20	Comparative Performance of Native and Hainan Varieties of Black Pepper Using Different Trellis and Type of Planting Materials	Sheena Lucena /Nancy Duque	135,789.00	135,789.00	-
21	Agri-Farm Tourism Development for Herbs, Spice: and Medicinal Plants	Rhodora Manceras	135,789.00	110,150.40	25,638.60
	Sub-Total		611,426.00	483,671.43	127,754.57
	OTHERS				
22	Integrated Community Extension Project (ICEP) in North Cotabato	Janice Bangoy	362,104.00	292,535.65	69,568.35
23	Health, Environment and Agricultural Livelihood Skills (HEALS)	Analya A. Gonzales	271,578.00	245,071.99	26,506.01
	Sub-Total		633,682.00	537,607.64	96,074.36
	GRAND TOTAL		11,784,000.00	9,496,845.37	2,287,154.63

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Note:

Prepared by:


EMMANUEL F. ESTOLLOSO
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Report of Budget Utilization & Balances
MAINTENANCE AND OTHER OPERATING EXPENSES

Research Services

As of December 29, 2020

FY 2020

Fund 101

December 29, 2020

			ALLOTMENT	OBLIGATIONS	BALANCES
Distribution:					
	USMARC Overhead Cost		2,591,440.73	2,260,798.57	330,642.16
	VPRDE Overhead Cost		2,090,292.01	1,791,384.68	298,907.33
	RDO Overhead Cost		1,595,227.95	1,458,136.76	137,091.19
	Publication Overhead Cost		1,206,785.81	1,004,347.21	202,438.60
	Sub-Total		7,483,746.50	6,514,667.22	969,079.28
VARIOUS PROJECTS/STUDIES					
Gender and Development (GAD)					
1	Concretization of GAD Initiatives in USM	Jacinta Pueyo/Marlyn Resurrection	181,052.00	140,877.72	40,174.28
	Sub-Total		181,052.00	140,877.72	40,174.28
Research and Development (RDO)					
2	Development and Validation of Teaching Guide in Earth Science Using 7E's Lesson Approach and Lesson Study Model	Hazel Ann Soriano/Faith Buned/Jay Regulacion/ Kautin Kulano	135,789.00	130,872.50	4,916.50
3	Predictors of Success and Failure of Test takers in the Licensure examination: Basis for the Development and Assessment of Intervention Programs in improving Passing Rate	Ronel Narimghon/Donnie Tulud/Mirasol Verona	226,315.00	50,355.47	175,959.53
4	Literaturang Pambayan ng mga Magindanaon Bilang Kagamitang Pampagtuturo para sa MTB-MLE (Mother Tongue Based- Multilingual Education)	Maria Luz Calibayan/Sandra Gonzang/Nelia Du/Winnie Aquino	135,789.00	91,452.42	44,336.58
5	Electronic Waste Management Assessment and Development of Intervention	Maricel Dayaday/Fredelino Galleto, Jr.	181,052.00	141,449.10	39,602.90
6	Instructional Material Development: Input to GE Course on Peace and Development	Amme Rose Blonto/Radji Macatabon	135,000.00	122,036.00	12,964.00
7	Product Development, Packaging and Branding of Smoked Native Catfish (Clarias Macrocephalus) as TINAHITO	Pia Amabelle Flores/Jalaloden Marohom	158,420.50	88,357.50	70,063.00
8	Assessment on the Alignment of USM Student and Faculty Researches Based on University Research Themes	Francisco Gil Garcia/Paul John Ongcoy	90,526.00	90,156.65	369.35
9	Design, Fabrication and Testing of Dehumidified Air Dryer	Alven Delson	181,052.00	99,751.65	81,300.35
10	Evaluation of Larvicidal and Ovicidal Activities of Marigold in Mosquitos	Sedra Murray/Elma Sepelagio	90,526.00	20,172.55	70,353.45
11	Rehabilitation of High Value Crop Commodities for Research and Production	Edward Barlaan/Sheena Lucena	125,000.00	82,000.00	43,000.00
12	Teaching and Learning Enhancement on selected General Education (GE) Courses through Outcomes-Based Education OBE)	Abubakar Murray/Kharlo Subrio	135,789.00	62,612.89	73,176.11
13	Meliponiculture: Honey Production from Stingless Bees Cultured in different Agricultural Ecosystem	Josephine Migalbin/Francisco Gil Garcia	225,000.00	93,307.96	131,692.04
14	Utilization Assessment on Modified Solar Photovoltaic Lighting System in IP Communities	Jowena g. Belocura/Jimmy D. Rama	67,894.00	18,330.23	49,563.77
15	Development and Product Evaluation of Adial Butter Spread and Sayote Leaf Tea	Emilie Esteloso/J. Mamacus/J. Reynes/AG Quinonero/Santos	181,052.00	21,471.17	159,580.83

1.2 Research Projects

1.2.1. Faculty Research (Completed)

The faculty members of the PhD Agricultural Sciences major in Crop Protection are actively engaged in research activities as shown by the number of completed and ongoing research projects. Several programs and projects were externally funded particularly by the RVO (Dutch Government), World Coffee Research, ACIAR, DOST-PCAARRD, DOST-PCIEERD, DA-BAR, DA-XII, and DA-ACEF. The USM also allot funds for research from where most of the researches received the funding. The research agenda of the research projects are mainly food security, poverty alleviation, and decent work and economic growth. Other researches conducted were aligned under sustainability, climate change, and innovations in science, engineering and technology.

Researches conducted by PhD Agricultural Sciences major in Crop Protection students were also externally funded by institutions such as DOST-PCAARRD and CHED; while institutional fellowship was granted to one of the students. The researches carried out by the students were aligned with the research agenda of the University, particularly food security and poverty reduction.

Table 5. Completed research of PhD in Agricultural Sciences major in Crop Protection faculty.

AGENDA	TITLE	PROPONENTS	DURATION	SOURCE OF FUND
No Poverty Zero hunger Decent work and economic growth	Screening of Potential Endophytes as Biocontrol Agent Against Major and Emerging Leaf Diseases of Rubber	Tamie C. Solpot (Project Leader), Ma. Teodora N. Cabasan, Bernadith T. Borja	Apr 2021-Oct. 2023	DOST-PCAARRD
No Poverty Zero hunger Decent work and economic growth	Enhancing Productivity of Robusta Coffee through Organic-Based Fertilization for Increased Profitability	Tamie C. Solpot (Project Leader)	Apr. 2022-Mar. 2023	World Coffee Research
No Poverty Zero hunger Decent work and economic growth	Seed Propagation Techniques in Growing Various Herbs and Spices and Their Pesticidal Efficacy against Bacterial and Fungal Diseases of Red Pepper (<i>Capsicum annuum</i>)	Tamie C. Solpot (Study Leader)	Jan. 2023-Dec. 2023	USM Locally Fund
No Poverty Zero hunger Decent work and economic	Artificial Intelligence-Based Diagnostic Clinic for Detection and Monitoring System for	Tamie C. Solpot - S & T consultant	Oct. 2022-Mar. 2025	DOST-PCAARRD

growth	the Management of Rubber Diseases and Insect Pest			
No poverty Zero Hunger Decent Work and Economic Growth	Etiology, Detection, and Management Strategies against Pestalotiopsis Disease of Rubber	Tamie C. Solpot (Project staff)	Mar. 2023- Feb. 2025	DOST- PCAARR D
No poverty Zero Hunger Decent Work and Economic Growth	Seed Propagation techniques in growing various herbs and spices and their bio-control efficacy against <i>Ralstonia solanacearum</i> and <i>Phytophthora palmivora</i>	Tamie C. Solpot (Project staff)	Jan.-Dec. 2023	USM Locally Funded
No poverty Zero Hunger Decent Work and Economic Growth	Development and Optimization of Innovative Tissue Culture Systems for 'Cardava' Banana	Tamie C. Solpot (Project Leader)	Jan.-Dec. 2023	USM Locally Funded
Poverty Reduction	Land Management of Rubber- Based Systems in Southern Philippines	Adeflor G. Garcia, Joseph O. Castillo, Leandreux D. Occasion, Mel Chrisel A. Sales, Purificacion O. Cahatian, Joan P. Sadoral	Jan. - Dec. 2022	ACIAR – PCAARR D
Food Security	Harnessing Rhizobacteria and Actinomycetes Potential as Biofertilizer and Biocontrol Inputs Supportive of Strengthening the Organic Industry (HaRBIS-Organic)	Mel Chrisel A. Sales , Neil Pep Dave N. Sumaya, Ma. Teodora N. Cabasan	Apr. 2023- Apr 2024	DA-BAR
No poverty Zero hunger Decent work and economic growth	Organic-based Interventions for Selected Crops and Sheep Nutrition	Tamie C. Solpot (Study Leader)	Jan. 2022- Dec. 2022	USM Local Fund
Food Security	Performance Evaluation of Fermented Teas as Biofertilizer and Biopesticides and their Effects on Pests, Diseases and Yields of Selected Solanaceous Vegetables	Naomi G. Tangonan, Purificacion O. Cahatian , Maria Irinea S. Candolita	Sept. 2019- Dec. 2022	DA- BAR
Innovations in Science, Engineering	Development of Weather-based Forecasting Tool Through Simulation and	Purificacion O. Cahatian, Joan P. Sadoral , Marilyn S. Painagan,	Jan. - Dec. 2021	DA-BAR

and Technology	Modeling as Early Warning System for Integrated Pest Management for High Value Crops	Joeseeph Quisado		
Food Security	Going Bananas-Restoring Livelihoods of Conflict Affected Farmers in Cotabato	Francisco Gil N. Garcia, Adeflor G. Garcia, Purificacion O. Cahatian , Harem R. Roca, Willie Jones B. Saliling	Jul. 2019-June 2024	RVO (Dutch Governm ent)
Food Security	Smarter Approaches to Reinvigorate Agriculture as an industry-Phase II:SARAI - Enhanced Agricultural Monitoring System in North Cotabato	Purificacion O. Cahatian , Romulo L. Cena	May 2018-Mar. 2021	UPLB DOST-PCAARR D
Food Security	Establishment of Urban Agriculture at University of Southern Mindanao (Urban Mushroom Production)	Joan P. Sadoral, Adeflor G. Garcia, and Purificacion O. Cahatian	Jul. - Dec. 2021	DA
Food Security	Pest, Disease and Nutrient Management of Organic Cacao	Purificacion Cahatian , Adeflor Garcia, Ronald Superioridad	Oct. 2016 - Jul. 2020	USM Fund 164
Food Security	Botanical Extracts from locally Available Plants for the Control of Major Insect Pest of Cacao and Rice	Purificacion Cahatian	Jul. 2017-Dec. 2020	USM Fund 164
Food Security	CacaoFutures: Production of Cacao Quality Planting Materials (QPM) and Tablea as Health Food for Community Dispersal to Alleviate COVID-19 Effects	Tamie C. Solpot , Frederick John Navarro, Ivy Mar M. Cabornida, Pamela Villanueva	Jan.- Dec. 2022	USM Fund 101
Food Security	USM Corn R&D Program: Harnessing Potential of Non-Conventional Hybrids and Other Special Types in Improving Corn Productivity	Magulama, EE.NE Olero, JC Imlan, IB Cabornida, JG Elarde, and JE Duran	Jan.-Dec. 2020	USM Fund 101
Food Security	Diversifying The Utilization of Corn as Food and Silage for Food Security	Magulama, EE.NE Olero, JC Imlan, IB Cabornida, JG Elarde, and JE Duran	Jan.-Dec. 2021	USM-GAA F-01
Food Security	Use of Triple Crop	Baser L. Mamalac,	Jan.-Dec.	USM

	System in Enhancing Resource Use Efficiency and Crop Productivity in Corn	Nenita E. Olero, Efren E. Magulama	2022	Fund 101
Food Security	Trait Enhancement of USM Varieties and Family Selections with Herbicide and Corn Borer Resistance	Efren E. Magulama , Jessie G. Elarde, Ferdinand A. Duldulao, Marry Grace S. Balbuena	Jan.-Dec. 2022	USM Fund 101
Food Security	CornLai: USM Agri-based Initiatives in Food production to Address Food Security During Pandemic Crisis	Jeannie U. Duka, Nenita Olero, Maribelle Piamonte, Jeannie U. Duka, Renel Alucilja, Efren Magulama , Ma. Teodora N. Cabasan	Jan.-Dec. 2022	USM Fund 101
Food Security	Phenotyping of Multi-cross Corn Hybrids and Synthetics with Tolerance to Herbicide	JA Elarde and EE Magulama	Jan.-Dec. 2024	USM-GAA F-01

1.2.2. Faculty Research (On-going)

Table 6. On-going researches of PhD in Agricultural Sciences major in Crop Protection faculty.

AGENDA	TITLE	PROPONENTS	DURATION	SOURCE OF FUND
Sustainability, Climate Change	Phytosanitary risk analysis of Cercopidae as potential pest of economically important crops in the Philippines	Elorde Jr. S. Crispolon	Dec. 2024 - Dec. 2025	Make Our Planet Great Again (MOPGA) 2024-Visiting Fellowship Program - French Ministry for Europe and Foreign Affairs, in collaboration with the French Ministry for Higher Education and implemented by Campus France
Food Security	Developing Land Management Options for Diverse Cacao-Based Systems in Mindanao	Mel Chrisel A. Sales	Nov. 25, 2022-Nov. 28, 2025	Global Green Growth Institute-BIMP EAGA and Republic of Korea Cooperation

				Fund
No poverty Zero hunger Decent work and economic growth	Etiology, Detection, and Management Strategies against Pestalotiopsis Disease of Rubber	Tamie C. Solpot (Project Staff)	March 2023-Sept. 2025	DOST- PCAARRD
No poverty Zero hunger Decent work and economic growth	Pests and Diseases Associated with Inflorescence and Immature Nuts Affecting Coconut Hybrid Production	Tamie C. Solpot (Project Leader)	Approved for Implementa tion (2025- 2027)	DOST- PCAARRD
Industry, Engineering, and Emerging Technology	Development of Improved Control and Management Measures for Banana Fusarium Wilt Disease Through Advanced Molecular Approaches	Edward A. Barlaan, Joan P. Sadoral , Khris June Callano	Approved for Implementa tion	DOST- PCAARRD
	Upgrading of Pest and Disease Laboratory at University of Southern Mindanao, Kabacan, Cotabato	Joan P. Sadoral and Joeseeph Quisado	Approved for Implementa tion	DA-ACEF
Food Security	Breeding and Yield Trial of Herbicide Tolerant Multi-Cross Hybrids	J. A. Elarde and EE Magulama	Jan.-Dec. 2025	USM-GAAF- 01

1.2.3 Student Research

Table 7. Research conducted by PhD in Agricultural Sciences major in Crop Protection.

AGENDA	TITLE	PROPONENTS	DURATION	SOURCE OF FUND
Environmental Protection, Conservation, and Risk Reduction	Insect and Arachnid in Different Rice Agroecosystems in Davao Oriental	Felix U. Sansaet	2 Years	DorSU Fellowship
Environmental Protection, Conservation, and Risk Reduction	Biological-based Management of Corn Fall Armyworm Using Entomopathogens in Zamboanga Peninsula	Maricel A. Fuentes	2 Years	CHED – SIKAP
Food Security	Host Reaction of Ten Cacao (<i>Theobroma cacao</i> L.) Clones to Insect Pests and Diseases	Jill D. Villanueva	2 Years	DOST-PCAARRD GREAT Scholarship (Dissertation)
Poverty Reduction	Artificial Intelligence-Based Diagnostic Clinic for Detection and Monitoring for the Management of	Jill Villanueva	2 Years	DOST - PCAARRD

	Rubber Diseases and Insect Pest			
Poverty Reduction	Etiology, Detection, and Management Strategies Against Pestalotiopsis Disease of Rubber	Jill Villanueva (S and T Consultant)	2 Years	DOST – PCAARRD
Food Security	Vermicompost Tea and Fermented Plant Extracts as Biological Control of Insect Pests and Diseases in Eggplant, Sweet Pepper, and Tomato	Jo-Anne Lynne Joy E. Duque	2 Years	Personal (Dissertation)
Food Security, Poverty Reduction	Biological Control-Based Approaches Against Major Diseases of Coffee in Region 12	Aurelio Ampo	2 Years	DOST – PCAARRD

1.3 Publications

1.3.1 Faculty Research Publications

The College of Agriculture where PhD in Agricultural Sciences is offered is very active in publishing scientific papers indexed in the International/ISI/SCOPUS/WOS journals/peer reviewed and engaged in research funded locally or internationally. Not only this, but there are also presentations being done in scientific conferences both local and abroad. Some of the faculty are also peer reviewers of prestigious international/ISI/SCOPUS/WOS journals.

Table 8. Publications of PhD in Agricultural Sciences major in Crop Protection faculty.

AUTHOR/ CO-AUTHORSHIP	TITLE	NAME OF JOURNAL	SCOPE
Tamie C. Solpot (Co-author)	Fungal endophytes consortium derived from rubber (<i>Hevea brasiliensis</i> Muell. Arg.) as antagonist against <i>Corynespora cassiicola</i> causing Corynespora leaf fall disease	Journal of Plant Diseases and Protection Vol. 132, Article No. 75, (2025)	International
Tamie C. Solpot (Main Author)	Leaf diseases of <i>Hevea brasiliensis</i> Müll. Arg. in major rubber growing areas of Cotabato, Philippines	Journal of Rubber Research Vol. 27, Pages 11-20, (2024)	International
Tamie C. Solpot , Jill D. Villanueva, Meynard P. Abello, John Benrich M. Zuniga	First report of <i>Neopestalotiopsis clavispora</i> causing foliar disease of rubber (<i>Hevea brasiliensis</i>) in the Philippines (2023)	<i>Journal of Phytopathology</i> , 2023, 4 pages	International
Jill D. Villanueva, Tamie C. Solpot , Naomi G. Tangonan	<i>Nigrospora sphaerica</i> causing Leaf Blight Disease of Cacao in the Philippines (2023)	<i>Indian Phytopathology</i> , 2023, 76(3), 915-	International

		922.	
Tamie C. Solpot, Christian Joseph R. Cumagun	Phylogenetic analyses and cross-infection studies of <i>Phytophthora</i> species infecting cacao and durian in South-Central Mindanao, Philippines (2021)	<i>Journal of Phytopathology</i> , 2021, 170(1), 41-56	International
Tamie C. Solpot, Christian Joseph R. Cumagun	First report of <i>Pythium cucurbitacearum</i> causing fruit rot of durian in the Philippines (2021)	<i>Journal of Plant Pathology</i> , 2021, 103(3), 1085-1085	International
Tamie C. Solpot (Main Author)	Cacao (<i>Theobroma cacao</i>) diseases: threats to the Philippines cocoa industry	<i>Philippine Plant Disease Bulletin</i> , 2020, 1(1), 2-4.	International
Tamie C. Solpot (Co-author)	Control of <i>Fusarium oxysporum</i> f. sp. <i>cubense</i> (EF Sm.) Snyder and Hansen tropical race 4 causing Fusarium wilt in banana cv.“Lakatan	Journal of Agricultural Research, Development, Extension and Technology (JARDET) Vol. 1, No. 1 (2019)	International
Tamie C. Solpot (Co-author)	Occurrence of <i>Fusarium oxysporum</i> f. sp. <i>cubense</i> Tropical race 4 and other genotypes in banana in South-Central Mindanao, Philippines	Philippine Agricultural Scientist Vol. 99, No. 4, 370-378 (2016)	International
Crispolon, Elorde Jr. S., Le Cesne, Maxime, & Soulier-Perkins, Adeline	Description of two new Philippine genera close to <i>Jacobsoniella</i> Melichar (Hemiptera: Cercopidae)	Annales Zoologici (74) 1, 17-42, (30 March 2024)	International
Elorde S. Crispolon Jr., Adeline Soulier-Perkins, Eric Guilbert	Molecular Phylogeny of Cercopidae (Hemiptera, Cercopoidea) (2023)	<i>Zoologica Scripta</i> , 2023, 1-23	International
Ramos, R.J., Ann Dichusa, C., Aryal, S., Crispolon, Elorde. Jr., Sumaya, N.P.D., & Sumaya, N.H.	Isolation, identification and virulence of the local entomopathogenic nematode <i>Heterorhabditis indica</i> in the southern Philippines against the sugarcane white grub, <i>Leucopholis irrorata</i> (Chevrolat) (Coleoptera: Scarabaeidae) (2022)	<i>International Journal of Tropical Insect Science</i> , 2022, 42(3), 2739-2750.	International
Crispolon Elorde. Jr. S., Guilbert E., Yap S.A. & Soulier-Perkins A.	New genus and new species of spittlebugs (Hemiptera: Cercopidae) from the Philippines (2021)	<i>European Journal of Taxonomy</i> , 2021 778, 90-135.	International
Le Cesne, M., Crispolon, Elorde & Soulier-Perkins,	Male terminalia of Cercopidae (Hemiptera, Cicadomorpha): towards a consensus terminology (2021)	<i>Scientific Reports</i> , 11(1), 2021, 10412.	International
Joan P. Sadoral,	Observations on the Potential	<i>Microbiology</i>	International

Christian Joseph R. Cumagun	of an Endophytic Fungus Associated with Cacao Leaves Against <i>Phytophthora palmivora</i> (2021)	<i>Research</i> , 2021, 12(3), 528-538.	
De Luna, M. R., Tesorero, M. R. T., Saturno, J. L., Sadoral, Joan. P. , Phumrungruang, B., Daria, A. P., ... & Bacongus, R. D	Coping Mechanisms to Existing Climate Hazards in the Agriculture Sector of Barangay Maravilla, Nagcarlan, Laguna, Philippines (2019)	<i>Journal of Management and Development Studies</i> , 2019, 8(2), 16-36.	International
Joseph O. Castillo	Efficacy of AKTRINE 4.6 SL (Matrine) for the Control of Major Insect Pests of Rice	<i>Journal of Agricultural Research, Development, Extension and Technology</i> , 2022, 4(1), 10-17.	International
Tangonan Naomi G , Pecho JA, Parcon EG.	Diseases of rubber (<i>Hevea brasiliensis</i>) in the Philippines (2020)	<i>Philippine Plant Disease Bulletin</i> , 2020, 1(1): 9-12.	National
Mel Chrisel A. Sales	Land Suitability Evaluation of Cocoa (<i>Theobroma cacao</i> L.) Production Areas in Davao City, Philippines	Mindanao Journal of Science and Technology Vol 22 No. 1 (2024)	International
Mel Chrisel A. Sales	Adapting Cacao Farming in Mindanao to Soil and Climate Challenges	MinDA	National

1.3.2 Student Research Publications

Table 9. Research publication of PhD in Agricultural Sciences major in Crop Protection students.

AUTHOR/ CO-AUTHORSHIP	TITLE	NAME OF JOURNAL	SCOPE
Joseph O. Castillo	Efficacy of AKTRINE 4.6 SL (Matrine) for the Control of Major Insect Pests of Rice (2022)	<i>Journal of Agricultural Research, Development, Extension and Technology</i> , 2022, 4(1), 10-17	International
Tamie C. Solpot, Jill D. Villanueva , Meynard P. Abello, John Benrich M. Zuniga	First report of <i>Neopestalotiopsis clavispora</i> causing foliar disease of rubber (<i>Hevea brasiliensis</i>) in the Philippines (2023)	<i>Journal of Phytopathology</i> , 2023, 4 pages	International
Jill D. Villanueva , Tamie C. Solpot, Naomi G. Tangonan	<i>Nigrospora sphaerica</i> causing Leaf Blight Disease of Cacao in the Philippines (2023)	<i>Indian Phytopathology</i> , 2023, 76(3), 915-922.	International

1.4 Scientific Presentations

Faculty Research Presentations

The research outputs of PhD Agricultural Sciences faculty members were disseminated through various conferences and fora (institutional/local, national and international levels). In addition, midyear and year-end Inhouse Research, Development and Extension (RDE) reviews are being conducted regularly in order to monitor the progress and accomplishments of all research studies which are being implemented by all USM faculty members, whether the projects are externally- or locally/USM-funded.

1.4.1 International

Table 10. Scientific presentation of PhD in Agricultural Sciences major in Crop Protection in International fora and or conferences.

NAME OF FACULTY	TITLE OF PAPER	NAME OF FORA/ CONFERENCE	DATE	LOCATION
Solpot, Tamie C.	Neopestalotiopsis Foliar Disease of Rubber in the Philippines	IRRDB 2023 International Rubber Conference	Feb. 20-21, 2023	Kuala Lumpur, Malaysia
	New Colletotrichum Species Infecting Rubber in the Philippines and the Potential of Endophytic Fungi as Biocontrol Against the Pathogen	IRRDB 2023 International Rubber Conference	Feb. 20-21, 2023	Kuala Lumpur, Malaysia
Elorde Jr. S. Crispolon	Advancement of Philippine Cercopidae Taxonomy: Where are we now?	17th International Auchenorrhyncha Congress and 13th International Workshop on Leafhoppers and Planthoppers of Economic Significance	April 1-5, 2023	UPLB, Los Baños, Laguna, Philippines
Sadoral, Joan P.	Insects and Diseases Profile in a Rubber-based Farming System in Southern Philippines	1st Southeast Asia Rubber-Based Cropping Production Forum	June 23, 2021	Prosperidad, Agusan del Sur, Philippines
Cahatian, Purificacion O. (Retired faculty)	Crop Protection in Rubber-based Cropping Systems	1st Southeast Asia Rubber-Based Cropping Production Forum	June 23, 2021	Prosperidad, Agusan del Sur, Philippines
	Crop Protection in Rubber-based Cropping Systems	1st Southeast Asia Rubber-Based Cropping Production Forum	June 23, 2021	Prosperidad, Agusan del Sur, Philippines
Solpot, Tamie C.	Research Updates on Cacao Pod Rot Disease and Management in the Philippines	Asia/Pacific Regional Cocoa IPM Symposium	April 9-11, 2019	Bali, Indonesia
Mel Chrisel A. Sales	Cacao Productivity and Soil Improvement by Cacao Cropping Systems and Soil Amendments Application in Kabacan Clay Loam	International Agri-Life and Bioresource Sciences Symposium	Mar. 16-19, 2025	Visayas State University, Leyte

	Transforming System and Strengthening Development for Agricultural Sustainability	ISSAAS Congress 2021	Nov 4-5, 2021	Kasetsart University, Thailand
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1.4. 2. National/Regional

Table 11. Scientific presentation of PhD in Agricultural Sciences major in Crop Protection faculty in national and regional fora and or conferences.

NAME OF FACULTY	TITLE OF PAPER	NAME OF FORA/ CONFERENCE	DATE	LOCATION
Solpot, Tamie C.	Updates on Pestalotiopsis Leaf Fall Disease of Rubber and Preliminary Work on Disease Management	56 th PMCP Conference	July 25-28-2024	Boracay, Malay, Aklan
Solpot, Tamie C.	Occurrence of Foliar Coffee Diseases in Selected Nurseries in Cotabato Province,	Federation of Plant Science Association in the Philippines (FPSAP) Scientific Conference	August 28- Sept. 01, 2023	Puerto Prinsesa, Palawan
Castillo, Joseph O.	Efficacy of AKTRINE 4.6 SL (Matrine) for the Control of Major Insect Pests of Rice (2022)	National Organic Agriculture Congress (NOAC)	March 21-24, 2023	USM, Kabacan, Cotabato
Crispolon, Elorde Jr. S.	GENE: Safeguarding Environment thru Conservation Education	Batangas State University	May 19, 2022	Via Zoom video conference
	My Research after MS Entomology Program	Open House 2021	Sept. 25, 2021	Via Zoom video conference
	The Foamy World of Spittlebugs: Episode 1 (Philippines)	53rd Pest Management Council of the Philippines Anniversary and Annual Convention	July 6-7, 2021	
	Biodiversity, Taxonomy and Phylogeny of the Spittlebugs (Hemiptera: Cercopidae) from the Old World	2021 MNH Biodiversity Seminar Series	Feb. 22, 2021	Via Zoom video conference
Solpot, Tamie C.	Foliar Diseases of Coffee in Selected Nurseries in Cotabato Province	27th FPSAP Scientific Conference	Aug 27- Sept 1, 2023	Princesa Garden Island Resort, Puerto Princesa City, Palawan

1.4.3 Institutional

Table 12. Scientific presentation of PhD in Agricultural Sciences major in Crop Protection faculty in local scientific fora.

NAME OF FACULTY	TITLE OF PAPER	NAME OF FORA/ CONFERENCE	DATE	LOCATION
Castillo, Joseph O.	Effective Rubber-based Cropping System in Southern Philippines	42nd USM Year-end Inhouse Review	Dec 1-2, 2022	USM, Kabacan, Cotabato
	Performance Evaluation of Fermented Teas as Biofertilizer and Biopesticides and their Effects on Pests, Diseases and Yields of Selected Solanaceous Vegetables	42nd USM Year-end Inhouse Review	Dec 1-2, 2022	USM, Kabacan, Cotabato
	Training of work Scholarship Program	39th USM Year-end Inhouse Review	39th USM Year-end Inhouse Review	USM, Kabacan, Cotabato
Crispolon, Elorde Jr. S.	THE FOAMY WORLD OF SPITTLEBUG: Biodiversity and Historical Evolution of Cercopidae (Insecta, Hemiptera)	USM Research Colloquium	Jan. 27, 2023	USM, Kabacan, Cotabato/ virtual
	Biodiversity and Historical Evolution of Cercopidae (Insecta-Hemiptera)	Research Colloquium	Nov. 4-5, 2021	USM, Kabacan, Cotabato
Sadoral, Joan P.	Land Management of rubber-based systems in Southern Philippines Project 4. Development of Cost-Effective Pest and Disease Management of Rubber and Intercrops	USM 43rd Mid-Year In-house Review	July 20, 2023	USM, Kabacan, Cotabato
	Land Management of rubber-based systems in Southern Philippines Project 4. Development of Cost-Effective Pest and Disease Management of Rubber and Intercrops	USM Year-end In-house Review	Dec. 1-2, 2022	USM, Kabacan, Cotabato
	Disease Profile of Rubber-based Farming System in Southern Philippines	USM Midyear In-house Review	Jul. 18-19, 2022	USM, Kabacan, Cotabato
	Establishment of Urban Agriculture at University of Southern Mindanao	41st USM Research, Development and Extension In-House Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato

	Disease Profile of Rubber-based Farming System in Southern Philippines - 41st USM Research, Development and Extension	41st USM Research, Development and Extension In-House Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
Solpot, Tamie C.	Screening of Potential Endophytes as Biocontrol Agent Against Major Emerging Leaf Diseases of Rubber	43rd USM Midyear Inhouse Review	July 20, 2023	USM, Kabacan, Cotabato
	Screening of Potential Endophytes as Biocontrol Agent Against Major Emerging Leaf Diseases of Rubber	42nd USM Year-end Inhouse Review	Dec. 1-2, 2022	USM, Kabacan, Cotabato
	CacaoFutures: Production of Cacao Quality Planting Materials (QPM) and Tablea as Health Food for Community Dispersal to Alleviate COVID-19 Effects	42nd USM Year-end Inhouse Review	Dec. 1-2, 2022	USM, Kabacan, Cotabato
Tangonan, Naomi G. (Professor Emeritus)	Performance Evaluation of Fermented Teas as Biofertilizer and Biopesticides and their Effects on Pests, Diseases and Yields of Selected Solanaceous Vegetables	40th USM Year-end Inhouse Review	Oct 21-22, 2020	USM, Kabacan, Cotabato
	Performance Evaluation of Fermented Teas as Biofertilizer and Biopesticides and Their Effects on Pests, Diseases and Yields of Selected Solanaceous Vegetables	41st USM Year-end Inhouse Review	Nov 4-5, 2021	USM, Kabacan, Cotabato
Cahatian, Purificacion O. (Retired Faculty)	Development of Cost and Effective Pest and Disease Management of Rubber and Intercrops	42nd USM Year-end Inhouse Review	Dec 1-2, 2022	USM, Kabacan, Cotabato
	Development of Weather-based forecasting as Early Warning System for Integrated Pest Management of High Value Crops	41st USM Year-end Inhouse Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
	Development of Cost-Effective Pests Management for Rubber and Intercrops	41st USM Year-end Inhouse Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
	Disease Profile in	41st USM Year-	Nov. 4-5,	USM,

	Rubber-based Farming System in Southern Philippines	end Inhouse Review	2021	Kabacan, Cotabato
	Upgrading of Geographic Information Support System Center for High Value Commodities and Indigenous Crops in SOCCSKSARGEN	41st USM Year-end Inhouse Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
	Smarter Approaches to Reinvigorate Agriculture as an Industry-Phase II: SARAI - Enhance Agricultural Monitoring System in North Cotabato	41st USM Year-end Inhouse Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
	Establishment of Urban Agriculture at University of Southern Mindanao	41st USM Year-end Inhouse Review	Nov. 4-5, 2021	USM, Kabacan, Cotabato
Sales, Mel Chrisel A.	Developing Sustainable Agricultural Environment Through the Organization of Durian Producers in Mindanao, Philippines	2024 USM Year-end Inhouse Review	Nov. 28-29, 2024	USM, Kabacan, Cotabato
	Developing Land Management Options for Diverse Cacao-Based System in Mindanao	2024 USM Year-end Inhouse Review	Nov. 28-29, 2024	USM, Kabacan, Cotabato
	Harnessing Rhizobacteria and Actinomycete's Potential as Biofertilizer and Biocontrol Inputs Supportive of Strengthening the Organic Agriculture Industry (HaRBIS-Organic)	2024 USM Year-end Inhouse Review	Nov. 28-29, 2024	USM, Kabacan, Cotabato
	Developing Land Management Options for Diverse Cacao-Based System in Mindanao	2023 USM MidYear-end Inhouse Review	Jul. 20, 2023	USM, Kabacan, Cotabato
	Verification of Soil pH, OM, N, P, and K Test Methods	42nd USM Year-end Inhouse Review	Dec 1-2, 2022	USM, Kabacan, Cotabato
	Mineral Nutrition of Rubber and Rubber-Based Cropping in Southeast Asia	42nd USM Year-end Inhouse Review	Dec 1-2, 2022	USM, Kabacan, Cotabato
	Developing Robust Diagnostic Tools and Effective Chemical Formulation for Rubber and Companion Crops to Improve Rubber	41st USM Year-end Inhouse Review	Nov 4-5, 2021	USM, Kabacan, Cotabato

	Productivity			
	Developing Rapid and Affordable Soil Nutrient Test Fertilizer Formulation	41st USM Year-end Inhouse Review	Nov 4-5, 2021	USM, Kabacan, Cotabato

1.5 Innovation and Commercialization

1.5.1 Utility Model

1.5.1.2. Utility Model Application for PhD in Agricultural Sciences major in Crop Protection

FACULTY	TITLE	Registration Number/Application Number/Certifying body
Solpot, Tamie C.	Fungal formulation (TpolXfee) for biocontrol of <i>Corynespora asiicola</i> causing leaf fall disease of rubber	IS805W1021N20242IL