AMY LIZBETH J. RICO, PhD.

KAREN Y. DAÑEZ

MAX P. GUILLERMO, PhD.

JULIUS CAESAR V. SICAT, PhD, CESO III

M E M O R A N D U M O F A G R E E M E N T

Know all men by these presents:

This **Memorandum of Agreement** is made and entered into by and between:

The **DEPARTMENT OF SCIENCE TECHNOLOGY REGIONAL OFFICE NO. III**, a national government agency, with postal address at the Diosdado Macapagal Government Center, Maimpis, City of San Fernando 2000, Pampanga, represented herein by **DR. JULIUS CAESAR V. SICAT**, Regional Director and hereinafter referred to as **DOST-III**.

.

-and-

The **TARLAC AGRICULTURAL UNIVERSITY**, an organization, with postal address at the Malacampa, Camiling, Tarlac 2306, represented herein by **DR. MAX P. GUILLERMO,** University President and hereinafter referred to as **TAU.**

W I T N E S S E T H

WHEREAS, Section 4 of Executive Order No. 128, s. of 1987 mandates the **Department of Science and Technology (DOST)** to formulate and implement policies, plans, programs and projects for the development of science and technology and for the promotion of scientific and technological activities for both the public and private sectors and to ensure that the results of scientific and technological activities are properly applied and utilized to accelerate economic and social development;

WHEREAS, pursuant to EO 128, the **DOST** through its **Grants-In-Aid (GIA) Program**, aims to harness the country's scientific and technological capabilities to spur and attain sustainable economic growth and development. Through the funding of relevant science and technology (S&T) undertakings, the **GIA Program** aims to contribute to productivity improvement and quality of life of Filipinos, by generating and promoting appropriate technologies;

WHEREAS, at the regional level, the **DOST-III** through its **Regional GIA (RGIA) Program**, intends to optimize the utilization of the region's resources and facilities to contribute to productivity improvement and quality of life of Filipinos living in Central Luzon;

WHEREAS, the **DOST-III RGIA Program** aims to stimulate the socio-economic development of Central Luzon by strengthening the participation of various S&T sectors in the region, particularly in research and development (R&D) promotion, technology transfer and utilization, human resource development, information dissemination, advocacy, and linkages;

WHEREAS, **TAU** is mandated, primarily to provide advanced education, higher technological, professional instruction and training in the fields of agriculture, agribusiness management, science and technology, engineering, teacher education, non-traditional courses, and other relevant fields of study, and undertake research, extension services, and production activities in support of the development of the Province of Tarlac, and provide leadership in its areas of specialization;

AMY LIZBETH J. RICO, PhD.

WHEREAS, **TAU** has submitted a project proposal to **DOST-III** through the **Provincial Science and Technology Office – Tarlac (PSTO-Tarlac)** aims to develop and promote SMART agricultural technologies for profitable onion production;

WHEREAS, **DOST-III** has endeavored to assist **TAU,** in its desire to implement the project by allocating funds from its **2022 Regional Grants-In-Aid Program**;

WHEREAS, DOST-III and **TAU** agree to jointly undertake the project entitled: **"Development and Promotion of SMART Agricultural Technologies for Profitable Onion Production".**

NOW, **THEREFORE**, for and in consideration of the foregoing premises, both parties hereto mutually agree to the following terms and conditions:

KAREN Y. DAÑEZ

I. PROJECT TITLE:

The project shall be entitled: **"Development and Promotion of SMART Agricultural Technologies for Profitable Onion Production"** with the approved project proposal hereto attached as Annex A and made an integral part of this Agreement.

II. OBJECTIVES OF THE PROJECT:

As stated in the attached project proposal

III. PROJECT ADMINISTRATION:

MAX P. GUILLERMO, PhD.

A. TAU shall:

1. Have primary responsibility of all project activities, notify **DOST-III** of significant concerns/problems related to project implementation;
2. Be responsible for the over-all implementation of the project and ensure that all activities and plans are carried out according to agreed schedules;
3. Designate from among its staff through a Special Order (SO), as **Project Leader (PL)** who shall:
   a. provide technical leadership and directly implement the project;
   b. adhere to the goals and objectives of the project;
   c. follow strictly the approved activities as reflected in the workplan;
   d. deliver committed outputs;
   e. submit required reports/documents on time;
   f. coordinate with **DOST-III** all activities that will be undertaken during implementation of the project;
4. Ensure that the designated **PL**:
   a. Must be a Filipino citizen, subject to applicable laws;
   b. Must hold a permanent position or a regular position for private entity and not due to retire during the conduct of the project;
   c. Must not have any existing accountability with **DOST** and its agencies particularly technical and financial reports;
   d. Must not have been found guilty of administrative or criminal case, including those under appeal.
5. Ensure that the **PL** submits to **DOST-III** through **PSTO-Tarlac** all required reports/documents on time and duly endorsed by the Head of Agency following the formats in **ANNEX C – DOST Forms:**

JULIUS CAESAR V. SICAT, PhD, CESO III

a. Regular Semi-Annual Progress Report using **DOST Form 6 - Semi-Annual Progress Report** shall be submitted in two (2) hard copies and an electronic copy, within a month after each semester;
b. Projects with a one (1) year duration shall submit the Terminal Accomplishment Report using **DOST Form 15 – Executive Summary for the Terminal Report** in two (2) hard copies and an electronic copy, not later than two (2) months after project completion, together with **DOST Form 12 - List of Equipment Purchased (LEP)**;
c. It shall include a publishable or pre-print manuscript, if applicable;
d. It shall also include evidence of intellectual property (IP) protection filing, if applicable;
e. Projects with multi-year duration or projects with one (1) year duration and with approved extension of up to another one 1) year (maximum), shall submit the technical report using **DOST Form 7 – Executive Summary for the Annual Progress Report** in two (2) hard copies and an electronic copy, not less than two (2) months after each year of implementation, together with **DOST Form 12 - LEP;**

6. Facilitate procurement of required equipment and disbursement of expenses as defined in the approved Line-Item-Budget hereto attached as ANNEX B;
7. Submit to **DOST-III** through **PSTO-Tarlac** the following reports and documents within a month after each semester using the formats in **ANNEX C - DOST Forms**:
a. DOST Form 8 – **Semi-Annual/Annual Financial Report (FR)** certified correct by the agency accountant and approved by the Head of Agency. The **FR** should be itemized in accordance with the approved LIB;
b. Report of Checks Issued (RCI) (ANNEX D) and **Report of Disbursements (ROD)** (ANNEX E) certified correct by the Certified Public Accountant, approved by the Head of **TAU** and duly audited by the **TAU** Auditor;
c. List of Equipment (LEP) (DOST Form 12) with corresponding **Property Acknowledgement Receipt (PAR)** (ANNEX F);
d. Journal Entry Voucher (JEV) (ANNEX G) related to the equipment purchased;
e. Schedule of Accounts Payable (SAP) (DOST Form 9); and
f. Report of Income/Interest Generated/Earned (DOST Form 13), if any.
8. Submit **Terminal Audited Financial Report (AFR)** (DOST Form 16) to **DOST-III** through **PSTO-Tarlac** within three (3) months after end of the project - duly received by the Agency's Commission on Audit (COA) auditor;
9. For NGOs or privately owned institutions (POs), the following documents shall be submitted to **DOST-III** through **PSTO-Tarlac** within three (3) months after end of the project:
a. Terminal Financial Report certified correct by its accountant and approved by its President/Chairman or its equivalent and verified by the accountant of the monitoring agency;
b. Fund utilization report indicating the summary of expenses duly certified correct by its accountant and approved by its President/Chairman or its equivalent and verified by the accountant of the **DOST-III**;
c. List of Equipment (LEP) (DOST Form 12) with corresponding **Property Acknowledgement Receipt (PAR)** (ANNEX F)
d. Pictures of implemented projects, as applicable;
e. Inspection Report and certificate of project completion issued by the **PSTO-Tarlac**; and
f. List of beneficiaries with their signatures signifying their acceptance/acknowledgement of the project/funds/goods/services received, as applicable;

DOST-III shall issue a Certificate of project completion upon endorsement of the **PSTO-Tarlac.** The **NGO/PO** shall keep and maintain financial and

accounting records of the funds granted by the **DOST-III** in accordance with the Philippine Accounting Standards. The **NGO/PO** shall make available all records and documents, including disbursement vouchers relative to the utilization of the funds, to **DOST-III** and COA Auditors.

10. The head of **TAU** shall approve any reprogramming/transfer of funds of existing expense item budget as originally approved by the DOST-III to augment direct and indirect cost under PS and MOOE (except for Foreign Travel and Training Expenses), provided there is no change in the indirect cost. The CO shall not be reprogrammed. A copy of the approved reprogrammed LIB and other required documents shall be submitted to the **PSTO-Tarlac** for endorsement to **DOST-III** within a period of two (2) weeks. The approved reprogrammed item/s submitted to **DOST-III** shall be reflected in the financial report/s (under "approved budget").
11. Allow **DOST-III** representatives access to the premises and facilities for activities relevant to the implementation of the project;
12. Provide logistic support to **DOST-III** staff who will extend assistance to the project;
13. Assist in the documentation, monitoring and evaluation of the project;
14. In coordination with **DOST-III**, place on the individual equipment acquired out of the financial assistance, inventory stickers to be provided by **DOST-III**;
15. Be responsible and accountable for the maintenance and safekeeping of equipment and properties acquired out of the GIA funds;
16. Put-up a signage at each of the project sites, at **TAU's** expense, two (2) weeks after the receipt of the project assistance. The signage shall contain the following information:

Department of Science and Technology- Region III
Regional Grants-In-Aid (GIA) Program

Project Title	:	**Development and Promotion of SMART Agricultural Technologies for Profitable Onion Production**
Implementing Agency	:	**Tarlac Agricultural University (TAU)**
Project Location/Site of Implementation	:	**Tarlac Agricultural University (TAU)**
Monitoring Agency	:	**Department of Science and Technology Regional Office No. III Provincial Science and Technology Office – Tarlac (PSTO-Tarlac)**
Project Duration	:	**One Year**
Source of Funds	:	**2022 DOST-III RGIA Program**

*Preferable material: Tarpaulin
*Prescribed Size: 4ft. X 4ft.

B. DOST-III shall

1. Designate the **Provincial S&T Director of Tarlac** as Project Coordinator who shall oversee the smooth implementation of the project;
2. Provide financial assistance from its 2022 Regional GIA Program for the acquisition of equipment and other components of the project as per attached line-item-budget;
3. Monitor the progress of the project, through **PSTO-Tarlac**, in attaining the objectives and its set targets and formulate immediate suggestions and recommendations on constraints or problems being encountered; and
4. Conduct documentation and evaluation of the project through **PSTO-Tarlac.**

IV. FINANCIAL ARRANGEMENT:

A. DOST-III shall transfer to **TAU** the amount of **THREE MILLION PESOS (Php 3,000,000.00)** from its **2022 Regional GIA Program** funds to fill in the budgetary requirements as defined in the approved Line-Item-Budget.

B. TAU, on the other hand, shall provide funds to cover for the other expenses defined in the line-item-budget. All other incidental expenses relating to the implementation of the project shall as well be borne by **TAU.**

V. OTHER CONDITIONS:

A. Project implementation shall commence within two (2) months after the release of funds.

B. Failure to submit within six (6) months the required financial, technical, and other reports prescribed deadlines, demand letter will be sent by **DOST-III** to the **PL** and Head of Agency. Upon the recommendation of **PSTO-Tarlac**, the **PL** and the **TAU** is prevented from receiving further grants or any kind of support from within the **DOST** System until he/she is cleared from all obligations pertinent to the previous GIA grant received. An Oath of Undertaking shall be executed by the **PL** acknowledging his/her outstanding obligation to **DOST** and its agencies with legally demandable commitment to comply within the prescribed period **DOST-III** may instigate legal measures against the **PL** and **TAU** for non-submission of requirements.

C. The activities, operation, books of accounts and records of the project shall be subject to inspection by the authorized representative of **DOST-III** and its auditor, whenever necessary.

D. Project Extension

1. Requests for extension of project shall be submitted together with the following documents:
   - **a.** Letter of request with justification
   - **b.** Endorsement from the PSTD
   - **c.** Latest financial report (DOST Form 8) (or as of date of request)
   - **d.** Latest progress report (DOST Form 6) (or as of date of request)
   - **e.** Proposed Line-Item-Budget side-by-side with the approved budget
   - **f.** Revised Gantt Chart of activities for extension or when the original is affected by realignment of LIB
   - **g.** Report of Checks Issued (ANNEX D)
   - **h.** Report of Disbursements (ANNEX E)
   - **i.** Journal Entry Voucher (JEV) (ANNEX G)
   - **j.** List of Equipment Purchased (DOST Form 12)
   - **k.** Property Acknowledgement Receipt (PAR) (ANNEX F)
   - **l.** Schedule of Accounts Payable (DOST Form 9)

   Payment of honorarium shall not be allowed during the extension period.

2. The request for extension should be submitted not later than three (3) months before the expected date of completion, except for extensions, as a result of force majeure. Extension of a continuing project shall not be allowed unless it is on its terminal/last year of implementation.
3. Request for extension with or without additional funding shall be reviewed by **PSTO-Tarlac** before endorsing to **DOST-III** for evaluation and approval.
4. If request for extension involves the use of unexpended balance, financial report or statement of fund balances as of date of request should be submitted not later than one (1) month before the expected date of completion. The request should be initially reviewed by **PSTO-Tarlac** before endorsing to DOST-III for evaluation and approval.
5. A project can be given a maximum of only two (2) extensions but not to exceed a total of 12 months except for extension as a result of force majeure. The request for second extension should be submitted one month before the completion date of first extension.

E. Budget Reprogramming and/or Modification

1. If budget reprogramming is required, a request shall be made not later than two (2) months before the end of the project's current year of implementation. Budget reprogramming and/or modification may be allowed for not more than three (3) months per agency (implementing and monitoring) per year of implementation, including the approved extension, if any.
2. The request for reprogramming shall be supported by the following documents; request letter duly signed by the Head of Agency; endorsement/approval letter from the monitoring agency; latest financial reports; work plan; and progress report (if additional funding and/or project extension is required). These documents shall be considered as the final program/project documents.
3. A revised LIB shall be issued to cover budget reprogramming, transfer of funds, reclassification of the position of the project personnel, and creation of expenses item/s.
4. Any reprogramming or transfer of funds from one expense item to another shall be based on the LIB approved by the DOST-III. The DOST-III and **PSTO-Tarlac** must be informed of the budget reprogramming including the changes in the indirect cost made by **TAU.** Otherwise, the reprogramming shall be deemed null and void.

F. Unexpended Balance (UB), Savings, Interest and Income

1. The UB, savings, income and interest of a project, if any, shall be reported and included in the annual FR/AFR submitted to the **DOST-III** through the **PSTO-Tarlac.**
2. Request for the use of UB/savings of completed/terminated/extended projects to pay for salaries and MOOE expenses shall be approved by the **DOST-III** upon recommendation of the **PSTO-Tarlac.**
3. Request to use the UB/savings for the extension period shall be submitted within one (1) month before the expected date of completion. It shall be supported with FR and valid justification to be used as basis in preparing a new or revised LIB.
4. Upon project completion/termination, all balances/savings and income/interest earned shall be reported and reverted to **DOST-III** within three (3) months after the end of project period together with the Terminal Financial Report.

G. Request for deferment/suspension/change in implementation date:

1. **PSTO-Tarlac** shall review and endorse the request for deferment/change in implementation date to DOST-III for evaluation and approval.
2. Projects with deferred implementation due to the delay in the release of funds shall commence two (2) months after the release of funds;

3. Requests for deferment for start of implementation should be made at the latest within the first month after fund release;
4. Requests to suspend the implementation of an ongoing project for a maximum of three (3) months shall be approved by DOST-III through the recommendation of the **PSTO-Tarlac**. The **TAU** shall officially inform **DOST-III** through **PSTO-Tarlac** on the resumption of project implementation at least two (2) months before the date of resumption and submit the following:
   a. Latest financial report (as of date of request)
   b. Proposed Line-Item-Budget for the resumption period.
   c. Gantt Chart of activities for the resumption

   DOST-III shall decide on the resumption, extension of suspension or cancelation of the project.

H. Request for change in project title/objectives/activities/implementing agency:
1. Change in project title and activities/workplan, which do not affect project deliverables shall be evaluated and approved by **PSTO-Tarlac**;
2. Change in implementing agency, objectives, or activities that affect project deliverables: the proponent shall be required to submit an amended project proposal and shall undergo review by the **PSTO-Tarlac** and endorsement to **DOST-III** for approval.
3. In both cases, **TAU** shall be required to submit justifications for such changes.

I. Purchase, Ownership and Accountability of Project Equipment - Project equipment authorized to be purchased using GIA funds shall be used exclusively for the project.
1. Purchase of Equipment - procurement of equipment shall be subject to the usual government procurement laws consistent with existing accounting and auditing laws, rules, and regulations. Only equipment included and identified in the approved LIB shall be purchased and shall be covered by **PAR** or **Inventory Custodian Slip (ICS)** for semi-expendable equipment.
2. Ownership of Equipment - **DOST-III** shall initially own all equipment purchased using grant funds until such are transferred to the **TAU.** The ownership of equipment maybe transferred to the **TAU** upon completion of the project as stipulated in this MOA, subject to existing government rules and regulations. **DOST-III** reserves the right to transfer ownership of such government equipment through **Property Transfer Reports (PTRs)** or execution of **Deed/s of Donation (DoD)** subject to existing government accounting and auditing laws, rules and regulations.
3. Accountability for Equipment

   The **PL**:
   a. Shall be primarily responsible for all equipment related to the project;
   b. Shall sign the corresponding **PAR** and **LEP** attested by the Property Officer of the **TAU.**

   The **DOST-III**:
   a. Shall issue **PTR/DoD** to the **TAU** upon written request after the project is completed;
   b. Reserves the right to retain the equipment in compliance with government rules and regulations.

   The **TAU:**
   a. Shall inform **DOST-III i**n the event the **PL** transfers to another government office, retires, resigns, or is dismissed/ separated from the service. That the **PL** has secured clearance from the Property and Supply Section and will not be issued clearance from financial and technical obligations unless all properties related to the project are fully accounted for.
   b. Shall record the equipment purchased out of the project funds in accordance with the **Government Accounting Manual (GAM)** subject to the provisions of the **Philippine Public Sector Accounting Standards 17**

(PPSAS 17) – Property, Plant and Equipment (PPE), the COA Circular No. 2015-002 and other pertinent issuances;

4. Record Keeping - the Property Officers of the **TAU** and **DOST-III** shall establish a complete and centralized file of records of all equipment procured out of the GIA grant which shall include the following data:
   - **a.** Agency Name:
   - **b.** Location of Equipment;
   - **c.** Project Title;
   - **d.** Current Custodian or end-user accountable for the equipment;
   - **e.** Equipment purchased with description/specification;
   - **f.** Date of Acquisition;
   - **g.** Property Number (to be provided by **TAU**);
   - **h.** Acquisition/Actual Cost.

   The Property Officers of the **TAU** and **DOST-III** shall maintain and update the directory and records of equipment yearly based on **PAR** and **PTR/DoD** issued by **DOST-III.**

J. **DOST-III** reserves the right to discontinue the project or its assistance in case of violation of this Agreement or upon determination that results which are obtained or reasonably expected do not justify further activity;

K. The **TAU** shall authorize/allow **DOST-III** to pull-out tools, equipment and other facilities acquired out of the project funds in case of inability on the part of **TAU** to successfully implement the project;

L. Any changes in the original project plans or any modifications, amendments or alterations of the foregoing terms and conditions shall not be undertaken without the knowledge and consent of all parties as long as this Agreement remains in force;

M. The **TAU** shall liquidate the Equipment Outlay by submitting to **DOST-III** a copy of the list of equipment purchased and copy of **PAR, JEV** for the recognition/booking of equipment;

N. The **TAU** shall acknowledge the assistance provided by **DOST-III** in all reports, products, papers and materials produced out of the project activities;

O. All parties agree that in matters relating to this Agreement, whether during its existence or after its termination, and also in all matters concerning the provision of this Agreement where any question, dispute or difference shall arise among parties, every such question, dispute or difference shall be settled mutually in good faith;

P. **DOST-III** and **TAU** shall be free to publish under their respective names, information generated from this joint undertaking such as the operation and performance of the project, evaluation of utilities, and other relevant findings provided due acknowledgement is given to the other party; and,

Q. Neither party shall be held liable in any way for failure to observe or perform any provision of this Agreement if such failure shall be caused by any law, rule or regulation, fortuitous events or of any cause beyond the control of the party in default.

VI. EFFECTIVITY:

This Agreement shall take effect upon signing of the **Memorandum of Agreement** by both parties and shall remain in force for one (1) year commencing upon the release of funds unless sooner terminated by either party provided that a written notice shall have been served one month prior to its termination.

IN WITNESS THEREOF, the parties in this **Memorandum of Agreement** hereunder subscribed and affixed their respective signatures this ____ of _____ 2022 at _____.

DOST-III	**TAU**
JULIUS CAESAR V. SICAT, PhD, CESO III Regional Director	**MAX P. GUILLERMO, PhD.** University President

Signed in the Presence of:

KAREN Y. DAÑEZ Provincial S&T Director PSTO-Tarlac	**AMY LIZBETH J. RICO, PhD.** Project Leader

Certified funds available:

ARIANNE D. AGUILAR
Accountant III, DOST-III

AMY LIZBETH J. RICO, PhD.

A C K N O W L E D G M E N T

Republic of the Philippines)
Province of_____) S.S.
City of _____)

BEFORE ME, a Notary Public for and in the Province of_____, this _____ day of _____ 2022, personally came and appeared the following:

KAREN Y. DAÑEZ

Name	Gov't Issued ID No.	Place and Date of Issue
DR. JULIUS CAESAR V. SICAT	Passport S0010381A	DFA-Manila June 5, 2017
DR. MAX P. GUILLERMO		

KNOWN TO ME AND TO ME KNOWN to be the same persons who executed the foregoing agreement on which the acknowledgement is written signed by the parties and then the instrumental witness on each every page thereof and acknowledgement as the entities represented.

MAX P. GUILLERMO, PhD.

WITNESS MY HAND AND SEAL on the date and place above written.

Doc No. _____
Page No. _____
Book No. _____
Series of 2022

JULIUS CAESAR V. SICAT, PhD, CESO III

ANNEX A. PROJECT PROPOSAL

Department of Science and Technology – Regional Office No. III
REGIONAL GRANTS-IN-AID PROGRAM

I. EXECUTIVE SUMMARY

A. Project Title	:	Development and Promotion of SMART Agricultural Technologies for Profitable Onion Production
B. Project Classification and Category	:	Research and Development/ Experimental Development
C. Project Proponent	:	Tarlac Agricultural University (TAU)
Office Address	:	Malacampa, Camiling, Tarlac 2306
Agency Head	:	Dr. Max P. Guillermo / University President
Contact No.	:	(049) 934 – 0216
Email Address		presoffice@tau.edu.ph
Project Leader	:	Amy Lizbeth J. Rico, PhD.
Contact No.	:	(049) 934 – 0216
Email Address	:	presoffice@tau.edu.ph
D. Project Beneficiary	:	Farmers, Farmer cooperatives, students, faculty members, researchers
E. Project Location and/or Site(s) of Implementation	:	Tarlac Agricultural University (TAU)
F. Implementing Agency	:	Tarlac Agricultural University (TAU)
G. Monitoring Agency	:	Department of Science and Technology-Regional Office III Provincial Science and Technology Center – Province
H. Cooperating Agencies	:	Department of Agriculture Local Government Units Farmers Associations
I. Project Duration	:	1 Year
J. Employment Generation	:	6
K. Total Project Cost	:	**PHP 3,697,000.00**
DOST-III RGIA	:	**PHP 3,000,000.00**
Proponent's Counterpart	:	**PHP 697,000.00**

II. RATIONALE:

In 2019, the volume of onions produced in the Philippines was approximately 222.1 thousand metric tons. In 2018, the production value of onions in the country was about 6.7 billion Philippine pesos (Onion Production in the Philippines 2019). In Central Luzon, the top producer of red onion at 19.74 thousand metric tons accounted for 51.9 percent of the country's total production. MIMAROPA followed this with 42.4 percent, and Ilocos Region, 2.6 percent. However, the production of onion in Nueva Ecija, particularly in the municipality of Bongabon (the leading producer of onion in the Philippines and probably in Southeast Asia), is expected to increase following the introduction newer and pest-resistant varieties.

Onion production fits very well in the rice farming system in selected regions of the country. These are usually grown after rice towards the dry season when water is not sufficient for another rice crop. They are growing both in the local and export markets. Climate mostly affects the production of vegetables and high value crops. The climate of the Philippines is tropical and maritime. It is characterized by relatively high temperatures, high humidity, and abundant rainfall. The drought periods commonly cause water shortages and impose additional restrictions which reduce irrigated acreage, impacting farming productivity and profitability. Under these circumstances, farmers often seek alternatives to increase their productivity and net return per unit of water applied by converting from furrow to drip irrigation systems and implementing irrigation scheduling strategies. However, many producers feel that the costs of employing these water saving technologies far exceed the benefit of increased vegetable yields and water savings. To reduce the economic risk of farming operations it is important to make sound decisions when selecting an irrigation method for a particular crop.

Plant–water relations are highly susceptible to changes in temperature and precipitation, and physiological changes are more likely to be impacted by extreme changes in these parameters than by changes in mean climate. Plants' response to climate change varies according to the plant species and developmental stage of the plant. There are species-specific thresholds for different plants, and their responses, such as elongation of roots, disturbance in growth angle of roots, and reduction in yield, vary among different species of plants. The key factors of climate, namely temperature, precipitation, and greenhouse gases, significantly hampered pest infestation, soil fertility, irrigation resources, physiology, and plants' metabolic activities. Several mitigation and adaptation strategies have been developed to offset the deleterious impact of climate change on agricultural sustainability. These technologies include greenhouse and drip irrigation technology. These technologies significantly reduce the effects of climate change on crops and make them more suited to the climate by minimizing the unfavorable impacts. Climate change is predicted to cause huge economic losses at both the micro and macro levels that can be mitigated through these interventions. But these interventions must be organized at the regional or local level to improve their efficacy. Mitigation and adaptation strategies are expected to increase farmers' income without compromising agricultural-production sustainability. The future of climate change and its associated impacts is highly unpredictable, which makes planning for mitigation and adaptation a bit complex. Suitable varieties need to be developed that could adapt to climatic variations, along with planned agronomic management and crop pest control. Farmers need to be educated regarding various climate-smart technologies and be provided training to simplify their use at the field level. Thus, this project proposal.

III. OBJECTIVES:

a. General Objective: The general objective of the project is to develop and promote SMART agricultural technologies for profitable onion production.

b. Specific Objectives:

1. To increase the harvest of onion by establishing a smart technology;
2. To map the onion production areas in Tarlac;
3. To conduct a cost - benefit analysis of onion production using smart technology;
4. To develop and audio-video presentation for the dissemination of the smart technology for onion production; and,
5. To publish in a scientific peer-reviewed journal to further disseminate the outcome of the project.

IV. PROJECT DESCRIPTION:

According to Philippine Statistics Authority, the volume of onions produced in the Philippines in 2021 amounted to approximately 218 thousand metric tons, reflecting a decline from the previous year's total. Overall, the production volume of onions in the country fluctuated in the past decade. This is driven by rising heat and unpredictable weather, the pest has devastated farms and caused a nationwide onion shortage.

In the Philippines, armyworm - a pest known locally as harabas - was first reported in Pangasinan in 2016, when a major infestation ravaged over 1,000 hectares of land. Since then, there have been infestations about every three years. The resulting drop in production has contributed to a countrywide onion shortage.

A 2019 paper by researchers from the National Crop Protection Center at the University of the Philippines Los Baños noted that, along with extreme climate events triggered by El Niño - a warming of ocean surface temperatures in the Pacific that occurs every few years - the overuse of pesticides also played a role in the outbreak.

Based on PSA data for 2020, the country's major producing regions are Ilocos, Cagayan Valley, Central Luzon, and MIMAROPA. By type, bulb onions comprise 79% of the total area (14,453 ha) while shallots take up 21% (3,938 ha). From 2011 to 2020, the average annual growth in production is 10.72% (128,837 mt to 229,539 mt) while area planted ha an average annual growth of 4.91% (14,641 to 18,391 ha).

From 2011 to 2019, onion production in the Philippines has shown improvements but not quite as much as Indonesia having almost doubled their harvest volume and area within the timeframe considered for this roadmap. In terms of actual yield, however, we are at par. For 2019, despite having the lowest total production and area harvested among onion-producing ASEAN countries, Thailand's yield values are impressive at 26.23 mt per ha followed by Myanmar (14.46 mt/ha), Philippines (11.13 mt/ha), Indonesia (9.93 mt/ha), and lastly, Vietnam (4.02 mt/ha).

In a study conducted by Enciso, et.al. in 2018, the subsurface drip irrigation (SDI) system allowed more frequent application at smaller irrigation depths than the furrow irrigation system. The irrigation efficiencies were also higher for the SDI system (81–88%) than the furrow system (54–67%). The irrigation use efficiency obtained with the SDI system ranged from 17.5 to 25.2 kg m−3 and from 4.2 kg m−3 to 6.2 for the furrow system in both locations. It was concluded that drip irrigation systems more than doubled yields and increased onion size while using at least 44% less water. This was due to SDI system allowing for more frequent application and smaller irrigation depths with higher irrigation efficiency than furrow irrigation systems.

In 2018, Abouabdillah, et.al. conducted a study on the effect of sustainable deficiency irrigation and irrigation frequencies on the growth, yield and quality of the onion crop. Results showed no significant effect on growth parameters and relative chlorophyll content. It also suggested applying 75 % of water requirements, saving 25% of irrigation water without having a significant effect on production and quality.

As a measure to help small scale farmers to cope with the event of climate change and sustain their production, this project aims at providing support to farmers to establish net house and drip irrigation facilities to optimize water use, reduce the accessibility of insects and animals that have the potential to damage or destroy plants. The net house technology reduces exposure to extreme weather conditions such as torrential rain and droughts. This project will also provide opportunities for farmers to cultivate during the dry season, to grow high value crops and improve their crop yield and income.

V. STRATEGY/MECHANISM OF IMPLEMENTATION:

a. Technical Aspect:

a.1 Identification of project site

Tarlac Agricultural University will be the project site in the development of smart technology for onion production. This will serve as the area for demonstration of the developed technology for farmers and other stakeholders.

a.2 Development of smart technology for onion production

Three (3) greenhouses with multi-layer planting frames will be used for onion production. These will serve as replication in the development of the smart technology for onion production. The red variety of onion will be used since it is the most in demand variety of onion in the country. Four (4) layers spaced at 40 cm will be used. UV lighting will be incorporated to the system to provide the crops with the needed light to survive.

a.3 Profiling and Mapping of Onion Production Areas

Survey will be conducted to the onion farmers within Tarlac Province to determine the available area and production of onion. Data gathered will be mapped through QGIS to determine the possible area of market of onion.

a.4 Cost – Benefit Analysis

The total cost of production and income from the production of onion using smart technology will be computed. Through the cost-benefit analysis, the possibility of onion production using the developed technology in comparison to the traditional planting systems will be determined.

a.5 Project Dissemination

An audio-visual presentation of the developed technology for onion production will be produced. This will be posted in different social media platform to disseminate the developed technology and to inform the farmers and the community the possibility of planting onion during offseason with higher production.

a.6 Publication

An article on the project will be published in a peer-reviewed journal to further disseminate the outcome of the project.

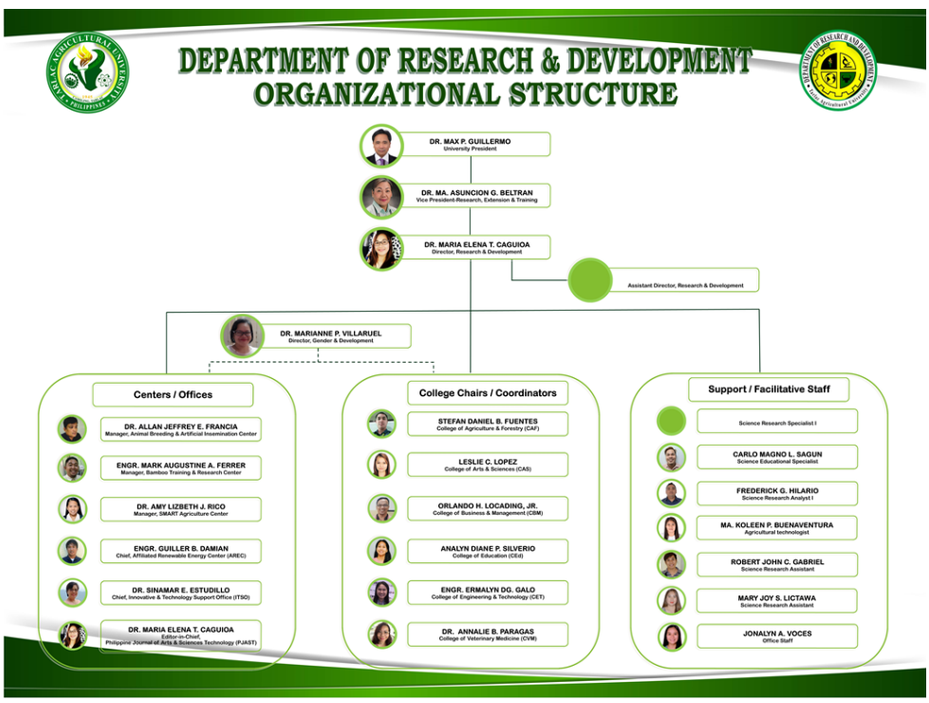
b. Production Aspect:

Current Practice of Onion Production	Intervention in Onion Production
Onion production in the Philippines is done in an open field from October to January.	Onion will be planted inside greenhouse with the possibility of year-round production because of the protective structure that can prevent the crops from infestation of diseases that affect onion during rainy season
Furrow irrigation or sometimes flooding is done in onion production	Drip irrigation will be used in watering the onions. Advantages of using this system include: 1. restricts excessive root growth and reduces the risk of bulbs splitting. 2. water goes directly to the roots, leaving the leaves dry 3. lack of leaf moisture significantly reduces foliar diseases such as Downey Mildew or Peronospora, minimizing crop loss and fostering up to 30% higher yields 4. water conservation

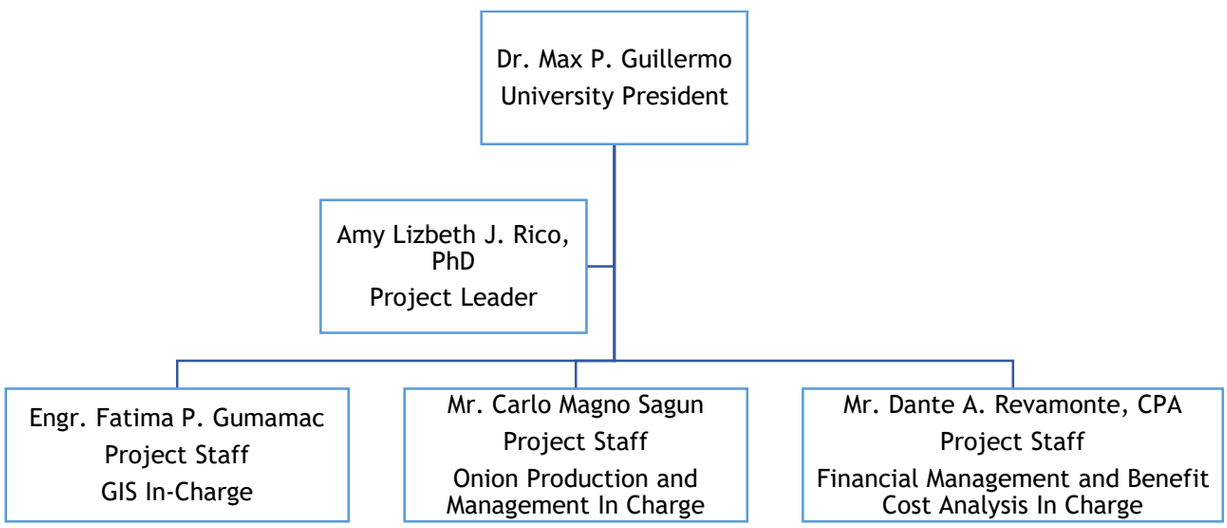
Application of pesticides and other chemicals for pest and disease management	With the use of greenhouses, pest and diseases infestation can be eliminated
Potential yield is 12,000 kg per hectare (Department of Agriculture, 2019)	Using the greenhouses, three (3) cropping cycles can be projected since year-round production can be obtained. The 12,000 kg production for a hectare can be obtained in 1/3 hectare of land. In addition, multi-layer planting frames will be used which will produce more harvest at lesser area of production.

c. Organization and Management Aspect:

A. Functional Organizational Structure



B. Project Organizational Chart



To efficiently manage and implement the project, the Project Team will comprise of staff with specialization in irrigation, agricultural structures, geographic information system, agriculture, and business management. Each member will work on the different components of the project such as onion production, mapping, benefit-cost analysis and marketing, and training. The following are the qualifications of the project team:

Project Team	Responsibilities	Qualification
Amy Lizbeth J. Rico, Ph.D.	Oversee the overall conduct of the project In charge of the vertical agriculture models to be used	Faculty, College of Engineering and Technology, Tarlac Agricultural University Specialization: Crop Process Engineering
Engr. Fatima P. Gumamac	Assist in the conduct of the project. In charge of the mapping of onion production areas in Tarlac Province	Faculty, College of Engineering and Technology, Tarlac Agricultural University Manager, TAU SMART Agriculture Center Specialization: Irrigation, Climate-Smart Agriculture
Mr. Carlo Magno L. Sagun	Assist in the conduct of the project. In charge of the production and cultural management of onion	Faculty, College of Agriculture and Forestry, Tarlac Agricultural University Specialization: Horticulture, Plant Pathology and Biotechnology, Plant Genetics
Mr. Dante A. Revamonte	Assist in the conduct of the project. In charge of the benefit-cost analysis of onion production using the different technologies	Specialization: Market Development, Finance and economics

d. Financial Aspect:

In relation to the TAU counterpart for the Budgetary requirements, office supplies (bond paper, ballpen, folders, and the like) that are available at the University can be utilized for the implementation of the project. Also, the University has existing net houses and drip irrigation systems that can be used in the experimental stage of the project prior to its implementation. The University has also cultivator – tiller that can be used in the land preparation for onion production. In addition, available manpower/labor at the University for onion production can also be utilized. Other details sa computers, printers, digital camera, etc.

The required funding for the project will be requested from DOST III through the Grants-in-Aid Program. TAU will provide the net houses and drip irrigation systems that can be used in the experimental stage of the project prior to its implementation. TAU also to provide cultivator – tiller that can be used in the land preparation for onion production. In addition, available manpower/labor at the University for onion production can also be utilized**. A total of twenty four percent (24%) of the total project cost will be shouldered by TAU and all other incidental expenses not included in the proposal**

e. Marketing Aspect:

Demand for onion is always present since it is a universally known condiment used in various cuisines. Profitability for onion is projected to be at return on investment of 147% for onion multiplier and 197% for bulb onion (PSA, 2019). Locally produced onion especially the red varieties ar brought and consumed mostly by households, in the Value Chain Analysis prepared by DA-PRDP, it was stated that about 75% of locally produced onion are sold in wet markets while the other 15% and 10% directly goes to supermarkets and fast-food chains, hotels, restaurants, and processors.

As per Volza's Philippines Export data, red onion export shipments from Philippines stood at 9, exported by 4 Philippines Exporters to 3 Buyers. Philippines exports most of its Red onion to Japan, Kenya and Taiwan and is the 2nd largest exporter of Red onion in the World.

f. Monitoring and Evaluation:

All operations during and after the implementation of the project shall be subjected to quarterly and yearly monitoring and evaluation (M&E) to update all stakeholders on the development, needs and problems met in the implementation of the project. DOST and TAU in collaboration and coordination with all other stakeholders will conduct regular M&E of all activities to maintain transparency and accountability required in the management and operation of the project. In addition, monthly M&E will be regularly conducted to assess the progress of activities and to make the project more dynamic and relevant to the needs and aspirations of the target beneficiaries of the project.

VI. WORKPLAN (Gantt Chart):

ACTIVITIES	MONTH											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Procurement of supplies and equipment	X	X	X	X	X							
2. Hiring of personnel	X	X	X	X								
3. Identification of project site			X									
4. Development of smart technology for onion production						X	X	X	X	X		
5. Profiling and mapping of onion production areas in Tarlac			X	X	X	X	X	X				
6. Cost-benefit analysis									X	X	X	
7. Project dissemination									X	X	X	
8. Publication to journal										X	X	X

VII. EXPECTED OUTPUTS:

1. Offseason onion production using smart technology that would increase production by 10%
2. Map of onion production areas in Tarlac Province
3. Cost – benefit analysis of onion production using the smart technology for onion production
4. one (1) audio-visual presentation of the developed technology
5. one (1) publication to a peer-reviewed journal

VIII. BUDGETARY REQUIREMENT BREAKDOWN

ITEMS OF EXPENDITURES	TAU	DOST III 2022 GIA
I. Personal Services		
Direct Cost		
Salaries		
1 Research Assistant @ 21,000 per month	252,000.00	252,000.00
Honoraria		
1 Project Leader @ 8,800 per month		105,600.00
Sub-total Direct Cost for PS	**252,000.00**	**357,600.00**
Indirect Cost		
Salaries		
PL (15% salary per month)	90,000.00	
Sub-total Indirect Cost for PS	90,000.00	
Sub-total for PS	**342,000.00**	**357,600.00**
II. Maintenance and Other Operating Expenses (MOOE)		
Direct Cost		
Travelling Expenses	50,000.00	50,000.00
Communication Expenses		
Telephone and internet expenses	15,000.00	90,000.00
Office Supplies and Materials	30,000.00	100,000.00
Agricultural Supplies	50,000.00	250,000.00
Representation Expenses	50,000.00	100,000.00
Professional Services (Labor, Consultancy, etc.)		301,850.00
Other Maintenance and Operating Expenses		280,550.00
Sub-total Direct Cost for MOOE	**205,000.00**	**1,172,400.00**
Indirect Cost		
Office Supplies		10,000.00
Printing and Binding Expenses		10,000.00
Sub-total Indirect Cost for MOOE	**0.00**	**20,000.00**
Sub-total for MOOE	**205,000.00**	**1,192,400.00**
III. Equipment Outlay		
Three (3) greenhouses	50,000.00	500,000.00
Three (3) sets Multi-layer planting systems	50,000.00	450,000.00
Solar-powered irrigation system with tank (complete accressories and with warranty)	50,000.00	500,000.00
Sub-total for EO	**150,000.00**	**1,450,000.00**
GRAND TOTAL	**697,000.00**	**3,000,000.00**

ANNEX B: LINE – ITEM – BUDGET

Project Title: **Development and Promotion of SMART Agricultural Technologies for Profitable Onion Production**

ITEMS OF EXPENDITURES	TAU	DOST III 2022 GIA
I. Personal Services		
Direct Cost		
Salaries		
2 Research Assistant @ 21,000 per month	252,000.00	252,000.00
Honoraria		
1 Project Leader @ 8,800 per month		105,600.00
Sub-total Direct Cost for PS	**252,000.00**	**357,600.00**
Indirect Cost		
Salaries		
PL (15% salary per month)	90,000.00	
Sub-total Indirect Cost for PS	90,000.00	
Sub-total for PS	**342,000.00**	**357,600.00**
II. Maintenance and Other Operating Expenses (MOOE)		
Direct Cost		
Travelling Expenses	50,000.00	50,000.00
Communication Expenses		
Telephone and internet expenses	15,000.00	90,000.00
Office Supplies and Materials	30,000.00	100,000.00
Agricultural Supplies	50,000.00	250,000.00
Representation Expenses	50,000.00	100,000.00
Professional Services (Labor, Consultancy, etc.)		301,850.00
Other Maintenance and Operating Expenses		280,550.00
Sub-total Direct Cost for MOOE	**205,000.00**	**1,172,400.00**
Indirect Cost		
Office Supplies		10,000.00
Printing and Binding Expenses		10,000.00
Sub-total Indirect Cost for MOOE	**0.00**	**20,000.00**
Sub-total for MOOE	**205,000.00**	**1,192,400.00**
III. Equipment Outlay		
Three (3) greenhouses	50,000.00	500,000.00
Three (3) sets Multi-layer planting systems	50,000.00	450,000.00
Solar-powered irrigation system with tank (complete accessories and with warranty)	50,000.00	500,000.00
Sub-total for EO	**150,000.00**	**1,450,000.00**
GRAND TOTAL	**697,000.00**	**3,000,000.00**

ANNEX C. DOST FORMS

DOST Form 6
EXECUTIVE SUMMARY FOR THE SEMI-ANNUAL PROGRESS REPORT
Attach DOST Forms 8, 11 and 12)

(1) Program Title:
Project Title:
Project Leader/Gender:
Agency:
Address/Telephone/Fax/Email:

(2) Cooperating Agencies

(3) Site/s of Implementation (Barangay / Municipality / District / Province / Region / Country)
Base Station: _____
Site/s of Implementation: _____

(4) Project Duration (number of months)	**(5) Project Start Date**	**(6) Project End Date**

(7) Major Accomplishments

A. Actual accomplishment of the project (via-a-vis the objectives)

OBJECTIVES	**ACCOMPLISHMENTS**			
	TARGET	**ACTUAL**	**PERCENTAGE (%)**	
			FOR THE PERIOD	**CUMULATIVE (FROM START)**

B. Catch-up Plan

C. Expected Outputs / 6Ps (Expected Outputs should be measurable.)

	EXPECTED OUTPUTS	**ACTUAL OUTPUTS**
Publications		
Patents/IP		
Products		
People Services		
Places and Partnerships		
Policy		

(8) Problems/Concerns

(9) Suggested solutions to the above concerns

DOST Form 7
EXECUTIVE SUMMARY FOR THE ANNUAL PROGRESS REPORT
(Attach DOST Forms 6, 8, 9, 11, 12)

(1) Program Title:
Project Title:
Project Leader/Gender:
Agency:
Address/Telephone/Fax/Email:

(2) Cooperating Agency/ies

(3) Site/s of Implementation (Barangay / Municipality / District / Province / Region / Country)
Base Station: _____
Site/s of Implementation: _____

(4) Project Duration (number of months)	**(5) Project Start Date**	**(6) Project End Date**

(7) Major Accomplishments

A. Actual accomplishment of the project (via-a-vis the objectives)

OBJECTIVES	**ACCOMPLISHMENTS**		
	TARGET	**ACTUAL**	**PERCENTAGE (%)**

B. Catch-up Plan

C. Expected Outputs / 6Ps (Expected Outputs should be measurable.)

	EXPECTED OUTPUTS	**ACTUAL OUTPUTS**
Publications		
Patents/IP		
Products		
People Services		
Places and Partnerships		
Policy		

(8) Risk Management Plan

OBJECTIVES	**(9) RISKS AND ASSUMPTIONS**	**(10) STRATEGIES**	**(11) ACTIONS TO BETAKEN**

(12) Problems/Concerns

(13) Suggested solutions to the above concerns

JULIUS CAESAR V. SICAT, PhD, CESO III	MAX P. GUILLERMO, PhD.	KAREN Y. DAÑEZ	AMY LIZBETH J. RICO, PhD.

DOST Form 8

SEMI-ANNUAL/ANNUAL FINANCIAL REPORT

(To be submitted by accountant and researcher within one month after due date)

as of ____________________

(1) Title Program: Project:		(2) Project Leader/Gender	(3) Source of Fund
(4) Project Duration (number of months): Original: Project Start Date: Project End Date: Revised (if applicable): Project Start Date: Project End Date:	(5) Date when fund was received by Implementing Agency	(6) Implementing Agency: Implementation Base Station:	

(7) Particulars	(8) Total Approved Budget for the Year	(9) Latest Reprogrammed Budget as of ____ (if applicable)	(10) Releases ___Year of Implementation			(11) Disbursements ___Year of Implementation			(12) Accounts Payable To Date	(13) Total Expenditures To Date	(14) Unreleased Budget To Date	(15) Unexpended Budget To Date
			Total Previous Quarter	Total This Quarter	Total To Date	Total Previous Quarter	Total This Quarter	Total To Date				
I. Personal Services												
A. Direct Cost												
1. Salaries/Wages												
2. Honoraria												
B. Indirect Cost (Separate amounts for coordinating agency and implementing agency)												
1.Salaries												
2. Honoraria												
Sub-Total												
II. Maintenance and Operating Expenses												
A. Direct Cost												
1. Travel												
2. Supplies & Materials												
3. Communications												
4. Other Services												
B. Indirect Cost (Separate amounts for coordinating agency and implementing agency)												
1. Travel												
2. Supplies & Materials												
3. Communications												
4. Other Services												
Sub-Total												
III. Equipment Outlay (Direct/Indirect Cost)												
Sub-Total												
T O T A L												

CERTIFIED CORRECT:	VERIFIED: (For NGOs or Privately owned institutions)	NOTED:	APPROVED:
Chief Accountant PTR/License No.__	Auditor PTR/License No.__	Program/Project Leader	Agency Head or Authorized Representative

Note: 1) Audited Financial Report (AFR) will be submitted at the terminal year of the project; For Government Agencies, financial report duly received by COA will be submitted awaiting AFR.
2) The FR shall be itemized in accordance with the approved line-item budget (LIB).
3) A Report of Checks Issued (Appendix 35 of the Government Accounting Manual (GAM) Vol. II) and Report of Disbursements (Appendix 41 of the GAM Vol. II) certified correct by the Certified Public Accountant, approved by the Head of Implementing Agency (IA) and duly audited by the Auditor of the IA, List of Equipment Purchased (LEP) with corresponding Property Acknowledgement Report (PAR), Journal Entry Voucher (JEV) (Appendix 36 of the GAM Vol. II) related to the equipment purchased, Schedule of Accounts Payable, and Report of Income/Interest Generated/Earned will be submitted along with the Semi-Annual/Annual Financial Report.

DOST Form 9

SCHEDULE OF ACCOUNTS PAYABLE

As of _____

(To be submitted by accountant and researcher together with DOST Form 8)

(1) Title **Program:** **Project:**			
(2) Project Leader		**(3) Implementing Agency**	
(4) Payee	**(5) Particulars**	**(6) Amount**	**(7) Remarks**

CERTIFIED CORRECT:

Chief Accountant

APPROVED:

Coordinator/Leader

JULIUS CAESAR V. SICAT, PhD, CESO III | MAX P. GUILLERMO, PhD. | KAREN Y. DAÑEZ | AMY LIZBETH J. RICO, PhD.

DOST Form 12
LIST OF EQUIPMENT PURCHASED
(To be accomplished by property/supply officer, accountant and researcher together with DOST Form 8)

(1) Title **Program:** **Project:**	**(2) Implementing Agency** **Project Duration (number of months):** **Project Start Date: _____ Project End Date: _____**
(3) Project Leader/Gender	**(4) Report for:** **Yr_____ Qtr_____ Period Covered _____**

(5) Location of Equipment	(6) Person Accountable	(7) Equipment Per LIB		(8) Amount Per LIB	(9) Actual Equipment Purchased		(10) Actual Amount		(11) Serial Number	(12) Date Acquired	(13) Inventory Control No.	(14) Condition
		(a) Quantity	(b) Description		(a) Quantity	(b) Description	(a) Unit Cost	(b) Total Cost				
(15) Total Amount				_____				_____				

Prepared by: _____ Property/Supply Officer

Certified by: _____ Accountant

Verified by: _____ Project Leader

Noted by: _____ Agency Head

Inventoried by: _____ DOST Inventory Team Leader

DOST Form 15
EXECUTIVE SUMMARY FOR THE TERMINAL REPORT
(Attach DOST Forms 8, 9 and 12)

(1) Program Title:
Project Title:
Project Leader/Gender:
Agency:
Address/Telephone/Fax/Email:

(2) Cooperating Agencies

(3) Site/s of Implementation (Barangay / Municipality / District / Province / Region / Country)
Base Station: _____
Site/s of Implementation: _____

(4) Project Duration (number of months)	
Original: **Project Start Date:** **Project End Date:**	**Revised (if applicable):** **Project Start Date:** **Project End Date:**

(5) Major Accomplishments

A. Actual accomplishment of the project (via-a-vis the objectives)

OBJECTIVES	ACCOMPLISHMENTS

B. Expected Outputs / 6Ps (Expected Outputs should be measurable.)

	EXPECTED OUTPUTS	ACTUAL OUTPUTS
Publications		
Patents/IP		
Products		
People Services		
Places and Partnerships		
Policy		

(6) Risk Management Plan

OBJECTIVES	RISKS AND ASSUMPTIONS	ACTIONS TAKEN

(7) Problems/Concerns Encountered	**(8) Suggested solutions**

DOST Form 16

TERMINAL AUDITED FINANCIAL REPORT

(To be submitted by accountant and researcher together with DOST Forms 11, 12, and 13)

(1) Title **Program:** **Project:**				**(2) Project Leader/Gender**	**(3) Project Duration (number of months)** **Original: Project Start Date:** **Project End Date:** **Revised (if applicable): Project Start Date:** **Project End Date:**	
(4) Implementing Agency/Research & Development Station						
(5) Particulars	**(6) Total Approved Budget**	**(7) Latest Approved Reprogrammed Budget (if applicable)**	**(8) Total Releases**	**(9) Total Expenditures**	**(10) Total Unreleased Budget**	**(11) Unexpended Balance/Savings**
I. Personal Services						
A. Direct Cost						
1. Salaries/Wages						
2. Honoraria						
B. Indirect Cost (Separate amounts for coordinating agency and implementing agency)						
1.Salaries						
2. Honoraria						
Sub-Total						
II. Maintenance and Operating Expenses						
A. Direct Cost						
1. Travel						
2. Supplies & Materials						
3. Communications						
4. Other Services						
B. Indirect Cost (Separate amounts for coordinating agency and implementing agency)						
1. Travel						
2. Supplies & Materials						
3. Communications						
4. Other Services						
Sub-Total						
III. Capital Outlay						
A. Direct Cost						
B. Indirect Cost						
Sub-Total						
T O T A L						

CERTIFIED CORRECT:

Chief Accountant
PTR/License No.__

VERIFIED:

Auditor
PTR/License No.__

NOTED:

Project Leader

APPROVED:

Agency Head or
Authorized Representative

Note: 1) Audited Financial Report (AFR) will be submitted at the terminal year of the project; For Government Agencies, financial report duly received by COA will be submitted awaiting the AFR.
2) The FR shall be itemized in accordance with the approved line-item budget (LIB).

ANNEX D. REPORT OF CHECKS ISSUED

Appendix 35

REPORT OF CHECKS ISSUED

Period Covered: _____

Entity Name : _____
Fund Cluster : _____
Bank Name/Account No. : _____

Report No.: _____
Sheet No.: _____

Check		DV/Payroll No.	ORS/BURS No.	Responsibility Center Code	Payee	UACS Object Code	Nature of Payment	Amount
Date	Serial No.							

C E R T I F I C A T I O N

I hereby certify on my official oath that this Report of Checks Issued in _____ sheet(s) is a full, true and correct statement of all checks issued by me during the period stated above for which Check Nos. _____ to _____ inclusive, were actually issued by me in payment for obligations shown in the attached disbursement vouchers/payroll.

_____
Name and Signature of Disbursing Officer/Cashier

_____ _____
Official Designation Date

ANNEX E. REPORT OF CASH DISBURSEMENTS

Appendix 41

REPORT OF CASH DISBURSEMENTS
Period Covered _____

Entity Name : _____ **Report No. : _____**
Fund Cluster : _____ **Sheet No. : _____**

Date	DV/Payroll No.	ORS/BURS No.	Responsibility Center Code	Payee	UACS Object Code	Nature of Payment	Amount

CERTIFICATION

I hereby certify on my

_____
Name and Signature of Disbursing Officer/Cashier

_____ _____
Official Designation Date

ANNEX F. PROPERTY ACKNOWLEDGEMENT RECEIPT (PAR)

Appendix 71

PROPERTY ACKNOWLEDGMENT RECEIPT

Entity Name : _____

Fund Cluster: _____ **PAR No.: _____**

Quantity	Unit	Description	Property Number	Date Acquired	Amount

Received by:	**Issued by:**
_____	_____
Signatue over Printed Name of End User	Signatue over Printed Name of Supply and/or Property Custodian
_____	_____
Position/Office	Position/Office
_____	_____
Date	Date

ANNEX G. JOURNAL ENTRY VOUCHER (JEV)

Appendix 36

JOURNAL ENTRY VOUCHER **Entity Name :** ____________________________ **Fund Cluster :** ____________________________	**JEV No.:**________ **Date :**

Responsibility Center	**ACCOUNTING ENTRIES**				
	Accounts and Explanation	UACS Object Code	Amount		
				Debit	Credit
			P		
		TOTAL			

Prepared by:	Certified Correct:
______________________________ Accounting Personnel	______________________________ Head, Accounting Division/Unit

Attachement.1

Bill of Materials of the Greenhouse (10m x 5m x 3.10m)

QTY	UNITS	ITEMS
6	pcs	GI Pipe, 1.0" dia #20
61	pcs	GI Pipe, 1/2" dia #20
34	pcs	GI Pipe, 3/4" dia #20
2	pcs	GI Pipe, 1 1/4" dia #20
2	pcs	Deformed Bar, 10 mm x 20
5	pcs	Hack saw blade, sanvick
20	kg	Welding rod, 1/8" wipweld
2	pc	Grinding Stone, 4"
0.5	gal	Metal Primer
0.5	gal	Paint thinner
2	pcs	Paint Brush
15	kg	GI Wire #12
10	kg	GI Wire #16
2000	pcs	Hardiflex Screw
2	pcs	Hardiflex screw Adaptor
25	pcs	Electrical PVC,¬†Orange
8	bags	Portland Cement
0.33	roll	Greenhouse plastic 11.5x 25 m(150 mc)
1	roll	Greenhouse net, 4 m x 60, (32x32 mesh)

Attachement.2

Cost analysis of peak season and offseason onion production

PARTICULARS	COST (Php)
A. Labor (Php 450/MD)	
Seed bedding	
Seed bed Preparation (5 MD)	1,250.00
Plot preparation (3 MD)	750.00
Seed sowing (2 MD)	500.00
Collection and placement of rice hull on plot (5 MD)	1,250.00
Care and maintenance of seedlings	750.00
Weeding of seedbed (10 MD)	2,500.00
Daily watering of seedbed (5 MD)	1,250.00
Plowing (3 MAD)	900.00
Harrowing (2 MAD)	600.00
Manure application (15 MAD)	3,750.00
Pulling of seedlings (15 MD)	3,750.00
Planting (30 MD)	7,500.00
Irrigation (10 MD)	2,500.00
Side dressing (10 MD)	2,500.00
Spraying (10 MD)	2,500.00
Weeding (30 MD)	7,500.00
Harvesting (20 MD)	5,000.00
Miscellaneous activities (20 MD); bagging, cleaningm sortingm final bagging	5,000.00
	49,750.00
B. Materials	
Seeds (400 kg)	15,000.00
Animal manure (100 bags) Fertilitizer	20,000.00
14-14-14 (3 bags)	3,441.63
16-20-0 (2 bags)	1,989.78
0-0-60 (3 bags)	4,047.00
Urea (1 bag)	1,140.12
Chemical sprays	5,000.00
Fuel and oil	5,000.00
Miscellaneous activities (20 MD); harvesting, hauling, etc)	5,000.00
	60,618.53
GRAND TOTAL	110,368.53
GROSS INCOME (12,000 kg@Php29/kg)	348,000.00
GROSS INCOME (12,000 kg@Php100/kg)	1,200,000.00
NET INCOME (peak season)	237,631.47
NET INCOME (off season)	1,089,631.47

Attachement.3

Cultural practices in onion production

Site Selection/Soil Type	Bulb onions grow well in friable and well-drained loam soil with good water holding capacity. Onion requires cooler weather during the early stages of growth and a dry atmosphere with moderately high temperature for bulb development and maturation for best growth and bulb quality. Planting can be done as early as October for red onions.
Seedbed Preparation	The seedbed soil must be loose and friable. This is attained by covering the area with rice hull about 3cm thick and then burned. Plow and harrow the seedbed twice. Prepare seedbed with a dimension of 1 x 10cm and raise it to at least 15-20 cm from the ground. Sow 0.5kg of seeds per seedbed at ten seedbeds, enough for 1 hectare.
Seedling Production	A 1-ha production area requires ten cans (1kg/can) of seeds. A 300-500 m2 seedbed produces enough transplants for one ha. Prepare beds 1 m wide & incorporate animal manure and rice hull. Line sows 3-5 kg seeds in rows set across the bed 7-10 cm apart. Distribute seeds thinly and evenly cover the seeds lightly with compost and mulch with rice straw or grass clippings to maintain adequate soil moisture and protect the seedbed against direct sunlight and rain with nylon net removable plastic tunnels. Reduce watering and expose seedlings to full sunlight one week before transplanting.
Land preparation	Land preparation is done one month before transplanting. The use of tractor-driven implement requires 1-2 plowing & harrowing operations. Some farmers also used to carabao-draw implements, especially those areas with less than 0.5 hectares.
Transplanting	Transplant seedlings 4-5 weeks after sowing gently uproot the seedlings to prevent root damage. Plant at 15 cm between rows and 3-5 cm between transplants can also be practiced. Use markers for proper spacing & to facilitate transplanting. After marking, use dibbles to make holes. Plant deep enough but not too profound. Care must be taken so as not to damage the basal portion of the plant. Place the white portion of the plant below the soil surface. Press the soil firmly around the basal portion. Irrigate the field before and after transplanting.
Fertilizer application	In the absence of soil analysis, a 1-ha production area requires 8.5-11.5 bags of ammonium sulfate (21-0-0), 6.5-26.5 bags superphosphate (0-18-0), and 2-4 bags muriate of potash (0-0-60). Apply all of 0-

	18-0 & half of 21-0-0 & 0-0-60 as basal fertilizer. Side dressed the remaining 21-0-0 & 0-0-60 at 30, 45 & 60 days after transplanting. High nitrogen rates tend to shorten the storage life of onions. Combine herbicide application with hand weeding to produce a good quality crop.
Weeding and cultivation	The weeding operation will start one month after transplanting. Repeat the operation as the need arises.
Irrigation	Bulb onions require adequate moisture for steady, continuous & desirable growth. Depending on soil types, irrigation varies between 3- and 5-days interval depending on the soil condition. Stop irrigation 2- 3 weeks before harvest, or when 20-30% of the tops fold over. The last irrigation should be a light one. It needs 13-15 times for irrigation of onion from field transplanting until harvest.

Attachement.4

Breakdown for the Professional Services and Other Maintenance and Operating Expenses

Professional Services	**301,850.00**
Labor @ 450/day (additional manpower for onion production)	211,850.00
Consultant @ 750/hr for consultancy service of an onion expert and resource speaker during training on onion production using drip irrigation and net house technology	90,000.00
Other Maintenance and Operating Expenses	**280,550.00**
Emergency purchase of supplies, wages and salaries not included in MOOE	