DOST Form 3

NON-R&D PROJECT PROPOSAL

(Technology Transfer, S&T Promotion and Linkages, Policy Advocacy, Provision of S&T Services, Human Resource Development and Capacity-Building)

I. PROJECT PROFILE

(1) Program Title: Grants-in-Aid
Project Title: Establishment of Model Farm for Smart and Sustainable Irrigation for High-value Crop Production of Young Farmers in Odiongan, Romblon

(2) Project Leader/Sex: Hon. Ricmel S. Falqueza/Male
Agency (smallest unit)**:** Mayha 4-H Club
Address/Telephone/Fax/Email (Barangay, Municipality, District, Province, Region)**:** Brgy. Mayha, Odiongan, Romblon

(3) Cooperating Agency/ies (Name/s and Address/es)**:** DA, DA-ATI, TESDA

(4) Implementing Agency (Municipality / District / Province / Region)
Base Station: Mayha, Odiongan, Romblon
Other Implementation Site (s): None

(5) Project Duration (number of months): 12 months implementation, 24 months monitoring
Project Start Date: January 2024 **Project End Date:** December 2024

(6) Total Project Cost: PhP 4,237,872.33 (indicate Counterpart Funds; use Form 4 for the Line-Item Budget)

Implementing Agency/ies	PS	MOOE	EO	Total
A. Requested Fund				
GIA		PhP603,872.33	PhP2,574,000.00	PhP 3,177,872.33
B. Counterpart Fund		**MOOE**	**Fixed Assets**	
4H Club		PhP60,000.00	PhP1,000,000.00	PhP1,060,000.00
TOTAL		**PhP663,872.33**	**PhP3,574,000.00**	**PhP4,237,872.33**

II. PROJECT SUMMARY

(7) Executive Summary (not to exceed 200 words)

This project aims to establish a model farm for smart and sustainable irrigation for high-value crop (HVC) production of young farmers at Brgy. Mayha, Odiongan, Romblon. The farm will be a pilot demo farm to showcase a Solar-powered Automated Drip Irrigation System across an 8000sqm. agricultural land. The model farm which will serve as both training ground and production facility will feature a 150sqm. processing area, and roughly 2000sqm. field where young and aspiring farmers could hone their skills. The drip irrigation system will include high-quality solar-assisted power generation system, moisture sensors, automated drips and its control system, data logger, and accessories (emitters, pipes, valves, filters). This technology is expected to increase farm productivity through accurate, convenient, and efficient crop irrigation while maintaining environment-friendly power generation.

While the model farm will produce HVCs like cucumbers, eggplants, string beans, bitter gourd, squash, bell peppers, chili peppers, okra, and tomatoes, it will also serve to encourage other farmers and communities to adopt smarter irrigation methods leading to increased crop productivity and water conservation. The innovation also seeks to inspire more youth to invest in agriculture through eliminating the idea that farming is hard work and that there are available technologies for smart agriculture. The 4H Club, an organized group of 15 young, dedicated farmers, will manage the project under close supervision of the PSTO-Romblon.

(8) Introduction (Not to exceed 15 pages)

Rationale/Significance (Not to exceed 300 words)

The municipality of Odiongan is one of the main sources of economically important crops in Romblon. Its 25 barangays have their own agricultural products that are abundant in their areas. Rice for example is abundant in Brgy. Anahao while root crops are richly grown in Brgy. Amatong and Brgy. Panique. For high value crops on the other hand the barangays of Mayha and Progreso Este are the leading

producer of the municipality. This is due to the abundant water sources of the barangays. However, most of the farmers in the municipality remain to implement traditional farming methods especially in their irrigation system. Most of them use handheld sprinklers and water hose to irrigate their crops. This method entails numerous disadvantages such as it is labor-intensive and time-consuming especially in large farming lands or during dry spells when plants require frequent watering. It lacks precision that could result to overwatering, water waste, uneven water distribution, inefficiency for deep root irrigation, high pressure damage on soil and delicate foliage, and increased risk of disease spread and fungal growth. These disadvantages adversely affect plant health and the overall productivity of the farm.

In 2007, a youth organization known as the 4H Club established a highly organized and productive farm in Mayha, consisting of 15 dedicated young farmers. The organization manages 2.3 hectares of agricultural land, which they effectively utilize for cultivating a diverse range of HVCs such as cucumbers, eggplants, string beans, bitter gourd, squash, bell peppers, chili peppers, okra, and tomatoes. However, the organization still use traditional irrigation method involving manual watering of plants using water from a deep well and the river beside the area. Watering the entire 8000sqm. agricultural land is daily administered by five (5) people from 7 am to 10 am. This entails much time and effort that could rather be spent on expanding farming areas, monitoring plant health, and marketing products. Absence of an automated irrigation system also results to high labor costs on water plants. This further leads to lower rate on return of investment (ROI). Despite the organization's success in providing HVCs to Odiongan and some neighboring municipalities such as San Andres, San Agustin, and Santa Fe, these municipalities still resort to importation of HVCs due to lack of supply. Some of the gaps that hinder farmers to meet local demand for HVCs are lack of efficient irrigation management that leads to low productivity of farms, and poor agricultural practices of farmers resulting to low quality crops. Moreover, most graduates of agricultural courses opt to work in the office rather than in the field due to lack of capitalization support and problems in trade system of agricultural products.

In this light, this project is conceptualized to showcase the solar-powered automated drip irrigation system and to involve more youth in the process of transforming traditional irrigation methods into smarter and more efficient irrigation system. The proposed technology could save much time and does not require constant vigilance from farmers. It can easily determine the amount of water in the soil using suitable sensors and provides precise water control that ensures equitable water distribution. Additionally, automation ensures precise scheduling and monitoring of irrigation, reduced labor requirements, minimized water loss and optimization of its use, increased crop yield, and conservation.

Objectives (General and Specific)

The general objective of this project is to establish a model farm for smart and sustainable irrigation for increased productivity on high-value crop (HVC) production of young farmers at Brgy. Mayha, Odiongan, Romblon.

Specifically, it seeks to:

1. improve the farm's productivity and increase crop yield by at least 30% through more precise scheduling and monitoring of crop irrigation using the solar-powered automated drip irrigation system installed within the 8000sqm. agricultural land of the organization;
2. improve agricultural practices and reduce water wastage by at least 30% by providing a sustainable and efficient water management solution;
3. assess the reception and appreciation of both the farmer-beneficiaries and the young farmers/students/interns on the technology provided through incorporating action research into the project;
4. improve capability of farmers through provision of technology training and orientation on the system's installation, operation, and maintenance;
5. encourage the youth to invest in agriculture through showcasing technologies for smart agriculture with an aim to eliminate the idea that farming is hard work; and
6. strengthen collaboration among NGAs and other stakeholders that may be involved in the project.

Methodology

The PSTO-Romblon conducted a Technology Needs Assessment (TNA) among various farmers in Odiongan to investigate gaps and explore possible innovative solutions applicable to the agricultural sector of the municipality. Results of the TNA revealed the need for the interventions proposed in this project, hence this proposal. Once the project has been approved and the funding has been allocated, the DOST-MIMAROPA, with the help of the PSTO-Romblon, would facilitate the purchase of the proposed technology/system. Once everything is set and all the required data is established, project implementation would begin immediately.

The design for the automated drip irrigation uses a system to control the irrigation's water pressure and water delivery. The system was composed of a Relay, Moisture Sensor, DC water pump, motor controller, Solenoid Valve, Real Time Clock (RTC). In order to prevent power fluctuation and to have a reliable system. A casing would be constructed where the microcontroller system will be mounted. Water will convey from the siphon river and deep well as a source of water throughout the project implementation. The installation and other technical assistance will be provided by the winning service provider/ supplier. Other NGAs will also be invited as project partners to increase success rate of the project. The Department of Agriculture (DA) for one will be asked for quality and certified seeds for planting while its Agricultural Training Institute (DA-ATI) will be asked for necessary training activities to maximize the model farm. The Technical Education and Skills Development Authority (TESDA) could also provide training on processing and value adding the agricultural crops produced in the model farm. Since the post-implementation vision for the project is for the farm to serve as both training ground for young farmers and a production facility, the farm will maintain and strengthen its business model to support this vision. Young farmers aged 18 to 30 years old will be considered as trainees in the farm. On the other hand, technical consultants will be hired as counterpart of the proponent to strengthen its human resources. The possibility of collaborating with RSU (Romblon State University) for expertise rather than with external parties will also be explored. Moreover, a simple action research to be led by the proponent with close supervision of PSTO-Romblon and RSU experts will be conducted to assess the reception and appreciation of both the farmer-beneficiaries and the young farmers/students/interns on the technology provided. In this way, the project will not only focus on becoming a livelihood but become an educational platform and research ground to gauge and hopefully elevate the appreciation of our future farmers on the kinds of technologies introduced through the project. The 4H Club, as the proponent of the project, will utilize the proposed technology according to this vision and provide proper maintenance procedures to ensure the long service life of the interventions. Capability training on operation and maintenance will be required from the supplier of the equipment with the assistance of the PSTO. Lastly, the assigned staff will monitor the project and ensure that the objectives are met.

Expected Outputs (6Ps):

The project is expected to provide innovative solution to the gaps in the irrigation system of 4H Club in Mayha, Odiongan, Romblon. In terms of physical targets, the following are expected:

Publication	At least one news article and one research paper related to the project drafted
Patent/ Intellectual Property	None
Product	Various high-value crops such as but not limited to cucumbers, eggplants, string beans, bitter gourd, squash, bell peppers, chili peppers, okra, and tomatoes
People Service	local farmers, young farmers, and community members
Place and Partnership	DA, DA-ATI, TESDA, 4H club
Policy	None

Expected Outcomes:

1. increased crop productivity and yield through precise water delivery to plants roots.
2. conserved water resources by minimizing wastage through water runoff.
3. improved the economic well-being of local farmers through increased crop production.
4. conducted a simple action research as part of the project to assess the reception and appreciation of both the farmer-beneficiaries and the young farmers/students/interns on the technology provided
5. empowered farmers and youth through training sessions on system operation and maintenance.
6. promoted sustainable agricultural practices and environmental stewardship.
7. enhanced community resilience by mitigating the impact of water wastage and fostering self-reliance in crop production.

Potential Impacts (2Is):

Through the comprehensive training activities, and technological advancements involved in the project, a positive and lasting impact on local farmers and the community as well as environmental sustainability is expected.

Social Impact

1. Enhanced food security by improving crop yields through more reliable water supply for agricultural activities.
2. Empowered local farmers, particularly youth, by equipping them with new skills and knowledge in sustainable farming practices.
3. Fostered community cohesion and collaboration among farmers as they will be encouraged to come together and adopt the benefits from the shared irrigation system, leading to a stronger sense and mutual support.

Economic impact

1. Enough production of HVCs will result to lower prices of the same. This will further create economic opportunities and stimulate overall economic growth in Brgy. Mayha and in Odiongan.
2. Increased agricultural productivity and higher crop yields will result in improved income for local farmers, fostering economic prosperity in the community.
3. Adoption of this advanced irrigation system will reduce labor costs and improve viability of high-value crop cultivation in Mayha, Odiongan.

Discussion on the results of related project handled by the same proponent (if any):

The Mayha 4H Club is the most organized group of young farmers in Odiongan. Having the largest agricultural land managed, it has received various agricultural assistance from agency-funded projects. One of which is a 3-horsepower water pump provided by the Department of Agriculture (DA). This water pump has greatly improved the club's farming operations through an adequate water supply in the farm. It also received numerous mentorship training activities, and coaching/guidance sessions from trusted NGAs like DA-ATI and TESDA. All this support inspires them to pursue upgraded farm management, and agri-entrepreneurship. To date, the Mayha 4H club is engaged in active collaboration with other private and public institutions to expand its agricultural network.

Target Beneficiaries:

The target beneficiaries of the project are the young farmers and other local farmers in the municipality of Odiongan. The project aims to provide them with a reliable model farm to explore and learn from the solar-powered automated drip irrigation system. Agricultural students from the Romblon State University will also benefit from the project as the model farm will be open for trainees to practice actual and hands-on farming. They will also be exposed to appropriate agricultural practices and modern farming system such as the proposed intervention in this project. The increased crop productivity, and improved crop quality will also benefit the workers of the farm as they will have higher income to sustain their day-

to-day living. The project will also have broader impacts on the community, including enhanced food security, economic growth, and the empowerment of the youth through training and capacity-building opportunities in sustainable agriculture practices.

Sustainability Plan (if applicable)**:**
The DOST-MIMAROPA through its Romblon Provincial Office together with the Mayha 4H Club Youth Organization and other agricultural agencies such as DA, DA-ATI, and TESDA will extend collaborative efforts to ensure sustainability of the project and maximize its impact and long-term purpose to local farmers and young aspiring farmers. The proponent assisted by the PSTO Romblon will also work out an institutional arrangement with DA or any possible market/buyers to secure steady returns for the project. On the part of operation, workers assigned in the farm will receive proper compensation and more comprehensive training programs to promote loyalty and commitment to the project. The compensation structure of these workers on the other hand will be evaluated including their share on the income generated by the farm. The proponent's budget that covers the compensation of the farm's human resources will also be assessed and properly monitored to ensure long-term sustainability. The proponent will also be encouraged to allot savings for maintenance of the system to prolong its service life. Moreover, pest and disease management will also be integrated into the project to reinforce sustainability. Experts from the academe like RSU can be tapped for this matter. The 4H club with close supervision of the PSTO will be responsible for regular monitoring of the project's implementation and outputs. A proper monitoring framework will be established. This monitoring framework will keep the project on track, identify any potential issues and provide resolutions for the same, and allow for necessary adjustments to ensure its sustainability and overall success.

Gender and Development (GAD) Score (refer to the attached GAD checklist):

Risk analysis (refer to the attached risks and assumptions)**:**

(9) Workplan (See Form 5)

(10) Project Management (not to exceed one page)
The project will be implemented by DOST-MIMAROPA Romblon provincial office in close partnership with Mayha 4H Club. The PSTO would coordinate with the regional office in the purchase of the proposed system and other aspects of project implementation. The procurement of the automated drip irrigation from delivery to installation and commissioning will be facilitated by assigned staff from the office. The DA, DA-ATI, and TESDA will also be enjoined in the contract for project to ensure that the respective responsibilities and contributions of each stakeholder are well defined.

III. OTHER SUPPORTING DOCUMENTS REQUIRED (Please refer to page 2 for the additional necessary documents.)

Prepared by:

RICMEL S. FALQUEZA
President, Mayha 4-H Club

Endorsed by:

MARCELINA V. SERVANEZ
Provincial S&T Director, PSTO Romblon

Approved by:

Digitally signed by
Abilay Ma.
Josefina Pormento

DR. MA. JOSEFINA P. ABILAY
Regional Director, DOST-MIMAROPA

DOST Form 4

DEPARTMENT OF SCIENCE AND TECHNOLOGY
Project Line-Item Budget
CY 2024

Program Title	:	Grants-in-Aid (GIA)
Project Title	:	Establishment of Model Farm for Smart and Sustainable Irrigation for High-value Crop Production of Young Farmers in Odiongan, Romblon
Implementing Agency	:	DOST-MIMAROPA
Total Duration	:	1 year for project implementation / 2 years for monitoring of outcomes
Current Duration	:	1 year
Cooperating Agency	:	Mayha 4H Club
Program Leader	:	Dr. Ma. Josefina P. Abilay
Project Leader	:	Hon. Ricmel S. Falqueza/Male
Monitoring Agency	:	DOST-MIMAROPA PSTO-Romblon

		Counterpart Funding	
		DOST-MIMAROPA	**Mayha 4H Club**
I. Maintenance and Other Operating Expenses			
Traveling Expenses			
Local		236,000.33	
Training Expenses			
Traveling Expenses		10,000.00	
Supplies and Materials		5,000.00	
Other Professional Services		8,400.00	
Representation		13,200.00	
Printing and Publication		200.00	
Communication Expenses			
Mobile Expenses		53,976.00	
Internet Subscription Expenses		79,176.00	
Supplies and Materials Expenses			
Office Supplies Expenses		40,000.00	60,000.00
Semi-Expendable Machinery and Equipment Expenses - Office Equipment		40,000.00	
Semi-Expendable Furniture, Fixtures and Books Expenses		50,000.00	
Representation Expenses		64,320.00	
Transportation and Delivery Services		3,600.00	
Sub-Total for MOOE	**P**	**603,872.33**	**P** **60,000.00**
II. Equipment Outlay			
Technical and Scientific Equipment	P		P
Establishment of Solar-powered Greenhouse with Drip Irrigation System as Model Farm in Odiongan, Romblon		2,574,000.00	
Sub-Total for EO	**P**	**2,574,000.00**	**P** -
III. Fixed Asset/s			
Land and Building			1,000,000.00
Sub-Total for Fixed Asset/s	**P**	-	**P** **1,000,000.00**
GRAND TOTAL	**P**	**3,177,872.33**	**P** **1,060,000.00**

Certified Funds Available:

MAE ANGELA C. BAUTISTA
Treasurer, Mayha 4H Club

JAY RALPH A. CABIAO
Accountant III, DOST-MIMAROPA

Approved by:

DR. MA. JOSEFINA P. ABILAY
Regional Director, DOST-MIMAROPA