

## PROJECT PROPOSAL 2022 DOST-GIA FUNDING

### I. PROJECT PROFILE

<b>(1) Project Title: Establishment of Tissue Cultured Laboratory for Banana</b>				
<b>(2) Project Leader/Sex: Harvey A. Dulay/ Male</b> <b>Agency: Marinduque State College</b> <b>Address/Telephone/Fax/Email: MSC Torrijos, Poctoy, Torrijos, Marinduque</b>				
<b>(3) Cooperating Agency/ies: DOST-PSTC</b>				
<b>(4) Site/s of Implementation</b> (Municipality / District / Province / Region) <b>Base Station: MSC Torrijos, Poctoy, Torrijos, Marinduque</b> <b>Other Implementation Site (s):</b> _____				
<b>(5) Project Duration: 2 years</b>				
<b>(6) Total Project Cost:</b> (indicate Counterpart Funds; use Form A for the Line-Item Budget)				
Source of Fund / Site(s) of Implementation	PS	MOOE	EO	Total
A. DOST		660,124.04	1,870,360.00	2,530,484.04
B. MSC	467,280.00	666,000.00		1,133,280.00
<b>TOTAL</b>	467,280.00	1,326,124.04	1,870,360.00	<b>3,663,764.04</b>

### II. PROJECT SUMMARY

One of the mature technologies being used for modern agriculture is tissue culture. This technology provides high yield and uniformity (in terms of shape, size, weight, and color) unlike the traditional method which usually does not meet the commercial demand.

Farmers using conventional banana farming methods are now encountering issues such as slow growth rate, low yields, high mortality rates, and struggle in propagating a disease-free uniform sucker. The said problems could be linked to different factors such as absence of disease-free banana planting materials and the farmer's lack of knowledge when it comes to modern cultivation techniques.

Based on the 2018 Provincial Commodity Investment Plan (PCIP Marinduque), there are 4,500 hectares of land in the province which is planted with banana. For every hectare of land, an estimated of 400 banana (saba) or 1,111 banana (lakatan) that can be planted. It is also reported that there are 13,533 farmers engaged in the production of banana.

Asides from farmers, there are local food processors who are also dependent to the production of banana. Among these processors includes (insert 3 sisters, Rejanos, etc.) which generate banana-products and job opportunities for the province. Furthermore, banana have been part of the local delicacies of Marinduque, this creates local demand for banana.

In the previous years, Marinduquenos had an experience of strong typhoons which destroys the banana plantations. This disrupts the continuous production, forcing the increase in price of banana and importation from other provinces. To address this concern, the timing of planting and immediate replacement of banana plants must be implemented.

In view of this, the establishment of a banana tissue culture laboratory and nursery is an intervention that could aid in the recovery of banana industry in the province. With the production of readily available uniform, disease-free banana planting materials, farmers in the different areas can plan for planting schedule to avoid seasons where typhoon can damage plantations. MSC through the province agriculture office will provide quality planting materials. Thus, this proposal.

#### **(8) Project Description** (Not to exceed 15 pages)

##### **OBJECTIVES**

Generally, this project aims to promote and enhance the production banana (Saba and Lakatan) in the province of Marinduque.

##### **Specifically,**

- To establish tissue culture laboratory for banana in MSC
- To produce 22,400 tissue-cultured banana planting materials per year for farming communities in the province.
- To engage at least 50 farmers in banana production per year

##### **METHODOLOGY**

##### **Establishment of Plant Tissue Culture Laboratory**

The banana tissue culture laboratory will be established at the Institute of Agriculture, Poctoy, Torrijos. This facility will be used for R&D, instruction and production activities. MSC will assign permanent staff who will oversee the project and a contractual employee as laboratory technician for the actual day to day operations in the laboratory.

A nursery for banana plantlets will be established in the MSC Torrijos and 2 technicians of the college will be assigned to managed it.

##### **Planting materials dissemination**

The PGM- PAgriO will then coordinate with the six municipalities for the distribution of the tissue cultured banana that are ready for field transplanting. To promote high adoption rate of farmers a subsidy will be provided to the purchase of planting materials.

##### **Conduct of Training**

MSC Institute of Agriculture through its Community Outreach Center (COC) will conduct series of trainings and consultancy activities for the recipients of the project.

##### **EXPECTED OUTPUTS**

##### **Product**

With the implementation of the project, about 22,400 tissues cultured will be produced by the MSC Tissue culture Laboratory.

**People Service**

In support to the promotion of banana production in the province, training on banana production will be catered by the MSC Community Outreach Center (COC).

**Place and Partnership**

The project will establish a plant tissue culture laboratory in MSC Torrijos, Poctoy, Torrijos, Marinduque.

**Policy**

For the sustainability of the project, a policy support to institutionalize the tissue culture of banana in MSC will be crafted through the board of trustees (BOT).

**EXPECTED OUTCOMES**

It is expected that this project will establish a plant tissue culture in MSC Torrijos which will cater the production of quality planting materials for banana and other important crops in the province. The project will also provide an estimate of 22,400 banana plants which are ready for out planting by local farmers. A total of 50 farmer beneficiaries will be capacitated for the mass planting of banana in the province.

**PERCEIVED IMPACT****Social Impact**

This project will involve about 50 farmers who will be capacitated to produce quality banana. This will ensure the supply of banana for the processor in the province. The production system design for this project will provide opportunity for the local farmers and processor to be linked for better production flow and market opportunity.

**Economic impact**

The intervention of this project to the banana industry in the province will ensure steady supply of quality planting materials for banana in the province. This address the lack of planting materials and further enhance the production banana thus providing income to local farmers engaged in banana planting.

**SUSTAINABILITY PLAN**

The tissue cultured laboratory for banana will be handled by 1 laboratory technical and 1 nursery worker. It is estimated that with this number of persons working in 5 days a week basis they could produce 1866 pcs a month of plantlets or **22,400** a year.

If the laboratory could produce 14,000 lakatan and 8,400 saba and can sell it at **₱ 30.00** for lakatan and **₱ 35.00** for saba it could generate an income of **₱ 420,000.00** and **₱ 294,000.00** for a total of **₱ 714,000.00** a year. An average of **₱ 59,500.00** monthly gross income can be generated with a net income of **₱ 14,976.91**

## Estimated Monthly Expense Item

Personal Services	Amount
Laboratory technician	11,000.00
Nursery Worker	8,470.00
<b>MOOE</b>	
Micronutrients & Vitamins/Organic Supplement	5,000.00
Bottles (186 pcs)	1,860.00
Poly bags (1,866 pcs)	3,732.00
Utility expenses	2,500.00
<b>Building &amp; Nursery Depreciation</b> (300,000.00/15years/12mo.)	1,666.66
(300,000.00/15years/12mo.)	1,666.66
<b>Equipment Depreciation</b> (1,553,000.00/15years/12mo.)	8,627.77
<b>Total</b>	<b>₱ 44,523.09</b>

Monthly Net Income: ₱ 59,500.00 - ₱ 44,523.09 = ₱ 14,976.91

To further sustain the operation of the project. A coordination and partnership with the local government units will be undertaken. This is to gain, policy support specifically on the allocation of resource devoted for the promotion, enhancement, and further development of banana industry in the province.

**(9) Workplan** (See Form B)**(10) Project Management** (not to exceed one page)

- MSC will provide of building to be rehabilitated as plant tissue culture laboratory.
- MSC Laboratory technician will handle the overall operations in the laboratory.
- Project Monitoring will be done by DOST MIMAROPA, MSC and PGM PAgrIO.

**III. ATTACHMENTS** (Please refer to the DOST-GIA Guidelines for the necessary documents.)

Prepared by:

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Assistant Professor 1  
MARINDUQUE STATE COLLEGE

Endorsed By:

**BERNARDO T. CARINGAL**  
PSTD  
PSTC Marinduque

Approved by:

**MA. JOSEFINA P. ABILAY**  
Regional Director  
DOST-MIMAROPA

**DOST Form B**  
**PROJECT WORKPLAN**

(1) Program Title:

(2) Project Title: Establishment of Tissue Cultured Laboratory for Banana

(3) Total Duration (in months): 24 months

(4) Planned Start Date: August 2022 (5) Planned End Date: August 2024

(6) OBJECTIVES	(7) TARGET ACTIVITIES	(8) TARGET ACCOMPLISHMENTS (quantify, if possible)	Y1				Y2				Y3			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
To establish tissue culture laboratory for banana in MSC	Repair of the existing laboratory of MSC in Torrijos Campus	Plant tissue culture laboratory with complete fixtures and equipment established in MSC Torrijos			x	x	x							
To produce 22,400 tissue-cultured banana planting materials per year for farming communities in the province.	Media preparation, Isolation of explants, Incubation of plant cultures (Shoot multiplication), Rooting initiation, Hardening of plantlets	The project will produce 22,400 tissue-cultured banana plants (Hardened) per year			x	x	x	x	x	X				
To engage at least 50 farmers in banana production per year	Organization of farmer-beneficiaries, Conduct of training on banana plantation establishment	50 farmers engaged in banana production			x	x	x	x	x	x				
(9) EXPECTED OUTPUTS (6Ps)	(10) DETAILS (quantify, if possible)	Y1				Y2				Y3				
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Publications														
Patents/IP														
Products	22,400 tissue cultured banana (Saba and Lakatan)				x	x	x	x	x					
People Services	Conduct of 2 training for banana plantation establishment			x	x	x								
Places and Partnerships	Established tissue culture laboratory in MSC Torrijos,			x										
Policy	1 MSC Policy support for the institutionalization of the project				x									

## DOST Form A

## DEPARTMENT OF SCIENCE AND TECHNOLOGY

Project Line-Item Budget  
CY 2022

Program Title : Grant in Aid  
 Project Title : Establishment of Plant Tissue Culture in MSC  
 Implementing Agency : Marinduque State College  
 Total Duration : 2 year  
 Current Duration : 2022-2024  
 Cooperating Agency : DOST-MIMAROPA  
 Program Leader : Ma. Josefina P. Abilay  
 Project Leader : Harvey A. Dulay  
 Monitoring Agency : DOST-MIMAROPA

	YEAR 1		YEAR 2	
	Counterpart Funding		Counterpart Funding	
	MSC	DOST	MSC	DOST
<b>I. Personal Services</b>	P	P	P	P
<u>Direct Cost</u>				
Salaries				
Laboratory technician (@ 11,000.00/mo.)	132,000.00		132,000.00	
Nursery Worker (@8,470.00/mo.)	101,640.00		101,640.00	
<b>Sub-total for PS</b>	<b>P 233,640.00</b>	<b>P -</b>	<b>P 233,640.00</b>	<b>P -</b>
<b>II. Maintenance and Other Operating Expenses</b>				
Traveling Expenses - local				
Office supplies				
Medical, Dental and Laboratory Supplies Expenses		404,999.00		
Other Supplies and Materials Expenses (for the rehabilitation of the la	650,000.00			
Utility Expenses				
Water Expenses	8,000.00		8,000.00	
Taxes, Insurance Premiums and Other Fees				
Insurance Expenses		13,092.52		13,092.52
<b>(Monitoring Agency)</b>				
Communication Expenses		29,970.00		29,970.00
Transportation and Delivery Services		4,500.00		4,500.00
Traveling Expenses		40,000.00		40,000.00
Utilities				
Supplies and Materials Expenses (shall be itemized based on GAM)				
Office Supplies Expenses, Gasoline, Oil and Lubricants Expenses		40,000.00		40,000.00
<b>Sub-Total for MOOE</b>	<b>P 658,000.00</b>	<b>P 532,561.52</b>	<b>P 8,000.00</b>	<b>P 127,562.52</b>
<b>III. Equipment Outlay</b>				
<b>Analytical Balance</b>				
Weighing Capacity : 220g				
Dimensions : Approx W213xD356XH338mm				
Weight : Approx 6.0kg				
Required power Supply : AC adapter (input 100-240V AC, 50/60Hz, output 12V, 1A)		130,360.00		
I/O Terminals : RS232C (D-sub 9P plug), USB Device (type B)				
Calibration Weight : External Weight				
<b>Stainless Steel Electric Distilling Apparatus</b>				
With water cut off				
Its all made of high quality stainless steel materials and by Advanced technology.				
Condenser is made of seamless stainless steel pipes and so with High efficient heating interchange and large water produce		70,000.00		
Electric Control device controls the water level and heating Elements via liquid -level sensor. Once water is running out.				

## Laminar Flowhood Cabinet

Internal Size : (W\*D\*H) 940\* 600\*660 mm  
External Size: (W\*D\*H) 1100\*750\*2250mm  
Tested Opening: Safety Height = 200 mm(8")  
Max Opening: 420mm(17")  
Inflow Velocity: 0.53±0.025 m/s  
Downflow Velocity: 0.33±0.025 m/s  
ULPA Filter: Two, 99.9995% efficient at 0.12um. Filter life indicator.  
Front Window: Motorized. Two-layer laminated toughened glass ≥ 5mm. Anti UV.  
Noise: EN12469 ≤ 58 dB / NSF49 ≤ 61 dB  
UV Lamp: 30W\*1  
Illuminating: LED Lamp  
Lamp: 12W\*2  
Illumination: ≥1000Lux  
Consumption: 760W  
Waterproof Sockets: Two, total load of two sockets: 500W  
Display: LCD display  
Control System: Microprocessor  
Airflow System: 70% air recirculation, 30% air exhaust  
Visual and audio alarm: Filter replacement, front window at unsafe height, abnormal airflow velocity.  
Material: Work Zone: 304 stainless steel  
Main Body: Cold-rolled steel with anti-bacteria powder coating.  
Work Surface Height: 750mm  
Caster: Footmaster caster  
Power Supply: AC220V±10%, 50/60Hz; 110V±10%, 60Hz  
Gross Weight: 243kg

800,000.00

## Magnet stirrer with Hot plate

-has a 10x10 (25.4x 25.4cm) Pyroceram top and digital temperature and stirring  
Speed displays.  
It is designed to operate on 230V/50Hz with either the BS 1363A or CEE&-7 plug (both included) for use  
In the parts of Europe , Asia . Africa and other areas with  
Electrical requirements. A Model PC 420D is shown to the  
Left with optional temperature controller and support.

80,000.00

### PERFORMANCE FEATURES

Microprocessor maintains consistent and repeatable  
Temperature settings from 5°C (If ambient temperature is 0°C  
Or lower) up to 550°C  
Digital Led temperature display is adjustable in 5°C increments  
Blinks until set temperature is reached .  
pH meter

30,000.00

## Culture Shelves with Lighting Fixtures (6 units)

w/o lightning size 30cm x 100cm x 180cm

90,000.00

Heavy Duty Gas Burner

20,000.00

## Autoclave

Chamber Size: Diameter*Depth)	260mm*475mm
Overall size (W*H*D)	700mm*370mm*490mm
Chamber Capacity	25Liters
Power Consumption	220V/1.5KW/7.5Amp.
Timer Range	0~60 minutes
Material Quality	Chamber SUS#304
Using Temp. /Pressure	Unwrapped: 122°C/1.4kg/cm² Wrapped : 122°C /1.4kg/cm² Liquids 121°C/1.2kg/cm²
Working range	140°C at 1.5kg/cm² (±10%)
Safety Device	Thermostat Control –prevent Overheating, Safety valve , release Valve, emergency exhaust valve
Standard Accessories	# 304 Stainless steel Sterilization Box Size : 42cmx20cmx14cm

200,000.00

**Aircon (2 units)**

Normal Size : 2.0hp  
Cooling Capacity 19,000Kj/Hr  
Energy Efficient Ratio (Eer) 10.1Kj/W-hr  
CurrentAmps8.4  
Power Consumption 1,880Watts  
Sound Level (H/1) 56dB  
Recommended Cooling Area 2 to 35 m  
Physical data  
Width x Height x Depth mm 659x428x730  
inch 25.9x16.39x28.7

Net weight 52kg

150,000.00

**Orbital shaker**

Orbital Diameter: 20mm  
Max Load Capacity: 3kg  
Platform Size: 320\*265mm  
Motor Type: DC Motor  
Speed Range: 70\*200rpm  
Time Range: 1-1199min  
Display: LED display  
Vessels: Petri dish, flask etc  
Operation Model: Timing, Manual  
Voltage: 220V/110V 50HZ/60HZ

250,000.00

**Refrigerator**

7.9 cu.ft two door No Frost  
Inverter Refrigerator  
LED Lighting  
Higher EEF:344  
Crisper Drawer with Humidity  
Control  
Net Volume: 7.3 cu. Ft.  
Freezer Volume: 53L  
Ref Volume: 164L  
Power Consumption per Day: 8.20

50,000.00


**Sub-Total for EO**

P	-	P	1,870,360.00	P	-	P	-
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**GRAND TOTAL**

P	891,640.00	P	2,402,921.52	P	241,640.00	P	127,562.52
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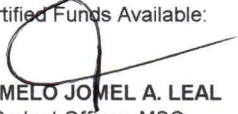
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
  
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