

APPLICATION FOR TECHNOLOGY NEEDS ASSESSMENT

| | | |
|---|---|---------|
| Name of Enterprise: Marinduque State College | | |
| Contact Person: Dr. Ma. Edelwina M. Blase | Position in the Enterprise: VP for Research and Development, Extension and Training | |
| Office Address: Tanza, Boac, Marinduque | Tel. No. (042) 332-2028 | Fax No. |
| | E-mail Address: supresident.msc@gmail.com/ mscrdet2020@gmail.com | |
| Factory Address: Tanza, Boac, Marinduque | Tel. No. | Fax No. |
| | E-mail Address: supresident.msc@gmail.com/ mscrdet2020@gmail.com | |
| Website: | | |

GENERAL AGREEMENTS:

1. The applicant shall, at the earliest opportunity, make available to the DOST Regional Office MIMAROPA (DOST MIMAROPA) all information (manuals, procedures, etc.) required to establish the technology status of the selected core business functions and management systems;
2. If DOST MIMAROPA is not satisfied that all the requirements for business registration are complied with, it shall inform the applicant of the observed deficiencies before starting the assessment;
3. When the required inputs to the assessment are already supplied by the applicant, including Attachment A, the DOST MIMAROPA will assess the firm through the core business functions and management systems, whichever is applicable, to identify technology needs and verify compliance to standards vis-à-vis existing practices;
4. When the DOST MIMAROPA has completed the technology assessment, a report will be prepared on the results of the assessment with accompanying recommendations and opportunities for improvement. The report prepared will define the scope of activities, functions, management practices and locations assessed. The applicant shall not claim or

otherwise imply that the report applies to other locations, product or activities not covered by the report;

5. The applicant agrees that the report will not be used until permission has been granted by the DOST MIMAROPA;
6. The applicant agrees that the receipt or acknowledgment of the report ends the assessment stage; any technical assistance ensuing from the recommendations of the report will be viewed as a separate project.

UNDERTAKING

I agree to undertake and observe the above General Agreements as stipulated by the Department of Science and Technology Regional Office DOST MIMAROPA.



MA. EDELWINA M. BLASE

Signature over Printed Name

VP for Research and Development, Extension and Training

Enterprise Profile

Name of Enterprise Marinduque State College

Production Site/Location Tanza, Boac, Marinduque

Business Permit No. _____ Year Registered _____

Brief Enterprise Background _____

Marinduque State College (MSC) is committed to maintaining the highest degree of excellence in the field of Instruction, Research, Extension and Production towards meeting customer satisfaction by adhering to globally-adopted quality standards. MSC envisioned an advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025 and their mission is to provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education. Their Core Values, is to Educating People, Enriching Lives, and Expanding Opportunities with:

Wisdom for Truth and Knowledge

Ingenuity in Research, Extension, and Production

Sustainability of Good Deeds

Dexterity in Management of Resources

Orchestrator of Good Practices in Achieving Goals, and

Magnanimity in Dealing with People and God's Creation

The role of Marinduque State College (MSC) in promoting innovation and value creation as well as achieving socioeconomic development is vital. Through research, development, and innovation (RDI), MSC helps the sector meet its needs in a rising economy. MSC has the skills and knowledge to assure the various project's long-term viability by maximizing the usage of different technology and raw materials available in the province.

The College supports any action and collaboration from public and private sectors in developing scientific solutions to the needs and problems in the communities. MSC and DOST-PSTC Marinduque has a strong collaboration in different projects that aims to develop products and help the lives of people in the province of Marinduque.

Year enterprise was established: _____ Initial capitalization: _____

Type of Organization: ☐ Single proprietorship
☐ Cooperative
☐ Partnership
☐ Corporation
☐ Profit
☐ Non-profit
☒ LGU/SUC

Enterprise Registration No. _____ Year Registered _____

Classification according to capital (PhP) Present capitalization _____

- ☐ Micro (less than 1.5 M)
☒ Small (1.5 – 15 M)
☐ Medium (15 – 100 M)

Classification according to employment (number of employees)

- ☐ Micro (1 – 9)
☐ Small (10 – 99)
☐ Medium (100 – 199)

Number of Employees:

| | | |
|---------------------------|-------|-------|
| Direct Workers | M:___ | F:___ |
| Production | M:___ | F:___ |
| Non-production | M:___ | F:___ |
| Indirect/Contract Workers | M:___ | F:___ |
| Total | M:___ | F:___ |

Business Activity:

- ☐ Food processing (please specify commodity) _____
☐ Furniture (please specify commodity) _____
☐ Gifts, decors, handicrafts (please specify commodity) _____
☐ Metals and engineering (please specify commodity) _____
☐ Agriculture/Marine/Aquaculture (please specify commodity) _____
☒ Health products and pharmaceuticals (please specify commodity) _____

—

☐ Information and Communications Technology (ICT) products
(please specify commodity)

☐ Others, please specify

1. Specific product or service the enterprise offers its customers:

Research, Development & Extension Services

2. Reasons why assistance is being sought:

Technical Assistance needed in form of equipment for the conduct of research and

Development in coconut “tuba” sap as probiotic drink.

3. Have you consulted any other individual/organization for any assistance?

☐ If Yes, which company/ agency?

☐ / If No, why not?

Organizational Structure

See Attached Organizational Structure

4. Enterprise’s plan for the next 5 years?

Transfer the technology to industry adaptors that will utilize the vast source of
coconut in the province.

Next 10 years?

Additional research will be conducted to support continuous innovation.

5. Current agreements and alliances undertaken

N/A

BENCHMARK INFORMATION

■ Production and Supply Chain

➤ Raw Material

Coconut sap from coconut farmers will be utilized by the project.

| Raw Material | Source | Unit Cost (₱) | Volume Used/Year |
|--------------|--------------------------|---------------|------------------|
| Coconut sap | Boac, Mogpog, Buenavista | | |
| | | | |
| | | | |

➤ Production

| Product | Volume of Production/Year | Unit Cost of Production (₱) | Annual Cost of Production (₱) |
|---------|---------------------------|-----------------------------|-------------------------------|
| N/A | | | |
| | | | |

➤ Existing Functional Production Equipment

| Type of Equipment | Specifications | Capacity | No. of Units | Year Acquired |
|-------------------|----------------|----------|--------------|---------------|
| N/A | | | | |
| | | | | |

➤ Production Problems and Concerns

Lack of fund needed for the acquisition of equipment for the conduct of Research &

Development of probiotic drink

Lack of capabilities (expertise and laboratory) for the characterization of coco sap probiotic drink.

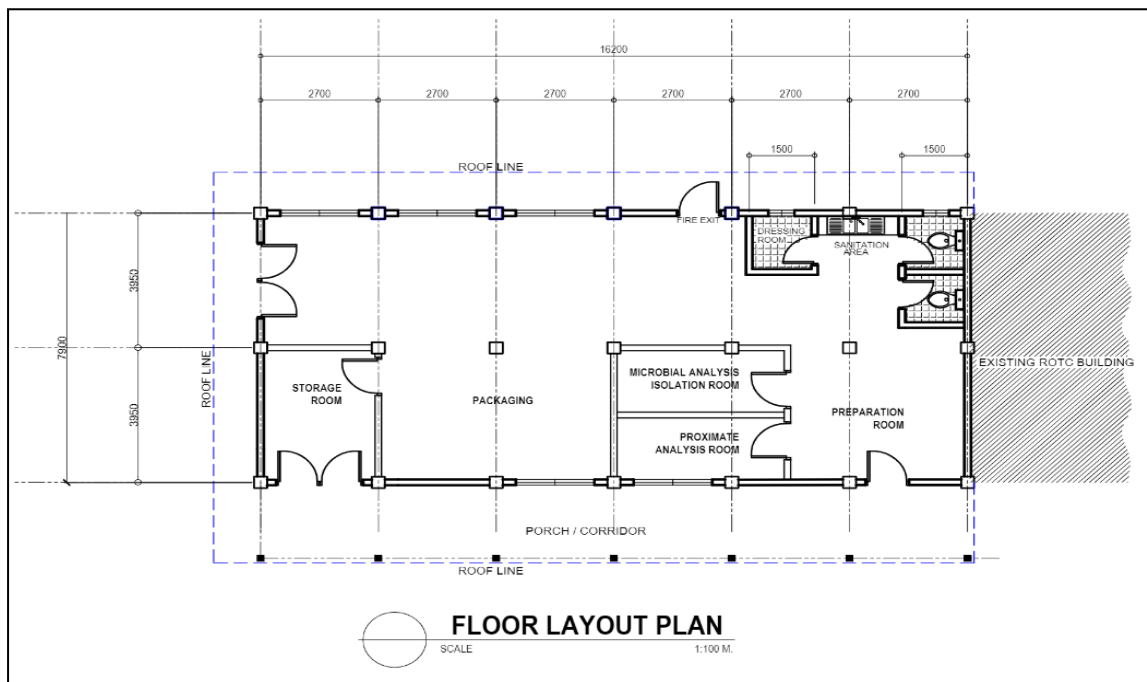
➤ Production Waste Management System

Waste materials coming from the facility will be disposed properly

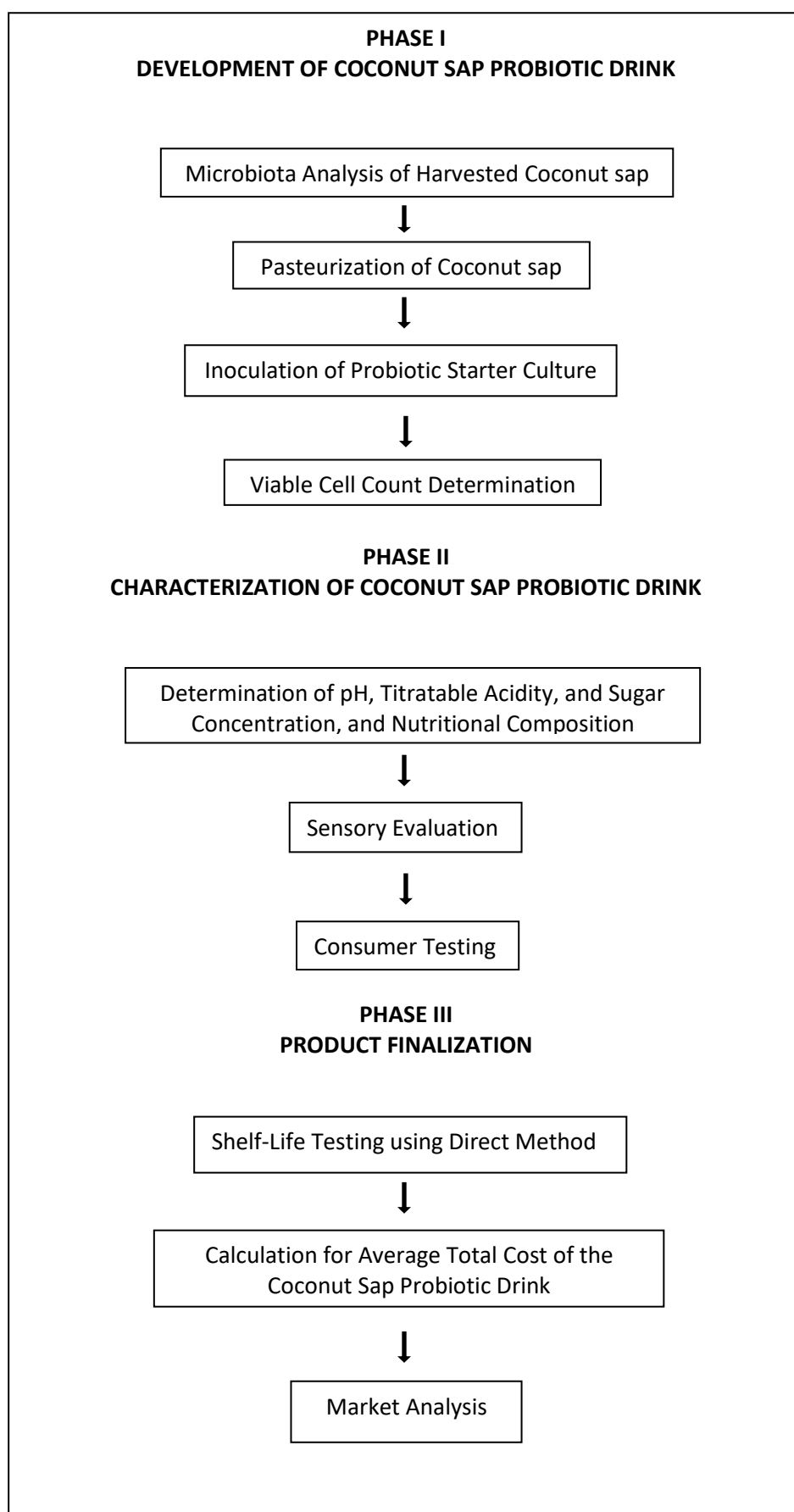
➤ Production Plan

The DOST-MIMAROPA will provide technical assistance for the acquisition of necessary equipment, supplies and materials. MSC will facilitate the procurement process, provide production building and technical and manpower skills requirements to engage the project.

➤ Plant Lay-Out



➤ Process Flow



➤ Inventory System

N/A

➤ Maintenance Program

Pasteurizer equipment and other laboratory tools will have a scheduled calibration and preventive maintenance

➤ cGMP/HACCP Activities

Personnel that will be assigned to the facility are equipped with proper training on food safety, cGMP and 5s.

➤ Supplies/Purchasing System

Raw materials (coconut sap) will be supplied by the coconut farmers coming from Municipalities of Buenavista, Mogpog and Boac .

▪ **Marketing**

➤ Marketing Plan

Once product is developed it will be registered to IPO-Tech. pitching will be facilitated to encourage potential adaptors of the technology.

➤ Market Outlets and Number

N/A

➤ Promotional Strategies

Result of Research & Development of probiotic will be promoted using flyers, t.v. & radio commercials, and presentation to public forums and meetings

➤ Market Competitors

No existing competitor within the province who's into probiotic drink using coconut sap product

➤ Packaging

- | | |
|------------------------|-----|
| ○ Nutrition Evaluation | N/A |
| ○ Bar Code | N/A |
| ○ Product Label | N/A |
| ○ Expiry Date | N/A |

▪ Finance

➤ Cash Flow or other related documents

Finances from the R&D will be handled by the assigned staff.

➤ Source(s) of capital/credit

MSC has the expertise to conduct product development but has the need for technical assistance to purchase the necessary equipment and other materials.

➤ Accounting System

There is existing budget and accounting department which ensures the proper utilization of the budget.

▪ **Human Resources**

➤ Hiring and Criteria

MSC will assign project coordinator for the management and operations of the project.
Expertise of UPLB-IFST will be tapped for the characterization of the probiotic drink.

➤ Incentives to Employees

N/A

➤ Training and Development

MSC staff that will be assigned in the facility is equipped with necessary skills for the
conduct of research and product development.

➤ Safety Measures Practiced

Safety standards will be strictly followed

➤ Other Employee Welfare

N/A

▪ **Other Concerns**

N/A

Prepared by:

Validated by:



MA. EDELWINA M. BLASE

Printed Name and Signature of
Owner/Chair/Representative

Date



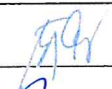
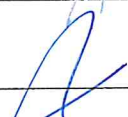
BERNARDO T. CARINGAL

Printed Name and Signature of
PSTD/Cluster Manager

Date

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| TECHNOLOGY NEEDS ASSESSMENT (TNA) REPORT | |
|---|--------------------------|
| COMPANY: | MARINDUQUE STATE COLLEGE |
| ADDRESS: | TANZA, BOAC, MARINDUQUE |
| SCOPE OF ASSESSMENT* | |
| <p>The TNA covered the following areas:</p> <ol style="list-style-type: none"> 1. Strategic Direction <ol style="list-style-type: none"> a. Vision and mission b. Plans and Objectives c. Strategic alliances and current agreement 2. Management Aspect <ol style="list-style-type: none"> a. Human resource management b. Purchasing c. Work environment d. Corporate social responsibility e. Occupational health and safety management 3. Technical Aspect <ol style="list-style-type: none"> a. Operational and outsourcing practices <ul style="list-style-type: none"> -production system -production planning and control -production lay-out -work improvement -equipment management and maintenance -quality assurance system -outsourcing practices b. Product and Process Performance and Improvement <ul style="list-style-type: none"> -reengineering and Research and Development -Procedures for continuous improvement -Product Quality standards c. Environmental Management System <ul style="list-style-type: none"> -Waste management 4. Marketing Aspect <ol style="list-style-type: none"> a. Marketing plan b. Market outlets and number | |

| | |
|--|----------------------|
| Reported by <u>BERNARDO T. CARINGAL</u> Signature  | Date <u>08-09-21</u> |
| - Name of TNA Team Leader | |
| Attested by <u>JERRY B. MERCADO</u> Signature  | Date <u>08/16/21</u> |
| Name of ARD | |

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- c. Promotional strategies
- d. Market competitors
- e. Packaging
- 5. Finance
 - a. Cash flow and other related documents
 - b. Sources of capital
 - c. Accounting system

*** Scope of TNA is based on Technology Assessment Plan (TAP)**

SUMMARY OF ASSESSMENT

BACKGROUND:

Marinduque State College (MSC) is committed to maintaining the highest degree of excellence in the field of Instruction, Research, Extension and Production towards meeting customer satisfaction by adhering to globally-adopted quality standards. MSC envisioned an advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025 and their mission is to provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education. Their Core Values, is to Educating People, Enriching Lives, and Expanding Opportunities with:

Wisdom for Truth and Knowledge



Ingenuity in Research, Extension, and Production

Sustainability of Good Deeds

Dexterity in Management of Resources

Orchestrator of Good Practices in Achieving Goals, and

Magnanimity in Dealing with People and God's Creation

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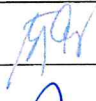
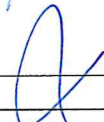
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The College supports any action and collaboration from public and private sectors in developing scientific solutions to the needs and problems in the communities. MSC and DOST-PSTC Marinduque has a strong collaboration in different projects that aims to develop products and help the lives of people in the province of Marinduque.

METHODOLOGY

This project will focus on the product development and formulation stage of the probiotic drink made from coconut sap. The coconut sap samples will be taken from coconut trees in Municipalities of Boac, Buenavista and Mogpog, placed directly in sterile plastic bottles, having 200 ml of coconut sap in each bottle, and delivered to MSC microbiology laboratory as soon as after harvested. MSC will conduct the different tests from **Phase 1**. Development of Coconut Sap Probiotic Drink (Microbiota Analysis, Pasteurization, Inoculation, Viable Cell Count Determination), **Phase 2**. Characterization of Coconut Sap Probiotic Drink (Determination of pH, Titratable Acidity, and Sugar Concentration, and Nutritional Composition, Sensory Evaluation) and **Phase 3**. Product Finalization (Shelf-life, Consumer-testing, Costing). Once the product has been successfully developed, the formulated product may be scaled up for greater volume production and be opened for commercialization.

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Summary of Findings**1. Strategic Direction****a. Vision and mission****Vision**

An advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025

Mission


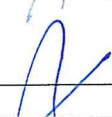
To provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education.

b. Plans and Objectives

1. Optimize the process of pasteurization of the coconut sap
2. Determine the population counts of *Lactobacillus* spp. in the developed probiotic drink
3. Characterize the developed non-dairy based probiotic drink from coconut sap in terms of PH, Titratable Acidity, and Sugar Concentration and sensory properties (smell, taste, color and general acceptability)
4. Determine the shelf life of the developed probiotic drink
5. Determine the Average Total Cost/Per-unit cost of the Coconut Sap Probiotic Drink

c. Strategic alliances and current agreements

MSC has existing linkages/collaborations with DOST and other National and Local Government units.

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2. Management Aspect**a. Human Resources**

A project coordinator and food technologist will be assigned by MSC. They will handle the overall operations of the project, including the preventive maintenance of the pasteurizer and other laboratory tools that will be used for the conduct of R&D on coconut sap into probiotic drink.

Expertise of UPLB-IFST will be tapped for the characterization of the probiotic drink.

b. Purchasing

Pasteurizer and other materials will be procured by MSC.

c. Work Environment


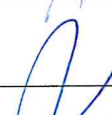
MSC has established a Food Testing and Microbiology Laboratory inside the MSC - Main Campus which will also be used for the probiotic drink project.

d. Business Ethics and Social Responsibility

MSC needs technical support for the provision of pasteurizer equipment and other supplies and materials conduct of R&D that will benefit the coconut farmer and the industry in the near future.

3. Technical Aspect**a. Operational and Outsourcing Practices****Production system**

A food technologist will be assigned in the Food Testing Laboratory for the full operations of the probiotic drink product and ensure product quality and make product innovations.

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| Process/ Existing Practice/Problem | Proposed S&T Intervention | Proposed S&T intervention related equipment / skills upgrading | Impact Expected |
|--|--|---|--|
| No existing optimized process for utilizing coconut sap into probiotic drink | MSC conduct research and develop probiotic drink product | Provision of pasteurizer equipment and other supplies and materials | <ul style="list-style-type: none"> Acquired equipment for Food Testing Laboratory Product innovations for coconut sap Utilization of coconut sap as probiotic drink |

Production Planning and Control



MSC coordinator and food technologist will developed a standard operating procedure of the food testing laboratory for probiotic drink product.

Production Layout

The food testing laboratory of MSC will be renovated to conform with cGMP standards. Portion of it will be dedicated for pasteurizer equipment.

Work Study/Improvement

Continuous research will be done for further improvement.

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Equipment Management and Maintenance

Equipment that will be acquired for the probiotic drink product will be used and maintained thru following the scheduled management and preventive maintenance.

Quality Assurance System

At present there is no quality assurance system.

Outsourcing Practices

MSC does not outsource its operation.

b. Product and Process Performance and Improvement**Performance Measures and Results – Process**

N/A

Performance Measures and Results – Product


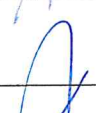
N/A

Procedures for Continuous Improvement

The MSC is open for major adjustment in their production process to improve product quality.

c. Environmental Management System**Waste Management**

Waste materials coming from the facility will be disposed properly

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4. Marketing Aspect

a. Marketing Plan

Once product is developed, it will be registered to IPO-TECH. pitching will be facilitated to encourage potential adaptors of the technology.

b. Market Outlets

N/A

Promotional Activities

Result of Research & Development of probiotic will be promoted using flyers, t.v. & radio commercials, and presentation to public forums and meetings.

c. Market Competitors

No existing competitor within the province who's into probiotic drink using coconut sap product.

5. Finance

a. Cash Flow and other related documents.


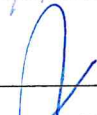
Finances from R&D will be handled by the assigned staff from MSC

b. Source of capital/credit

MSC has the expertise to conduct product development but has the need for technical assistance to purchase the necessary equipment and other materials.

c. Accounting System

There is existing budget and accounting department which ensures the proper utilization of the budget.

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CONCLUSIONS

Based on the interview and ocular inspection the TNA team concludes the following;

1. Marinduque State College needs for technical assistance in form of equipment (Pasteurizer) and other supplies and materials in providing R&D for coconut sap into probiotic drink product.
2. The needed assistance is timely and would enable the MSC to meet its vision and mission.



RECOMMENDATIONS

The following are recommended by the TNA team:

1. DOST MIMAROPA to provide technical assistance to MSC in form of equipment (Pasteurizer) and other supplies and materials to produced probiotic drink product utilizing coconut sap.

TNA Team:

Team Leader: BERNARDO T. CARINGAL
 Members: KEITH PAOLO A. BUENAVENTURA
 ELEAZAR P. MANAOG

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|--|
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