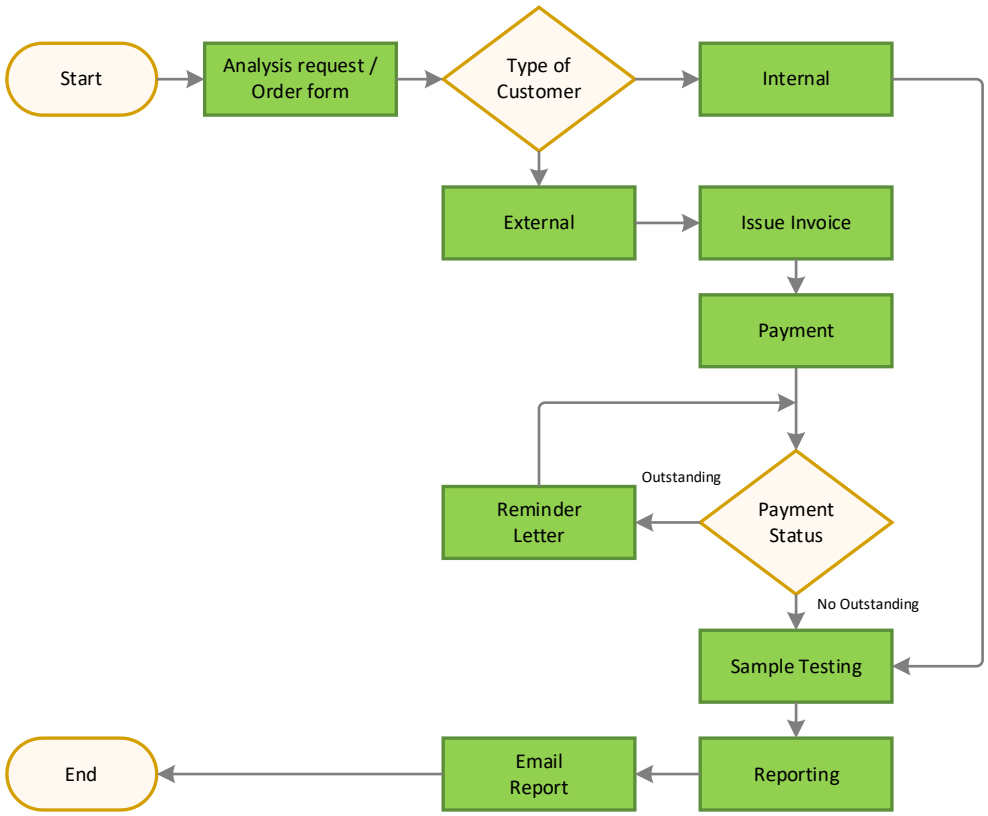
1.0 SAMPLE CHART



2.0 SCOPE

2.1 The procedure aims to provide a standard approach for sample-receiving operations to ensure high sample integrity and the validity of the analytic laboratory results.

2.2 This document serves as a guideline for customers sending samples to CAL for testing.

3.0 GUIDELINE

3.1 Upon getting inquiries on the laboratory services, the laboratory shall provide an Analysis Request Form, FM-GG-03, to the customer to choose the type of analysis required.

3.2 Upon receiving feedback from customers, the laboratory shall provide a quotation.

3.3 Guidelines on sending samples for testing shall be provided to the customers to ensure the sample is prepared accordingly. Refer to the attachment for guidelines based on the type of samples

Attachment 1 – Effluent and Water Samples
Attachment 2 – Fertilizer
Attachment 3 – Soil
Attachment 4 – Foliar and Compost
Attachment 5 – Palm Oil and Palm Oil Products
Attachment 6 – MOSH/MOAH

Attachment 1

GUIDELINES FOR EFFLUENT & WATER SAMPLES DELIVERED TO THE LABORATORY

1.0 GENERAL

1.1 The following guidelines **MUST BE STRICTLY FOLLOWED** by the customer when sending samples for testing to the laboratory. This is to ensure the

1.1.1 The sample's integrity is guaranteed
1.1.2 Samples are adequate for testing
1.1.3 The safety of laboratory personnel in handling the samples is guaranteed

Disclaimer

- **The laboratory has the right to refuse or reject the samples if the samples received are not in appropriate conditions.**
- **If the sample was not properly preserved and/or transported to the laboratory within the holding time, the sample shall be rejected by the laboratory, and the customer shall be informed through written communication on the proper way to preserve and transport the sample unless requested by the customer. Appropriate remarks will be inserted in the test report.**

2.0 COLLECTION OF EFFLUENT SAMPLES

2.1 Apparatus

2.1.1 A clean 1,000mL plastic bottle.
2.1.2 A clean glass bottle with 2.5mL sulphuric acid (for oil and grease test).
2.1.3 Appropriate size of polystyrene ice box (optional).
2.1.4 Customers may collect their FOC plastic/glass bottles at CAL.

2.2 Quantity of samples

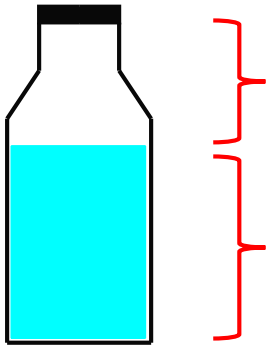
2.2.1 An appropriate amount of samples is required to ensure the laboratory has enough samples to conduct the testing

No	Criteria	Amount of Sample, mL	Container
1	Full test, 7 to 12 parameters	2,000	Plastic bottle
2	Part test, 1-3 parameters	1,000	Plastic bottle
3	Oil and Grease	500	Wide-mouth glass bottle

2.3 Sample collection

2.3.1 Fill the samples into the container **with not more than ¾ of the bottle capacity** (maximum 750mL for 1000mL plastic bottle and 375mL for 500mL glass bottle).

2.3.2 This is to prevent the sample from exploding during laboratory handling. Microbial activity in the samples generates gases, which pressurize the bottle.



Air space - a room for gas released by microorganism activities

Sample filled in the container ¾ of the container size OR LESS

2.3.3 Closed the container airtight.

2.3.4 Clearly label/tag all sample bottles with relevant information. An example of the sample information tag is below.

2.3.5 Secure the tag with an appropriate method to ensure the integrity of the tag is secure.

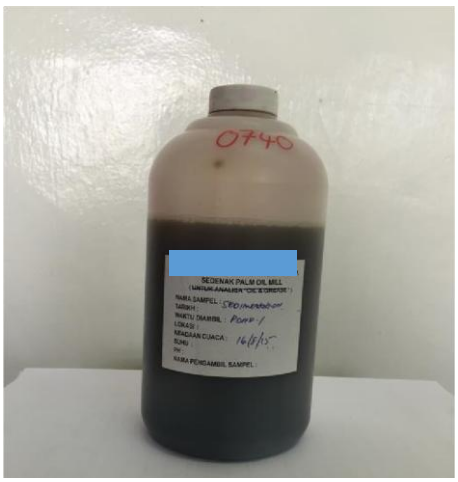
Sample Name	
Date	
Time	
Sample by	
Remarks	
Weather Condition	

2.3.6 Store and carry the samples in an appropriate polystyrene ice box with adequate ice quantity to extend the sample's shelf life (optional).

2.4 Example of Effluent Sample

FOR IMPROVEMENT

1. Sample fully filled
2. Dirty bottle label as a result of overflow samples
3. Shape of the bottle changed due to pressurize gas produced by microorganism
4. Can **EXPLODE** at any time
5. Dangerous to open the bottle



GOOD EXAMPLE

1. Sample filled < ¾ of bottle capacity
2. Clean & clear label
3. Shape of the bottle remain unchanged due to enough air space for gases released by microorganism

6.0 COLLECTION OF WATER SAMPLE

6.1 Apparatus

6.1.1 A clean 1,000mL plastic bottle or/and
6.1.2 A clean 500mL plastic bottle
6.1.3 Appropriate size of polystyrene ice box (optional)

Note:
Customers may collect FOC plastic/glass bottles at our laboratory in Kota Tinggi.

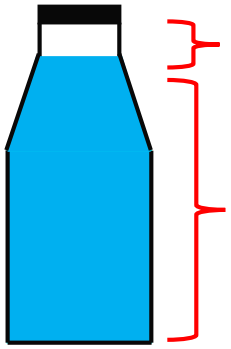
6.2 Quantity of sample

3.2.1 An appropriate amount of samples is required to ensure the laboratory has enough samples to conduct the testing.

No	Criteria	Amount of sample, mL	Container
1	Full test, more than 10 parameters (chemical)	5,000	Plastic
2	Part test, less than 10 parameters (chemical)	1,000	Plastic
3	Microbiology test (e.g. E-Coli)	1,000	Plastic

3.3 Sample collection

3.3.1 Fill the samples into the plastic bottle **<u>until almost full</u>**
3.3.2 3.3.2 Keep a minimum air space.



Kept minimum air space

Sample filled in the plastic bottle at almost full

3.3.2 Clearly label/tag all sample bottles with relevant information. An example on the sample information tag is below.

3.3.3 Secure the tag with an appropriate method to ensure the integrity of the tag is secure.

Sample Name	
Date	
Time	
Sample by	
Remarks	
Weather Condition	

3.3.4 Store and carry the samples in an appropriate polystyrene ice box with adequate ice quantity to extend the sample's shelf life (optional).

3.4 Example of Water Sample

FOR IMPROVEMENT

1. Samples filled in not appropriate container
2. Sample exposed to contaminant

GOOD EXAMPLE

1. Used a proper container
2. Sample labelled accordingly

Attachment 2

GUIDELINES FOR FERTILIZER SAMPLE DELIVERED TO THE LABORATORY

1.0 SCOPE AND APPLICATION

1.1 The guideline served as a general guideline for the customer when sending fertilizer samples for analysis to the laboratory.

2.0 QUANTITY OF SAMPLE

2.1 An appropriate amount of samples is required to ensure the laboratory has enough samples to conduct the testing

No	Criteria	Packing	Quantity
1	Internal customers	Self-adhesive fertilizer sampling bag (provided)	All samples retained in the x-cross-sampling probe
2	External customer	Bag	> 50 grams
3	Liquid Fertilizer	Plastic Bottle	> 100 mL

3.0 SAMPLING PROCEDURE

3.1 The sampling procedure may vary for each type of sample and shall have a representative sample.

6.3 The sampling procedure may also vary depending on company policies.

3.2.1 For internal customers, you may refer to the guideline outlined in the JPG Agriculture Manual, subtopic Manuring.

3.2.2 For external customers, you may refer to Malaysian Standard MS 417: Part 1: 1994 Method of Sampling and Sample Preparation or any standard methods can be used as references.

4.0 SAMPLING PACKING

4.1 For Internal Customer reference packing example

1. One bag is a representative of each sub-sampling of a retained bag.
2. Seal the bag using a self-adhesive seal. (Refer to JPG Agriculture Manual for label design)

4.2 For External Customer reference packing example

1. Each bag is a representative of 1 sample
2. Seal the bag to avoid contamination.
3. Label each sample for proper identification

Attachment 3

GUIDELINES FOR SOIL SAMPLE DELIVERED TO THE LABORATORY

1.0 SCOPE AND APPLICATION

1.1 The guideline served as a general guideline for the customer when sending soil samples for analysis to the laboratory.

2.0 QUANTITY OF SAMPLE

2.1 An appropriate amount of samples is required to ensure the laboratory has enough samples to conduct the testing

No	Criteria	Packing	Quantity
1	Fresh sample	Appropriate	1 kg per sample
2	Dried sample	Appropriate	1 kg per sample
3.	Dried and ground sample	Appropriate	500 g

3.0 SAMPLING PROCEDURE

3.1 The sampling procedure may vary for each type of sample to have a representative sample.
3.2 The sampling procedure may also vary depending on company policies.
3.3 Any standard methods can be used as references.

Attachment 4

GUIDELINES FOR FOLIAR & COMPOST SAMPLE DELIVERED TO THE LABORATORY

1.0 SCOPE AND APPLICATION

1.1 The guideline served as a general guideline for the customer when sending foliar and compost samples for analysis to the laboratory.

2.0 SAMPLING PROCEDURE

2.1 The sampling procedure may vary for each type of sample to have a representative sample.
2.2 The sampling procedure may also vary depending on company policies.
2.3 Any standard methods can be used as references.

3.0 SAMPLE PREPARATION FOR OIL PALM / COCONUT LEAVES

3.1 Preparation of fresh leaf samples received by the laboratory

3.1.1 Under moist conditions, green tissue remained active for several days after they have been removed from the tree.
3.1.2 At this time, the living processes deplete the starch and protein reserves of the leaves, which leads to a loss of nitrogen.
3.1.3 To reduce these losses to a minimum, leaves must be prepared preferably within 2 hours of sampling.
3.1.4 If too many samples are received at one time for processing, they may be stored for a longer period in a refrigerator or deep freeze.
3.1.5 The midrib shall not be removed, except in material where it is predominant. If the midrib is being removed, this shall be stated in the analysis report.

3.2 Cleaning

3.2.1 Clean on both sides of leaves, using a clean, listless cloth soaked in water and wrung out to just wet. The water needs to be changed at frequent intervals.
3.2.2 Exceptionally dirty leaves should first be cleaned with a solution of 0.2% phosphate-free detergent, followed by distilled water.
3.2.3 Do not soak the leaves in water or a detergent solution. This causes rapid leaching of plant nutrients.
3.2.4 After cleaning, if necessary, the leaves are cut into 3-4 cm pieces to facilitate drying and sub-sampling.

4.0 SAMPLE PREPARATION FOR OIL PALM / COCONUT RACHIS

4.1 Preparation of fresh rachis samples received by the laboratory

4.1.1 Clean on both sides of the rachis block using a clean, listless cloth soaked in water and wrung out to just wet. The water needs to be changed at frequent intervals.

4.1.2 Rachis sample block shall be cut, taking 3 pieces of the middle layer by 1-2 cm wide.

4.1.3 Do not remove the green layer of the block.

4.1.4 The slice shall then be cut into a straw shape.

5.0 SAMPLE PREPARATION FOR ANALYSIS

5.1 Drying by Oven

5.1.1 Dry the sample in the oven at 70 $\pm$ 10^{o}C overnight.

5.1.2 The sample is considered dry when it is crisp to the touch.

5.1.3 Let the sample cool to room temperature and pack properly for mailing.

5.2 Drying by Microwave

5.2.1 The sample can also be dried using a microwave oven with medium power.

5.2.2 The sample is considered dry when it is crisp to the touch.

5.2.3 Let the sample cool to room temperature and pack properly for mailing.

CAUTION: DO NOT OVERDRY. The burned sample may affect the analysis results

6.0 SAMPLE PACKING

6.1 Prepare and send the appropriate amount of sample to the laboratory for testing

No	Type of Sample	Sample Condition	Amount of Sample required
1	Leaf and rachis	Fresh, clean uncut	500 grams
2		Dried ungrounded	200 grams
3		Dried grounded	100 grams
4	Compost	Fresh	500 grams
5		Dried ungrounded	500 grams
6		Dried grounded	100 grams

Attachment 5

GUIDELINES FOR PALM OIL AND PALM OIL PRODUCT SAMPLES DELIVERED TO THE LABORATORY

1.0 SCOPE AND APPLICATION

1.1 The guideline served as a general guideline for the customer when sending palm oil or palm oil product samples for analysis to the laboratory.

2.0 QUANTITY OF SAMPLE

2.1 An appropriate number of samples is required to ensure the laboratory has enough samples to conduct the testing.

2.2 The number of samples may vary depending on the number of parameters required.

No	Criteria	Packing	Quantity
1	Crude Palm Oil	Plastic bottle	250 mL
2	Sludge	Plastic bottle	500 mL
3.	Decanter/Press Cake	Clear plastic bag	1,000 grams
4.	Physical test	Clear plastic bag	1,000 grams

Attachment 6

GUIDELINES FOR MOSH AND MOAH SAMPLES DELIVERED TO THE LABORATORY

1.0 SCOPE AND APPLICATION

1.1 This procedure also provides guidelines for sampling and handling to ensure MOSH/MOAH testing is conducted in accordance with food safety sampling standards.

1.2 Special attention must be given to the high risk of cross-contamination during sampling, as MOSH MOAH analysis is highly sensitive to external contaminants

Disclaimer

- **The laboratory has the right to refuse or reject the samples if the samples received are not in an appropriate condition.**
- **If a sample is not properly preserved or transported to the laboratory within the specified holding time, it shall be rejected. The laboratory will notify the Mills representative, who must provide a replacement sample from the same sampling point and deliver it to the laboratory as soon as possible.**

2.0 MATERIAL AND EQUIPMENT

2.1 Clean the Amber Glass Bottle for 250 ml and 500 ml with the cap

2.2 Labelling sticker

2.3 Aluminium Foil

2.4 Personal protective equipment

2.5 Box (any type)

3.0 SAMPLING PROCEDURE

3.1 The sampling point

No	Process Point	Sample Type	Sample Size
1	FFB at Ramp	Loose fruits	> 20 pieces
2	After sterilizer	Oil + Condensate Water	500 ml
3	Recover oil (from steriliser condensate water)	Oil + Condensate Water	500 ml
4	After condensate chamber	Oil + Condensate Water	500 ml
5	Digester	Oil	250 ml
6	Press	Oil from Press Liquor	250 ml
7	Decanter	Oil (sludge water phase)	500 ml
8	EFB Press	Recover Oil	250 ml
9	Clarifier Tank	Crude Oil (contains sludge)	250 ml
10	Storage Tank	Crude Palm Oil	250 ml
11	Dispatch Tank	Crude Palm Oil	250 ml

3.2 At each sampling point, allow the oil to flow for a few seconds to flush out stagnant oil before collecting with a scoop. Gloves must be worn during sampling.

3.3 The top layer of oil shall be collected using a scoop to avoid inclusion of sludge or debris during the sampling process

3.4 Collect the sample size based on the Process Point that had been designed.

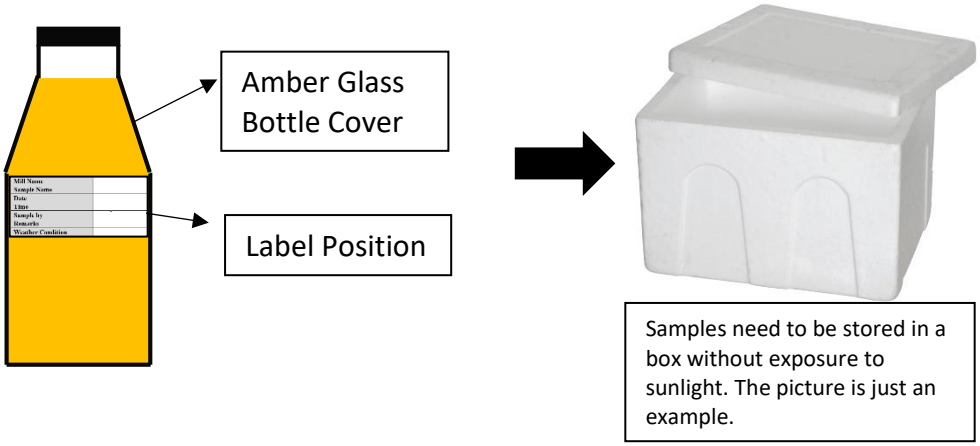
3.5 Close the bottle immediately to prevent contamination. Cover with aluminium foil to protect the sample from direct sunlight

3.6 Wipe any dirt or oil outer bottle on the surface.

3.7 Each sample would have labelling

Mill	
Sampling Point	
Date	
Time	
Sample by	
Remarks	
Remarks/Abnormality	

3.8 Paste the sample sticker properly onto the glass bottle.



3.9 Store the sample and deliver it to CAL for testing.

3.9.1 Samples shall be kept in a closed container under controlled conditions to prevent exposure to sunlight and elevated temperatures that could affect sample integrity.

3.9.2 To preserve the integrity and freshness of the samples, the Mill Person-In-Charge is required to ensure delivery of the sample box to the designated location within 24 hours.