

# SOP for Determination of Dry Matter Content

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Ethics: The activities, which led to the production of this manual, were assessed and approved by the CIRAD Ethics Committee (H2020 ethics self-assessment procedure). When relevant, samples were prepared according to good hygiene and manufacturing practices. When external participants were involved in an activity, they were priorly informed about the objective of the activity and explained that their participation was entirely voluntary, that they could stop the interview at any point and that their responses would be anonymous and securely stored by the research team for research purposes. Written consent (signature) was systematically sought from sensory panelists and from consumers participating in activities.

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<b>RTBfoods</b> <b>WP2: Biophysical characterization of quality traits</b>		
<b>SOP: Determination of Dry Matter Content</b>		
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## 1 SCOPE AND APPLICATION

Moisture content affects the processability, shelf-life, usability and overall quality of a product as well as its sensorial properties. Accurate moisture content determination, therefore, plays a crucial role in ensuring quality as it affects processing, packaging and final product quality.

Thermogravimetric methods which involve moisture loss through heating might render the samples not suitable for further analysis as other vital ingredients may have been lost in the process.

This SOP is applicable for RTB products wet or dry samples.

## 2 REFERENCES

AOAC (2005) Determination of Moisture, Ash, Protein and Fat. Official Method of Analysis of the Association of Analytical Chemists. 18th Edition, AOAC, Washington DC.

## 3 DEFINITIONS

Moisture content is the quantity or the amount of water (in any form) contained in a material such as food, grains, feeds, etc.

## 4 PRINCIPLE

The principle of moisture content determination using thermogravimetric method involves the loss in weight that occurs as the material is heated up to constant weight. The sample weight is taken before heating and again after reaching a steady-state mass after drying. The sample is heated at 100 – 105 °C for at least 16 hours in a draft air oven, while the constant loss in weight is reported as moisture. During the heating process, compounds other than moisture could be lost.

## 5 REAGENTS

No reagents.

## 6 APPARATUS

Well-ventilated convection drying oven

1. Desiccator
2. Moisture Cans (preferably in nickel, aluminium, stainless steel or glass)
3. Analytical balance (calibrated and correct to 0.1 mg)

## 7 PROCEDURE

1. Wash thoroughly with clean water and dry the aluminium Cans for 3 – 4 hours in the oven at 103 °C remove from the oven and allow to cool for 10 min in a desiccator.

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2. Weigh 5 g of the homogenized sample in duplicate into a pre-weighed clean aluminium Cans provided;
3. Place the Cans in a well-ventilated Oven maintained at 103°C for 16 hours;
4. Remove and transfer to a desiccator at room temperature to cool;
5. After cooling for at least 20 minutes, weigh as quickly as possible to 4 decimal places (the Can must be completely cold, not warm).
6. Remove and transfer to the Oven for another 2 hours
7. Repeat steps 4 and 5 until a constant weight is obtained.
8. Report loss in weight in weight as moisture content

## 8 EXPRESSION OF RESULTS

Report Percent loss on drying (% LOD) as moisture content (% w/w, wet basis)

$$\% LOD = 100 * \frac{Wt\ of\ test\ before\ drying - Wt\ of\ test\ after\ drying}{Wt\ of\ test\ before\ drying}$$

**% Dry Matter = 100 - % LOD**

## 9 CRITICAL POINTS OR NOTE ON THE PROCEDURE

- All aluminium Cans must be washed and dried thoroughly.
- The desiccators must be cleaned, greased and with suitable desiccants.
- The samples (for dried samples) must be milled to fine particles of < 0.5mm size before drying.
- The wet samples must be dully finely sliced, homogenized and blended before drying.
- It is essential to never place moist products in an oven containing test portions at the end of dehydration, as this will result in partial rehydration of the latter.
- The analytical weighing balance and Oven must be calibrated before use.
- The Cans must be completely cold, not warm, before weighing.
- Minimum of 2 to 3 replications is required for the determinations.

## 10 REVISION RECORD

Date (DD/MM/YYYY) (arial 11 bold)	Responsible person	Description of change



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