



Dry Matter Testing of Mangoes

Greg Owens, A/Principal Extension Officer, DPIFM Darwin

When a mango has 14% dry matter it is considered mature enough to pick and will ripen properly with a good flavour. The procedure set out below shows how dry matter percentage can be calculated simply and accurately.

Mango dry matter should be used in conjunction with the other maturity indicators of heat sums, internal flesh colour and external colour and shape. The heat sums value that indicates when a mango crop should be checked for dry matter each year is given in Information Sheet IS34 on our web site and updated fortnightly throughout each mango season.

Go to www.horticulture.nt.gov.au and then to the current mango season page.

The method used to calculate dry matter percentage is to weigh a sample of mango flesh when it is still full of water; then to dry out all the water in the flesh and weigh it again. The weight of the dry matter left can be converted to a percentage of the original wet weight, this is the **DRY MATTER PERCENTAGE (%DM)**.

Equipment:

- Cutting boards x 2
- Large knife
- Vegetable graters x 2
- Fork
- Microwave or drying oven
- Coffee mugs (for microwave oven)
- Paper towels
- Patty papers
- Marking pen
- Accurate scales (0.1g accuracy)
- Calculator
- Notebook or spreadsheet to record the results

Method:

Sample Preparation

1. Select samples of the "average" fruit to be tested (avoid obviously forward and backward fruit).
2. Weigh the patty papers and write the weight or a code number on the bottom of the paper (using 2 papers together for each sample works better), together they weigh about 0.45g.
3. Cut the cheeks of the mango to be sampled and cut the cheeks into quarters.
4. Grate the flesh from the centre of all the quarters of the one mango onto a cutting board.
5. Mix using a dry fork and transfer about 10g of flesh into a weighed patty paper.
6. Weigh and record this weight as the "Wet weight + patty paper".
7. Clean and dry all equipment before the next sample (this is why there are 2 sets of graters and boards).

DEPARTMENT OF PRIMARY
INDUSTRY, FISHERIES AND MINES

Crops, Forestry and
Horticulture Division
GPO Box 3000
Darwin NT 0801
Tel: 08 8999 2357
Fax: 08 8999 2049
Email: horticulture@nt.gov.au
Web: www.horticulture.nt.gov.au

Disclaimer:

While all reasonable efforts have been made to ensure that the information contained in this publication is correct, the information covered is subject to change. The Northern Territory Government does not assume and hereby disclaims any express or implied liability whatsoever to any party for any loss or damage caused by errors or omissions, whether these errors or omissions result from negligence, accident or any other cause.

Drying procedures

Microwave oven

1. Two thirds fill the coffee mug with cool water from the tap and place it in the microwave. This is essential to stop the samples burning instead of drying. Don't overfill the cup as it will boil over onto the sample.
2. Run the microwave for about 3 minutes. Remove the cup of hot water carefully and replace with new cup of cool water. Allow the first cup to cool down for the next swap.
3. Repeat the above for 3 minutes and then weigh the sample. Remember to swap the cups for cool water.
4. Repeat for 2 minutes, then 1 minute etc, until the sample is totally dry. This will be when there is no more change in weight of the sample.
5. Record the dry weight + patty paper.

Drying oven

1. Place the sample in a drying oven and leave for 12 - 24 hours at approximately 65°C. Higher temperatures will cause burning.
2. Record the dry weight + patty paper.

Calculations

1. Take away the weight of the patty paper from the wet weight + patty paper and the dry weight + patty paper.
2. Record these as Dry and Wet weights.
3. Divide the dry weight by the wet weight and multiply by 100% to bring it to a percentage. This is the %Dry Matter.

Formula: Dry weight/Wet weight x 100% = % Dry Matter

Example of a Spreadsheet for Dry Matter

Sample No	Date	Wet weight + patty paper	Dry weight + patty paper	Wet weight	Dry weight	% Dry Matter
1	13 Sept	11.45g	1.60g	11.00g	1.15g	10.5%
2	28 Sept	10.85g	1.86g	10.4g	1.41g	13.6%

General notes

1. The more care taken the more accurate the result.
2. Scales must be accurate to at least 0.1g.
3. This test is only useful when the sampled fruit is the same as the fruit to be harvested.