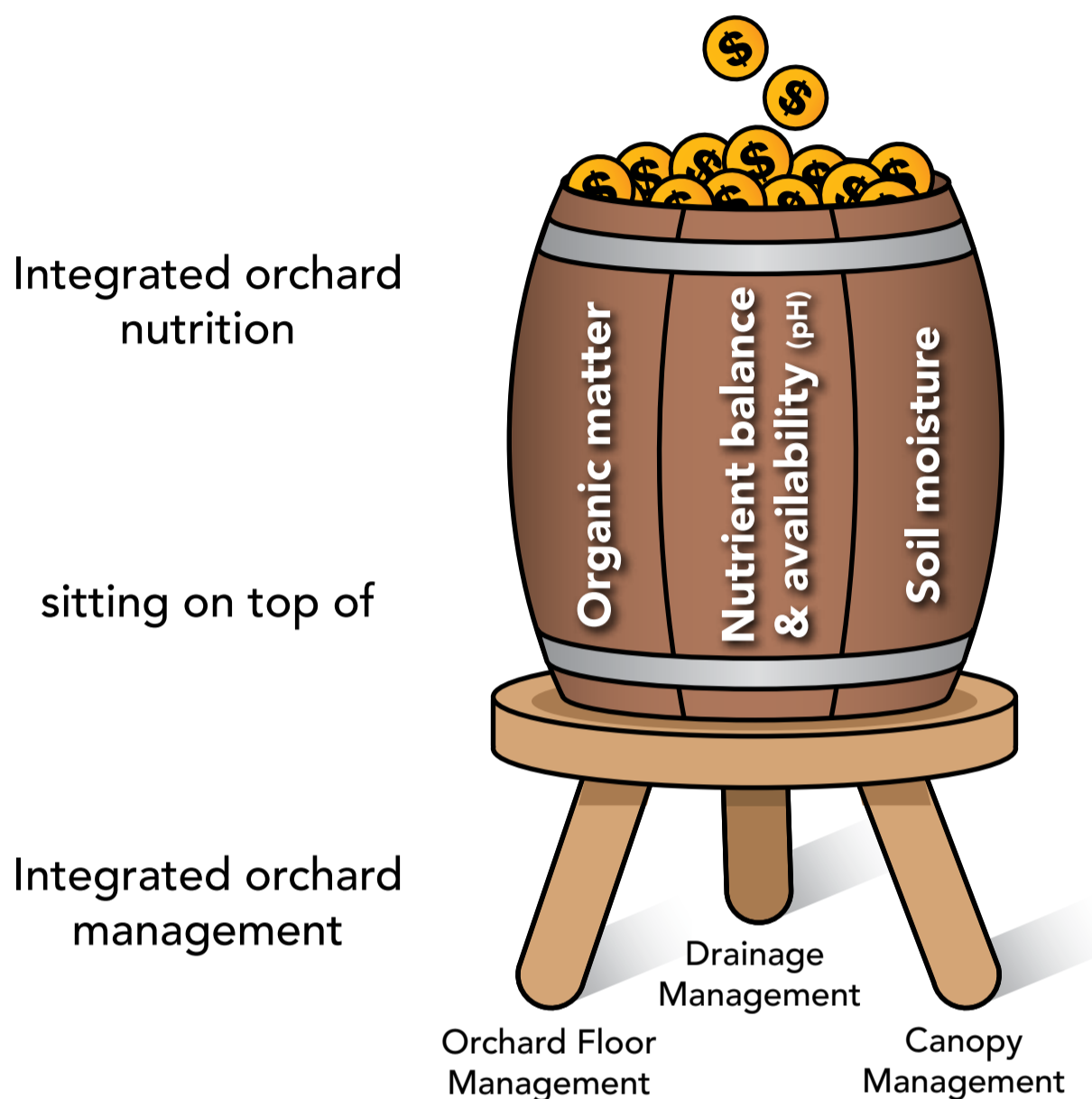


Integrated Orchard Nutrition (ION): Important information for growers

Integrated orchard nutrition (ION) works together with integrated orchard management (IOM) to maximise profits and production for macadamia orchards. It is important to establish an effective IOM program before considering how an ION program could assist in further improving and maximising results.



The three key aspects of ION are:

1. Organic matter
2. Nutrient balance and availability (pH)
3. Soil moisture

The three key aspects of ION are interrelated and have an effect on each other. These factors can also be seen as 'limiting factors' - meaning an issue with any of these factors could be limiting an orchard's ability to achieve maximum profitability and production.

Key ION statements

1. Plants do not eat, they drink.

Soil moisture is vital in an ION program. Plants need moisture to absorb nutrients.

2. A nutrition program should be undertaken in a consultative manner, not a prescriptive manner.

One size does not fit all. Consulting with the grower to understand their goals, ambitions and limitations prior to developing an ION program is vital to success, and an indicator of a professional consultant. Growers should NOT expect to be able to get an "over the counter" prescriptive nutrition program recommendation from a professional consultant. Rather, growers should engage a professional consultant

and request they visit their orchard to assist to develop a suitable nutrition program, in a consultative manner.

3. Leading growers do not make single person decisions - they always get input from multiple sources (in-house and external).

High producing orchards use consultants to assist them in developing their ION program.

4. Growers should engage professional consultants. And ensure their consultants are up to date on the latest ION knowledge

5. Soil and leaf tests need to be fair and consistent representations of the management area.

A management area is not necessarily a specific block. Each grower needs to clearly articulate

to their consultant/s their specific management blocks (this may be by variety, by block, by soil type or it may be the case that the whole farm is treated the same way. This will vary from orchard to orchard depending on the managers and owners). Soil and leaf tests should be taken to be fair and consistent representations of the management areas.

6. Previous research has identified and proven that stress at nut development will result in decreased yield (particularly in the oil accumulation stage).

Minimising stress during nut development is possible with soil buffering (such as; increased organic matter, increased soil moisture, improved nutrient balance) will assist to increase yield.

For further information contact: Australian Macadamia Society

113 Dawson Street Lismore NSW 2480

T 02 6622 4933 | 1800 262 426 | F 02 6622 4932

E info@macadamias.org | australian-macadamias.org

This project has been funded by Horticulture Innovation Australia Limited using the macadamia industry levy and funds from the Australian Government

**Horticulture
Innovation
Australia**

Integrated Orchard Nutrition (ION): Self assessment questions for growers

Self-assessment questions to identify key limiting factors

Pre ION questions

- Do you have any IOM red flags on your orchard? (please refer to your IOM booklet for the IOM red flags)
- Is your orchard's canopy, drainage and/or orchard floor at stages 3 or 4? (please refer to your IOM booklet for the IOM orchard stages)



If you answered YES or YES and NO to both questions you have major opportunities for implementing and/or improving an IOM program. Please refer to the IOM booklet for more info.

If you answered NO to both questions, move on to the ION self-assessment questions below.

Key ION self-assessment questions

Record keeping

- Do you have a documented summary of your orchards historical production per hectare over the last 5 years? (or longer)
- Do you have your production per hectare targets for the next 5 years written down? (or in a form that can be clearly communicated)
- Do you keep block (or management area) production records?
- Do you have a farm/orchard map, with management areas and key points of difference highlighted?

Know your soil

- Is your soil friable and well-structured under the tree row?
- Have you undertaken a soil test in the last 12 months?
- Do you understand where soil samples need to be taken?
- Do you understand why this is critical?
- Do you have your historical soil test results grouped together?
- Is your soil pH (water) above 4.5?
- Do you know what the different soil types are on your orchard and where they are specifically located? (Do you have a detailed orchard soil map?)
- Do your soil tests identify any problems? (deficiency or toxicity)
- Do you have a clear plan to fix these problems?

Know your tree

- Do you have uniformly healthy trees in your orchard?
- Have you undertaken a leaf test in the last 12 months?
- Do you understand where leaf samples need to be taken?
- Do you understand why this is critical?
- Do you have your historical leaf test results grouped together?
- Do your leaf tests identify any problems? (deficiency or toxicity)
- Do you have a clear plan to fix these problems?

Know your consultant and your nutrition program

- Do you use a professional nutrition consultant?
- Do you have a clearly documented nutrition budget and is your consultant aware of it?
- Does your consultant develop your nutrition program in consultation with you? (Is the nutrition program tailored to your orchard, your production goals and your businesses limitations [physical, financial, mechanical])
- Is the amount of nutrients you apply equal to the amount of nutrients removed? (factoring in appropriate application losses for your orchard)
- Are you applying key elements in line with peak demand periods?
- Do you know what your most limiting ION factor is on your orchard?
 - Organic matter
 - Nutrient balance and availability (pH)
 - Soil moisture



If you answered NO to any of these questions it is highly likely you have major opportunities for implementing and/or improving an ION program on your orchard.

ION is a complex area of orchard management, it involves; soil chemistry, tree physiology, soil physics, an understanding of chemistry (fertilisers) and soil biology.

The AMS recommends that all growers engage an ION consultant to help develop a specific ION program. A professional and up to date ION consultant will help identify the most limiting ION factor on your orchard, discuss options for targeted improvements, and help implement the most suitable ION program.

Please contact the AMS for a full list of up to date ION consultant contact details.

For further information contact: Australian Macadamia Society

113 Dawson Street Lismore NSW 2480

T 02 6622 4933 | 1800 262 426 | F 02 6622 4932

E info@macadamias.org | australian-macadamias.org

This project has been funded by Horticulture Innovation Australia Limited using the macadamia industry levy and funds from the Australian Government

**Horticulture
Innovation
Australia**