

National Landcare Program: Smart Farms Small Grant – Fruit Growers Victoria

FACT SHEET 6 Sampling and Data Collection

The objective of soil and plant tissue sampling is to determine adequate nutrition applications for the development of harvest fruit and maintenance of tree health, along with determining soil constraints and amelioration planning

Sampling and data collection assists the grower determine crop requirements at different growth stages and enables efficient use of fertilisers to optimise yields of fruit tree crops.

Fertiliser mismanagement, or deficiencies, can lead to nutrient imbalances in the tree which can contribute to physiological disorders of fruit.

Sampling

Each crop and variety will remove a different amount of nutrient, so each block and variety require testing to determine the correct amount of nutrient required.

To accurately determine what nutrients are present and what nutrients are lacking, a soil sample is taken with results used to calculate what the soil can supply to the crop.

Plant tissue analysis is utilised to support the soil test data. It is recommended to sample developing fruit and harvested fruit to determine specific requirements by variety and location at known growth stages. Knowing the nutrient removed in crop, we can compare with the soil supply and adjust as required.

Testing strategy

Recommended testing

Soil to 300mm post-harvest (standard soil test of all cations and anions and function such as pH and SOM)

Developing fruit

Apples – 100mm circumference
We know that apple fruit calcium levels are important for storage, so 100mm diameter fruit sample is the first sample of the new season and provides a full analysis of nutrient uptake at that time.

Other fruits can be measured at 100mm to maintain a similar reference point. Growers may utilise growth stages of known physiological change in different crops.

Testing and analysis of **harvested fruit** provides the data to calculate the nutrient removed from the site by the crop.

Beneficial testing

Deep soil 300-600mm and 600-900mm

Considering the range of subsoils and potential depth of water and nutrient removal from fruit tree production soils, we recommend a deep nitrogen soil sample to be taken at two depths, 300mm to 600mm, and 600mm to 900mm.

The intent of this sampling strategy is to account accurately for the nutrient used by the tree and crop for the season. This allows the grower to make well informed decisions for nutrient budgets for the coming season based on the soil nutrient bank and nutrient removed by the crop. Growers can decide to replace, manage or drawdown on the soil nutrient bank with the sound knowledge they have the data to support their decision.

Observations

The value placed in, use of and application of soil testing and analysis was surveyed during the first grower workshops

and further discussed continually throughout the project and at most workshops.

The strategy outlined above for sampling aims to improve clarity to the data and assist growers to understand how nutrients are exported from their properties and the importance of making well informed decision to replace the nutrient removed from the soil.

The intention is to more closely calibrate nutrient application to nutrient use , making application more efficient, and placing greater value on the soil and plant analysis and nutrient budgeting.

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