

Management principles

Tailoring nutrition for certified organic

Managing soil fertility for an organic cropping system involves integrating approaches to enhance soil fertility (that is, crop rotation, green manure, etc) with nutrient inputs allowed or registered for use in organic farming systems. This paper enumerates the basic concepts or principles to consider in tailoring a nutritional program for optimum crop yield and quality. These concepts can be used to develop a nutritional program to sustain crop productivity of an organic cropping system.

BASIC CONCEPTS

In tailoring a nutrition program, it is important to understand the following basic concepts:

Soil health. A healthy, well-structured soil rich in humus and high biological activity is fundamental for an organic cropping system. (Refer to Lyn Abbott's article entitled "Understanding Soil Fertility", published in the *Australian Organic Journal*, Autumn 2006 issue, pp 40-41).

Root health and extensivity: Crop growth and vigour depends on nutrient availability and how successfully crops take up nutrients through their root system.

Soil moisture: It is important that the soil contains optimum moisture not only to improve nutrient availability, transport and absorption but also to meet crop water requirements.

Essential elements: The amount of the 17 essential elements or nutrients required by a crop varies with species, cultivars and growth stage. This requirement is modified by prevailing environmental conditions (biological, physico-chemical and climatic) where the crop is grown.

Thus crop growth, yield and quality will greatly depend on how sufficient these elements are supplied (or are available) in order to meet the necessary amount required by the crop to normally grow and produce an optimum yield.

ABOUT THE AUTHOR

Valerio C Tanguilig (Val) has worked overseas as an agronomist/ crop physiologist managing nutritional programs for crops such as pineapple, banana, papaya, tomato, corn, rice and other fruit and vegetable crops.



Val has a tertiary degree in botany and advanced degrees in plant physiology (plant nutrition) and crop production and management from the University of the Philippines at Los Banos.

Val has been employed with Australian Certified Organic since last December as quality assurance co-ordinator and allowed inputs co-ordinator.

STEPS TO TAKE

Know the nutrient requirement of the crop you are growing. Different crops require different amounts of essential nutrients. Nutrient requirements may even vary with cultivars within species.

A hybrid tomato, for example, may require more nutrients than an inbred cultivar. Crop nutrient requirement is also influenced by edaphic and climatic conditions. That is why nutrition programs should be tailored to suit the farm location.

If you have been growing the same kind of crop(s) in the same location for several years, you should know by now how much of the nutrient(s) is (are) required by the crop(s) to attain optimum yield and quality.

If you are not certain of the nutrient requirement of the crop(s) you are growing, consult your agronomist/horticulturist for this information.

Quantify the amount or concentration of essential elements of the soil/growing medium. Soil analysis is the first step in a nutrition program. This will tell us soil chemical properties (such as pH, CEC, OM content and quantity of nutrients available for crop use).

Any nutrient amount detected by soil analysis entails savings on fertiliser budget. Approaches to improve, or amend, soil fertility of organic systems should be adopted. These include green manuring, crop rotation or using cover crops, compost application, microbial inoculation and liming.

Ensure levels of essential nutrients in the soil medium support crop growth and optimum yield. If levels of essential nutrients (as detected by soil analysis) are not sufficient to support crop growth and optimum yield, nutrient inputs should be applied to meet crop requirement.

To determine precise and cost-effective application rates, a nutrient content analysis of the organic fertiliser or amendment is necessary. After quantifying the amount of nutrients that can be supplied from the organic fertiliser or amendment, apply the necessary amount to meet crop requirements.

Monitor nutrient status of the crop at specific growth stages. It is important to do tissue or sap tests during specific crop growth stages to check whether your crops have proper nutrition.

Consult your agronomist/horticulturist if you are not certain

Overall, the major concept behind nutrient management for organic production is to conserve natural resources by depending mostly on biological processes responsible in the release and cycling of nutrients for crop use.

of desired nutrient levels that your crops should have at specific growth stages. Apply organic supplemental nutrition, when necessary.

For a precise and cost-effective application rate, know the nutrient contents of the registered/approved product you are going to use. Apply the needed amount based on tissue or sap test results.

SUMMARY

Practical nutrient management for organic cropping system starts with maintaining good soil health and fertility following requirements of the Australian Organic Standard (2006).

Soil tests should be done to determine whether organic fertilisers or amendments are needed to meet crop requirements. Nutrient contents of the organic fertiliser or amendment should be known before application.

Verify whether crop nutrient requirements are met through tissue or sap tests. Based on tissue/sap tests, supplemental nutrients may be applied to meet crop requirements.

Overall, the major concept behind nutrient management for organic production is to conserve natural resources by depending mostly on biological processes responsible in the release and cycling of nutrients for crop use.

These processes should be enhanced rather than relying on application of manufactured nutrient inputs. ■

SUGGESTED READING

- Abbott, L. 2006. Understanding Soil Fertility. AOJ 65:40-41.
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