

## The Basic Principles of Selecting Growth Medium and Fertigation of Pot Grown Plants<sup>©</sup>

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Growth media that are presently used by growers vary considerably and this complicates matters on how to handle the physical and chemical analysis results. To overcome this, certain basic principles should be considered.

Plants require certain properties from the growth medium, including water, nutrients, oxygen, buffering, and anchoring. When the growers comply with certain basic aspects in the preparation of their growth media some of these requirements are met.

Two aspects of growth media, that have to be consider are the physical and chemical properties.

- Physical properties: Air filled porosity, water holding capacity, and density.
- Chemical properties: pH, EC, and nutrient content.

When using artificial growth media, such as sawdust, bark, or any other organic component it can be expected that the physical and chemical properties will be different and that the analytical results will have to be interpreted differently.

Sampling is very important and any analysis can't be better than the sample. To take a representative sample needs some effort and the equipment necessary may also vary.

The method of chemical analysis especially the extraction procedure for soils and artificial growth media is different. Growers should ensure that they ask for the proper analytical method. Use an accredited laboratory to do the analysis. Local laboratories that participate in the control scheme of AgriLASA are a good starting point. Ensure that the consultant or the responsible person that use analytical results are aware of the different techniques and how to interpreted the results.

The following norms can be use as guidelines.

- Artificial growth mediums (organic)
  - Physical
 

Air filled porosity	20% - 50 %
Water contend at field capacity	50% - 80 %
Density	100 - 600 g.liter <sup>3</sup>
  - Chemical
 

1:1.5 water extraction	
pH	5.5 - 7.0
NO <sub>3</sub> - N	50 - 90 mg·kg <sup>-1</sup>
NH <sub>4</sub> - N	20 - 30 mg·kg <sup>-1</sup>
P	15 - 30 mg·kg <sup>-1</sup>
K	80 - 160 mg·kg <sup>-1</sup>
Mg	16 - 24 mg·kg <sup>-1</sup>
Ca	40 + mg·kg <sup>-1</sup>

■ Micronutrients ( $\text{mg}\cdot\text{kg}^{-1}$ )

Fe	1.5
Mn	0.6
Cu	0.03
Zn	0.15
B	0.3
Mo	0.03

Micro nutrient values will vary depending on the pH of the solution.

EC  $<1.5 \text{ mS}\cdot\text{m}^{-1}$

■ Soil analysis

Chemical

Ammonium acetate extract

1 : 10

Ca

200 +  $\text{mg}\cdot\text{kg}^{-1}$

Mg

70 + (Mg should be less than half that of Ca)

K

100+

P(Bray 1)

30-50 (to high values (100) can be detrimental to plants)

pH

5.5 - 7.0

Resistance

> 300 Ohm

Care should be taken not to apply more fertilizers than what is removed by the crop. Regular monitoring of the soil/growth medium is important.