

## Hydroponic Propagation of *Aglaonema*

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### INTRODUCTION

We started to experiment with growing indoor plants hydroponically in 1978. We found best growth with *Aglaonema* 'Silver King', *A.* 'Silver Queen', *A.* 'Parrot Jungle', and *A. pseudobracteatum*.

Hydroponically grown *Aglaonema* are cheap to transport. As many as 250 (300 mm tall) plants can be packed into one carton. They can be kept, wrapped in peat moss in bundles of 10, for up to two weeks. The plants can be potted up at the other end and be ready for sale in approximately three months instead of a typical six months for saleable plants from cuttings.

### HYDROPONIC PROPAGATION

**The Subirrigation Gravel Unit.** A commercial subirrigation system using 9-mm blue metal gravel as a substrate in a V-shaped trough is used. The unit has an inlet-outlet pipe running the full length of the trough to ensure excellent drainage. Good aeration is assured through the use of large (9 mm) gravel. Flooding occurs automatically every 2.5 h during daylight but only twice at night.

Formula (hydroponic nutrient solution) control is manual and a recirculating system is used to maintain economical use of nutrients and water.

**Hygiene of Unit.** It is important that the gravel is thoroughly washed so that no dust or limestone are left in it. The pipes from the media tank, the troughs, and the gravel should be sterilized with 1/100 formalin. The unit is thoroughly rinsed after a 24-h soak.

Provided the unit is kept clean, it may be used continuously for at least five years. All damaged plants, dropped leaves or diseased plants must be removed. After removing cuttings the gravel should be turned over and any broken roots removed. It is advisable to include 5 ppm Benlate in the solution as a preventative treatment in damp, overcast conditions.

The hydroponic unit that we use is situated in a propagation house which has forced-air ventilation, a temperature range of 20 to 30°C, 70% humidity, and good light (1200 ft-c). No misting is used in hydroculture and the solution temperature is 20 to 24°C. However, provided the solution temperature does not vary more than 4°C and the air temperature does not vary more than 15°C and the air temperature does not fall below 15°C, or exceed a range of 30°C daily, all cuttings perform well.

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**Hydroponic Nutrient Solution Formula**


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**Macronutrients<sup>1</sup>**


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Macronutrient	Quantity (kg)
Monopotassium phosphate	0.454
Potassium nitrate	2.27
Calcium nitrate	3.54
Magnesium sulfate	1.42
Water to 3785 litres	

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**Trace Elements<sup>2</sup>**


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Trace element	Minimum (ppm)	Maximum (ppm)	Optimum (ppm)
Iron (Fe)	2.0	5.0	4.0
Manganese (Mn)	0.1	1.0	0.5
Copper (Cu)	0.01	0.1	0.05
Boron (B)	0.1	1.0	0.5
Zinc (Zn)	0.02	0.2	0.1
Molybdenum (Mo)	0.01	0.1	0.04

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<sup>1</sup> The following gives (in ppm): N 190; P 34; K 275; Ca 52; Mg 45.

<sup>2</sup> Trace elements are added only after the water has been analyzed. Final concentrations in the solutions after analysis and addition of trace elements.

**Formula Notes:**

- 1) The formula is used at half strength for propagation.
- 2) The chemicals must be weighed out accurately.
- 3) Careful storage and use of pure chemicals is of the utmost importance if you are mixing your own formula.
- 4) Use clean, filtered water.
- 5) Water should be adjusted to pH 7 before adding nutrients. Use phosphoric acid or dehydrated lime to adjust the pH.
- 6) Calcium nitrate is added separately.
- 7) Trace elements are best added via a stock solution; iron should be added separately.
- 8) Check pH and conductivity after mixing the formula.
- 9) Check all electrical and automatic systems for reliability and correct settings.
- 10) Prepare propagation material in clean, aseptic conditions.

***Simple Formula Adjustments:***

- 1) Add 28.3 g iron sulfate weekly (to 3785 litres).
- 2) After three weeks, to return pH and conductivity to normal, add another 10% of the weight of all macronutrients.
- 3) If plants do not progress at a normal rate on a steady pH, a 3.4 ppm phosphorus boost may be necessary.
- 4) If pH and conductivity are swinging or rising rapidly a new formula needs to be prepared and the old one replaced.
- 5) Benlate, 5 ppm in solution, is used in winter.
- 6) When using sprays, fungicides, etc., check for trace elements content before use in hydroponic solutions or toxicities will appear.
- 7) Remember there is no normal soil buffering effect in a hydroponic solution, so whatever is put in will be taken up by the plants.

**MAINTENANCE**

- Remove damaged plant material, spilled soil, etc; if gravel is soiled, remove, clean, and replace.
- Check time clocks and adjust if necessary.
- Top up nutrient solution with water.
- Do not increase irrigation times, even on very hot days. New cuttings may be misted every 6 to 48 hours if humidity is low.
- On a weekly basis, flood troughs to overflow and sprinkle cuttings. This removes any excess salts from the top 2.5 cm and prevents buildup of dust.

**PROPAGATION OF *AGLAONEMA***

Stock plants should be healthy, free from disease and insect infestation, true-to-type, and vigorous. We grow our stock plants in 175-mm pots in a poly-covered house which is heated to 18°C minimum from the end of May to the end of September.

Cuttings are taken from August to May. We take a multi-noded cutting with three leaves or more. These are planted into the gravel (70 mm deep and spaced at 90 mm centres) with a dibbling tool.

Roots start appearing after two weeks. In summer the rooted plants take six weeks to grow big enough for despatch and in winter they take up to eight weeks.

Aglaonemas come from humid tropical areas in Thailand, Sri Lanka, Malaya, Philippines, China, and Indonesia. They are free branching and suckering plants that grow slowly and last for a number of years if given ample humidity. They make good house plants and are much used in indoor plant hire.