

Calathea roseo-picta: a flat-growing Brazilian species to 12 in. with large 9 in. elliptical, glossy purple leaves with pink markings; undersides purple.

Calathea warscewiczii: a vigorous species to 30 in. from Costa Rica, referred to in the trade as 'Jungle Velvet'; exhibits velvety, deep green leaves with a light green feathering along the midrib; underside a rich burgundy red.

Calathea elliptica 'Vittata': a bushy cultivar from Colombia having light green leaves with symmetrical stripes of silver-green to white.

Calathea picturata 'Argentea': an upright-growing cultivar to 24 in. from Venezuela; leaves a shining silver, except for a border of dark green along the margin; underside wine-red.

Calathea majestica 'Roseo-lineata': an upright-growing cultivar to 36 in. from the Amazon having metallic, olive-green leaves on long petioles, marked with closely set pairs of pink to white lateral stripes; underside purple.

Calathea makoyana: a bushy species from Minas Geraes, Brazil, referred to in the trade as the "peacock calathea", eventually reaching a height of 36 in.; oval-shaped leaves exhibit exotic, olive-green markings in a translucent field of yellow-green; undersides purple-red with a similar pattern of markings.

A NEW FOG AEROPONICS SYSTEM FOR PROPAGATING AND GROWING HORTICULTURAL PLANTS¹

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The advantages of soilless and detached media for propagation and cultivation of many horticultural crops are self-evident. All these systems, including many types of hydroponic units, rely on the use of a solid medium to support the roots. Aeroponics is a unique method of propagating and growing plants with their root systems enclosed within a mist chamber.

Recently, we developed a new, improved, aeroponics system, based on ultrasonic-generated fine fog. The system consists of 4 modules, each made of a lower opaque plastic compartment which contains the roots, and an upper transparent hood for the shoots. The modules are fed from underneath by a central ultrasonic fog generator, which releases a fine, 1 to 5 micron droplet, fog. The fog is equally distributed into the lower and upper compartments of the

¹ Poster presentation

4 modules, or can be applied to each one of them separately. The system is modular, electronically controlled, and the fog can be applied intermittently, at any pre-set cycle. Water consumption is low (100 to 200 ml/h at continuous operation), as is electrical power requirements (ca. 50 wh). The aeroponics system allows the application of nutrient fog either to the base of cuttings and root systems, or the shoots, or both.

This improved fog-aeroponics system has been used successfully, so far, for:

1. rooting of chrysanthemum, kalanchoe, carnation and mung bean cuttings
2. hardening liner production of chrysanthemum and kalanchoe plants
3. growing mature, flowering, tomato plants
4. germination and initial growth of mung bean and radish sprouts.

The cuttings produced good, well branched, normal root systems. Rooted cuttings were transferred to a standard potting mixture and allowed to develop in the aeroponics system. Top and root fresh weight of these liners was twice as much as liners growing without fog. Large cuttings of mature tomato plants rooted and developed well for at least 3 to 4 weeks, and fruit-set occurred. Seed germination in the aeroponics unit was rapid, producing uniform sprouts.

The new fog-aeroponic system is an advanced, modular, multi-purpose propagation and growing unit. This is due to both its constructional-mechanical and physiological-horticultural versatility. Mechanically, it is a simple, non-expensive and fully controlled system. Unlike traditional foggers, the ultrasonic-generated fog system alleviates the need for high water pressure and expensive filtration devices. Water and electrical power consumption is low, and the system is completely safe. Physiologically, it provides for maximal aeration, combined with adequate, continuous, water and nutrient supply to the plant. Taken together, these advantages allow uninterrupted growth of both roots and shoots. The fog-aeroponics system, therefore, seems to be advantageous for various types of propagation programs and horticultural activities, especially for the following:

- efficient rooting of cuttings
- an alternative for standard mist and fog propagation
- hardening and liner production
- production of specific root crops and root-derived products
- high-humidity growing of specific plants (e.g. tropical and epiphytes)
- tissue cultures
- root research programs