

The Design and Development of Seaview's Propagation Facility

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Early this year, the need arose to expand and modernise our propagation area with the following attributes:

- Where possible, existing structures to be utilised.
- Flexible/adaptable, where there is an ability to propagate a number of plant species under different temperature, water, and light regimes within the same structure.
- Easy to use/workable, whereby there is a central control unit without the need for constant monitoring, or adjusting of timers, throughout the day.

With these factors in mind it was decided to utilise an existing durolite house with vents, electricity, and water were already in place, and which required only a concrete floor. It was decided that a new work room (where cutting preparation, deflasking of tissue cultures, etc., are performed) would be built.

The workroom is fully lined and it utilizes both artificial and natural lighting. The floor is painted with epoxy resin to aid cleaning. Work benches are free standing, height adjustable, and the working surface is made of stainless steel—again for ease of cleaning and hygiene.

The growing area consists of 16 benches each with individual heating, misting, and lighting controlled from a central controller. In order to save space, the benches roll which reduces the need for walkways or paths between benches. The benches are at a comfortable height so staff do not have to squat, stoop, or lean in order to move trays. Movement is also helped by being able to pull the mist lines up when not in use, or if working with the cuttings. Bottom heat is supplied by thermostatically controlled heat boards, with nine used per bench. Each bench is capable of holding 52 hygiene trays. Mist is supplied overhead and four of the benches have fog.

Mist and fog are controlled by an 18-stage Sarnia controller with a wean selection. This enables mist cycles to be gradually omitted between the time cuttings begin to root and until they have hardened and are ready to be potted. Each bench is assigned to an individual stage on the mist controller. Mist cycles can range from 2 sec to 1 min. The mist controller is itself controlled through a light integrating meter which converts sunlight into calories/cm². The meter "counts" down the number of calories that pass until reaching zero—then the mist controller is activated. The more intense the sunlight, the faster the countdown occurs; the more cloudy the day is, the less frequently zero is reached thereby reducing the risk of over watering, or under watering. Night-time watering can be achieved through a standard time clock built into the mist controller. This control system is easy to set, requires little or no monitoring, and if adjustments are needed they can be done

in seconds without having to change all the benches. The main goal which has been achieved is the flexibility of the facility whereby the microclimate within each bench can be altered, allowing different plant species with different requirements to be grown side by side without the need to build special houses.

The system after being in place for 9 mo was expanded with a further 16 benches added and a 34-stage controller installed. Rooting percentages were up and disease incidence down in the new facility.