

## RISK MINIMISATION WITHIN TGG'S PROPAGATION FACILITY

### IRRIGATION

The most crucial input in any propagation nursery is water. If the misting system fails in the heat of summer fresh micro-cuttings can perish in minutes. TGG has various measures to prevent this:

- The water source is a reliable high quality aquifer.
- Rather than pump directly from the bore to the nursery, the water is pumped into a series of tanks, thereby increasing storage capacity and allowing time should there be a breakdown in the bore pump.
- A separate rain water storage system is also linked to the nursery irrigation system to allow for a second back-up supply. A third supply is available from reed bed filtered run-off stored in dams.
- The bore water is pumped from the storage tanks to the nursery using a state of the art computer controlled dual pump system. Each pump is capable of handling normal load while the other is serviced.
- Two pipelines carry the water to the nursery – each capable of being isolated in the case of a malfunction in either.
- A mixture of high and low technology delivers the water to the plants as appropriate. Overall control is delegated to a flexible and virtually failsafe irrigation computer, but even this can be overridden to allow manual operations. In the greenhouses premium quality misters are utilised and the non rooted micro-cuttings are kept correctly hydrated by simple but highly effective balance arm evaporative sensors, of which there are two in each zone to allow one to fail and be repaired while the other continues to function.

### POWER OUTAGE

In the case of a cut to the supply of electricity a powerful generator automatically starts and can power the entire nursery as per supply from the grid, not just irrigation but plant lighting, air-conditioning in the propagation rooms, refrigeration and all other electrical functions – even on a very hot day. This is particularly valuable if a bush fire emergency was to occur.

### PEST AND DISEASE

Careful consideration has been given to greenhouse design. Firstly the decision to build a series of small houses rather than use a large multi-span. This allows the more effective batching of the plants. Each age group receives just the right levels of irrigation and climate control, and each house can be isolated should a disease or pest issue arise. The use of fans to constantly circulate the air helps to prevent fungal diseases, as does the ability to ventilate the houses very effectively with vents and roll-up walls.

Nursery hygiene is kept to a high standard. In particular, plant contact with soil is completely prevented and all trays and tools are disinfected before use. Parent plants are maintained meticulously. The propagation rooms are constantly cleaned and the team follows careful procedures to ensure the cutting material does not become contaminated. The growing medium is mixed on site from sterile components delivered in bags and is used directly so as to avoid risk of contamination in storage prior to use. Greenhouses and all fittings are thoroughly scrubbed down and disinfected between each batch. During each crop careful monitoring and responsible use of prevention and control measures makes sure only healthy plants are delivered to the plantation.

### ADVERSE WEATHER & BUSH FIRE

Fortunately the Mornington Peninsula has a quite benign climate, but TGG are not complacent. It is rare to get any colder than a very light frost at TGG, however for the sake of being able to propagate all year round we utilise waste oil fired hydronic heating and metal halide plant lighting. Hail can occur occasionally so we have the plants covered within 180um polythene or hailgard during vulnerable stages. This also protects from severe winds. A few days of extreme heat (up to 47° C) will generally occur each summer. The evaporative cooling effect of misting ensures this does not present a serious problem – even for the most delicate fresh micro-cuttings. Consideration of fire risk results in the nursery grounds being well maintained combined with positioning of water hoses able to deliver the reliable high pressure nursery water supply, along with back up fire fighting back pack sprayers. However, there is no large area of bushland near to TGG so any fire risk is relatively slight.

### QUALITY ASSURANCE

At every point TGG seeks the best quality in the materials, tools and containers used, along with sourcing, testing, improving and creating top genetics. These important areas are covered in more detail in other documents. However, the key to a top quality product is in achieving quality assurance in day to day operations. This means having the right people in the job, making sure they are well trained and resourced and ensuring they keep their eye on the prize through appropriate management practices. Many nurseries source their staff through employment contractors. TGG prefer to advertise and find staff directly, interviewing carefully, short listing, choosing a limited group for a short training session and ultimately selecting only the most suited to go on to a one week trial from which the best will continue on to further training and ongoing employment. This may be a painstaking process, but it is not true to say that anyone with propagation experience can propagate Paulownia – at least not large quantities of uniform planting stock. The fact is this is a very specialist plant and requires a great deal of attention to detail and a professional approach. During every production period quality is constantly monitored by Noriko Lawrence, Quality Control Officer. Useful systems to help assess each staff member's performance include tracking who produced each tray of cuttings using labels of a different colour for each day of the week, variety coded, dated and marked with the employee's name. Measures such as this also allow the top employees to be rewarded for their excellence. Quantity is never given priority over quality, however. The main advantage of the tracking system is the ability to inform an individual of a quality issue and fix it before it becomes a larger problem. TGG employees understand and accept the need for such a program because it is carried out in a respectful manner. TGG is committed to the recruitment and retention of superior staff.

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