

ABOUT TOAD GULLY GROWERS

by manager and founder James S. Lawrence ~ toadgully.com.au

Introduction

Toad Gully Growers is committed to the mass production of premium quality Paulownia planting stock.

We are the only nursery in Australia specialising in the year round propagation and supply of Paulownia plants.

Propagation is a fascinating process. To start from a single plant and multiply it into many thousands is a very gratifying endeavour. From the beginning, the aim at TGG was to develop the most effective systems to reliably produce top quality Paulownia planting stock to meet the needs of commercial plantations.

To appreciate what sets TGG's product apart you need to comprehend three facets of our operations; method, products and genetics.

Method

In the late 1980's we began propagating Paulownia by field grown root cuttings. This is a low tech method and was a useful starting point, but it soon became clear it was not best practice. There are significant inefficiencies, both in time and land use, to grow saplings for several months and then dig them and trim the roots to obtain the cuttings. This is followed by further time in containers in a greenhouse while a percentage of the roots sprout, generally at varying rates and of uneven quality requiring sorting and grading before finally hardening and dispatching to the plantation. More important, however, is the disease risk inherent in any plant matter sourced directly from the ground. Soil borne fungal and other pathogens are easily transmitted and carried from sapling plot to nursery and ultimately into the plantation.

Our next step was seed germination, in which we soon became proficient after determining the exacting conditions required by Paulownia. We still supply seedlings when circumstances favour this method. According to leading Chinese researcher Prof. Zhu Zhaohua, "...production from seeds is an important method of Paulownia propagation. It has many advantages. The roots are better developed in seedlings than those propagated by root or stem cuttings. The plants grow stronger, faster and are hardly affected by heartwood-rot." We don't doubt the Professor but it is important to know that seed propagation will result in more variability. Each seed is genetically individual, so plants grown from seed are not as uniform as those grown from cuttings or other vegetative methods (which produce clones). Tissue culture is another method to produce clones but it has limited value for large scale Paulownia forestry as it is an expensive method of propagation and results in weak laboratory grown plants in-vitro that take a long time to greenhouse grow and harden in the nursery before they are strong enough to survive planting in the real world.

At TGG we have developed alternative technology for the propagation of Paulownia which is both efficient and provides solutions to the problems associated with field grown root cuttings and the variability of seed propagation. Starting by developing and selecting only the best parent plants we then use our unique non-vitro method to clone only those strongest, thus eliminating much of the variability. Specially managed soil-free grown starter plants are used to source clean parent material. Micro-cuttings from this juvenile tissue mimic actual seedling growth, ensuring a strong root system and avoiding the early decline often seen in trees propagated by field grown root or stem cuttings. These greenhouse propagated plants are also much faster than any other method to reach a ready to plant stage, allowing us to react faster to the needs of our clients.



Products

TGG supply Paulownia plants that are strong and ready to plant directly into the ground.

Headstarters™ are bare-root Paulownia trees with trimmed trunks. They can be easily transported and are ideal for farmers and foresters, including export customers in countries with strict quarantine requirements. PreStarters™ are hardened, green plantlets in biodegradable plug pots and are supplied in large quantities to commercial plantations.

In addition we develop custom solutions as alternatives to the main product types. For low cost nursery options we can offer starter plugs or propagation material in the form of container grown root cuttings from healthy parent plants grown in soil free medium.

Genetics

There are ten species within the genus Paulownia, most of which are not utilized in timber plantations simply because they are un-tested or under-developed. TGG has on-going research and development to improve the range and quality of Paulownia genetics available to plantation growers.

Paulownia have a very wide natural distribution ranging from latitude 22° to 40° in China (tropical to cool temperate) with *P. fortunei* also extending into Vietnam and Laos. Paulownia tomentosa also grows in Korea and Japan. *P. kawakamii* and *P. fortunei* are indigenous to both China and Taiwan where they formed the natural hybrid *P. taiwaniana*.

Most Paulownia plantations in Australia use *P. fortunei*, particularly strains originating from Guangdong province. TGG's biggest sellers are two such varieties; the FGD09 derived originally from high grade seed sourced directly from China then further propagated from select plants in our nursery, and the CAF15+ which originated from work done by the Chinese Academy of Forestry, with the '+' symbolising further selection undertaken at TGG. Fortunei is favoured for its ability to produce a straight trunk more readily than some other species and its adaptability to Australian climatic conditions. However, it should be noted that there is a vast range of variation within most species of Paulownia, depending firstly on provenance and secondly, for those changed through cultivation, the level of genetic alteration; so it is too simplistic to generalise on the characteristics of particular varieties based on species alone. There are many hundreds of cultivars and natural local variants within the different Paulownia species, many of which do not display certain reputed weaknesses of their more archetypical relatives.

TGG has collected a large range of Paulownia genetics from both within Australia and internationally. Along with self harvested and imported seed germination and lineal selection we also actively generate new hybrids within our nursery. We have achieved obvious heterosis through the crossing of certain strains of Paulownia species. To result in a commercial quantity of a new select hybrid clone is a long process, beginning with cross pollination, seed collection and germination, followed by numerous generations of selection trials ultimately resulting in a single superior tree from which we begin mass propagation leading to the release of a new variety for sale.

The combination of the best method of propagation, suitable product type and top genetics makes TGG Paulownia the obvious choice for premium plantations.



Mission

To work closely with others to build the foundation of ecologically and economically sustainable tree based industries.

Vision

Creation of employment and improved living standards through well managed tree plantings which correctly match type to region & site, create local continuity of supply to enable value adding and fill domestic and export market demand.

Based on the Mornington Peninsula, south of Melbourne, Australia, TGG is a family business specialising in the propagation and supply of Paulownia plants. With over 20 years experience in Paulownia genetic improvement, propagation and supply worldwide and through our own field trial growing, overseeing, and learning from plantation customers, we are well placed to offer both a premium planting product and the knowledge needed to grow it.



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