



INTERCROPPING **PAULOWNIA**

Over 1.5 million hectares of farmland in China is intercropped with Paulownia. It is in intercropping systems (as well as wastewater irrigated plantations) that the author feels Paulownia should find its place in Australia as the tree could be incorporated with many of our irrigated crops.



Although the leaves on young Paulownia are very large, as the tree matures they become smaller and are quite sparse, allowing good light penetration. The root systems are deep and once established they tap into ground water and so don't compete with shallow rooted crops. They also circulate nutrients from deep in the soil to nearer the surface - through leaf fall - where they can be of benefit to the crop.

The Paulownia grow better in intercropping as they benefit from fertiliser applied to the crop which leaches deep into the soil and also irrigation and nutrient rich run-off from the crop. In China the Paulownia, once established, are usually not fed or watered at all. They only receive what is applied to the crop. In other words, they are considered a big bonus at the end of their 7 - 15 year rotation.

The crops benefit from the reduction of wind speed, a reduced evaporation rate and consequently higher soil moisture content, along with cooler summer temperatures and slightly warmer late autumn, winter and early spring due to the reduction of cold wind. If the Paulownia leaves that fell during autumn are allowed to rot into the soil (they are also valuable as fodder) their high nutrient content (Nitrogen 3% dry weight) can act as a natural fertiliser.

According to the Chinese Academy of Forestry Research, at 5 x 5 metre spacing (400 per hectare) normal yields of wheat and summer vegetables can be achieved for the first four to six years after planting the trees. Most autumn crops yields are reduced due to the shade. By ten years, the yield of summer crops is usually down by about 20%. At 5x20m (100 trees hectare) the yield of agricultural crops can actually be higher than normal during the first five years. From six to ten years the yield of summer crops remains high but the autumn crops decrease. Over a ten year trial the yield of agricultural crops was basically the same as a control area (without Paulownia) with an

average total of 38.1 tonnes per hectare and the Paulownia yielded an average 44.5 cubic metres of timber per hectare.

Another 8.7 million hectares of China has shelter-belt plantings, a large percentage of which is Paulownia. With shelter-belt plantings of 5 x 30 - 50m of Paulownia (40-67 trees per hectare) most crops are basically unaffected while wheat yields can be increased by up to 23%, millet by 20% and maize by 17%. The yield of cotton was unaffected under average climatic conditions. Under dry conditions, cotton planted in Paulownia shelter-belt areas performed better than cotton grown without Paulownia.

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PROBLEMS, QUERIES, COMMENTS, SUGGESTIONS.

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