

FEATURE

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A TREE FOR ALL REASONS

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China Features

Since ancient time, Chinese peasants have been fond of planting paulownia trees, not only for the beauty of their purple-and-white trumpet-shaped flowers, but also because of their unique fast-growing characteristics. More important, however, interplanting these trees with crops results in a significant increase in grain production.

The trunk of a ten-year-old paulownia tree can reach up to 40 centimetres in diameter, and there is an 18-year-old paulownia tree in Qianjiang county in southwest China's Sichuan province that is 21.7 metres tall and 1.05 metres across. This kind of tree provides an extraordinary average of 0.37 cubic metres of timber per year.

The paulownia adapts to a variety of natural conditions, and grows in China from the tropical Hainan island to the capital, Beijing, and from Taiwan to the loess highlands in the upper and middle reaches of the Yellow River. Even southwest China's hilly regions and valleys -- some 2,000 metres above sea level -- have paulownia forests.

Wood from the paulownia tree is light with a beautifully defined grain. It is resistant to wear, erosion, and moisture, and is easily processed. Its properties make it excellent for insulation and sound conduction. It is said that both the Shennong and the Yellow Emperor in ancient China (4,000-6,000 years ago) made xylophones out of paulownia wood.

As a result, timber from the paulownia is used widely for roof beams, doors, windows, and for furniture as well as for packing boxes. Handicraft items are often carved out of paulownia wood.

Apart from timber products, the branches of the trees are used as firewood while the leaves, flowers, fruit, and bark can be used as medicines. Some scientific units in Henan and Shandong provinces have used paulownia in medicinal tablets and serums for injections to treat tracheitis, laryngitis, and pneumonia.

The nitrogen content of paulownia leaves is higher than that of the leaves of the false indigo, the kind used as a green manure crop. Paulownia leaves also serve as high-quality feed for pigs, sheep, and rabbits.

But above all, paulownias are increasingly being used by Chinese peasants to boost grain output.

Much of the farmland in Henan and Shandong provinces, located on the lower reaches of the Yellow River, has been interplanted with paulownias. As early as 20 years ago, peasants in these areas planted paulownias to withstand such natural calamities as sandstorms, droughts, and frosts. These tall, luxuriant trees have helped achieve high and stable yields.

At the Kongchang Production Brigade in Lankao county, Henan province, for example, annual grain output has increased from less than 0.75 tons in 1963 to an average of 5.25 tons per hectare since the paulownia has been introduced.

Cases such as Kongchang are not rare. An investigation carried out by the Paulownia Section of the Chinese Academy of Forestry Science shows that grain output for production brigades that have interplanted paulownia trees with crops have registered greater increases than those that have not interplanted, but have similar natural conditions.

This increase is the result of an improved microclimate in the farmland. Paulownias do not retard the sprouting of wheat since they bud

half a month later than other trees. When the trees begin to blossom and put forth leaves in April and May, the wheat is just beginning to bloom and does not need full sunshine. Because the branches and leaves of the trees are sparse, moving patches of sunlight can penetrate the swaying branches and shine on the cropland under the trees. As a result, wheat interplanted with paulownia trees has a longer period of growth, which in turn helps the wheat to ripen better.

Another advantage is that the leaves of the paulownia fall late, thus protecting autumn crops from frost. Wheat planted under the crowns of the trees always gives an increased output. The practices of several production brigades in Xiezhuang, Minquan county, Henan province, show that the nearer the wheat is to the trees, the higher the output.

The paulownias do not contend with crops for fertilizer and water since about 80 percent of their absorbing roots reach a depth of 40-100 cm, while most of the absorbing roots of wheat, maize, millet, and cotton reach less than 40 cm.

Paulownias also increase air humidity in the fields. Through evaporation, paulownias absorb ground heat, thus lowering soil temperature. However, the temperature in interplanted fields is higher in early winter thanks to the cover of late falling leaves.

This adjustment of temperature makes conditions more favourable for growing wheat in north and central China where temperatures in late autumn are usually lower than that suitable for the cultivation of wheat (13-18⁰ C) and where temperatures in early summer are always higher than 20⁰ C -- the appropriate temperature for the early development of wheat ears.

Planted in parallel lines, the thick branches and large leaves of the paulownia trees can greatly reduce wind speed. Its benefits are more obvious where dry and hot winds prevail. In 1974, when Lankao and Shangqiu counties in Henan province and Juancheng county in Shandong province were hit by severe dry and hot winds, most of the brigades that had not interplanted paulownia trees with their crops suffered a reduced output of wheat. The

brigades that had interplanted, however, obtained yields up to 20 percent higher than in ordinary years.

The intercropping of paulownia trees with maize also helps increase harvests. However, interplanting paulownia trees with crops that need large amounts of sunshine such as sweet potatoes, soya beans and sesame, may result in reduced yields.

Today, the intercropping of paulownia trees with food crops is being rapidly popularized in most parts of China as a major contribution to the country's drive to boost agriculture.

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