

PAULOWNIA

*The fastest growing
tree in the world*



- Valuable wood
- Ultra growth
- Biofuel
- Landscaping
- Land restoration
- Oxygen manufacture
- Curative honey
- Perfumery
- Cosmeceuticals
- Fodder for livestock





OBJECTIVES OF THE COMPANY

Paulownia Professional Company is a producer of seedlings, popular species of Paulownia. Our company is located in Spain, the province of Aragon, whose productive area is 2 hectares, which allows us to produce more than half a million seedlings a year. We offer an individual approach to each client, a large selection of advanced varieties of Paulownia, which have come a long way of selection and adaptation and yielded excellent results. Also, we will help you determine the species that best matches your climatic zone (regardless of the severe cold and hot heat), soil type, irrigation, industrial plantation purpose.

We set ourselves the task of growing quality, certified seedlings that can satisfy the entire range of applications of Paulownia: Wood, Biofuel, Flora and Fauna Recovery, Perfumery, Cosmeceuticals, Fodder for livestock etc. We will help to draw up a project and business plan for the successful conduct of business, share the knowledge of the cultivation of Paulownia, starting from planting and up to the receipt of finished products, as well as their implementation!

The purpose of the **Paulownia Professional Company** is to contribute to the improvement of environmental conditions in Aragon, Spain and Europe in general!!! The creation of plantations and industrialization of Paulownia, as well as the creation of "green zones" and parks, will save ecology and natural resources, solve issues of energy consumption without risks to the environment, increase the volume of production of mixed fodders, globally combat emissions into the atmosphere of industrial enterprises, large amounts of CO₂, toxic substances, heavy metals causing great danger to humans, the environment and leading to the creation of a greenhouse effect.



PROFITABILITY

To date, the price on the world market for **1 cubic meter of Paulownia wood ranges from 200 € to 600 €**, depending on its age, thickness of section and degree of processing. With proper care after 7 years, you can get 240-350 m³ of quality wood from 1 hectare.

INTRODUCTION

The tree comes from China. The earliest documents and chronicles mentioning the use of this wonderful tree date back to 2,600 years AD. For centuries the tree grew in Japan. And it was known by the name of Kiri, which means "life" in Japanese. In China, paulownia is grown in an area of 2.5 million hectares. The United States and Europe also occupy a large part of the market, exceeding 10 billion dollars.

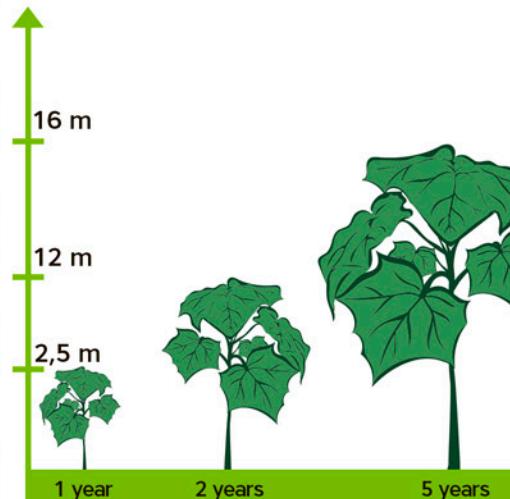
Paulownia is officially recognized as the fastest growing tree in the world. This tree, under favorable conditions, can reach up to 6-8 meters per year. A growth of 1 cubic meter is achieved in 7-8 years, which is incomparable with the growth of other fast-growing trees.





Table: Fast growing trees

Species	Annual growth	Height of a tree of 3 years	Maximum height of an adult tree
Paulownia	3-5 m	10,5-15,5 m	15-28 m
Salix sepulcralis	1,5-4 m	7,5-12 m	15-25 m
Populus nigra	1,5-2,5 m	4,5-9 m	15-20 m
Populus deltoides	2,5-3,5 m	9-12 m	20-25 m
Quercus falcata	2,5-3,5 m	9-12 m	20-30 m
Eucalyptus tereticornis	2 -2,5 m	7,5 -9 m	15-20 m
Salix babylonica	2-2,5 m	6-9 m	10-15 m



Cultivation of Paulownia is exceptionally profitable business and it is gaining momentum every year! Not for nothing is it called a "miracle tree" or "tree-oil well". If you have a desire to industrially grow Paulownia, to engage in gardening or simply you want to learn more about the miracle tree, about its features and proper cultivation, then you are on the right track!

SPECIES

The most popular paulownia species are:



Paulownia tomentosa



Paulownia fortunei



Paulownia elongata



Paulownia catalpifolia



Paulownia kawakami

We want to focus your attention on the fact that species are very different in characteristics and resistance to weather conditions, so the choice of planting material should be approached very carefully! To date, the market has a wide range of species of various hybrids of Paulownia intended for the cultivation of quality wood. Our company Paulownia Professional is ready to help you decide on the choice offering only the leading species tested over decades and their selections:

Paulownia Shan Tong (Fortunei x Tomentosa) -28°C

This is the most popular hybrid of Paulownia in China, the United States and Europe, which has the following advantages over other species of Paulownia: rapid growth, strong resistance to diseases and insect pests, greater resistance to drought and cold, large volume of wood produced, good quality of material, large conservation of the land area, wide adaptation range, strong ability to restore, etc.



Paulownia Pao Tong Z07, (Fortunei x Tomentosa x Kawakami) "Superhybrid" -33°C

This is the most popular and favorite species of Paulownia in Japan for its rapid growth and high quality of wood. This is very powerful species, with an excellent growth rate, it adapts to the temperature drops of the environment and soil. It is the most resistant species to diseases, heat, drought and cold up to -33°C (the most frost-resistant of all varieties). It is ideal for plantations in Europe and CIS countries in particular, where there are severe temperature changes and severe frosts. For the second year after planting, it reaches 6-8 meters, which allows us to get a high, smooth, knotless trunk of superior quality! **It allows planting 4m x 4m (640 trees/hectare) and 4m x 3m (850 trees/ hectare), due to not a large tree crown.**



Paulownia Kawakamii 0°C

This rare species is the shortest of all species. Thanks to its more compact size and the beauty of flowering, Paulownia Kawakamii is very successfully used for decorative purposes and it is suitable for small gardens and shading rest areas.



Paulownia Elongata -10°C

This is the rapidly growing giant. It has the growth of the right size for the industrialization of wood for 5 years. It reaches an altitude of about 28 m, which is order of magnitude greater than the previous varieties.

The crown is average, at which it is necessary to keep planting on the following pattern: 6m x 5m and 6m x 6m. This tree is more suitable for the Mediterranean climate. Because of the rapid growth, Paulownia Elongata is the foremost for the cultivation of energy plantations and the extraction of biofuels.



Paulownia Fortunei -10°C

Paulownia Fortunei is a very thermophilic species of Paulownia with very rapid growth, height up to 30 m, and a narrow crown. It is cultivated in warm regions, such as southern part of China, southern Europe and Africa. This species is characterized by very high quality wood. To date, the pure species of Paulownia Fortunei is not cultivated much, instead of this they prefer to resort to breeding hybrids Paulownia Shan Tong and Paulownia Pao Tong Z07 based on this species.





Paulownia Tomentosa -27°C

The huge leaves and a large crown that provide a dense shadow in rest areas or shady shelter near the house on a hot summer day are considered to be the most important advantage of Paulownia Tomentosa. In addition, Paulownia is famous for its magnificent flowering of fragrant flowers of large size, with which Paulownia's branches are strewn every spring. **It can withstand a temperature drop down to -27 °C. Paulownia is a long-liver plant, life expectancy of which is about 100 years.**



ABOUT PAULOWNIA

Paulownia is not just an exotic tree, it is a unique plant that brings benefit and beauty at all stages of its breeding and growing. It is difficult to list all the areas, in which Paulownia tree is used or its different parts, not missing any. All species of Paulownia have properties and qualities that we can use: power and beauty, wood, leaves and flowers.

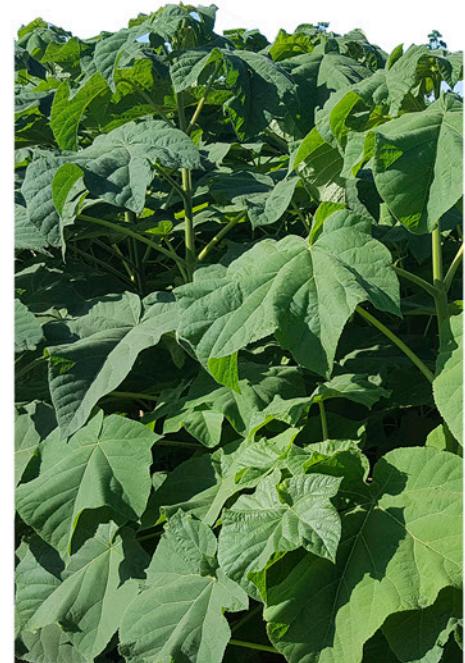
1. Ultra growth: Growth in the size of 1 cubic meter for 7-8 years is incomparable with the growth of any other tree species. The plant as a whole, with its accelerated growth, is a small treasure for humanity: it heals and regenerates soils from erosion, one tree absorbs 22 kg of CO₂ and gives 6 kg of oxygen, only think about these figures!

2. Low maintenance seedlings: Prepared, quality seedlings of the Paulownia tree with a strengthened root system are able to grow on infertile soils, including clay soils.

3. Benefits during growth:

• Landscaping

Huge leaves and a large crown provide a thick, dense shadow in resting places, parks and squares, forming pleasant cool parts in the center of the gassy and stuffy cities. If there is a tree about which you can say "urban lungs", this is Paulownia.



• Fodder for livestock

Leaves (foliage mass) of Paulownia are often used for fattening of cattle (cows, sheep, goats, etc.) The qualities of Paulownia are close to the qualities of alfalfa. It contains about 20% of the proteins in the green state and about 12% after the fall foliage. It is saturated with microelements; its digestibility is 60%. The highest percentage of protein content is found in annual plants. Therefore, if the main purpose is to obtain nutrient biomass from Paulownia for the fattening of cattle, it is advisable to create a separate plantation and harvest a quality crop at the end of the summer period. Technologies of plantation growing of fast-growing Paulownia trees for production of plant biomass for 1 year on an area of 1 hectare will allow receiving 35-40 tons of quality plant raw materials. Availability and high yield provide low prime cost for fattening - one of the most important indicators when choosing fodder in the industrial livestock production.

• Cosmeceuticals

It is established that the leaves of Paulownia contain substances that have beneficial effects on the liver, kidney and gallbladder, and the leaves of Paulownia are also used for problems with the lungs. In China, the properties of the leaves of Paulownia have been known for a long time, even the pharmaceutical industry is involved in the industrial production of Paulownia-based medicines. Leaves of Paulownia have other properties: their use in cosmetics in Asian countries is as old as their application in medicine, but it is a novelty for Europe. Only in recent years, extracts from the leaves of Paulownia are included in the composition of medicines, creams and perfumes



• Perfumery

Awakening from winter hibernation in February and March, Paulownia grows flowers in the form of a bell, each up to 6 cm in diameter, fleecy, bluish violet, lilac or almost white. The aroma (notes) of flowers of Paulownia is defined as vanilla, powdery and slightly almond. It is established that this is due to the heliotropin substance contained in the aroma known in perfumery and present in other flavors (e.g. Tahitian vanilla). The aroma of flowering Paulownia is analyzed by the so-called "GC mass spec" (Gas chromatography-mass spectrometry) method, based on gas chromatography and mass spectrometry.

• Honey

In addition to beauty, the flowers of Paulownia are also distinguished by strong, fragrant aroma and they are an excellent nectariferous plants! From one hectare of Paulownia it is possible to receive 800 kg and more honey. The advantage is that when growing Paulownia tree, the chemical products are not used at all, so we do not harm bees that do not tolerate the use of herbicides and other chemicals, receiving a NATURAL (ECOLOGICALLY CLEAN) product. Honey from Paulownia is light, transparent, very bright and fragrant. Honey from Paulownia can be compared only with honey from acacia by its color and consistency. Honey from Paulownia, as well as acacia, is of the highest quality. In addition to being a delicacy, it also serves as a medicine. Its properties are known as such that have beneficial effects and help in the treatment of bronchitis, lungs and respiratory system diseases, and Paulownia also improves the function of the gallbladder, liver and digestion in general. The qualities of Paulownia honey are determined by biologically active substances in its flowers, so that flowers themselves are used for food.

• Application in food

In addition to the Chinese experience in this respect, we cannot miss the fashionable use of Paulownia's flowers in the form of horns with cream - it can sound like an exotic dessert, but it is already a part of the menu of many European restaurants.

• Regeneration of a tree

Regeneration of a tree Paulownia's uniqueness lies in the fact that the tree does not require re-planting. After each cutting, clipping, the tree regenerates. The life span of the root is 70-100 years and it can endure between 4 and 8-9 cycles for eight years, which gives us the opportunity to resume our work process without the cost of new planting and land cultivation! The trunk can be cut down at any time of the year, despite the season and short harvesting times, which is not the case with other species of trees.

4. Use after cutting

• Wood

100% ecológica, resistente, suave, ligera, resistente al fuego, resistente a la humedad, resiste al alabeo y a las plagas e imputrescible.

The wood of Paulownia is straight grained, with a bright and expressive beautiful pattern of straight fibers and granular texture, glossy, light and odorless. The color of the wood is from ashy pale yellow to light red. The beauty of the wood structure is similar to expensive exotic woods. Paulownia wood opens up new unknown dimensions and possibilities in the production of furniture of the future. There is not any knot if the tree of Paulownia is grown properly.

Paulownia wood is soft, but extremely resistant to bending and twisting. The index of compressive strength along the fibers of Paulownia wood is 281 kg/cm².





This indicates that Paulownia wood is used as building elements, which require high strength, for example, floor structures, bearing building structures. Due to the high density-to-mass ratio, Paulownia wood is one of the best materials for construction. Paulownia wood easily lends itself to any processing. Many masters choose it for strength, smoothness and lack of defects. Wood of Paulownia poorly absorbs water, which in turn contributes to a more economical consumption of stains and varnishes. Products from Paulownia do not change their shape and size under the influence of severe weather conditions and they are difficult to decay.

• Weight

The mass (wood) of Paulownia is lighter than the balsa wood, which has been recognized as lightest wood up to now. Paulownia wood is light and at the same time extremely strong, it is an ideal combination in cases when this ratio plays an important role. Its average weight is about 208-300kg/m³. The high strength/weight ratio makes Paulownia wood irreplaceable in shipbuilding, aircraft construction, production of boards for surfing, skiing, snowboarding, production of auto campers and other products. It easily lends itself to any processing. Strength, smoothness and absence of defects on wood make it the preferred raw material in construction, in furniture production, for sheathing, for the production of veneer, toys and other products. Wood has an incredible resonance that is highly valued in the production of musical instruments, as well as in the production of equipment for concert halls and recording studios.

It is very much appreciated as a material for boxes, pallets for transportation, since it reduces the total weight of goods. This allows reducing fuel consumption, increasing the volume of transported products, and generally leads to a decrease in transportation prices, which is the main objective of companies involved in logistics.

Paulownia wood keeps perfectly nails and screws and does not require pre-drilling holes. For example, Poplar Yellow and Pine White show the degree of decoupling below the degree of decoupling of Paulownia. Screws with flat heads can be screwed up to their alignment with the surface of the material, without causing any damage, even if this is done on the edge of the end of the part. This is an ideal material for wood carving.

• Fire resistance

Fire resistance: it lights up at a temperature twice as high (400 ° C) as the temperature of ignition of needle-leaved wood. In ancient times, the Japanese made their own wardrobes from Paulownia wood to keep their precious kimonos in case of fire.

• Resistance to attack by insects

Wood of Paulownia is resistant to attack by insects such as termites, wood fretters, black carpenter ants and others because of the high content of tannin in it.

• Billions of air pores

Billions of air pores make wood exceptionally warm and noise-insulating material, incomparable to no other. This quality is especially appreciated in the production of saunas, cottages, flooring and plating.

• Moisture resistance

Moisture resistance: wood material is difficult to absorb water, which in turn contributes to a more economical consumption of varnishes. Any element from Paulownia exposed to the influence of atmospheric conditions does not change its shape and size. It does not lend itself to rotting because of the above mentioned property.





BIOFUEL, BIOGAS, BIOETHANOL

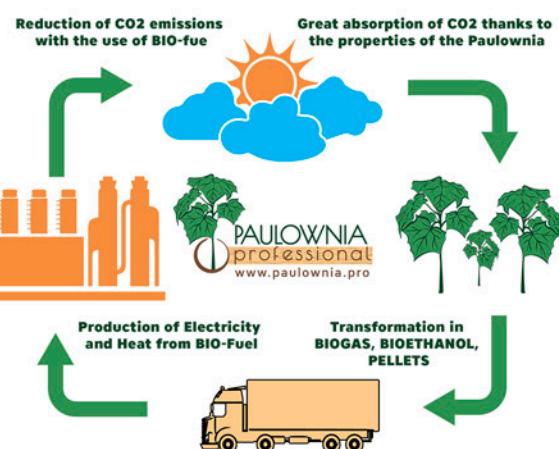
With the ever increasing consumption of biofuels, in the near future, the countries of Central Europe will not have enough of their forest resources, so Germany, the Netherlands, the United Kingdom and Spain plan to significantly increase the import of pellets.

- At present, when technological progress is measured by the degree of protection of nature, more attention has been paid to **Biofuels** from renewable, high-performance energy crops. The use of Paulownia in the form of energy raw materials: Paulownia tree is used except in the industry, also in the energy sector in the form of pellets (solid fuels for boilers and fireplaces with fully automated fuel supply), as well as in the form of raw materials for alternative recovered biofuels. For these purposes, all parts of the tree are used: trunk, branches and leaves. Pellets can be used both for boilers heating private houses and apartments, and for large installations and electrical networks. Biogas is a new source of renewable energy, environmentally friendly and economically viable. This is a gas consisting mainly of methane (CH_4), carbon dioxide (CO_2) and small amounts of other gases. This gas occurs when fermenting organic substances under anaerobic conditions (in the absence of oxygen). Biogas installations are installations where the accelerated form of the natural decomposition cycle occurs.

- The leaves of Paulownia are increasingly being used as a component of the organic matter of this **Biofuel**. Having a large size, at decomposition more basic gases are produced, of which biogas is directly composed, compared to the organic material offered by other types of plants, making Paulownia an ideal product for obtaining this biofuel.

- Another application of Paulownia is its use as raw material for the production of **Bioethanol**. American scientists have developed a new technology based on the combination of thermochemical and biotechnological methods resulting in the extraction of 511 liters of ethanol from one ton of dry wood. This is the only reason to call our tree an "oil well".

The creation of plantations of fast-growing trees, combined with the innovative technologies for growing Paulownia trees can become an important part of the policy of saving resources and solving problems related to energy consumption, without risk to the environment.



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