



Sustainable sourcing of tannins

In this article, Italian chemicals manufacturer Silvateam offers more details about how it sources sustainable tannins, and its use of quebracho from Argentina and of tara from Peru. In the previous issue of World Leather, it focussed on its sourcing of chestnut tannins from Italy.

Part 1: Quebracho

Quebracho Colorado (*Schinopsis balansae* and *Schinopsis lorentzii*), commonly referred to as quebracho, is an evergreen tree that grows wild in South America in dense sub-tropical forests. Its main growing areas are in Argentina, in the provinces of Chaco, Formosa and Santa Fé, as well as in Bolivia and Paraguay. The word “quebracho” is derived from the Spanish “quebrahacha”, which translates as “axe-breaker”.

This name accurately describes its wood, which is particularly durable and compact. It has long been used locally for posts, telegraph poles, bridge timbers, railway ties, paving blocks and other types of construction where high levels of durability are required. The bark is traditionally used as a febrifuge (a medicine for reducing fever) and as a cough remedy. This species of tree can live for over three hundred years.

The native populations of Argentina and Paraguay attribute mystical powers to the quebracho and the tree plays a key role in many local myths and legends. Today, the most important use of quebracho is in the production of tannin extract. This extract has a characteristic red colour that gives the leather an unmistakable warm and brilliant shade, a typical pleasant sweet smell, and a compact texture that is more resistant to water and atmospheric agents. Quebracho wood will typically yield around 20% of

its weight in tannins. As the wood has a high weight of 1.2 tonnes per cubic metre, this amounts to up to 250 kilos of tannin per cubic metre of wood. This makes it an important renewable material for the leather industry.

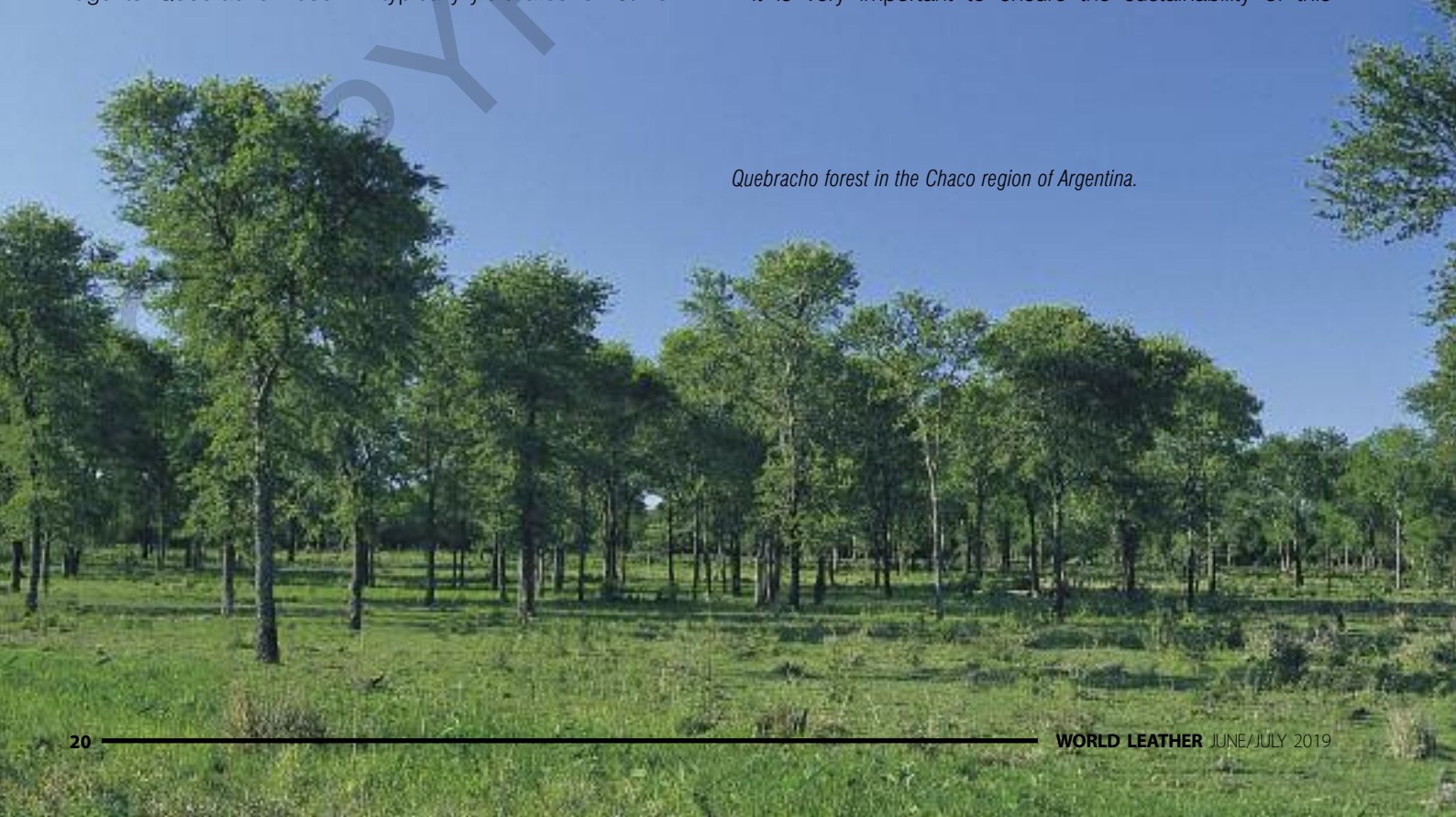
Argentina: forest management and reforestation

The provinces of Chaco and Formosa in Argentina are the regions with the highest density of quebracho colorado. In 2007, the Ley de Bosque Nativo, a law designed to protect and promote native forests, established guidelines for the responsible management of forests, separating them into three classifications: exploitable areas, mixed areas and protected areas.

For the first two classifications, there are a maximum number of quebracho trees that can be cut down per year and per hectare to extract tannin. There are also guidelines in relation to the minimum diameter of the trunks, implementing a traceability system that allows the monitoring of the origin of the collected wood. According to a quebracho tree inventory carried out in 2011 by Argentina's Under-Secretariat of Natural Resources, the overall size of quebracho forests in the Chaco province is more than 3 million hectares, including more than 23 million tonnes of wood. The amount of quebracho wood used for tannin production was 250,000 tonnes per year.

It is very important to ensure the sustainability of this

Quebracho forest in the Chaco region of Argentina.





Quebracho wood availability and its usage for tannin extraction in Argentina.



resource. In order to achieve this, the collected amount must not exceed the annual wood yield of the forest, that is, the volume that grows during a whole year. As reported as part of this inventory, the minimal growth per hectare of the Chaco native forest is 0.33 tonnes per year. Therefore, every year in Chaco around one million tonnes of new quebracho colorado wood is available. This means tanning production requires annually an amount of wood that represents just 4% of the newly generated forest. The conclusion of this inventory is very clear: the harvest of quebracho for the production of tannin is widely covered by the vegetative growth of the quebracho forest.

There is also an ongoing replanting programme, carried out as part of a collaboration between the tannin producers and the owners of the woodland. It focuses on seedling planting and best practices to manage the forests. Investment in research and development and the respectful sourcing of raw materials are essential prerequisites of sustainable forest management.

Part 2: Tara

Caesalpinia spinosa (more commonly known as tara) is a tree that is indigenous to the Peruvian and Bolivian Andes, where it bears fruit from April until December. It can grow up to 3,000 metres above sea level and tolerates dry climates and nutrient-poor soils, including those abundant in sand and rocks. Furthermore, it is resistant to the majority of pathogenic agents and parasites.

Its mature pods are usually harvested by hand and then left to dry under the sun before being processed. If properly irrigated, the tree can produce its fruit for over 80 years. The tree can reach up to 8 metres in height and tends to branch out at the base, while the greyish-brown bark is highly fissured. The leaves are bipinnate and can reach a length of 35 millimetres. The fruit, which is a flat, oblong-shaped, non-splitting reddish pod, contains four to seven large black seeds. The seeds are used to produce tara gum, a natural ingredient for the food industry. The products it appears in include desserts, bakery products, sauces and dairy products. After the seeds have been removed, the pods themselves are ground down to produce the tara tannin.

Tara tannin is almost completely free from colouring substances and, consequently, it allows for the manufacture of very bright and lightfast leathers, which are especially used in the automotive sector. Moreover, it imparts the characteristics of fullness and softness to leathers, while still maintaining a fine and tight grain. The grains of leathers tanned with tara have a higher resistance to break-load than those obtained when using other vegetable tannins.

A study on tara exploitation under current forest legislation, carried out in 2017 by Peru's National Forest and Wildlife

Service (SERFOR), showed that more than 13,000 hectares of tara trees are growing in Peru. Of these, 80% come from spontaneous growth. Tara pod production is around 20 kilograms per tree.

In the Quechua culture, tara is used as a traditional natural remedy for treating inflamed tonsils and healing cuts and wounds. It has also been successfully employed to alleviate fever and colds, as well as to combat stomach cramps and heartburn.

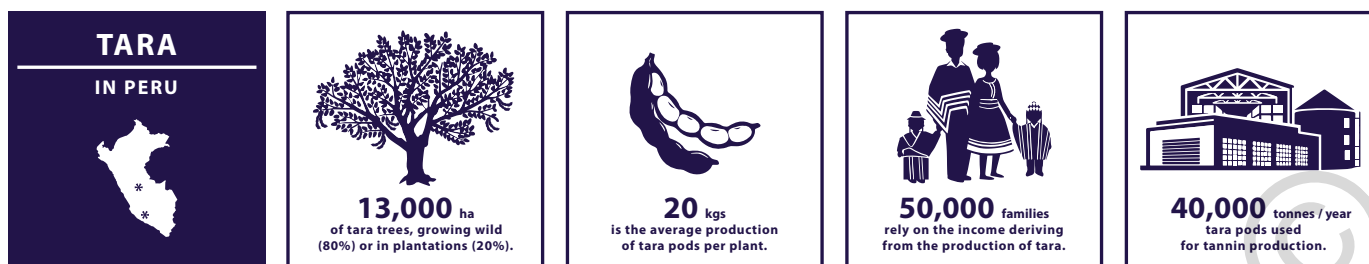
A development opportunity for 50,000 families of farmers

The communities of farmers who live in the inhospitable valleys of the Peruvian Andes, where the tara spinosa tree grows wild, normally rely on a subsistence economy that is limited to small-scale self-production. In an agricultural context, it is highly underdeveloped, both in terms of equipment and available resources across the territory. Through significant investments in the country, which have included a new factory in the Chilca district and two plantations, Silvateam has committed to creating an important and stable source of supplementary income for local communities, who are now engaged in harvesting the pods of this tree.

As a result of the commercial success of tara-based products in several industries, Silvateam's production and turnover has grown significantly. This revenue is entirely down to exports to industrialised and developing countries,



Wild tara pods in Peru.

*Tara tree availability in Peru.*

primarily the US, China, Germany, Italy and Brazil). Almost 50% of this amount is transferred as labour force payment to the more than 50,000 local families who live off the land. Through multi-year contracts, Silvateam enables the Peruvian farmers to sell their harvest at fair prices and quantities. This has led to an improvement in the quality of life of producers. In terms of corporate social responsibility, the company is committed to the growth and development of its employees and their local communities.

Silvateam participates in specific community support programmes, such as an annual medical check-up to prevent common diseases, services that assist in dealing with administrative practices, subsidised loans, and sports participation at dedicated facilities near to the manufacturing plant. Specialist training courses, which are organised in collaboration with the Peruvian National Institute of Natural Resources, are aimed at providing farmers with the best harvesting practices in order to increase their productivity and the value of their activity.

The commitment of the Italian company towards its employees also concerns the labour sphere. It involves aspects such as the drafting of transparent contracts for workers, the prohibition of child labour, prevention of accidents in the workplace, and the provision of a safe environment that does not pose any health risk (e.g. in relation lighting, ventilation, noise and dust reduction).

The creation of a consolidated supply chain has enabled Silvateam to obtain fair trade certification and to contribute to the development of these rural areas. This is especially important when one considers that, despite economic growth in recent years, Peru still has a high ranking on the Extreme Poverty Index.

Silvateam tara plantations

A part of the *caesalpinia spinosa* grows wild and is harvested by local farmers. It is sold in the collection centres within community neighbourhoods and then transported to the factory. The remaining part is obtained at two proprietary plantations, the only ones present in Peru, which extend over an area of 450 hectares in the mountain region of Huánuco and the desert area of Ica.

The Huánuco plantation, which was established in 2002, is located in the Andes at 2,500 metres above sea level. It comprises 170,000 plants, which are watered by means of gravity. Production is totally organic and the pods are harvested between May and June.

The Ica plantation, dating back to 2006, is based in a desert plateau 40 kilometres from the Pacific Ocean. Here, around 115,000 plants are cultivated and watered from underground sources. The use of conventional agrochemicals is kept to a minimum, with sustainable and

organic solutions favoured instead. Production at these plantations has obtained organic certification.

As the climate is dry and arid, the harvest takes place between October and December. Although Ica is in one of the most arid parts of the world, its underground water resources enable an agricultural production that makes up 65% of Peru's total exports. It includes citrus fruit, grapes, asparagus and artichokes. The authorities believe there is considerable capacity for further growth, estimating that of the almost quarter of a million cultivatable hectares in Ica, less than half has been cultivated so far.

Over the past decade, Silvateam has conducted various field and laboratory studies in order to maximise the productive yield of its plantations. First, the most high-performing cultivars were selected in order to carry out floral biology assessments in relation to sexual and asexual reproduction, and progeny tests. Second, several agro-climatic evaluations were launched in an effort to identify the most suitable areas in Peru to grow *caesalpinia spinosa*.

The pollination of the flowers is facilitated by the bee population that comes from beehives positioned within the plantations. In the Ica plantation, Silvateam continuously works to improve operational methods. This has included adopting semi-mechanised harvesting systems, such as nets for harvesting the pods; cleaning tools to remove leaves and impurities; and installing a packaging machine to facilitate the handling and transportation of the raw material to the factory for processing. 🌱



Tara pods being harvested using a net system in Ica, Peru.