



## AUSTRALIAN SANDALWOOD PLANTATIONS

How can plantations—or longer-term investments—change the dynamics of the aromatic ingredient market? Some crops take longer than others to materialise, but whenever there's a change in the air the markets appear to be in a state of confusion.

Why is this? The most likely reason is that there is never just one individual, investor or company thinking into the future, but many, and never do these many get together and paint one true picture of the market. These many are likely to be future competitors, and each investor or company can have different time frames and motivations as to why they're looking into the future, as well as how the future might evolve.

There's an inevitable assumption that if new plantations start to supply oil to the market, the oil price will start to come down. These are simple supply and demand principles. However, investors often don't wish to see this happen. Controlling any sudden influx of fresh material is critical to maintaining prices; after all, it is likely that a higher oil price that attracted such investors to a plantation project in the first place.

Of course, this all sounds fairly straightforward, but plantations don't always come online when expected and may not yield the same standard of oil as older plantations or wild-harvested areas to which the market is accustomed. One should remember that producers are dealing with natural products, which can be full of surprises.

Often, plantations can replace wild-harvested areas, offering conservation or economic benefits. Here we discuss the current impact of recent plantations of sandalwood hitting the market.

## SANDALWOOD

This is one ingredient that is close to my heart as I recently spent five years in Australia. When I author started in the industry in 1998, Western Australian (WA) sandalwood (*Santalum spicatum*) was new to the market; just a couple of years later, there were stories and rumours about future plantations. It was then revealed that these plantations were not WA sandalwood but the more commonly known Indian sandalwood (*Santalum album*). Confusion set in, and for years different stories from different companies emerged until the fog slowly dispersed. Even now, with supplies of both *S. album* and *S. spicatum* seemingly short, many remain confused as to when the market will see the benefits of these 15-plus-year investments.

WA is a vast state that is almost four times the size of Texas and five times the size of France. It has extremely diverse climates, ranging from a tropical high-rainfall region in the north, desert and dry areas in the middle, and more temperate climates in the south. This allows for the growing of *S. album*, an introduced species, in the north, and *S. spicatum*, a native species, in the east, central and southern areas of the state.

There is absolutely no doubting the commitment within WA toward the sandalwood industry, with total investment approaching, if not passing, \$1 billion. This investment will see WA as the global hub for the two major traded species of sandalwood for some time to come.

## **WA SANDALWOOD – PLANTATIONS & WILD HARVEST**

The current supply of WA sandalwood comes from a wild harvest that has been state-managed since 1929 and is currently around 2,000 tonnes of wood per annum. This is made up of approximately 65% greenwood (live trees) and 35% deadwood (trees that have died naturally).

It is the greenwood trees that are used in oil production and, in particular, the roots, butts and larger logs, which give the highest oil yield and quality. On average, across these three grades of wood, the oil yield would be between 2.3% and 2.6%. However, one of the major advantages of WA sandalwood is the ability to steam distil the oil without the need to remove the sapwood, which in a country like Australia with high labor costs would be a very expensive exercise.



*A seven-year-old plantation of S. spicatum set in long straight rows*

Since 1996, the WA government has only supplied one local oil-producing company, which has effectively created a monopoly. This is scheduled to change in mid-2016, when the supply agreement runs out. The review for the following 10 years has been announced, and the government agency controlling the harvesting has strongly indicated that it will continue to harvest at close to current levels until 2026. On the face of it, this is good news—it is hoped that this opening up of wood availability will allow more companies to produce and sell WA sandalwood oil, a benefit to the whole market.

Currently, this exclusive supply arrangement has allowed the production of approximately 13,000 kg of oil annually, plus additional oil that may have been extracted from other local privately owned wood. In total, approximately 15,000 kg of WA sandalwood oil was produced in WA during 2014.

Currently, there are more than 20,000 hectares (approximately 10 million trees) of *S. spicatum* growing in WA. They range in age from one to 13 years, and should start to produce strong supplies of wood for oil from 2018. These plantations are on the poorer soil areas of the region's Wheatbelt, which is located three hours east of Perth. This is the trees' traditional, natural growing region, so no fertilization is required, just weed-killing for the first few years, after which natural sheep management can be used. This management practice should see some of these plantations gaining organic accreditation in the coming years. It is expected that some oil production from these plantations will start mid-2015, slowly gaining momentum as the months pass.

Future production from the WA sandalwood plantation industry is expected to peak at about 30,000–40,000 kg in mid-2025 when it is likely there will be three or four key producers. It is important to note that WA sandalwood is preferred by the traditional incense markets in China, Taiwan and Hong Kong, which require unprocessed wood, thus reducing the amount of wood available for oil extraction.

The ownership of these plantations ranges from a primary grower comprising 12,000 Australian Forestry Standard-certified (AFS) hectares down to hundreds of smaller growers with wood lots of 10–50 hectares. The WA government is also an owner and share farmer, with more than 3,000 hectares. Establishment of new plantations is expected to continue at between 800 and 1,200 hectares per annum.

The introduction of plantation oil should see a stabilization of pricing, if not some reduction in price, as the production volume grows over the coming years. However, in reality there is unlikely to be too much volume until 2018, hence the reason why the WA government wishes to keep the wild harvest going for at least a further 10–12 years.

There is a general view in WA that the wild harvest volume of wood taken annually is likely to be reduced over the coming 12 years as the WA sandalwood plantations come on line and begin to replace the wild harvest wood in most applications, including the production of oil.



*WA Sandalwood trees at 10 years old*

In summary, it certainly looks as if there will be an on-going supply of WA sandalwood oil for the long-term, and therefore using it in fine fragrances and other applications can be done with confidence. While the price of WA sandalwood oil continues to creep up, the broadening of future wood availability and new production of plantation wood and oil should bring about stability and even a slight cost reduction as competitive pricing tension emerges in the marketplace.

The planting of Indian sandalwood trees in Australia started in a small way around the end of the 1990s, growing steadily since 2000. Today, there are more than 12,000 hectares (approximately 5.7 million trees), ranging in age from one to 15 years.

## **INDIAN SANDALWOOD – PLANTATIONS**

The spread of plantations has moved out from the “food bowl” of northern WA and into the Northern Territory and Queensland regions of Australia where land is more readily available and at lower cost. These new areas allow for continued planting in future years, and are expected to expand at a rate of about 1,000 hectares per year.

The Indian sandalwood plantations are in areas that are not typical of the traditional growing areas in India, but rather in tropical environments, which speeds up growth. While the benefit is that the trees grow quickly, the down side is the requirement for increased weed management to keep the trees alive.

The first significant harvest to produce Indian sandalwood oil on a commercial scale was undertaken in 2014. The good news is that the quality and odor profile of the oil is quite good and very acceptable to the fragrance industry. While the volume produced in 2014 was small, believed to be less than 1 tonne, future years will see significant growth, with many forecasting annual oil production in excess of 150,000 kg if 50% of the heartwood is converted to oil. This is estimated to be four-times greater than current total production of Indian sandalwood oil in India itself. This is likely to change the dynamics of the Indian sandalwood market for a long time.

There are primarily two Indian sandalwood producers, who have similar amounts of trees in the ground to ensure an even supply of oil through to 2022. This should bring stability of supply to Indian sandalwood oil

that has not been seen for many years. However, the anticipation of lower prices from the first producer has not yet occurred, with early supply being priced significantly higher than the market price, which for the fragrance industry appears to be too high. No doubt when the second producer enters the market this year we should start to see some competitive tension in the market. It would be enjoyable to see Indian sandalwood oil at an affordable price for use in perfumes, just like it used to be.

Certainly the long-term supply of Indian sandalwood oil from WA appears assured and secure. The benefit of two key suppliers will assist in giving choice and reliability of supply to the market and hopefully introduce some price tension to enable the use of the oil in new fine fragrances.

There is no doubt that Australia will be the number-one source of sandalwood oil for the perfumery industry in the foreseeable long term. How the Indian and WA sandalwood oils find their place alongside each other may be the next big question.



*This large-scale sandalwood plantation is over 1650 hectares and was planted around 2011*

## Summary

For buyers in the market it can be difficult to see what demands are just around the corner, so it is always a challenge to envisage what market demand may be in five, 10 or 20 years' time. Investments in plantations can be highly successful. They can provide a strong basis to develop sustainable products for the future, but if poorly managed and unregulated they can cause more problems than the benefits for which they were initially intended.

Manmade influences are yet another set of variables that can affect the ingredient marketplace. Future articles will review additional factors impacting the supply of tropical products and explain why buying natural, isn't always such a straightforward process.

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