

# Tea tree oil industry 25 years

---



Learn more  
[agrifutures.com.au/tea-tree-oil](http://agrifutures.com.au/tea-tree-oil)



**AgriFutures™**  
**Tea Tree Oil**

---

# Tea tree oil industry grows into export powerhouse

---

Australia's tea tree oil industry is reaping the benefits of 25 years of research and development funding with a \$6 million investment yielding \$35 million annually in export sales. Key gains for growers include a jump from early oil yields of 100-150 kilograms per hectare to new cultivars which consistently yield 350-450 kg/ha.

## Production gains

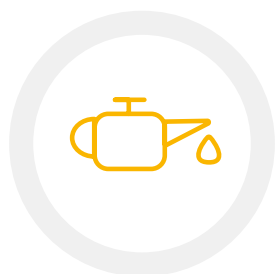
This increase in productivity has delivered an estimated annual \$4.5 million to growers and \$75 million to the Australian economy over the last 17 years.

Pure Australian Tea Tree Oil is an iconic product sold throughout the world and 25 years of dedicated research funding has resulted in a doubling in production and established international markets.



Tea tree or *Melaleuca alternifolia* seedlings are grown in specialised nurseries until they are three to five months old and ready to be used in the establishment of new plantations. The industry has matured with 25 years of research and development funding. (Photo: T. Larkman)

## How the tea tree oil industry has matured over 25 years



### Oil quality:

Meeting International Standard ISO4730 and market preference for less than 4% cineole content



### Productivity:

Breeding programs have increased oil yields from 100-150 kg/ha to upwards of 450 kg/ha.



### Reliability and uniformity of planting stock:

The Tea Tree Breeding Program (TTBP) ensures a reliable supply of large volumes of improved seed for industry expansion.

## From Australia to the world

Pure Australian Tea Tree Oil (TTO) is an iconic Australian natural product marketed and sold throughout the world. It is steam-distilled from established plantations of an iconic native Australian plant *Melaleuca alternifolia*. TTO is used in healthcare, cosmetics, pharmaceutical, veterinary and industrial products.

Today the industry is a vital component of the rural economy in the Northern Rivers, Central Coast and North Coast regions of NSW, and Atherton and Dimbulah districts in north Queensland where the majority of the estimated 4000 hectares of Australia's tea tree plantations are based.

Australia is the largest producer of TTO globally and in 2016/17 produced about 900,000 kg of 100% pure Australian TTO valued at \$35.32 million.

The TTO industry is a rapidly growing sector, providing significant job opportunities in remote rural and regional areas, and helping to sustain and expand communities.



**Modern industrial tea tree plantations produce uniformly high oil quality and high oil yield as a consequence of breeding and selection.**

(Photo: C. Cassegrain)

## Global destinations

Ninety per cent of Australian tea tree oil is exported with the balance used for domestic consumption and value-added products manufactured in Australia and exported to the world.

Australian Tea Tree Oil goes to more than

**40**  
countries in  
continents including;

North America ▶

**54%**



Europe ▶

**30%**



Asia ▶

**14%**



Asia is the fastest growth segment over the past two years (source: ABS).



## Get to know Pure Australian Tea Tree Oil

- The indigenous Bundjalung people of eastern Australia have recognised tea trees as a traditional medicine for many centuries.
- The modern era of TTO's antimicrobial activity was first published by Arthur Penfold in the 1920s and 1930s. His evaluation of the antimicrobial activity of TTO distilled from *M. alternifolia* showed it was 13 times more active than phenol.
- The Australian Government assigned bottles of Tea Tree Oil to Australian soldiers in World War II for medicinal purposes.
- Research by the Tea Tree Oil Research Group at University of Western Australia (UWA), has revealed tea tree oil to be effective as an antibacterial, antifungal, antiviral agent which also has significant anti-inflammatory properties.



**Tea trees are harvested annually before being steam distilled to produce 100% pure Australian TTO.**  
(Photo: T. Larkman)

## From cottage industry to plantations

The transformation of a fledging cottage industry in the 1970s and 80s into a fully emerged plantation-based industry is a remarkable success story that could never have happened without the dedication and foresight of dedicated researchers and breeders. These pioneers assessed hundreds of wild tea trees and collected seed from the best of these to form the core of the iconic Tea Tree Breeding Program (TTBP).



***Melaleuca alternifolia* trees growing in a billabong in the coastal lowlands of northern NSW. The tea tree breeding program established populations of trees from the coastal lowlands. These are better suited for TTO production than those from upland region due to the higher prevalence of individuals with commercial oil quality and higher oil content.**  
(Photo: Y Hassan)



***Melaleuca alternifolia* seedlings establish quickly in ideal conditions.**  
(Photo: P. Prather)

## The role of the Tea Tree Breeding Program

Tea tree production began as a cottage industry in the 1970s, with bush harvesting of native stands of *Melaleuca alternifolia*. As demand grew, the tree tea oil industry began developing plantation-based production in the 1980s. This transformed the industry into a modern, sustainable, mechanised industry and precipitated the drive towards a tea tree breeding program.

Paralleling the move to plantations, pioneers realised a source of consistently high-yielding trees was vital so tea tree breeding using best providence, bush-sourced seed began in 1993. This was funded via voluntary industry subscription, bush seed sales and Commonwealth funds delivered by NSW DPI and CSIRO and managed by RIRDC and ATTIA Ltd.

Teatree breeding is a long term commitment with returns not flowing back to industry for many years following R&D investment, nonetheless, the tea tree oil industry's steady commitment to breeding over 25 years has been returned more than five-fold.

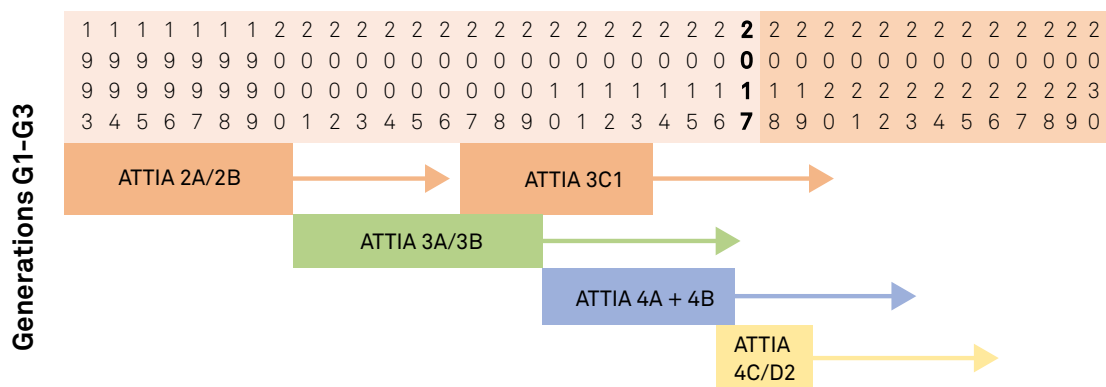
This important R&D contribution to the growth and consolidation of tea tree oil into the mature industry it is today is highlighted by its transition into the AgriFutures Australia growing profitability arena, following the establishment of the R&D levy on 1 July 2017.

Providing a reliable source of high quality seed stock cultivars, breeding provided growers with the confidence to expand plantations and new players to enter the industry confident that the planting stock was the best available.

A reliable flow of high quality pure Australian tea tree oil from improved plantations has given suppliers and manufacturers the confidence to include the product in formulations of cosmetic and therapeutic products, generating new outlets and expanding existing markets. By increasing oil yields and consolidating oil quality and reliability, breeding also provided the lift in productivity to increase profitability and help the Australian industry remain competitive.

After 25 years of continuous operation, the legacy of TTBP 1 is its major contribution to the development of the tea tree oil industry into the mature, stable and internationally competitive industry that it is today.

In 2017 the TTBP transitioned from NSW DPI to Southern Cross University (SCU). Researchers at SCU will continue to build on the legacy of desirable traits identified and selected through the tea tree breeding program.



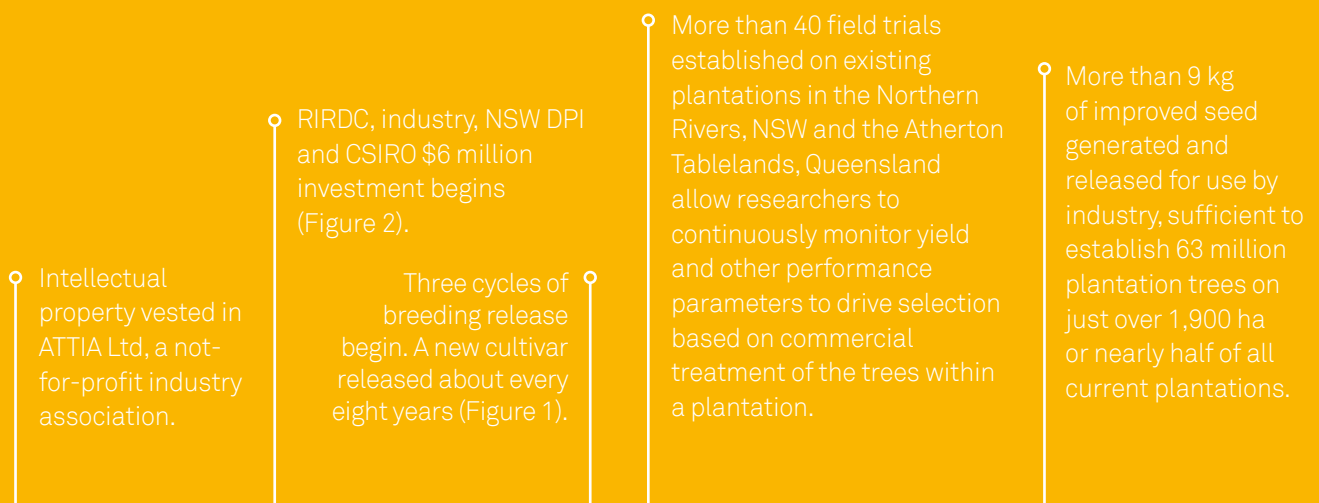
**Figure 1** Historic and projected release of tea tree cultivars generated from TTBP1. Solid bars = selection, breeding, establishing a seed orchard and bringing it into production; Arrows represent estimated operational life of cultivar.

## Building on the R&D investment - where to from here?

With more than \$6 million dollars invested into developing the tea tree oil industry (Figure 2), what lies ahead for this burgeoning export powerhouse?

- Breeding programs currently run by Southern Cross University will build on a successful, long-running partnership between AgriFutures Australia, NSW Department of Primary Industries (NSW DPI) and CSIRO.
- A breeding population of around 500 trees will be carried forward into a foundation fourth generation of breeding at the Southern Cross University led TTBP 2 program which commenced in July 2017. These elite trees were selected after assessment of over 40,000 trees for growth, oil quality and oil yield during the life of TTBP 1.
- Two new orchards established in 2017 have seed release projected for 2020.
- Five distinct genetic resource collections of tea trees representing more than 300 families from all parts of the species natural range have been established in the Northern Rivers of NSW as well as at West Wyalong and Wagga Wagga in southern NSW. These resource collections preserve the genetic diversity of the species and allow researchers to identify and infuse desirable traits into the main population through controlled pollination.

## 25 years of breeding at a glance



1990

1991-2017



**Figure 2** Investment in the Tea Tree Breeding Program between 1991 and 2017

\* note that most projects required 50% cash contribution from ATTIA

- Five distinct genetic resource collections of tea trees representing more than 300 families from all parts of the species natural range established in the Northern Rivers, West Wyalong and Wagga Wagga, NSW.
- Seed orchards established on NSW DPI land at Wollongbar and Wagga Wagga providing genetic security. Duplicate orchards have also been established for some orchards on private properties in northern NSW.
- More than nine improved seed cultivars released.
- Two new orchards established with seed release from these projected for 2020.

2000-2017

2017





Researchers collect material from wild trees to assess their oil content and quality. If suitable, seed is collected and grown for infusion into the breeding program. (Photo: Y Hassan)



An Australian native Narrow-leaved tea tree (*Melaleuca alternifolia*) in full flower. Early tea tree breeding involved surveying natural stands of tea tree throughout its natural range in the northern NSW and SEQ during the early 1990s. This included trees from higher altitude populations from the Great Dividing Range around Stanthorpe in SEQ.

## Contact

### Duncan Farquhar

Program Manager, Research & Innovation  
duncan.farquhar@agrifutures.com.au

02 6923 2912  
0429 495 499

AgriFutures Australia Publication No.: PRJ-009617  
AgriFutures Australia Project No.: 18/022

Learn more  
[agrifutures.com.au/tea-tree-oil](https://agrifutures.com.au/tea-tree-oil)

AgriFutures Australia is the trading name for Rural Industries Research & Development Corporation.  
AgriFutures is a trade mark owned by Rural Industries Research & Development Corporation.



**AgriFutures™**  
Tea Tree Oil