Oil will grow on trees in forests of future
Pilot plantations to yield clean green fuel show great promise, writes Daryl Passmore

A USTRALIAN motorists could be driving cars run on clean, green fuel from forests of biodiesel trees in the future.

Farmers are already rushing to get hold of seeds imported from the South American rainforests to grow plantations of trees that will produce alternative fuel to run machinery and vehicles on their properties.

And scientists say the potential of some native Australian plants to be grown commercially as a renewable fuel source for transport and industry is exciting.

Researchers from the University of Queensland have partnered with Origin Energy and Pacific Renewable Energy on several hectares of pilot plantations of pongamia pinnata — sometimes referred to as native wisteria — at Roma and Caboolture.

A hectare of the trees can produce 5,500 litres of biodiesel a year — enough to run 100 cars for a year.

All of Queensland’s fuel needs could be met by about 1.5 million hectares of the trees — an area about 10 times the size of Brisbane.

The potential for large-scale commercial production is “super high,” says Professor Peter Gresshoff, an expert in plant biotechnology and biofuel at the University of Queensland.

“In a few decades’ time, I believe we will have large forests of pongamia along the Bruce Highway,” Prof Gresshoff said.

Growing trees as a source of biodiesel has a double appeal in countering climate change. The trees would absorb carbon and reduce future greenhouse gas emissions by offering a renewable alternative to fossil fuels.

The native wisteria, often grown as an ornamental because of its purple flowers, could be ideal as it has already adapted to Australian conditions and will tolerate drought, frost and salty soils, meaning it could be grown in many areas, Prof Gresshoff said. And because it’s a legume, it produces its own nitrogen, eliminating the need for fertiliser.

The oil, similar to olive oil, is produced in seeds inside large pods. The trees take five years to reach their first yield but then produce annually for up to 100 years.

And the bonus, Prof Gresshoff said, was that as a legume the trees would provide a high-protein feed for cattle which would be worth as much, or more, than the diesel itself.

The researchers are looking at the best areas for planting and trying to develop variations which could produce five times the number of seeds.

Gum trees are also being looked at as a possible source of biofuel. Queensland Sustainability, Climate Change and Innovation Minister Andrew McNamara recently returned from a trade delegation visit to Brazil where major companies including Dow Chemicals are looking at how to produce lignocellulosic — or second-generation — ethanol from the woody parts of plants, rather than sugar or grains.

“They feel they are five years away from correcting this process,” Mr McNamara said.

“It’s tantalisingly close.”

Queensland scientists are watching closely, believing the method could be used to produce fuel from eucalypts.

“Gums grow quite quickly and have quite a mass,” Mr McNamara said.

“We need to pursue every rabbit down every hole in the search for sustainable energy sources. There’s no silver bullet, but there’s a lot of silver buckshot.”

Mike Jubow, who runs the Nunyara Forest Nursery at Mackay, has been importing seeds for the so-called “diesel tree” — copaifera langsdorffil — from Brazil for two years.

He has supplied about 100 growers with a total of 50kg of wild seed, enough for about 50,000 trees.

“But we’ve been getting a lot more inquiries since the fuel prices have gone right up,” he said.

Mr Jubow, who normally imports 10kg lots of seed, said he would have to place an order in for 20kg-30kg to keep up with the growing demand.

A latex-type oil can be extracted from the trees and converted quite simply to biodiesel.

A 1ha plantation is expected to produce 10,000 to 12,000 litres a year and the first harvest would cover the cost of planting and nurturing, but the trees take about 15 years to mature and have to be hard-harvested. They are suited to high rainfall areas.

Another import being considered is the jatropha, a drought-resistant shrub being cultivated by BP as a biofuel in India, southern Africa and South-East Asia.

But Mr Jubow said the toxic plant, nicknamed “the bellyache bush”, should be kept out of Australia. It has already been declared a weed in Queensland.

Another plant with biofuel potential but also regarded as a weed risk is euphorbia lathyris, or caper spurge.
REVVING UP:
Nurseryman Mike Jubow with some of his diesel-tree stock
Picture: Daryl Wright

RENEWABLE RESOURCE:
Professor Peter Gresshoff with the pongamia plant (above) and seeds (below), which are crushed to make the oil (bottom)
Pictures: Jono Searle