

# Jatropha – the agrofuel of the poor?

GRAIN

The plant *Jatropha curcas* is a bush with bright red flowers, indigenous to Central America, which Portuguese traders took to Africa and Asia as a hedge plant. Its oily seeds can be used to produce biodiesel. As it can be cultivated on poor soils, it is being widely promoted in Asia and Africa as the ideal plant for small farmers. Claims like the following, made on a Pakistani website, are typical:

- If the farmer can grow his own diesel, this decentralised energy source will be a major boost to his economic condition
- 1 jatropha plant will give 1 litre of biodiesel per year for 40 years
- 90 per cent of the work can be performed by women, and directly help their revenue-earning potential
- Jatropha is drought-resistant and grows well on bad soil; moreover, it creates a lot of topsoil, so it helps to make land arable

A rosy picture indeed, but unfortunately what is actually happening does not support this optimistic view that jatropha will provide poor farmers with both cheap energy and significant income. In Africa and Asia there are serious concerns about jatropha's environmental and social impacts. Western Australia has even banned it because of its toxicity to humans and animals, and because of its capacity quickly to become a hard-to-control, invasive weed.<sup>1</sup>

Then there is the oft-repeated claim that farmers can grow jatropha without irrigation on poor soils. This is technically the case, but yields are so low in these conditions that the crop's viability becomes questionable. Indian studies show that, without irrigation, the average yield after five years is 1.1–2.75 tonnes per hectare, compared with 5.25–12.5 tonnes per hectare with irrigation.<sup>2</sup> It seems likely that, instead of being grown in marginal areas, jatropha production for agrofuels will compete directly with the production of food crops on the most fertile, irrigated lands.

Who will grow the jatropha? Proponents say that the crop is ideal for small-scale farmers. But, in practice, they are being pushed aside for tightly controlled corporate production, either on large plantations or through stringent contract production systems. In India, where the government is targeting 13.5 million hectares of "wasteland" for jatropha cultivation by 2012, it is reported already that companies are pressing farmers to give up their lands for jatropha production. Farmers near Balangir, Orissa, say that they were cheated out of 138 hectares of land by Taj Gas Limited, a company pursuing jatropha plantations in the area.<sup>3</sup> Also, as local NGOs have pointed out, the government's definition of "wasteland" includes the common lands and forests that many farmers, pastoralists and indigenous peoples depend on for their food and fuel needs.

The reality is that jatropha has already been converted into another plantation-based agribusiness commodity, tightly controlled from seed to fuel by transnational corporate networks.

1 David Smith, "Western Australia bans *Jatropha Curcas*", *Biofuel Review*, 31 May 2006. <http://tinyurl.com/2ya3cm>

2 <http://tinyurl.com/2ajfkq>

3 "Private companies eye fertile lands", *Newindpress*, 12 June 2007. <http://tinyurl.com/2fm85u>



## Some companies investing in jatropha plantations for agrofuels

British Petroleum (UK)	Plans to establish 100,000 hectares of jatropha plantations in Indonesia to feed the 350,000-tonne-per-year biodiesel refinery that it is building in the country.
Van Der Horst Corporation (Singapore)	Building a 200,000-tpy biodiesel plant in Jurong Island in Singapore that will eventually be supplied with jatropha from plantations it operates in Cambodia and China, and possible new plantations in India, Laos and Burma. <sup>1</sup>
Mission Biofuels (Australia)	Hired Agro Diesel of India to manage a 100,000-hectare jatropha plantation and a contract farming network in India to feed its Malaysian and Chinese biodiesel refineries.
D1 Oils	Among its many global jatropha operations, it has a joint venture in the Philippines with the Philippine National Oil Company for the operation of a 1,000-hectare jatropha mega-nursery.
NRG Chemical Engineering Pte (UK)	Signed a US\$1.3 billion deal with state-owned Philippine National Oil Co. in May 2007. NRG Chemical will own a 70% stake in the joint venture which will involve the construction of a biodiesel refinery, two ethanol distilleries and a US\$600-million investment in jatropha plantations that will cover over 1 million hectares, mainly on the islands of Palawan and Mindanao.

1 Burma's military junta is implementing an extensive jatropha planting campaign in the country. It plans to have jatropha planted on 200,000 hectares within three years and eventually on 3.25 million hectares. See: <http://tinyurl.com/2hwroc>

UK-based D1 Oils is the world's leading developer of jatropha biodiesel. Although its biodiesel refinery in England currently relies on soya oil from Brazil, D1 says it will soon switch to jatropha oil, sourced from its own plantations. "As our plantations of primary feedstock, jatropha curcas, begin to produce oil in volume over the next few years, we will increase significantly the import and refining of low-cost feedstocks sustainably produced overseas, particularly in developing countries", said Elliott Mannis, Chief Executive of D1 Oils.<sup>4</sup>

D1's jatropha plantations are located in Saudi Arabia, Cambodia, Ghana, Indonesia, the Philippines, China, India, Zambia, South Africa and Swaziland. In most cases, the plantations or contract growing arrangements are managed by D1's local partners, such as the Williamson Magor Group, India's largest plantation tea company, or the Philippine National Oil Company.

D1 is now working on the development of high-yielding jatropha varieties, with much of its breeding work focusing on India, an important centre of jatropha diversity and research. In 2005, in a storm of controversy, the company hired Dr Sunil Puri, one of India's leading jatropha researchers. Puri had until then been head of the forestry department at the Indira Gandhi Agricultural University in Raipur in central India and, as co-ordinator of jatropha research and development in the Indian National Oil Seeds and Vegetable Oils

Development Board, he had direct access to the University's important collection of local jatropha germplasm. A subsequent investigation by the University found that Puri had at the time illegally passed on 18 varieties from that collection to D1.<sup>5</sup> As jatropha today is no longer a marginal crop but big business, this germplasm was certainly of great use to D1. Indeed, shortly before the Puri scandal broke, D1 had contracted India's Labland Biotech to produce about 100 million high-quality jatropha clones through tissue culture techniques.<sup>6</sup>

In 2006 D1 hired one of the world's most prominent corporate biotech plant breeders, Dr Henk Joos, to lead its jatropha breeding programme. According to Joos, "The challenge lies in identifying and developing the most promising wild varieties of jatropha and producing hybrids with enhanced yield, higher oil content, and drought resistance characteristics."<sup>7</sup> Once they find such varieties, corporations like D1 will surely apply for patents, as they commonly do for other agrofuel crops.

Executives from the US-based company Xenerga Inc. say that they have already patented a Malaysian variety of high-octane jatropha that they will introduce for commercial production in the US in 2007. Xenerga and its associate company, German-based EuroFuelTech, also manage jatropha plantations in Kenya, where they say they have hundreds of thousands of hectares available for production.<sup>8</sup>



4 D1 Oils press release, 20 June 2006. <http://tinyurl.com/2aqpb8>

5 GRAIN, "Jatropha biopiracy debate", BIO-IPR Docserver, 25 January 2006. <http://www.grain.org/bio-ipr/?id=465>

6 Laiq A Khan, "Money grows on jatropha plants for Mysore firm", The Hindu, 24 April 2005. <http://tinyurl.com/2gepn2>

7 <http://tinyurl.com/275df8>

8 Rich McKay, "Farming our fuel", Orlando Sentinel, 17 April 2007. <http://tinyurl.com/yv3av6>  
Company website: <http://tinyurl.com/ywvgr7>