

## 'This is our future' – Kenya's croton tree touted as new biofuels crop

Will the legacy of biofuel's failure in Kenya prevent croton oil from transforming the industry?

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**i** Oil from croton nuts can be used in diesel generator, water pumps and tractor engines. Photograph: Eco Fuel Kenya

**T**all, spindly and grey, croton trees grow everywhere in Kenya. Although they tend to be used for little more than firewood or shade, their nuts turn out to be an excellent source of biofuel. This overlooked plant could be the answer to Africa's growing demand for cheap, low-carbon energy.

At least that is what Eco Fuels Kenya hopes. Founded in 2012, this small company based in Nanyuki, in the foothills of Mount Kenya, is pioneering the use of croton oil as

a replacement for diesel and hopes others will soon follow suit. The startup wants to use the tens of thousands of croton trees already growing wild across the nation to improve livelihoods and protect the environment.

The croton industry is still in its infancy but, if the biofuel performs as promised, this macadamia-sized nut could help Africa meet several sustainable development goals, including clean energy, climate action and poverty reduction.

### **Biofuel's troubled legacy**

Kenya currently imports all of its oil and, while some rural communities can barely afford to buy diesel for their water pumps, car exhausts in the capital Nairobi are causing dangerous levels of air pollution. "Croton has a lot of potential as a sustainable fuel," says Michael Jacobson, chair of the forest ecosystem management programme at Penn State University.

This is not the first time Kenya has been promised a biofuel revolution. In 2000, jatropha, a plant native to Central America, was introduced, billed as the next big biofuel crop. The Kenyan government took away farmers' land to make space for thousands of acres of monoculture.

At the peak of the jatropha hype there were thousands of farmers in Kenya helping to grow the plant. But yields were "dismal" and because 90% of the jatropha plantations were established on former agricultural land, when some of these companies left, they kept their land titles. This meant hundreds of farmers were left with no jobs and no place to grow their crops.



**i** Croton trees are common in much of central and east Africa, but are often overlooked.  
Photograph: Eco Fuel Kenya

Myles Katz, the managing director of Eco Fuels Kenya, says his team has learned from jatropha's failure and purposefully pursued a different business model.

"Instead of going the way of monoculture, we have decided to collaborate with small-scale holders and minimise the risk for everyone involved," says Katz. His company currently buys nuts from 5,000 farmers in the Mount Kenya and Rift Valley regions.

Croton oil generates 78% (pdf) less carbon dioxide emissions than diesel and has one big advantage over other common biofuels: food security. The fact that croton nuts are inedible means they can replace the need to make fuel from ingredients that could otherwise be food for humans. Croton trees are also already growing all over the region so there is (in EFK's model) no need to create massive mono-cultures that could potentially displace other food crops.

Unlike palm oil, croton trees are native to east Africa, which means that monetising their fruit may also incentivise locals to fight deforestation.

While the oil needs to be processed before it can be used in cars, it can go directly into diesel generators, water pumps or tractor engines. The company sells the oil to safari lodges in the Masai Mara. The price fluctuates but it is usually about 10% cheaper than diesel, which is currently about \$0.90 (£0.73) a litre in Kenya.

Eco Fuels Kenya also sells the byproducts of the fuel production. The seedcake paste left from pressing the croton nuts is a protein-rich feed for poultry and the grounded husks are sold as an organic fertiliser for depleted soil. "We are constantly discovering new uses for croton," says Katz.

### **A cash crop to replace coffee?**

Croton nuts could also help bring many Kenyans out of poverty. The trees don't require any investment in terms of water or fertiliser and harvest time can last up to six months a year, which makes it a steady source of income. What's more, sellers get paid on delivery while coffee farmers often have to wait months for their money.



**i** Grounded husks from croton nuts can be used as an organic fertiliser. Photograph: Eco Fuel Kenya

This is why, after years as a coffee grower, Martin Kamai is moving into croton. This young farmer and his wife have planted 500 croton trees on their property in Nyeri County, central Kenya, and plan to add even more next year. “Croton pays better than any other crop,” he says, “this is our future.”

Still, there are many challenges in the way of croton taking over the biofuel industry. The failure of jatropha is likely to make foreign investors, local farmers and Kenyan government officials more reluctant to put their weight behind another experimental biofuel solution.

Lack of marketing awareness and knowledge about best growing methods for croton will also make it hard for the business to scale up. “Investors won’t see much gain in small-scale, local projects, and the low price of oil is probably dampening their interest in energy alternatives,” warns Carol Hunsberger, an assistant professor at Western University who researches biofuels in Africa.

Despite the hurdles, Eco Fuels Kenya continues to grow. In 2016, it processed about 1,000 tonnes of nuts (twice as much as the previous year) and helped local farmers plant 100,000 croton trees in regions where they plan to expand their operations.

Next year, it will open its second processing plant in the lake town of Naivasha. The startup wants to set up five plants in Kenya before branching out to neighbouring Tanzania and Rwanda. The company declined to share any figures on the investment and its profit.

Will croton ever become a global biofuel? It’s doubtful, says Jacobson. But he adds that if local entrepreneurs persevere and oil prices go up again, this unlikely cash crop could make a real dent in east Africa’s energy supply, “which alone is good enough”.

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