

# Scientists create fuel from African crop waste (w/Video)

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(PhysOrg.com) -- Bananas are a staple crop of Rwanda. The fruit is eaten raw, fried and baked — it even produces banana beer and wine. Around 2 million tons are grown each year but the fruit is only a small percentage of what the plant produces. The rest — skins, leaves and stems — is left to rot as waste.

Now scientists at The University of Nottingham are looking at ways to use that waste to produce [fuel](#), developing simple methods of producing banana briquettes that could be burnt for cooking and heating. PhD student Joel Chaney in the Faculty of Engineering has developed a method of producing the briquettes using minimal tools and technology, which could be used in communities all over Africa.

First, the banana skins and leaves are mashed to a pulp in a hand-operated domestic meat mincer. This pulp is mixed with sawdust to create a mouldable material — in Rwanda it would be mixed with sun dried banana stems, ensuring the whole plant is used.

Then, the pulp mix is compressed into briquette shapes and baked in an oven at 105 degrees. Again, in Africa the fuel would be left for a few days to dry in the sun.

*Video: Joel makes his banana briquettes.*

Once dried, the briquettes form an ideal fuel, burning with a consistent steady heat suitable for cooking. Joel has tested this himself by cooking

fried banana fritters, which is similar to "red-red" a popular Ghanaian dish.

"A big problem in the developing world is firewood," said Joel. "Huge areas of land are deforested every year, which leads to the land being eroded. People need fuel to cook and stay warm but they can't afford the more expensive types, like gas.

"As well as the environmental damage this causes, it also takes a lot of time. Women can spend four or five hours a day just collecting firewood. If an alternative fuel could be found they could spend this time doing other things — even generating an income.

"Using waste to create fuel is key to sustainable development, and this method could be easily transferred across Africa."

Joel's supervisor Dr Mike Clifford, Associate Professor in the Faculty of Engineering, is working on a number of sustainable materials and technologies including yak wool, recycled banknotes, waste cardboard and vernonia oil — a naturally occurring resin found in Ethiopian plants.

"Joel's work on biomass briquetting is very interesting. We've been able to turn all sorts of waste materials into fuel and to predict how well different mixtures of materials will burn. I'm looking forward to some sunny weather so I can try the banana briquettes out at home on my barbeque!"

Source: University of Nottingham ([news](#) : [web](#))

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