

# Cassava paper, a green inspiration

Budding scientist Rohaizah Awatif Mohd Rafie talks to **Rozana Sani** about inventions and ambitions



Rohaizah with her Cassava Green Paper.

As far as Rohaizah Awatif Mohd Rafie can remember, her parents would always take her and her siblings to their hometown whenever they were free.

On the return trip, the car boot would be filled with durian and the inside of the car would be filled with the pungent smell of the fruit.

It was on one such trip earlier this year that got the 16-year-old thinking: "Wouldn't it be great to invent something that would absorb the odour? Something that would not only lessen the smell but also green the earth."

She adds: "I have always loved doing scientific experiments, even when I was younger. I remember trying to make an incubator with my brother. We also made a solar cooker once though it didn't work that well."

The student of Sekolah Seri Puteri (SSP) in Cyberjaya lists science experiments on YouTube, scientific articles on the Internet and the mad professor book series as her favourites.

Rohaizah decided to create cassava paper from cassava starch, waste paper and charcoal.

Her idea was to use the paper to make a paper bag or paper for wrapping food which could lessen the earth's waste disposable problem. A biodegradable product such as cassava green paper is not only environmentally friendly but also enables food to be stored for a longer time.

"When I did my research, I did not find any such product. The closest that I came to was paper with cassava (also known as tapioca) starch mixed in. Existing research on this type of paper gave me the idea to further improve on this by adding charcoal. Charcoal is well-known for its ability to absorb odour and the paper produced will have the same property," says Rohaizah, who is vice-secretary of her school's Young Scientist Leaders Club. She also plays squash for her school.

With help from the advisor of the



Rohaizah (right), Habsah and a teammate with their prize at the Malaysian International Young Inventors Olympiad.

School Innovation Project, teacher Habsah Ahmad, Rohaizah started her experiments in February at the laboratory of Universiti Putra Malaysia's Tropical Forestry Faculty.

The lab work was to explore the potential of cassava to produce alternative paper, to find out whether the charcoal in cassava paper could absorb food odours and to create paper bags and food wrapping paper using cassava paper.

She says: "The recycled paper was immersed in tap water for 24 hours to soften it. It was then poured into the Somerville for screening. Then, I moved on to the disintegration process. The pulp was mixed with water before being dried. Water was added to the pulp again with the addition of 0.24g of charcoal and 10ml of heated cassava starch."

Results from the lab sessions showed that the cassava green paper

was strong and could absorb odours.

"The results gave me the idea to test its water absorbency and whether it would be affected by humidity. Improvements will be done in the near future to perfect the green paper. Hopefully, it will be produced on a commercial scale for use by consumers worldwide," says Rohaizah.

She and her teammates presented the project — Cassava Green Paper To Reduce Environmental Problem — at the Malaysian International Young Inventors Olympiad at Universiti Malaysia Perlis on April 16-19. Not only did they win a prize but they also received inquiries from representatives of the paper and food industries.

Rohaizah and SSP have patented the product. She also submitted the project as an entry at the Google Science Fair 2013, an annual international, online science and technology competition that encourages students aged 13-18 to

VIDEO LINK: [HTTP://WWW.YOUTUBE.COM/WATCH?V=ZGOMK139A5K](http://www.youtube.com/watch?v=ZGOMK139A5K)

be curious, ask questions, and perform science experiments to answer those questions. She was named a regional finalist, the only one from Malaysia.

Rohaizah names Albert Einstein as her idol and enjoys hearing stories on how Einstein failed many times before he actually succeeded in his inventions.

What makes Rohaizah passionate about science?

"I feel the urge to invent new things and to discover the world, and that somehow I need to make a change. My parents inspire me. They exposed me to science from when I was a child," she says.

She plans to become a cardiologist one day, specialising in medical engineering. For a girl who wants to make a difference, she is off to a good start.