Headline	Seeds of innovation		
MediaTitle	New Straits Times		
Date	04 Jun 2012	Color	Full Color
Section	Life & Times	Circulation	136,530
Page No	9	Readership	330,000
Language	English	ArticleSize	595 cm²
Journalist	Izwan Ismail	AdValue	RM 19,337
Frequency	Daily	PR Value	RM 58,012

Seeds of innovation

A researcher dedicates her life to finding innovative ways to conserve forests. ***Izwan Ismail*** *has the story*

WHILE many of her peers would settle for an office job, Datuk Dr Marzalina Mansor prefers a totally different setting — the forest.

After more than two decades at the Forest Research Institute Malaysia (FRIM), the 49-year-old mother of four from Kuala Kangsar, Perak has developed a deep love for the forest. She is very passionate about conserving trees and preserving the ecological balance.

Marzalina joined FRIM in 1998 as a researcher, conducting phenological study and seed technology of the forest species. She loves every minute of her job.

"I was astounded by the beauty of our forests. But at the same time, I was also sad to see how fast these green 'treasures' are disappearing due to timber extraction activities. Our forests hold a lot of treasures waiting to be discovered — many of the plants have medicinal value," she says.

Marzalina didn't see it as a problem spending three weeks a month deep in the jungles.

"I quickly learnt to survive in the jungle. In the early days, there were no tech gadgets such as mobile phones, PDAs, GPS, etc, to assist researchers. To survive, we had to depend on our five senses and skills, as well as assistance from our Orang Asli guide," she adds.

CHALLENGES

Through her study of the forest, Marzalina learnt that indigenous tree species like Meranti, Keruing and Cengal have a unique flowering and fruiting timing, which occurs once between three and eight years. This is termed as mass flowering and fruiting season, which occurs in tandem with several triggering factors during weather oscillations.

Marzalina also discovered that the trees produce seeds which are of different 'recalcitrant' properties, and they react differently to surrounding areas.

"The seeds can be preserved for a longer period if the temperature is manipulated. Cooler temperature always helps," she says.

This was when Marzalina got the idea of creating a seed dewinging machine, seed-seedling storage chamber, and mobile seed-seedling chamber, so that the seeds can be dewinged faster and kept in cool temperatures.

She also worked on artificial seeds to ensure storage period can be lengthened so as to make them available for reforestation and plantation activities when needed. This involved using embryos from seeds such as Keruing, Sesenduk, Meranti, Jati, Meranti and Mahogany, which are processed into gel beads.

"Through this, we are able to conserve the forest without even having to be inside it. We store the seeds in a seed bank, and when they germinate, they are transferred to the nurseries. When the trees grow bigger, we plant them back in the forest," she adds.

ARTIFICIAL LUMBER

In 2007, Marzalina joined FRIM research team led by senior research officer Dr Wan Tarmeze Wan Ariffin, and worked on the MYScrim project to develop artificial lumber.

Utilising patented technologies, waste biomass like oil palm trunk can be compressed and engineered to the hardness of lumber like Rubberwood, which can be used to make all sorts of wood-based products.

"There are about 13.6 million oil palm trunks in Malaysia, but only three per cent are used to make plywood and the rest are left to rot. It's a waste of biomass and yet we face shortage of raw material due to limited natural resources from the forest," she says.

Today, the same techniques can be used on bamboo and juvenile acacia trees to make artificial lumber.

Marzalina says artificial lumber can benefit the industry in many ways.

For one, there is not much need to log for trees and the millions of unused oil palm trunks can be recycled back into wood.

"There are plenty of under-developed areas that can be turned into forest plantations. Utilising the wood from young plantation (aged 3.5 to 5 years) to create artificial lumber will definitely cut down the long-gestation period (usually between 15 and 40 years) of waiting for natural lumber to be harvested. It can also create more jobs for the people and at the same time conserve the forest," she says.

HOPES

Marzalina's works have not gone unnoticed. She has won several awards from international and local bodies like Malaysian Tech Expo, ITEX, and

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World Intellectual Property Organisation. Now, as director of MYScrim flagship project, she is on a mission to promote artificial lumber technology to the local market as well as overseas.

"I'd love to see the MYScrim project take off. It will help to better conserve our forest through the use of green, artificial alternatives. I hope to continue to deliver my skills and knowledge in biotech and forest conservation efforts," she says.

For those, especially women, who would like to make forestry a career, Marzalina has this to say; "You need to understand why you want to do it. If you want it, it will be easy, don't do it because you have no choice or nowhere else to go, as you need to be ready for what's waiting for you in the forest.

"You will see beautiful things in the forest. You blend with them, and vice versa," she adds.

While collecting mangrove wildings, Rhizophora at Pulau Kukup, Johor

"You will see beautiful things in the **forest**. You blend with them, and vice versa."

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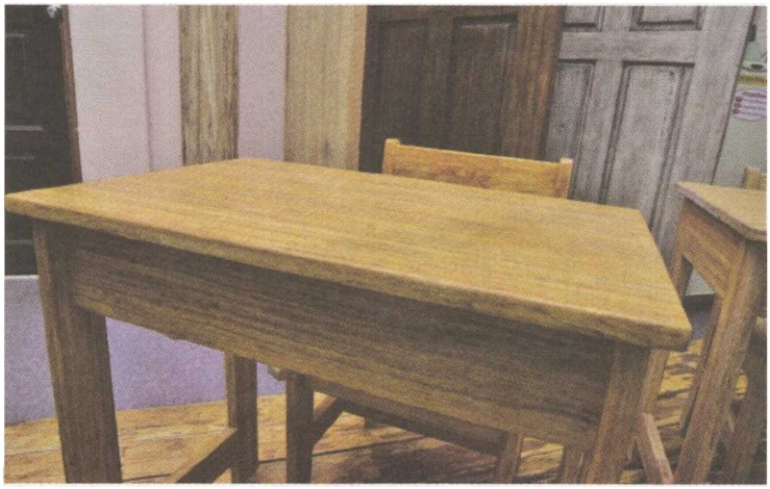
The seed dewinger machine



Artificial timber has the same qualities as the real thing