



Biology: uniformity and diversity

Experimenting with Diptocarps

Narrator

In a traditional Chinese teashop two scientists are seeking sustainable solutions. Ian and Su See's challenge is to transform biology into economics.

Prof Ian Alexander

Like all scientists we're interested in finding out how things work. But at the same time we recognise and are keen to use the knowledge that we get and apply it in order to make better forests.

Narrator

Timber from dipterocarps has an established market. To grow them in plantations would relieve one pressure on natural forests. But you can't just plant dipterocarp seedlings anywhere and expect them to grow.

Dr Lee Su See

This was an area, which was an experimental plot set up to see whether dipterocarp could survive here, when planted under different spacing. They removed 16 rows of acacia's and planted 16 rows of dipterocarp. And the only ones that survived those just along the edge where they are next to the acacia's, where they got some shade and some protection. Whereas the rest in this area, were exposed to high sunshine, high light intensity, high temperatures and they just didn't make it.

Narrator

So these dipterocarp cuttings are getting some help. From Sue See's collection of mycorrhizal Funghi. Inspired by what happens in the natural forest, Dr Lee and her assistant are artificially inoculating them.

Dr Lee Su See

This fungus is a fungus that we isolated from acacia mangium plantations. And we know that you can farm microrisers and so now we are going to use this as the inoculums for our dipterocarps here as well.

Narrator

The seedlings are to be pioneers in a dipterocarp plantation. When they're bigger, Sue See takes them to an experimental plot. But something's already growing there. The fast growing foreigner acacia mangium. The trees are about to be given a totally new career. To act as nursemaids for baby dipterocarps.

Two rows of acacias are removed. Those left standing will provide light conditions similar to when a tree falls, creating a gap in the natural forest. The rest of the seedlings support system is underground. Mycorrhizal funghi on the seedlings can also link up with the surrounding acacia's. Creating a localised woodwide web.

Jonathan Leake

The complexity below ground may be in many cases driving eco systems, promoting organisms which might otherwise not do very well simply by the benefits that are being gained from joining into a shared mycorrhizal mycelial network.

Narrator

This could be just the boost the seedlings need.

Dr Lee Su See

While the dipterocarps take a longer time to grow we reckon that the root that they produce is of better quality. And we think that they should have fewer disease and pest problems compared to some of the exotics, which are established in plantations.

Narrator:

This is what Sue See hopes her experiment will eventually look like. Two rows of acacia interspersed with two rows of younger dipterocarps. Eventually the dipterocarps will grow to be taller than their nurses. The acacia's will be felled leaving a plantation of tropical hardwood trees.