



Biology: uniformity and diversity

Funghi: Academic commentary

Narrator:

Funghi are an important part of forest or woodland eco system. They are the major agents by which twigs and leaves are broken down. Releasing nutrients for re-absorption by plants.

And we know funghi also form a constructive partnership with living trees. David Robinson from the Open University's Life Sciences Department explains that although we have known about this partnership and relationship for some time, we are now learning more about the nature of that relationship.

David Robinson:

You can go back nearly I think four hundred million years, and look at fossils. And you can actually determine that this relationship existed in fossils that length of time ago. So it isn't biologically a new idea. It's only more recently that the precise nature of that relationship has been worked on.

For example it's become possible to use radio active isotopes to track movement of molecules between funghi and tree roots. And then even more recently, has come the applications of this knowledge. Whereby horticulturalists and agriculturalists can make use of culture of funghi, to set up these relationship for themselves, in area that they're trying to plant.

You can go and look at websites from people who supply mycelium, that's the fungal culture, for use in a whole range of applications.

Narrator:

In Malaysia, scientists are now finding ways to apply the knowledge of the partnership between funghi and trees, in order to ease a problematic relationship, between economics and ecology.

DR:

I think the interest about the Malaysian example is that they have a very particular problem that they are trying to solve there. And they're solving it with use of fundamental research. And they're trying to pioneer techniques, not only for changing logging practices in the country but also for reclaiming areas which have been lost to forest and perhaps industrial areas. Which now with the aid of this research they can hope to reclaim.

Narrator:

In Malaysia, Doctor Lee Su See is trying to establish hardwood trees in a barren area of land. Using her knowledge of the way in which the relationship between funghi and trees works.

DR:

I was very struck by the experiment that Doctor Lee Su See was carrying out in reclamation. And the area of land that she was working on looked absolutely impossible for plants to grow. Although of course there were one or two acacia plants had managed to get established there. Of course she was going to work on a large scale so she couldn't just put plants there, and hope for the best. She had to inoculate them with the fungus, so as to get the web of mycelium and roots established. And it was obvious also that she needed to add other things. Notably quite a lot of water. But it really didn't look the sort of place where you would expect to grow plants. And she clearly has had some success and that success undoubtedly will continue. It's a long term project even so.

Narrator:

The larger aim of Doctor Lee Su see's work is to get a sustainable source of hardwood in order to avoid the logging on untouched rain forest. In so doing, she is combining research with direct application.

DR:

So she's trying to get really quite large scale reduction of hardwood. That is really quite a number of trees, in the same area. And getting them established and growing away as quickly as possible. And this was difficult without knowledge of the way in which the link with funghi worked.

Narrator:

This growing knowledge of the large scale web of relationships going on underground is changing scientists views of the relationship between larger trees and saplings.

DR:

We've known about symbiotic relationships of course for quite a long time. This is a more unusual example. In that it's so large an area, it's underground. And there seems to be such a close and intimate relationship between the fungus and the trees. And so it's rather different from the examples that have been studied before. It's extremely interesting to think about the possibilities that this web of inter relationship opens up. And certainly you can imagine almost that the large trees are feeding the small ones. The small ones are managing to grow, perhaps not as fast as they would if they had access to all the light from above. But they are kept going. And it's almost as if the large trees are keeping them going, until such time as a hole develops in the canopy and they can grow away to their full height. So that relationship between the large mature trees and the young saplings is most unusual. And I think there's a lot more that we need to understand about the precise links between them. And how much material is passed from the adult trees into the new saplings.

(CLEAR FOCUS PRODUCTIONS)