

AUSTRALIAN SOIL CHYTRIDS

Peter McGee

Chytrids are zoosporic fungi (Chytridiomycota). They are unusual fungi in that they have motile zoospores as the local dispersal stage, and many species form sporangia. They are found in moist habitats, including soil.

We have been examining their distribution, and testing some factors that affect their diversity and abundance in soil, as part of a wider program on biological health of soil. So far, we have found that chytrids are widespread in soil of eastern Australia, and we have seen more than 40 species. They are relatively abundant in soil of the Sydney basin, and less so in cropping soil of Narrabri.

So far, we have tested their response to temperatures. The fungi may have one of several mechanisms to enable survival through inclement temperatures. Some species have heat tolerant sporangia when dry. Others tolerate higher temperatures experienced in soil by going into quiescence for short periods. These fungi do not appear to complete their life cycle if they are held at the higher temperatures. A few fungi appear intolerant of even moderate temperatures, leading us to wonder how they survive in soil.

Chytrids also have an odd interaction with plants. Abundance of most soil fungi increases with plants, and diversity of soil fungi increases with plant diversity. This association does not appear to hold for chytrids, and requires more careful testing of which substrates are used by these organisms in soil.