

# Olive oil and fungus protect wood from wood rot

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Test bed of wood panels on the roof of the Westerdijk Institute in The Netherlands. Credit: Martin Meijer

Elke van Nieuwenhuijzen will be receiving her doctorate next Wednesday, 7 November, at Eindhoven University of Technology for her study of black fungus on oiled wood that behaves like a 'biofinish.' This layer colors the wood and actually protects it from wood rot and degradation by sunlight. An additional advantage: the fungus automatically repairs damage in the protective layer.

The discovery was made almost 20 years ago by chance, when researcher Michael Sailer investigated whether vegetable oil can conserve [wood](#). He discovered that pieces of coniferous wood impregnated with linseed oil and hemp oil turned black after exposure to wind and weather. But the discolored wood did not become soft, like rotten wood; it remained hard. The wood was possibly protected by the black [layer](#), which the microscope showed to be fungus.

Elke van Nieuwenhuijzen has now thoroughly investigated the natural fungal composition of these layers. She was supervised by, among others, mycologists from the Westerdijk Fungal Biodiversity Institute in Utrecht. Outdoors, she impregnated planks of three types of wood (spruce, pine, ilomba) with three types of oil ([olive oil](#), crude linseed oil, stand oil). The fungi then formed automatically, and on some planks, formed an opaque black layer. She did the same experiment in Norway.

Olive oil worked best in the Netherlands, producing an opaque black [protective layer](#) for all three types of wood. Crude linseed oil on pine also worked well. In Norway, the picture was broadly the same, but it took longer for the layer to fully cover the planks. Van Nieuwenhuijzen suspects that this is because of the colder climate.





Test bed of wood panels in Norway. Credit: Elke van Nieuwenhuijzen

The effect of the protective layer partly results from the discoloration: the black layer blocks UV light, and thus prevents degradation. Van Nieuwenhuijzen also suspects that the dark pigmented fungi crowd out wood-destroying fungi. Additionally, oil repelling water is probably beneficial for the dark-pigmented fungi. Water forms droplets on the wood, which is where the fungus thrives.

One of the [fungi](#) that was always found was of the genus *Aureobasidium*. Apparently, it thrives in all kinds of climatic conditions. How the fungus survives and its energy source is not yet entirely clear. Elke says, "It's an enigmatic [fungus](#). It develops in many different ways. Sometimes it behaves like a yeast, sometimes it forms threads, sometimes it turns black, sometimes it doesn't. You could say it is a kind of [Barbapapa](#)."

The Ph.D. student does not advise people to treat their outside wood with olive oil themselves. Her research concerned wood impregnated with oil, or permeated. She does expect it to work, however, if the oil is applied with a brush, but it can take months and sometimes even years before the black spots converge into a covering layer, especially in sheltered places.

Provided by Eindhoven University of Technology

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