# Climate change drives alarming spread of deadly Aspergillus fungi across continents



As the planet continues to warm, researchers are raising alarms about the expanding reach of dangerous fungal pathogens, particularly the Aspergillus species, which pose significant health risks to vulnerable populations. A study spearheaded by scientists at the University of Manchester has uncovered projections that could dramatically change the landscape of public health as Aspergillus fungi spread into new territories across Europe, Asia, and the Americas.

Fungi, while critical to many ecosystems, can also wreak havoc on human health. An estimated 2.5 million people die annually from fungal infections, a figure that recent studies suggest could actually be much higher. New research published in The Lancet Infectious Diseases reveals that invasive fungal infections might account for as many as 3.8 million deaths each year. This rise correlates with an increasing incidence of illnesses like aspergillosis, a lung disease resulting from inhaling Aspergillus spores, which are buoyant and easily spread through the air.

Aspergillus fumigatus and Aspergillus flavus are of particular concern. These species thrive in warmer climates, and researchers predict that their distribution will significantly expand as global temperatures rise. They have identified a potential 77.5% increase in the spread of Aspergillus fumigatus by the year 2100, potentially exposing millions to health risks. The implications for those with weakened immune systems—including patients suffering from asthma, cystic fibrosis, and those recovering from severe illnesses—are particularly precarious, as their immune systems may fail to fend off the invasive fungi.

The study utilising computer simulations indicates that climate change could enhance fungi's adaptability, allowing them to thrive in environments that would previously have been inhospitable. For instance, Aspergillus flavus, which can infect crops and has shown resistance to antifungal treatments, could see its range extend northwards into areas that are currently cooler. This threatens not only health but also food security, as these fungi can contort agriculture by infecting critical food supplies.

Despite the severity of the situation, understanding of fungal diseases lags behind that of viral and bacterial diseases. Norman van Rijn, a researcher involved in the study, highlights that while fungal infections kill millions each year, they remain under-researched. He hopes that the growing attention stemming from popular culture—such as the HBO series "The Last of Us," which dramatizes a fungal outbreak—will galvanise interest and research into these silent killers.

Recent climate data supports these projections, indicating an urgent need for increased awareness and preparedness. Extreme weather conditions—droughts, floods, and heatwaves—have been linked to spikes in fungal diseases, leading to increased incidence rates following natural disasters. With over 20,000 cases of aspergillosis identified in a recent comprehensive study of more than 100 million patients in the U.S., the incidence is climbing at about 5% annually.

Public health experts are calling for more comprehensive approaches to monitoring and data collection on these pathogens. Justin Remais, an environmental health sciences professor, emphasises the gap in the existing knowledge base and the critical need to address fungal infections as a growing public health threat. Indeed, while the spotlight often shines on viruses and bacteria, fungal pathogens are becoming increasingly prominent in conversations about global health, giving rise to a need for innovative solutions and urgent action.

As mitigation efforts for climate change continue to evolve, the trajectory of fungal infections presents a stark reminder of the interconnectedness of environmental and human health. The findings from the recent studies offer a clear warning: without focused attention and intervention, society may face a future where the shadows cast by the warming world include an increase in deadly fungal diseases.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.9news.com.au/world/a-fungi-that-can-eat-you-from-the-inside-out-could-spread-as-the-world-heats-up-world-news-cnn/3675a743-9cfa-4a65-a4b5-b8207e6b5bba> - Please view link - unable to able to access data
2. <https://www.ft.com/content/506f5a03-8520-40e1-aee3-a6e6427f68c0> - A recent study warns that climate change is accelerating the global spread of dangerous fungal pathogens, particularly Aspergillus species. Rising temperatures are enabling Aspergillus fumigatus and Aspergillus flavus to expand into northern regions of Europe, Asia, and the Americas. These fungi pose serious health risks, especially to people with weakened immune systems. Aspergillosis, a lung disease caused by inhalation of Aspergillus spores, kills hundreds of thousands annually, with many cases going undiagnosed due to unfamiliarity and symptom overlap with other conditions.
3. <https://www.ft.com/content/2df0ad08-65b6-483a-a59c-2af40d8afc23> - In January, Professor David Denning of the University of Manchester alarmed the public health community by publishing figures that doubled previous estimates on the incidence and mortality of invasive fungal infections. According to his article in The Lancet Infectious Diseases, 3.8 million people die annually from these infections, with the fungus being the main cause in 2.5 million cases. This finding highlights the neglect of this factor in global mortality, now representing approximately 5% of all deaths, a trend that mycologists expect climate change to exacerbate.
4. <https://wellcome.org/news/climate-change-putting-millions-more-people-risk-infection-causing-fungi> - A new study, published on preprint platform Research Square and funded by Wellcome, maps the effects of rising temperatures on infection-causing fungi under different climate change mitigation scenarios until the year 2100. Using climate modeling and forecasts, Dr. Norman van Rhijn at the University of Manchester and colleagues have mapped how the global distributions of three fungal pathogens (Aspergillus flavus, Aspergillus fumigatus, and Aspergillus niger) could be expected to change as a result.
5. <https://www.manchester.ac.uk/about/news/climate-change-putting-millions-more-people-at-risk-from-infection-causing-fungi/> - Researchers from The University of Manchester have forecast an increased risk of infection from fungi over the coming years, including a significant spread of some fungal pathogens across Europe, the extent of which will depend on global actions to mitigate climate change. Under a scenario of relying on fossil fuels instead of clean power, the spread of Aspergillus flavus, for example, could increase by about 16%, putting 1 million more people at risk of infection in Europe.
6. <https://www.eea.europa.eu/en/analysis/publications/mycotoxin-exposure-in-a-changing-european-climate> - Under a +2°C temperature-increase scenario, the study predicts that aflatoxin (AF) contamination in maize will increase, particularly in southern Europe (Spain, Italy, and the Balkans). In a +5°C scenario, the contamination risk may decrease in southern regions due to extreme heat, but risks will widen geographically to include more northern European countries. For wheat, there are also increases in AF contamination, but these are higher in a +2°C temperature-increase scenario than a +5°C scenario.
7. <https://www.9news.com.au/world/a-fungi-that-can-eat-you-from-the-inside-out-could-spread-as-the-world-heats-up-world-news-cnn/3675a743-9cfa-4a65-a4b5-b8207e6b5bba> - Infection-causing fungi responsible for millions of deaths a year will spread significantly to new regions as the planet heats up, new research predicts — and the world is not prepared. Fungi are absolutely everywhere. A vast kingdom of organisms, from mould to mushrooms, they grow in environments such as soil, compost, and water. They play an important role in ecosystems but can have a devastating impact on human health: Fungal infections kill an estimated 2.5 million people a year, and a lack of data means that number could be far higher.