# Rising Aspergillus fungus threat linked to climate change could put millions at risk by 2100



Rising global temperatures, a direct consequence of climate change, are leading to alarming developments in public health, particularly concerning the spread of dangerous fungi. A recent study conducted by scientists at the University of Manchester predicts that the Aspergillus genus, which includes certain species capable of causing severe lung infections—will proliferate dramatically by 2100 due to escalating climate conditions. These fungi, which could potentially be described as “eating humans from the inside out,” are becoming a critical concern in the context of a warming world.

Aspergillus fungi have been around for centuries and inhabit various environments, from soil to decaying organic matter. Their ecological roles include breaking down dead plants and organic materials, with some species even contributing to the production of food items like soy sauce. However, not all Aspergillus species are benign. Aspergillus fumigatus and Aspergillus flavus are particularly concerning; they are known to trigger aspergillosis, a condition that can lead to serious respiratory infections, especially among individuals with compromised immune systems, such as cancer patients and organ transplant recipients. The World Health Organization has classified A. flavus as a critical fungal threat, highlighting the growing urgency surrounding this issue.

The implications of the study are supported by data indicating that under a scenario of continued reliance on fossil fuels, A. fumigatus could expand its range by 77.5%, advancing into northern Europe, Asia, and the Americas, with projections estimating that 9 million additional people in Europe may be at risk of infection. A. flavus, thriving in hotter climates, is predicted to see a 16% increase in spread, potentially affecting food security as it infects crops. This burgeoning threat poses not just health risks but also socioeconomic challenges related to agriculture and food safety, particularly in regions previously unaffected by these fungi.

Climate change plays a multifaceted role in this situation. Rising temperatures and shifting weather patterns are increasing the prevalence of mycotoxigenic fungi, which are suited to warmer environments. Fungi such as A. flavus flourish in tropics and subtropics, and as temperatures increase, their influence is likely to extend to higher latitudes. Research indicates that within the next century, A. flavus could become a significant food safety issue across southern Europe and parts of the Mediterranean, further complicating food security in a region already grappling with climate-related challenges.

Moreover, the symptoms of aspergillosis are often unspecific—fever and coughs are common to many illnesses—making timely diagnosis difficult. The fact that these fungi often exhibit resistance to antifungal treatments exacerbates the public health crisis. Increased awareness and understanding among healthcare professionals are imperative to address the complications arising from this underdiagnosed condition.

In summary, the rising incidence of Aspergillus species is more than an environmental concern; it is a harbinger of a significant public health challenge exacerbated by climate change. As global temperatures continue to climb, it is paramount that we acknowledge the interconnectedness of health and environmental conditions, adopting measures that aim to mitigate climate change while also enhancing our healthcare infrastructure to manage emerging infectious threats.

## Reference Map:

* Paragraph 1 – [[1]](https://www.dnaindia.com/viral/report-this-fungi-that-can-eat-humans-inside-out-could-spread-rapidly-amid-climate-change-here-s-what-we-know-so-far-3154634), [[2]](https://www.ft.com/content/506f5a03-8520-40e1-aee3-a6e6427f68c0)
* Paragraph 2 – [[1]](https://www.dnaindia.com/viral/report-this-fungi-that-can-eat-humans-inside-out-could-spread-rapidly-amid-climate-change-here-s-what-we-know-so-far-3154634), [[3]](https://as.com/actualidad/sociedad/alerta-en-europa-por-un-hongo-potencialmente-mortal-puede-afectar-a-millones-de-personas-n/), [[4]](https://www.manchester.ac.uk/about/news/climate-change-putting-millions-more-people-at-risk-from-infection-causing-fungi/)
* Paragraph 3 – [[6]](https://www.cdc.gov/fungal/about/climate-change-and-fungal-diseases.html), [[5]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9319892/)
* Paragraph 4 – [[4]](https://www.manchester.ac.uk/about/news/climate-change-putting-millions-more-people-at-risk-from-infection-causing-fungi/), [[7]](https://www.eea.europa.eu/en/analysis/publications/mycotoxin-exposure-in-a-changing-european-climate)
* Paragraph 5 – [[2]](https://www.ft.com/content/506f5a03-8520-40e1-aee3-a6e6427f68c0), [[3]](https://as.com/actualidad/sociedad/alerta-en-europa-por-un-hongo-potencialmente-mortal-puede-afectar-a-millones-de-personas-n/)

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

## Bibliography

1. <https://www.dnaindia.com/viral/report-this-fungi-that-can-eat-humans-inside-out-could-spread-rapidly-amid-climate-change-here-s-what-we-know-so-far-3154634> - 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://as.com/actualidad/sociedad/alerta-en-europa-por-un-hongo-potencialmente-mortal-puede-afectar-a-millones-de-personas-n/> - An alert has been issued in Europe due to the increase in cases of aspergillosis, a potentially fatal disease caused by Aspergillus fungi, especially species Fumigatus and Flavus. This infection primarily affects individuals with weakened immune systems, such as transplant patients or those undergoing chemotherapy. The most severe form is pulmonary aspergillosis, which can severely damage the lungs. Climate change, particularly rising temperatures, favours the proliferation of these fungi, along with other factors like compost, pesticides, and resistance to agricultural medications. It is predicted that Aspergillus fumigatus could expand by 77% globally if fossil fuel use continues, and cases of Aspergillus flavus may increase by 16%. Other pathogenic fungi like Candida auris and Coccidioides have also been observed to expand. While most people tolerate the spores well, those with pre-existing lung diseases are at high risk of severe and fatal infections.
4. <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, depending on global actions to mitigate climate change. Under a scenario of relying on fossil fuels instead of clean power, the spread of Aspergillus flavus could increase by about 16%, putting 1 million more people at risk of infection in Europe. Infections affect the respiratory system, and this fungus infects a broad range of agricultural crops. The predictions also show that the spread of Aspergillus fumigatus could increase by 77.5% and potentially expose 9 million people in Europe. This is a concerning trend due to a rise in antifungal resistance and a severe lack of diagnostics and treatment options for fungal infections.
5. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9319892/> - Climate change is expected to increase the prevalence of mycotoxigenic fungi suited to higher temperatures, such as aflatoxin-producing Aspergillus species, posing significant hazards to human and animal health. Aspergillus species, including A. flavus, are primarily found in tropical and subtropical regions, thriving at high temperatures and low water activity. Developing crops are frequently resistant to infection by A. flavus and subsequent aflatoxin contamination unless environmental conditions favour fungal growth and crop susceptibility. Projections indicate that within the next century, A. flavus will become a food safety issue in maize in central/southern Spain, South Italy, Greece, north/southeast Portugal, Bulgaria, Albania, Cyprus, and Turkey under scenarios of +2°C and +5°C temperature increases.
6. <https://www.cdc.gov/fungal/about/climate-change-and-fungal-diseases.html> - Climate change poses many threats to biological, ecological, and societal systems. Shifting temperatures and weather patterns over time are changing the environment and fungal habitats. The impact of climate change on fungal infections is not fully understood due to a lack of data. However, there are several ways that environmental changes can transform fungi, where fungi live, and their interactions with other living things. Rising temperatures and extreme weather events may impact fungal disease spread. Increases in temperature and precipitation may expand the areas where some fungi can survive. For example, the fungus that causes Valley fever, Coccidioides, lives in the soil in hot and dry regions. Coccidioides is usually found in the southwestern United States as well as parts of Mexico and Central and South America. However, presence of the fungus in Washington state was documented in 2015. Environmental changes may also extend the regions where fungi causing blastomycosis and histoplasmosis survive. The same occurs for fungi found in tropical or subtropical climates, like Cryptococcus gattii.
7. <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 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 aflatoxin contamination, but these are higher in a +2°C temperature-increase scenario than a +5°C scenario (although with the latter, they are still higher than in the current meteorological scenario). For rice, the risk of contamination is negligible at harvest for all scenarios. This change in the spread of fungal species in Europe will alter exposure patterns, resulting in people being exposed to different mycotoxins with varying health effects. Contamination from multiple mycotoxins, including mixtures of aflatoxins, fumonisins, deoxynivalenol, and zearalenone, is expected to increase in crops, escalating human dietary exposure.