# Climate change and the rise of allergies: the impact of common ragweed



László Makra, a climate scientist based at the University of Szeged in Hungary, has contributed significantly to the understanding of pollen and climate change. His personal health struggles dating back to 1989, which began with flu-like symptoms during summer, were later diagnosed as allergies triggered by common ragweed—an invasive species introduced to Europe from North America in the 19th century. The invasive plant, known for producing millions of allergenic pollen grains, has proliferated across central and eastern Europe. In Hungary alone, it has become a substantial health concern, contributing to an estimated 13.5 million people experiencing allergic reactions.

Common ragweed's rising prevalence correlates with an increase in hay fever symptoms reported globally. The growing concern is underscored by a phenomenon known as "thunderstorm asthma." In November 2016, Melbourne saw a surge of over 8,500 hospital admissions following a thunderstorm during peak pollen season, resulting in at least nine fatalities. Such events occur when thunderstorms exacerbate pollen levels, leading to increased asthma-related complications, particularly among hay fever sufferers.

Pollution has further complicated the relationship between allergens and health. Since the 1960s, over 350,000 chemical molecules have been introduced into everyday life, many of which serve as pollutants. Research indicates that particulate pollution from industrial and vehicular emissions can interact with pollen to increase allergenic responses. One study focused on birch pollen in Poland found that, in polluted areas, pollen produced heightened levels of a key allergen, Bet v1. Recent research from the University of Manchester in 2023 suggested that urban pollution correlates with more severe hay fever symptoms among residents.

Prof Claudia Traidl-Hoffmann of the Institute of Environmental Medicine and Integrative Health in Germany highlighted the damaging effects of modern pollutants on the protective barriers of human skin and mucosal layers, potentially resulting in increased sensitivities to allergens. She noted that children living in high-traffic areas are at higher risk for developing asthma and allergies.

Climate change is projected to play a crucial role in the expansion and severity of pollen seasons. With higher global temperatures, many countries are experiencing earlier start times and longer durations of pollen seasons. A study from 2019 recorded increases in cumulative pollen counts across the northern hemisphere as a direct result of warmer conditions, leading to estimates of a 60% increase in pollen severity in north-west Europe in the coming years.

While casual observations suggested a change in pollen dynamics, researchers in the UK, such as Beverley Adams-Groom, have noted that levels of common allergens like grass pollen have not seen significant changes recently. However, birch pollen in central England has increased, linking its rise to climate change.

Invasive species, particularly common ragweed, are expected to proliferate due to favourable climatic conditions, potentially quadrupling pollen concentrations by mid-century. To manage these invasive species, some regions, including Switzerland, have introduced natural predators, such as leaf beetles from North America, to mitigate the impact of ragweed.

Prof Traidl-Hoffmann remarked on the multifaceted nature of environmental medicine, citing a combination of environmental factors contributing to rising allergies. She emphasised that while climate change appears to be harming public health through increased allergies, it also presents an opportunity to enact positive changes for future health outcomes.

As climate patterns continue to shift, the dynamics of plant life—including allergenic species—will evolve, presenting ongoing challenges for public health as pollen seasons become longer and potentially more problematic.

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

## References

* <https://scholar.google.com/citations?user=dGQlAmsAAAAJ> - This URL corroborates the contributions of László Makra to understanding pollen and climate change, particularly in relation to temperature-related changes in pollen abundance across the northern hemisphere. It highlights his involvement in researching the impacts of climate on allergenic pollen seasons.
* <https://pubmed.ncbi.nlm.nih.gov/38995241/> - This study discusses the use of machine learning models for pollen forecasting globally, which aligns with the context of climate change affecting pollen seasons. It also mentions environmental variables crucial for pollen concentration forecasts.
* <https://www.health.nsw.gov.au/news/Pages/20161110_00.aspx> - This webpage from the New South Wales Health Department discusses the thunderstorm asthma event in Melbourne in 2016. It explains how thunderstorms can exacerbate pollen-related health issues, leading to increased hospital admissions.
* <https://www.sciencedirect.com/science/article/pii/S2211335522000708> - Research articles like this one from ScienceDirect often cover topics related to pollution's impact on allergens and health. They support the notion that pollutants can interact with pollen to heighten allergenic responses.
* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6937621/> - This article discusses how particulate pollution can affect allergen production, such as increasing Bet v1 levels in birch pollen. It underscores the complex relationship between pollution, allergens, and human health.