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UCT scientist leads ground-breaking project on fluctuating pollen levels

A multidisciplinary project which may fundamentally change the allergy treatment process and the way healthcare professionals respond to common allergies like asthma, hay fever and eczema is being led by the Division of Allergology and Immunology at the University of Cape Town's (UCT) Lung Institute. The project is examining the fluctuating pollen levels in South Africa and the subsequent effects on the human body.

With pollen levels expected to increase exponentially in the country over the next two decades, the need for a formal nationwide monitoring process is necessary, says Associate Professor Jonny Peter, head of the Division of Allergology and Immunology.

In partnership with academics at several leading universities in the country, The Real Pollen Count – continues to make significant strides when it comes to examining and responding to pollen levels to better manage conditions like allergic rhinitis, asthma and eczema by obtaining accurate data on the main pollen triggers and when they occur.

The pollen-monitoring campaign has been in place in the Western Cape for 20 years. Other provinces have not been so lucky with Gauteng having not been monitored since the 1990s, while cities like Port Elizabeth and Kimberley had not had formal pollen monitoring campaigns in place at all. Thanks to the campaign, there are now pollen-monitoring devices in seven South African cities: Johannesburg, Pretoria, Bloemfontein, Durban, Kimberley, Port Elizabeth and Cape Town. "The reason for doing this is multiple. It's for patients to know what's in the air – that's critical so that a diagnosis related to these pollens can be made and they can get treated," he said.

Associate Professor Peter explained that scientists monitor pollen levels on a weekly basis using a spore trap. Thereafter, removing the strip and analysing its contents under a microscope to identify each individual pollen grain is what is most complex and requires the eyes of trained, expert aerobiologists.

Using a mathematical equation, scientists then calculate the amount of pollen in the air each day to provide the daily counts. This, he explained, needs to be done for each of the seven spore traps nationwide and requires a team at each university.

To ensure the data is easily understandable for the layperson, scientists use the traffic light system to communicate weekly pollen results on the Real Pollen Count website. Red indicates pollen levels are very high in a specific region and potentially dangerous to pollen allergy sufferers, especially asthmatics. Orange indicates that pollen levels are high, and allergy sufferers should keep outdoor activities to a minimum and use medication to minimise effects. Yellow and green indicate moderate to low levels of pollen.

Based on the data collected since the start of the campaign, tree pollen reached the highest level in seven years in Cape Town this September. "This has been a bumper year for tree pollen in Cape Town," he said. Peter added that this comes on the back of the Mother City's devastating drought in 2018, where grass and tree pollen were peaking at their highest levels in 10 years.

"We're concerned that this is a trend we're seeing, which indicates that year-on-year, the levels are climbing. Through this monitoring process, we want to try and obtain this kind of data to verify this across the country. This year, the temperatures rose quite quickly in the early weeks of September, and that probably led to the very high and rapid flowering of certain tree species," he added.

Scientists suspect that climate change has a big role to play in the increase in pollen levels in Cape Town specifically. But the team needs to survey data over an extended period of time in order to verify this theory and draw accurate conclusions. Step one is developing updated pollen calendars for the country. In some places pollen calendars have not been updated since the 1990s, and in other places pollen calendars are non-existent.

Associate Professor Jonny Peter with fellow researcher, Dr Dilys Berman at the spore trap in Cape Town. **Photo** Supplied

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