PLANT EPIDEMIOLOGY

Banana disease risk

Phil. Trans. R. Soc. B **374**, 20180269 (2019).

Credit: Pavel Matousek/Alamy Stock Photo

Bananas are an important tropical staple crop but are highly susceptible to several diseases, including Black Sigatoka caused by the ascomycete fungus *Pseudocercospora fijiensis*. Understanding future disease risk requires an understanding of how historical climate change has altered past disease risk.

Daniel P. Bebber, of the University of Exeter, UK, takes a forward modelling approach that utilizes experimental data to parameterize an infection model that examines whether climate conditions over the last 60 years in Latin America and the Caribbean were favourable for spore germination and growth of Black Sigatoka disease. Climate change over that period made crop canopies wetter and temperatures more suitable for disease development, substantially increasing the risk of disease by a median of 44.2% in banana-growing areas of the region. Infection risk was greatest in eastern Nicaragua, Panama and coastal Guyana, and increased most rapidly across the Amazon basin.

The current research does not predict the potential future impact of climate change on Black Sigatoka disease or subsequent banana yields. Further research exploring the interactions between abiotic conditions, host availability and agricultural management practices is needed. *AY*

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AMAZON DEFORESTATION

Delayed wet season

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Precipitation that maintains the Amazon rainforest occurs in a pronounced wet season related to monsoon dynamics and migration of the intertropical convergence zone. Wet season onset depends on the rainforest itself, which moistens the atmosphere through evapotranspiration and primes the troposphere for deep convective rains. Deforestation could therefore affect the timing of wet season onset and the likelihood of drought, and these aspects play a role in ecosystem health, wildfire risk and the global carbon cycle.

Argemiro Teixeira Leite-Filho and colleagues from the Federal University of Viçosa, Brazil, employed a land-use change database and data from 112 rain gauges to study the relationship between precipitation and deforestation during the past few decades in the southern Amazon. They found that a 50%–60% deforestation rate would correspond to a wet season delay of about one week. In addition, at the beginning or end of the wet season, regions experiencing greater deforestation were more likely to experience dry spells of eight days or longer. This study underscores the cascading impacts of Amazon deforestation on regional hydroclimate, with implications for agriculture and land use. *BL*

Credit: Morley Read/Alamy Stock Photo

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BIOGEOCHEMISTRY

Cool gas in warm summers

Geophys. Res. Lett. http://doi.org/c5jm (2019).

Dimethylsulfide (DMS) is a naturally-produced gas that has been called the 'anti-greenhouse gas' due to its potential to cause cloud formation, which alters how much solar radiation makes it through the atmosphere. In sunlit zones of the ocean, microbial activity can produce enough DMS that the ocean serves as a net source to the atmosphere, especially in sub-Arctic regions. It has been suggested that warmer waters will lead to more DMS production in high-latitude waters, but this has not been proven in many areas, including the Bering Sea.

To gain understanding of potential high latitude changes, Cheng-Xuan Li, from the First Institute of Oceanography in China, and colleagues measured DMS production in the Bering Sea in the summers of 2012, 2014 and 2016. While 2012 was relatively cold, 2014 and 2016 were both warm. The warmer summers led to increased DMS concentrations, that were also more widespread throughout the Bering Sea and reached into deeper waters. Although the role DMS plays in the atmosphere is still debated, if it does lead to more clouds and cooler weather, there might be some relief from warming at high latitudes. *LZ*

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PRO-ENVIRONMENTAL BEHAVIOUR

Academic air travel

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Air travel is one of the fastest-growing contributors to greenhouse gas emissions. In academia, travel may be required to coordinate research across international teams and conduct fieldwork, and conferences and department visits may provide important opportunities for maintaining visibility, promoting new research and developing collaborations. However, whether air travel is actually related to professional success in academia has not been tested.

Seth Wynes and coauthors, from the University of British Columbia, Canada, analysed data from travel requisition forms provided by 26 academic departments at the University of British Columbia over an 18-month period, as well as publicly available academic profiles. Conferences were the primary purpose for most trips. More senior academics and those with higher salaries were responsible for more air travel emissions. However, there was no association between emissions and productivity, as measured by total citations and *h*-index (adjusted for academic age and discipline). Nor was air travel related to collaborations with other academics, as measured by average number of authors per paper. These results suggest that there is potential for academics to reduce emissions from air travel without compromising their careers. *JR*

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