

# Tweets, news offer insights on invasive insect spread

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The invasive insect, the spotted lanternfly. Credit: U.S. Department of Agriculture

A new North Carolina State University study shows the potential for using Twitter and online news articles to track the timing and location of invasive insect spread in the United States and around the globe. Researchers say these sources are promising for filling in gaps when official data are not widely available.

The study, "Plant pest invasions, as seen through news and [social media](#)," appears online in *Computers, Environment and Urban Systems*.

"The idea was to explore if we could use this data to fill in some of the information gaps about pest spread, and ultimately, to support the development of better predictive models of where pest spread is happening, and when to use costly control measures," said Laura Tateosian, associate teaching professor in the NC State Center for Geospatial Analytics. "Even though these are not formal scientific sources, we found that we could clearly see some of the major events that were occurring about two invasive pests in the news, and on Twitter."

In the study, the researchers tracked past Tweets about two insects—spotted lanternfly and *Tuta absoluta*—compiled by a web-based subscription service, Brandwatch, as well as online news articles aggregated by Google News and GDELT, or the Global Database of Events, Language and Tone Project.

Spotted lanternfly, which was first reported in the United States in Pennsylvania in 2014, is an insect native to Asia that can damage or destroy grapes, cherries, hops, certain lumber trees and other plants. The research team tracked historical posts about the spotted lanternfly in Pennsylvania in a single year in 2017, and then globally between 2011 and 2021.

*Tuta absoluta*, an insect also known as the tomato leaf miner, is native to South America. It was discovered in Spain in 2006, and has spread into parts of Europe, Africa, Asia and the Middle East. It has been nicknamed the "tomato Ebola" because of the devastation it can cause to tomato crops. The researchers tracked posts about *Tuta absoluta* between 2011 and 2021.

"While some invasive insects have reached their global range, in both of these cases, the pests are actively spreading," said Ariel Saffer, graduate student in geospatial analytics at NC State. "We launched this as a proof-of-concept study to see if it would be scientifically reasonable to use these sources to track pest spread. We compared information in places where the insects were known to be present to see if these sources accurately captured existing knowledge."

The researchers found that activity on Twitter and in news stories tracked some of the patterns in official surveys. For example, the volume of Twitter posts and news activity about [spotted lanternfly](#) tracked the seasonal pest cycle, with more activity in the summer and fall. In terms of location, they saw a high volume of Tweets and news articles in areas located at the epicenter of outbreaks. In Pennsylvania, news articles captured a subset of counties confirmed in 2017 by USDA Animal and Plant Health Inspection Service survey data, but also uncovered one county not listed in official records.

For *Tuta absoluta*, the team found posts on Twitter and in news stories often coincided with global pest spread, as compared to reports gathered by the European and Mediterranean Plant Protection Organization (EPPO). Information in news and Twitter [posts](#) also aligned with survey data for this pest in Nigeria, and sometimes before that information was widely available in scientific sources.

The researchers say the findings suggest Twitter and [news](#) information could be useful to supplement official data sources, but more work is needed.

"News media and social media have the potential to give you more immediate insight into what's going on, especially if scientific information on insect spread is not immediately published in scientific literature, or not widely available to other scientists," Saffer said. "Also,

relying on data from scientific publications can sometimes offer a patchwork coverage of space and time, depending on when that study happened. It can be hard to get aggregated information in continuous time, especially at the global scale, as that information can be managed by multiple agencies."

Study co-authors included Chelsey Walden-Schreiner and Makiko Shukunobe.

**More information:** Laura G. Tateosian et al, Plant pest invasions, as seen through news and social media, *Computers, Environment and Urban Systems* (2022). [DOI: 10.1016/j.compenvurbsys.2022.101922](https://doi.org/10.1016/j.compenvurbsys.2022.101922)

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