

Farmer suicides rise in India as climate warms, study shows

July 31 2017, by Katy Daigle



In this July 22, 2017 file photo, an Indian farmer uses a pair of bulls to plough a vegetable field on the outskirts of Hyderabad, India. Researchers report a link between crop-damaging temperatures and suicide rates in India, where more than 130,000 farmers end their lives every year. (AP Photo/Mahesh Kumar A, file)

When Rani's husband died by drinking pesticide, he left the family in debt. But even if they could pay off the loans, Rani said their farming days are over.

"There are no rains," said the 44-year-old woman from drought-stricken Tamil Nadu, one of hundreds of farmers protesting in the capital for more government support. "Even for drinking, we get water only once in 10 days."

A study suggests India will see more such tragedies as climate change brings hotter temperatures that damage crops and exacerbate drought. For every 1 degree Celsius (1.8 degrees Fahrenheit) of warming above 20 degrees C (68 degrees F) during the growing season in India, there are 67 more suicides on average, according to the findings published Monday in the Proceedings of the National Academy of Sciences, or PNAS.

The message "is that farming is an inherently risky occupation, with annual incomes often held hostage to the weather, and it's getting riskier in the era of climate change," said Vikram Patel, an Indian psychiatrist and mental health expert with Harvard Medical School in Boston who was not involved in the study.

Experts said the study's findings should raise alarms, especially with India's average temperatures expected to rise another 3 degrees C (5.4 degrees F) by 2050. That will bring more erratic weather events, more drought and stronger storms.



In this May 11, 2016 file photo, Indian farmer Anant More inspects his destroyed crop of sugarcane due to drought in Marathwada region, in the Indian state of Maharashtra. Researchers report a link between crop-damaging temperatures and suicide rates in India, where more than 130,000 farmers end their lives every year. (AP Photo/Manish Swarup, File)

"Anything that will affect occupational stability is going to affect farmers' mental health," Patel said.

Farming has always been considered a high-risk profession, and a single damaged harvest can drive some to desperation. With agriculture supporting more than half of India's 1.3 billion people, farmers have long been seen as the heart and soul of the country. But they've also seen their economic clout diminish over the last three decades. Once accounting for a third of India's gross domestic product, they now contribute only 15 percent of India's \$2.26 billion economy.

There are many factors that can contribute to suicide, including poor crop yields, financial devastation or debt, access to easy methods of self-harm, or a lack of community support. In India, many farmers will drink toxic pesticides as a way out of backbreaking debt, with the government in some cases guaranteeing monetary aid to their surviving families. That provides a perverse incentive for suicide, "rewarding people who end their lives by paying family compensation, but only if they die," Patel said.

"We may not be able to stop the world from warming, but that doesn't mean we can't do something to address suicide," including providing more financial stability and paying more attention to mental health, he said.

The study released Monday should make those efforts even more urgent, experts said.



In this March 7, 2017 file photo, Indian women farmers work in their farm on the eve of International Women's Day on the outskirts of New Delhi, India. Researchers report a link between crop-damaging temperatures and suicide rates in India, where more than 130,000 farmers end their lives every year. (AP Photo/Altaf Qadri, File)

"It provides evidence for a causal pathway—from unfavorable weather to poor crop yields to rural misery to increased suicide," said Dr. Howard Frumkin, a University of Washington environmental health professor who was not involved in the study. "With climate change bringing increasingly chaotic weather in many places, this causal pathway is likely to intensify."

India's farms are already hit regularly by strong storms, extreme drought, heat waves and other extreme weather events. Some still rely on rainfall rather than irrigation to water their crops. Scientists have shown that extreme weather events are already increasing as the planet warms.

For the study, researcher Tamma Carleton looked at suicide data from India's National Crime Records Bureau between 1967 and 2013, along with data on agricultural crop yields and on temperature change.

"I estimate that warming temperature trends over the last three decades have already been responsible for over 59,000 suicides throughout India," writes Carleton, who studies agriculture and resource economics at the University of California, Berkeley. In other words, warmer temperatures were a factor accounting for a 6.8 percent increase in suicides, the study says.

She noted limitations in the study, including an inability to differentiate between urban and rural suicides because the crime records bureau only

began classifying farmer suicides in 1995. Other experts also noted that the actual number of suicides may be higher than the crime database counted, but said these concerns were unlikely to undermine the study's core findings.



In this Dec. 11, 2016 file photo, Indian farmer women walk carrying straw on their heads at Basi village on the outskirts of Allahabad, India. Researchers report a link between crop-damaging temperatures and suicide rates in India, where more than 130,000 farmers end their lives every year. (AP Photo/Rajesh Kumar Singh, File)

India's farmers, often complaining about being ignored, hold frequent protests to demand better crop prices, more loan waivers and even water delivery systems to guarantee irrigation during dry spells. Sometimes, they stage sit-ins or dump truckloads of vegetables onto highways to disrupt traffic.

For the past month, hundreds of farmers—some carrying human skulls they say are from farmers who committed suicide in the drought-stricken southern state of Tamil Nadu—have been staging what they say will be a 100-day protest in a central New Delhi square to "prevent the suicide of farmers who feed the nation."

The government recently introduced legislation to subsidize crop insurance aimed at reducing some of the financial risk faced by farmers who take out loans to buy seeds and agrochemicals. But experts note there is almost no discussion about mental health as it relates to India's farming community.

Agriculture Minister Radha Mohan Singh told lawmakers Thursday there were 11,458 farmer suicides in 2016—the lowest number in two decades. It was also a year of mild temperatures and normal monsoon rains.

He acknowledged that the number of farmer suicides had gone up by about 9 percent in each of the previous two years, both of which were marred by drought. The crime bureau found that 58 percent of the 12,602 farmer suicides in 2015 were driven by bankruptcy, indebtedness and other farming-related issues. Most of the victims were marginal cultivators or small-farm holders with less than 2 hectares (5 acres) of land.



In this Feb. 1, 2017 file photo, an Indian farmer works in his paddy field in Roja Mayong village, east of Gauhati, India. Researchers report a link between crop-damaging temperatures and suicide rates in India, where more than 130,000 farmers end their lives every year. (AP Photo/Anupam Nath, File)

"Suicides occur due to extreme economic despair," said M.S. Swaminathan, a geneticist whose work on high-yield rice and wheat crops helped drive India's Green Revolution in the 1960s. His research in the late 1980s found that a 1 degree C (1.8 degree F) temperature rise reduced a crop's duration by about one week, causing losses in the overall weight of harvest. His foundation works to find farming solutions not only to rising heat, but also to drought or salinity from coastal sea rise. Given these growing risks, he said, government policy has a large role to play.

"Suitable crop insurance and a prompt compensation of losses due to

climate-related factors will help to avoid a sense of hopelessness that leads to suicide," Swaminathan said.

More information: Crop-damaging temperatures increase suicide rates in India, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1701354114

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Citation: Farmer suicides rise in India as climate warms, study shows (2017, July 31) retrieved 22 May 2024 from <https://phys.org/news/2017-07-farmer-suicides-india-climate.html>

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