Extreme heat has devastating effects on agriculture and workers

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The impact of global warming on agriculture and agricultural workers is mounting. Given the likely temperature increases anticipated by the end of this century, it is projected that conditions in much of South Asia, tropical sub-Saharan Africa, and parts of Central and South America could result in up to 250 days a year being so hot that the bodies of agricultural workers cannot sustain meaningful physical labor.

A recent report (Extreme Heat and Agriculture) prepared jointly by the United Nations' Food and Agriculture Organization (FAO) and the World Meteorological Organization (WMO) finds that elevated temperatures around the world threaten the food security and livelihoods of over a billion people. The human impact is already evident. The report states that:

> Extreme heat is increasingly defining the conditions under which agrifood systems operate. Rising temperatures and heatwaves, occurring with greater frequency, duration and intensity, are often accompanied by prolonged drought and other climate extremes. Together, these hazards are exerting mounting pressure on crops, livestock, fisheries and forests, and on the communities and economies that depend upon them.

Furthermore:

> Extreme heat magnifies existing weaknesses across agricultural systems. Higher temperatures parch soils, reduce harvests, strain livestock, disrupt fisheries and increase wildfire risk. When combined with water scarcity, the consequences intensify, cutting production, lowering incomes, and tightening food supplies.

The negative effects on food production have already begun.

For example, yields of staple crops like maize and wheat have declined by 7.5 and 6.0 percent per 1 °C of warming and are projected to decline by up to an additional 10 percent for every 1 °C of warming in the future. Under high-emission scenarios, nearly half the world's cattle could be exposed to dangerous heat by 2100, with annual losses nearing USD 40 billion (in 2005 dollars), although under a low-emission scenario (SSP1-2.6) [Shared Socioeconomic Pathways—a range of projected climate outcomes under different social responses to global warning], impacts from livestock exposure to extreme heat are reduced by nearly two-thirds.

SSP1-2.6 is among the lowest of potential global warming scenarios currently projected. Unless greenhouse gas emissions are significantly reduced, conditions could be even worse. Recent elimination of the most extreme projection, SSP5-8.5, does not invalidate the other scenarios, contrary to claims by Donald Trump. Its withdrawal indicates that the limited measures undertaken so far, primarily the increasing use of renewable energy sources (e.g., wind and solar), is having an impact—confirmation that a substantial increase in such efforts is needed to further reduce the effects of global warming.

Already, extreme heat has rendered agricultural workers 35 times more likely to die from occupational heat exposure than workers in any other sector. A total of 470 billion working hours has been lost per year on a global basis. Inside workers are also being injured and killed by excessive heat.

Analysis by the Intergovernmental Panel on Climate Change (IPCC) projects that compared with 1.5 degrees Celsius (°C) (3.5 degrees Fahrenheit) of warming over preindustrial conditions, the threshold set by the Paris Agreement above which severe climate consequences were projected, which has already effectively been reached, the intensity of extreme heat is likely to increase by at least 100 percent at 2°C (36 degrees F.) and by 300 percent at 3°C (37 degrees F.).

The report describes the impact of "compound events," when multiple extreme weather events co-occur and amplify their negative effects beyond that if they were to happen individually. This can occur, for example, when extreme heat combines with drought, often interspersed with occasional, heavy downpours which result in flash floods. "Recent studies confirm that there has been an overall increase in compound drought and extreme heat events since the 1950s at regional and global scales, with an increase of more than 200 percent

recorded in some regions." The Colorado River basin is currently experiencing such extreme conditions.

Increasing heat and drought negatively impact the ability of soil to support crops. In addition to insufficient water, hot and dry soil bakes hard, reducing its ability to absorb the occasional intense rain, which rapidly runs off and/or causes erosion, stripping nutrient-rich topsoil. This will be compounded by the imperialist war against Iran, which has resulted in a severe reduction in the available supply of fertilizer during the critically important planting season in the northern hemisphere. As previously reported, such extreme climate conditions can negatively impact riverine fisheries, as well as those in the oceans as well.

Approximately one billion people worldwide work in agriculture, representing about 28 percent of the working population, nearly half as wage labor, according to the International Labour Organization (ILO). If present climate change trends continue, extreme heat could make agricultural work unsafe for up to 250 days a year by the end of the century. The effects of heat stress on crop yields would be devastating. It is estimated that every 1 degree C. increase in temperature, crop yields would be cut by 7.5 percent. The effect of this year's anticipated "Super El Nino" will only intensify these dire effects.

The report, citing an IPCC analysis, warns that "adaptation efforts across most sectors and regions continue to rely on minor modifications to current practices and that, faced with intensifying climate extremes, including extreme heat, many human systems and coupled human-natural systems are approaching, or have already exceeded, their adaptive limits given current capacities."

A number of general categories of technical options are identified that should be explored to adapt to increasing global temperatures. While these may be useful in the short term, unless the fundamental cause of global warming, the massive emission of greenhouse gases, is addressed, the planet will become unlivable.

Using Brazil as an example, the FAO/WMO report provides a case study in the already serious impact of increasing temperature on food production and the health of the workers involved. The results demonstrate the severe effects of the compounding impacts of multiple manifestations of global warming. From late 2023 through 2024, large parts of Brazil endured a severe and prolonged extreme heat event. "For some locations and over a course of months, daytime maximum temperatures exceeded 5 °C [41 Degrees F) above the climatological mean value (from 1980 to 2022)." These conditions were amplified by a strong El Niño.

The effects were severe for agricultural workers, livestock, fisheries and on Brazil's primary crops—soy and first season maize. The soybean crop, for example, was reduced from an expected 162 million metric tonnes to 147.7 million metric tonnes, a reduction of nearly 10 percent. In addition to extreme temperatures, agricultural workers were also endangered by extensive wildfires, caused by the combination of the heat and drought, which produced quantities of dry fuel.

Scientists are now warning that this year will see a "Godzilla" El Niño, that is more intense than any yet experienced, which will intensify the already devastating effects of global warming.

Record-breaking heatwaves have already been experienced this year in India and Europe. In India, as of late May, temperatures had crossed 45 degrees Celsius (113 degrees Fahrenheit). The human body can withstand 35 degrees C, beyond which it can no longer cool itself. The country recently experienced 40 consecutive days when the high temperature exceeded 40 degrees C.

The callous indifference of the ruling class is typified by Indian Prime Minister Narendra Modi, a long-time climate change denier, who told a group of students, "Climate has not changed. We have changed. Our habits have changed."

As the evidence of global warming-induced climate change is becoming increasingly evident, governments around the world are denying, belittling or actively promoting processes that drive it forward. In the US, the Trump administration's Environmental Protection Agency (EPA) has openly declared that fighting climate change by curbing greenhouse gas emissions from vehicles is "futile," because the problem is too big to be addressed by reducing this one source.

At the same time, Trump is moving to halt the construction of offshore wind electric generation project on the Atlantic and Pacific coasts and, at the same time blocking the shutdown of several coal-fired plants. And, in order to hobble the ability to track the effects of global warming, Trump has ordered the removal of a series of automated climate monitoring stations along the US coast. This is part of the effort to disband the National Center for Atmospheric Research. As with the ruling class's respond to COVID-19—minimize monitoring and the problem "disappears."

The capitalist system has clearly demonstrated that it is incapable of undertaking the necessary measures to address the existential crisis. The world's food supply along with workers, both agricultural and industrial, will be severely impacted. Meanwhile, the ruling class is willfully downplaying the danger and instead hurtling toward world war.