

# **Threat to future global food security from climate change and ozone air pollution**

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**Global demand for food is expected to increase by at least 50% from 2010 to 2050 mainly as a result of population growth and a shift towards a more 'westernized' diet in developing regions. Both temperature extremes and surface ozone, formed through the photochemistry of precursor gases mainly arising from human activities, are detrimental to crop yields.**

**The impact of global warming and surface ozone concentration has been projected for 2050 compared with 2010 for two greenhouse gasses emission scenarios: an intermediate pathway with a global reduction in surface ozone due to pollution control measures worldwide (RCP4.5) and a more 'pessimistic', energy-intensive pathway with a worldwide increase in ozone except in the US and around Japan (RCP8.5).**

**According to these projections, more severe ozone pollution (scenario RCP8.5) leads to substantial crop damage on a global scale, reducing global total crop production by 3.6%. In this scenario, ozone pollution and climate change combine to reduce global crop production by 15% between 2010 and 2050. Aggressive pollution control worldwide, however, (scenario RCP4.5) leads to an overall 3.1% increase in global production. According to these results, ozone pollution control (scenario RCP4.5) has the potential to partially offset the negative impact of climate change, leading to a smaller combined global crop production decrease of 9.0%.**

**Source: Tai et al., 2014. Nature Climate Change 4: 817-821.**

**Photo: Rory MacLeod ([www.stckr.com](http://www.stckr.com))**