

Stressed crops emit more methane than thought

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Scientists at the University of Calgary have found that methane emission by plants could be a bigger problem in global warming than previously thought.

A U of C study says that when crops are exposed to environmental factors that are part of [climate change](#) -- increased temperature, drought and ultraviolet-B radiation -- some plants show enhanced methane emissions. Methane is a very potent [greenhouse gas](#); 23 times more effective in trapping heat than [carbon dioxide](#).

"Most studies just look at one factor. We wanted to mix a few of the environmental factors that are part of the climate change scenario to study a more true-to-life impact climate change has on plants," says David Reid, a professor in the Department of Biological Sciences who co-authored a paper with research associate Mirwais Qaderi in the advanced on-line edition of the journal *Physiologia Plantarum*.

Reid and Qaderi, who received funding from the University Research Grants Committee (URGC) and Natural Sciences and Engineering Research Council of Canada (NSERC), analyzed methane emissions from six important Canadian crops - faba bean, sunflower, pea, canola, barley and wheat - that were exposed to combinations of three components of global climate change: temperature, ultraviolet-B radiation and water stress (drought). What they found they say is troubling. These stresses caused plants to emit more methane. In a warmer, drier world methane might be a bigger contributor in global

warming than previously thought.

When it comes to the [greenhouse effect](#), methane could be considered the misunderstood and often overlooked orphan greenhouse gas. Much of the attention has been focused on carbon dioxide but more recently it has been realized that methane should also be considered as a very significant greenhouse gas. Its concentrations have more than doubled since pre-industrial times. While the growth rate of methane concentrations has slowed since the early 1990s, some scientists say this is only a temporary pause.

"Our results are of importance in the whole climate warming discussion because methane is such a potent greenhouse warming gas, says Qaderi. "It points to the possibility of yet another possible feedback phenomena which could add to [global warming](#)."

Since elevated levels of carbon dioxide has been observed to counteract the negative effects of some environmental stresses,

Qaderi and Reid are now studying the effect of increased carbon dioxide with factors such as drought, higher temperature and UVB on methane production in crops.

More information: The paper "[Methane](#) emissions from six crop species exposed to three components of global climate change: temperature, ultraviolet-B radiation and water stress" by David M. Reid and Mirwais M. Qaderi is available in the advanced online issue of the journal *Physiologia Plantarum*: www3.interscience.wiley.com/journal/119880798/issue

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